

# PROCEEDINGS

## INTERNATIONAL HEALTH CONFERENCE

Postgraduate Program  
Poltekkes Kemenkes Semarang

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"LEGAL AND ETHICAL ASPECTS  
OF HEALTH SERVICE  
DURING A PANDEMIC"

Tuesday – Wednesday,  
16-17 November

2021

collaboration with :



**2<sup>nd</sup> INTERNATIONAL HEALTH CONFERENCE**  
**“LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICE**  
**DURING A PANDEMIC”**  
**2021**

Pasca Sarjana Poltekkes Kemenkes Semarang Building,  
Semarang, 16-17 November 2021



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Poltekkes Kemenkes Semarang**

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**MINISTRY OF HEALTH POLYTECHNIC POSTGRADUATE PROGRAM**  
**2<sup>nd</sup> INTERNATIONAL HEALTH CONFERENCE**  
**“LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICE DURING A PANDEMIC”**  
**2021**

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## PREFACE

The current era is an era where the development of the era is very fast and has high complexity. This is also the case in the world of health, from the era of written documentation to the paperless era. From a simple and simple era to a complex problem. This requires us to always have the ability to understand and follow the direction of consumers. Health care is something that is also experiencing rapid development. All health workers, including nurses, midwives, dental hygienists, doctors, radiographers, and other health workers are required to provide services by prioritizing quality, effectiveness and cost effectiveness.

Health care providers must have a good understanding and competence in both theory and implementation of legal and professional ethics. There is a need to combine a strong emphasis on biomedical ethics and a health law-based critique of ethical principles and legal approaches to respect for human dignity. Therefore, this event will be supported in developing a sophisticated international perspective on ethical issues, ethical dilemmas, codes of ethics, professional values in particular through the lens of a human rights approach. The role of health care providers is the main content to prepare students to have competency in basic concept knowledge of health ethics and law.

The analysis of ethical dilemmas, conflicting interests surrounding health care and the application of biomedical ethical theory and health legislation will guide students to become professional healthcare providers. Having an understanding of the professional ethics of health workers is a necessity. This understanding provides students with the mental readiness to make ethical decisions related to the practice of the healthcare workforce. Have an understanding of legal concepts so as to avoid actions that include violations of the law in providing health employment practices. Explain and apply his knowledge of the rights and obligations of health workers and patients. At this stage of ability, students can perform health services in accordance with their rights and obligations professionally. Carry out medical dispute resolution. If later health providers face a medical dispute can make the right decision.

This International Health Conference activity was held in the context of the peak implementation of the National Health Day celebration in 2021. This activity became an event where practitioners, academics, and observers in various health fields could gather to conduct discussions, share experiences, and oral presentations according to their expertise. This International Health Conference activity involves the academic community in the Postgraduate Program of the Health Polytechnic of the Ministry of Health in Semarang.

## SPEAKERS

No	Speaker	Theme
1	Associate Professor Dr. Wilmolrat Puwarawuttipanit, RN, PhD. Faculty of Nursing Mahidol University	Legal and Ethic Aspect of Interprofessional collaboration in caring for non-communicable diseases
2	Assoc. Prof. Kasara Sripichyakan, PhD, RN. Faculty of Nursing, Chiang Mai University	Legal aspect of Midwifery care during Pandemic in Thailand
3	Assoc. Prof. Dr. Yudthaphon Vichianin	Ethics and legal aspects of using health electronic data for research in the industrial era 4.0
4	Prof. Nawi NG.,MD.,MPH.,PhD	Legal aspect and ethics of health services on Non Communicable disease treatment during a pandemic.
5	Dr. Emi Nurjasmi, M.Kes	Legal aspect and ethic in Midwifery Education in Indonesia
6	Mardiyono, MNS, PhD	Holistic Nursing in cardiovascular patients in hospital
7	Dr. Sri Sumarni, M.Mid	Ethical approval in midwifery research during the pandemic era
8	Gatot Murtoj Wibowo, S.Pd, M.Sc	Experience and learning teleradiology by generic workflow system for postgraduate student in diagnostic imaging
9	Dr. Bedjo Santoso, S.SiT, M.Kes	Dental and oral health policy during pandemic

## REVIEWER

### Reviewer by Subject

<b>Subject</b>	<b>Reviewer</b>
Nursing Midwifery	Nina Indriyawati, MNS
	Ajeng Titah Normawati, S.ST, M.Tr.Kep
Diagnostic Imaging science	Listyaning Eko Martati, S.SiT, M.Tr.Keb
	Siti Rofi'ah, S.ST, M.Kes
	Dr. Sri Sumarni, M.Mid
Nursing Midwifery	Rini Indratni, S.Si, M.Kes
	Marichatul Jannah, S.ST, M.Kes
Diagnostic Imaging	Prof. Dr. drg. Diyah Fatmasari, MDSc
	Dr. drg. Lanny Sunarjo, MDSc
	Prasko, S.SiT, M.HKes
	Hermien Nugraheni, SKM, M.Kes

### ***Reviewer and Moderator Oral Presenter***

<b>Room</b>	<b>Reviewer and Moderator</b>
Room 1	Reviewer : Mardiyono, MNS, PhD Moderator : Widya Juniantina Nusantari
Room 2	Reviewer : Sri Widatiningsih, M.Mid Moderator : Eviyati Aini Muriana
Room 3	Reviewer : Rizky Amelia, S.SiT, M.Kes Moderator : Farah Faadhilah
Room 4	Reviewer : Dr. Sudiyono, SE, M.Kes Moderator : Gatot Santosa
Room 5	Reviewer : Dr. drg. Ani Subekti, Sp. KGA Moderator : Muh. Firdaus Tullah
Room 6	Reviewer : drg. Endah Aryati Ekoningtyas,MDSc Moderator : Aprilia Dini Sulistyanti
Room 7	Reviewer : Hermien Nugraheni, SKM.,M.Kes Moderator : Miranda Gita

**SPEECH**  
**BY CHIEF ORGANIZING COMMITTEE**  
***INTERNATIONAL HEALTH CONFERENCE***  
**MINISTRY OF HEALTH POLYTECHNIC POSTGRADUATE PROGRAM**

Assalamu'alaikum wr wb

Greeting

First of all, I express my deepest gratitude to God almighty for His blessings as the International conference conducted cooperatively by health polytechnic of Semarang can be done successfully On this very special occasion, I wish particularly to give my best thanks to Mr. Marsum, BE, S.Pd, MHP and her colleagues as representation of POLTEKKES Semarang, for giving me a huge opportunity as a chief committee. i am most grateful for efforts put forth by all of the International conference committee, who diligently worked throughout the process of inviting both participants and speakers so that the event goes on the right track Finally, I do hope that the event will contribute positively to health professionalism itself as well as to establish a wonderful networking between health organization and significant others May God bless our good relationship and good will so that He will only bring goodness for al

Wassalamu'alaikum wr wb

Semarang, November 2021

Chief Committee

Dr. Sri Sumarni, M.Mid

**SCHEDULE  
OF 2nd INTERNATIONAL HEALTH CONFERENCE  
“LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC”  
POSTGRADUATE PROGRAM OF POLTEKKES KEMENKES SEMARANG**  
Semarang, November 16 – 17th 2021

<b>Conference day 1, Tuesday, 16<sup>th</sup> November 2021</b>		<b>PIC</b>
<b>ID : 897 2527 1438 Password : 374934</b>		
<b>Jakarta time (GMT+7)</b>		
<b>07.00- 08.00</b>	<b>Registration</b>	<b>IT</b> : Intanwati
	<b>Opening Ceremony</b>	<b>MC</b> : Tecky Afifah SA, S.Si.T., M.Tr.Keb.
08.00- 08.10	Indonesian Anthem and Mars of Poltekkes Kemenkes Semarang	
08.10- 08.15	Pray	Ishaq Ibrahim
08.15- 08.20	Committee Report from The Chief Committee (Dr. Sri Sumarni, M.Mid)	
08.20- 08.25	Welcoming Speech from Head of Postgraduate Program (Prof. Dr. dr. Suharyo Hadisaputro, Sp.PD, KPTI)	<b>MC</b> : Tecky Afifah SA, S.Si.T., M.Tr.Keb.
08.25- 08.35	Opening Remarks from Director of Poltekkes Kemenkes Semarang (Dr Marsum, BE, SPd, MHP)	
08.35- 09.15	Speaker 1  Associate Professor Dr. Wilmolrat Puwarawuttipanit, RN, PhD.  Faculty of Nursing Mahidol University “Legal and ethic aspect of interprofessional collaboration in caring for non-communicable diseases”	<b>Moderator :</b>  Mardiyono, MNS,PhD (@30” for Presentation, 10” for discussion) <b>Note Taker:</b> Novita Kurnia W, M.Tr.Kep.
09.15- 09.45	Speaker 2  Assoc. Prof. Kasara Sripichyakan, PhD, RN Faculty of Nursing, Chiang Mai University “Legal aspect of Maternal and Child Health Care in Thailand During Pandemic in Thailand”	
09.55- 10.35	Speaker 3  Dr. Emy Nurjasmi, M.Kes Ketua PP IBI Indonesia “Legal Aspect and Ethic in Midwery Education In Indonesia”	
10.35- 11.15	Speaker 4  Dr. Julian Fisher Charite University Berlin in Germany “Providing Affordable and Safe Access of Dental and Oral Health Care to All People”	<b>Moderator :</b>  Sri Widatiningsih, M.Mid (@30” for Presentation, 10” for discussion) <b>Note Taker:</b> Novita Kurnia W, M.Tr.Kep.
11.15- 11.55	Speaker 5  Prof. Nawi NG.,MD.,MPH.,PhD	

	Sahlgrenska Academy, University of Gothenburg, Swedia “The Impact Of Covid-19 On Health Services For Non-Communicable Disease”	
11.55- 12.45	Speaker 6 Assoc Prof dr. Yudthapon Vichianin Mahidol University, Thailand “Ethics and legal aspects of using health electronic data for research in industrial era 4.0”	
12.45- 12.50	<b>Closing day 1</b>	
<b>Conference day 2, Wednesday, 17<sup>th</sup> November 2021</b>		<b>PIC</b>
<b>ID : 897 2527 1438 Password : 374934</b>		
07.00- 07.45	<b>Registration</b>	<b>IT</b> : Astri Ulina Saragih
07.45 - 08.00	<b>Opening Day 2</b>	<b>MC</b> : Tecky Afifah SA, S.Si.T., M.Tr.Keb.
<b>Invited Speaker Session</b>		
08.00- 08.15	Mardiyono, MNS, PhD. “Holistic nursing in cardiovascular patients in hospital”	<b>Moderator :</b> Dr. dr. Ari Suwondo, MPH. <b>Note Taker :</b> Dhita Aulia Octaviani, S.ST., M.Keb.
08.15- 08.30	Dr. Sri Sumarni, M.Mid. “Ethical approval in midwifery research during the pandemic era”	
08.30- 08.45	Gatot Murti Wibowo, S.Pd., M.Sc. “Experience and learning teleradiology by generic workflow system for postgraduate student in diagnostic imaging”	
08.45- 09.00	Dr. Bedjo Santoso, S.SiT, M.Kes. “Dental and oral health policy during pandemic”	
09.00- 09.05	Back to MC announcement for Oral Presenter Room, and Participants room	<b>MC</b> : Tecky Afifah SA, S.Si.T., M.Tr.Keb.
<b>Oral Presentation Session</b>		
<b>BREAK OUT ROOM</b>		
09.05- 11.35	ROOM 1 (Nursing) Reviewer : Mardiyono, MNS, PhD.	<b>Moderator</b> : Widya Juniantina nusantari <b>Note Taker</b> : Radiah Ilham <b>Operator (IT)</b> : Ainun Mutmainah
	ROOM 2 (Midwifery) Reviewer : Sri Widatiningsih, M.Mid	<b>Moderator</b> : Eviyati Aini Muriana <b>Note Taker</b> : Tyas Febrina <b>Operator (IT)</b> : Ninick
	ROOM 3 (Midwifery) Reviewer : Rizky Amelis, S.ST, M.Kes	<b>Moderator</b> : Farah Faadhlilah <b>Note Taker</b> : Gustiyana <b>Operator (IT)</b> : Intanwati

	ROOM 4 (Diagnostic Imaging) Reviewer : Dr. Sudiyono, SE. M.Kes	<b>Moderator :</b> Gatot Santosa <b>Note Taker :</b> Giovana Nopa Prancisca <b>Operator (IT) :</b> Astri Ulina Saragih
	ROOM 5 (Oral Health Therapist) Reviewer : Dr. drg. Ani Subekti, Sp. KGA	<b>Moderator :</b> Muh. Firdaus Tullah <b>Note Taker :</b> Lanny Hapsari W <b>Operator (IT) :</b> Efa Nurizza
	ROOM 6 (Oral Health Therapist) Reviewer : Drg. Endah Aryati Ekoningtyas,MDSc	<b>Moderator :</b> Aprilia Dini Sulistyanti <b>Note Taker :</b> Annisaa Sittatunnikmah <b>Operator (IT) :</b> May Fransiska
	ROOM 7 (Oral Health Therapist) Reviewer : Hermien Nugraheni, SKM.,M.Kes	<b>Moderator :</b> Miranda Gita <b>Note Taker :</b> Ratna Dwi Handayani <b>Operator (IT) :</b> Yayuk Fathonah
11.35- 12.05	Best Presenter, Best Paper, Best Output	<b>MC :</b> Tecky Afifah SA, S.Si.T., M.Tr.Keb.
12.05- 12.10	Closing Statement	Dr.dr.Ari Suwondo MPH.
12.10- 12.15	<b>Closing Ceremony</b>	

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**Effect of Therapy Music Against Anxiety in Preoperative Patients Spinal Anesthesia at PKU Muhammadiyah Hospital Yogyakarta****Anita Setyowati<sup>1</sup>, Ni Ketut Mendri<sup>2</sup>, Tri Prabowo<sup>3</sup>**<sup>1</sup>Student of the Department of Nursing, Poltekkes, Ministry of Health, Yogyakarta<sup>2,3</sup>Lecturer of Nursing Poltekkes Ministry of Health Yogyakarta

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[anitasetyowati25@gmail.com](mailto:anitasetyowati25@gmail.com)**ABSTRACT**

**Background :** The operation of a person can pose a threat that can generate stress reactions both physiologically and psychologically such as fear, anger, anxiety, and anxiety. The cause of anxiety in patients pre-spinal anesthesia is the concern about procedures that during surgery can be seen and heard. Anxiety in preoperative patients needs to be considered, one of the actions to overcome anxiety in patients can be in the form of music therapy. **Objective :** knowing the effect of giving music therapy to the anxiety of spinal surgery patients at PKU Muhammadiyah Hospital in Yogyakarta. **Methods :** This research method is a quasi experiment with one group pre test and post test with control design. The population in the study were all patients who were treated with 64 patients with spinal anesthesia. Sampling by consecutive sampling and analysis with the Mann Whitney U test. **Results :** Classical music therapy lowers the anxiety of patients with spinal surgery with significance ( $p = 0.000$ ). There was a difference in the decrease in anxiety after giving music therapy between the intervention group and the control group. **Conclusion:** music therapy can reduce the anxiety of patients undergoing spinal anesthesia surgery

**Keywords:** Anxiety; Music Therapy; Spinal anesthesia**INTRODUCTION**

The act of hospitalization experienced by a person can pose a potential or actual threat, can evoke both physiological and psychological stress reactions. All kinds of actions may not necessarily be received positively by all patients. Every situation or event that causes changes in a person's life, requires that the individual must adapt to overcome it, so there is a need for adaptation, but a

person's ability to adapt is different, so stress or anxiety conditions can arise.(Hawari, 2011)

According to research Makmuri, et al (2009) about the level of preoperative anxiety showed that of the 40 respondents there were 16 people or 40% who had anxiety levels in the moderate category, 15 people or 37.5% in the mild category, respondents with severe anxiety levels as many as 7 people or 17.5%

and respondents who do not feel anxious as much as 2 people or 5%. Various bad possibilities that could harm the patient could occur. So do not be surprised if the patient shows an excessive attitude as a form of response to the anxiety he is experiencing.

Spinal anesthesia is one of the safe, economical and reliable anesthetic techniques and is often used in daily anesthesia. This technique has been widely used to provide anesthesia, especially for operations in the area below the umbilicus (lower middle part of the abdomen or abdomen). The main advantages of this technique are that the patient remains conscious during the operation and maintains the airway, and requires minimal postoperative reassurance and analgesia.(Morgan, GE, & Mikhail, 2013). However, with the patient awake during the operation, the patient will see, hear all the surgical procedures, this causes increased anxiety in the patient.

One of the relaxation and distraction techniques that can be used is music therapy. Music is used as a relaxation technique because it has a wide range of tones and a dynamic tempo (Nurrahmani, 2012). Research that says there is a significant effect between classical music therapy on the anxiety level of pre sectio caesarea patients at the Kraton Pekalongan Hospital concluded that there are differences in anxiety levels before and after

classical music therapy. The patient's anxiety decreased due to the relaxing effect resulting from giving classical music. Patients feel comfortable and relieve anxiety or pain during treatment because it can coordinate breathing, heart rhythm, brain wave rhythm and can improve physical and physiological emotions.

Nurseha (2012) explained that classical music has the function of calming the mind and emotional catharsis, and can optimize regular tempo, rhythm, melody and harmony and can produce alpha waves and beta waves in the eardrum so as to provide calm that makes the brain ready to accept new input, the effect relaxes and sleeps. . Music therapy in the form of sound is received by the auditory nerve, converted into vibrations which are then transmitted to the brain through the limbic system.

Based on the above background, the researcher is interested in conducting research on the effect of classical music therapy on anxiety in pre spinal anesthesia patients at PKU Muhammadiyah Hospital Yogayakarta.

## MATERIAL AND METHOD

This research is a *quasy-experimental design* research with a pre-test and post-test one group with control design. In the intervention group, which was given in the form of therapy from the hospital plus classical music therapy, the control group only received therapy from the

hospital without getting classical music therapy. The treatment group and the control group measured the level of anxiety using the APAIS measuring scale.

The research was conducted at PKU Muhammadiyah Yogyakarta Hospital on March 4 – April 13 2019. Based on the sample calculation, a sample of 32 people was obtained for each group. The research sample was taken by consecutive sampling from the patient population who underwent elective surgery with spinal anesthesia at PKU Muhammadiyah Hospital Yogyakarta.

Respondents who met the inclusion criteria were asked to participate in becoming a respondent by asking to sign a letter of consent to become a respondent. In this study the respondents consisted of two groups, namely the intervention group and the control group. Each group that will undergo surgery with spinal anesthesia will measure the level of anxiety *pre test* while in the ward 1 hour before undergoing surgery. Then the intervention group was asked to listen to Mozart's music for 15 minutes. The control group was given therapy according to the action at the hospital, if not, the control group was given Mozart music therapy after the second measurement (*post test*).

Data were collected by means of interviews or direct interviews with respondents. In collecting primary data, researchers used research instrument in the form of anxiety questionnaire The Amsterdam

Preoperative Anxiety and Information Scale (APAIS) then processing the data with the steps of editing, coding and tabulating. The data obtained were analyzed using quantitative statistical techniques.

## RESULTS AND DISCUSSION

### A. Overview of Research Locations

PKU Muhammadiyah Yogyakarta Hospital is one of the referral hospitals in the field of health services for the community in Yogyakarta and its surroundings, which is located on Jalan KH Ahmad Dahlan Yogyakarta. PKU Muhammadiyah Yogyakarta Hospital is a type B hospital that is accredited by KARS belonging to the leadership of the Muhammadiyah Center founded by KH Ahmad Dahlan.

Handling of preoperative patient anxiety that applies at PKU Muhammadiyah Yogyakarta Hospital, namely all patients who will undergo surgical procedures and anesthesia are given *health education* during pre-anesthesia visits by anesthesiologists and anesthetists who provide information related to surgery to reduce anxiety symptoms in patients.

### B. Research result

#### 1. Characteristics of Respondents

Characteristics of respondents based on age, gender, education and occupation can be seen in the

following table.

Table 4.1. Distribution of Respondents Characteristics

Karakteristik Responden	Kelompok intervensi		Jumlah	
	f	%	f	%
Usia	21-25 tahun	10	15,6	
	26-30 tahun	12	18,8	
	31-35 tahun	8	12,5	
	36-40 tahun	22	34,4	64 100
	41-45 tahun	6	9,4	
	46-50 tahun	6	9,4	
Jenis Kelamin	Perempuan	40	64,7	
	Laki-laki	24	35,3	64 100
Pendidikan	Tidak Tamat SD	3	4,7	
	Tamat SD	8	12,5	
	Tamat SMP	18	28,1	
	Tamat SMA	21	32,8	64 100
	Tamat Perguruan Tinggi	14	21,9	
	Pekerjaan			
Pekerjaan	Petani	10	15,6	
	Swasta	17	26,6	
	PNS	13	20,3	
	IRT	8	12,5	64 100
	Buruh	15	23,4	
	Tidak Bekerja	1	1,6	

Based on Table 4.1 it can be seen that the most age groups are 36-40 years old. Most of the sex is in women. As many as 40 people. The highest level of education is high school. Employment is dominated by private employees.

## 2.Distribution of Anxiety Before and After Classical Music Therapy Performed on Patients in the Intervention Group

Table 4.2. Distribution of Anxiety Before and After Classical Music Therapy in the Intervention Group at PKU Muhammadiyah Yogayakarta Hospital 2019

	Sebelum		Sesudah		$\Delta$	P value
	f	%	f	%		
Kecemasan Ringan	2	6,3	20	62,5		
Kecemasan Sedang	10	31,3	11	34,4		
Kecemasan Berat	20	62,5	1	3,1	15,00	0,000
Total	32	100	32	100		

Based on Table 4.2, it can be seen that the patient's level of anxiety before classical music therapy was carried out most experienced severe anxiety 62.5% and after classical music therapy the patient's anxiety decreased from severe anxiety to moderate anxiety 34.4%. After the statistical test using the Wilcoxon test in Table 4.2, the mean results were 15.00 and the sig value was 0.000 ( $p < 0.05$ ), which means that the test results showed that there was a difference in anxiety before and after classical music therapy intervention. according to(Smeltzer, 2002) that preoperative anxiety is an anticipatory response to an experience that the patient perceives as a threat in the role of life, body integrity, and even one's own life. Study (Suciati, 2014) who said there was a significant effect between classical music therapy on the anxiety level of preoperative sectio caesarea patients at the Kraton Pekalongan Hospital and the research (Qulsum, 2012). concluded that there was a

difference in the level of anxiety before and after giving classical music therapy to preoperative patients at Tugurejo Hospital Semarang. The patient's anxiety decreased due to the relaxing effect resulting from the provision of music therapy. Patients feel comfortable and relieve anxiety or pain during treatment because music can coordinate breathing, heart rhythm, brain wave rhythm, and can improve emotions, physically and physiologically. Both of these studies are in line with the research of the researcher.

### 3. Distribution of Anxiety After Performing Classical Music Therapy in the Intervention Group and Control Group

Table 4.3. Distribution of Anxiety Before and After Classical Music Therapy was Performed in the Control Group at PKU Muhammadiyah Yogayakarta Hospital in 2019

	Sebelum		Sesudah		$\Delta$	P value
	f	%	F	%		
Kecemasan Ringan	2	6,3	2	6,3		
Kecemasan Sedang	12	37,5	18	56,3		
Kecemasan Berat	18	56,3	12	37,5	11,20	0,000
Total	32	100	32	100		

Based on Table 6. it can be seen that the patient's anxiety level before classical music therapy experienced the most severe anxiety 56.3% and after classical music therapy the patient's anxiety

decreased from severe anxiety to moderate anxiety 56.3%.

In this study, there were differences in anxiety in the control group who were given intervention from the hospital without classical music therapy. However, the result is an increase in anxiety as the time of surgery approaches. according to(Negoro, 2017)when conducting research at Mitra Delima Balulawang Hospital, Malang, East Java, he stated that the ideal effect of music therapy can be obtained by doing music therapy for approximately 30 minutes to an hour every day, but if you don't have enough time, do it for 15 minutes. The duration of giving music therapy for 10-15 minutes can give a relaxing effect, giving music therapy for 15-20 minutes gives a stimulating effect while to give effect, music therapy can be given 30 minutes. Music must be given at least 15 minutes in order to have a therapeutic effect(Potter, PA, Perry, 2005)

### 4. Differences in Anxiety in the Intervention Group and the Control Group

Table 4.4. Results of Statistical Analysis of the Mann Whitney U Test Differences in the intervention group and the control group.

kelompok	Mean Ranks	Sum Ranks	Z	Sig
Kelompok Intervensi	21,72	695,00	-5061	0,000
Kelompok Kontrol	43,28	2385,00		

Based on the results of the Mann Whitney U Test in Table 4.4, it is known that the results of testing the difference in anxiety in the intervention group and control group obtained  $p$  value = 0.000 ( $p < 0.05$ ), which means that  $H_a$  is accepted, namely there is a difference in anxiety reduction in the intervention group and the control group. classical music therapy

If  $p$  value  $> 0.05$  then  $H_0$  is rejected and  $H_a$  is accepted. These results indicate that classical music therapy to reduce preoperative anxiety levels in both groups before and after being given classical music therapy to preoperative patients at PKU Muhammadiyah Hospital Yogyakarta.

This is because the two respondents have the same characteristics with the results of the homogeneity test sig  $> 0.05$ , the majority are female, high school education level and labor work

Amini's Research (2017) showed that prior to classical music therapy, most respondents experienced moderate anxiety 59.5%. After classical music therapy was done, there was a decrease in respondents' anxiety to mild anxiety

as much as 83.3%. The  $p$  value of 0.000 means that there is a difference in anxiety between pre and post classical music therapy. The study is in accordance with this study  $p$  value of 0.000 that there is a difference in anxiety.

## CONCLUSION

There were differences in anxiety in the intervention group and the control group who were given classical music therapy, which had an effect on reducing anxiety levels in patients who would undergo surgery with spinal anesthesia.

## SUGGESTION

- a. It is a recommendation for hospital institutions that this research intervention be included in nursing care to reduce the level of non-pharmacological anxiety of preoperative patients at PKU Muhammadiyah Hospital Yogyakarta.
- b. Other researchers  
Researchers suggest to do further research with the same treatment but using different variable

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### The Effect Of Drinking Guava Leaf Decoction On Blood Glucose Levels To People With Type II Diabetes Mellitus

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### ABSTRACT

Diabetes mellitus is a disease with characteristics of hyperglycemia. One form of herbal therapy is using guava leaf decoction water that contains tannins and calcium that inhibit the enzyme  $\alpha$ -glycosidase thus slowing the release of glucose in the blood. The purpose of this study was to analyze the effect of drinking guava leaf decoction water on blood glucose levels to people with type II diabetes mellitus. This study used a quantitative approach with a *quasi-experimental* method. The type of design in this study was non equivalent (*pretest & posttest*) control group design. The research population was people with type II diabetes mellitus in the working area of Makrayu Health Center as many as 100 people. The sample was 32 respondents (*intervention group and control group*). The sampling technique in this study was quota sampling. Analysis of parametric test data was t-test independent. An independent t-test analysis showed no effect of giving guava leaf decoction water on blood glucose levels in people with type II diabetes mellitus ( $p$ -value  $0.093 > \alpha (0.05)$ )

Keywords: *guava leaf decoction, diabetes mellitus, blood glucose levels*

### INTRODUCTION

Besides guava plants are easy to find, the content contained in guava is more effective than other plants in overcoming Diabetes. Diabetes Mellitus (DM) is a metabolic disorder characterized by an increase in blood glucose levels (hyperglycemia) due to damage to insulin secretion, insulin action, or of all, which cause various chronic complications in the eyes, kidneys, and blood vessels, accompanied by lesions of the basement membrane on examination by electron microscopy (Brunner and Suddarth, 2013). Based on data obtained from the health profile of the province of South Sumatra in 2015, the

increase in the number of people with diabetes mellitus in South Sumatra is very high, with the number reaching tens of thousands of people with diabetes mellitus. In 2013, the number of people with diabetes mellitus in South Sumatra reached 21,418 people, while in 2014 it decreased to 7,541 people. Meanwhile in 2015, it increased again to 14,042 sufferers (South Sumatra Health Office, 2015).

To overcome and prevent an increase in blood glucose levels and reduce predisposing factors for insulin resistance which can lead to the occurrence of diabetes mellitus, pharmacological and non-



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pharmacological therapies are needed. Diabetes Mellitus therapy with non-pharmacological actions, the main thing is food by regulating the patient's diet in collaboration with nutritionists to determine what foods can be consumed (Helen Anjelina Simanjuntak, 2018).

For non-pharmacological therapy for diabetes mellitus, especially type II, herbal plants are used. Some plants that can be used as raw materials for diabetes mellitus drugs include star fruit, brotowali, corn, guava, black cumin, avocado, apple and so on (Maharani, 2013).

However, in several studies, guava is an herbal plant that is often used as a raw material for Diabetes Mellitus. Therefore, people prefer treatment using herbal plants as medicine compared to chemical drugs. One of the reasons is because herbal plants have advantages, besides being easy to obtain, herbal plants are also easy to grow, can be mixed yourself and cheap (Helen Anjelina Simanjuntak, 2018).

In accordance with the theory put forward by Anastasia Bangun (2004) in a chemotaxonomic study that guava leaves contain tannin and calcium compounds, where tannins function as  $\alpha$ -glucosidase inhibitors which are useful for delaying glucose absorption after eating, thereby inhibiting postprandial hyperglycemia conditions. While the calcium in guava leaves is able to increase the production of pancreatic cells to produce insulin. Therefore, guava leaves are one of the herbs that are useful as a normalizing function of the pancreas gland with pharmacological effects to facilitate the blood circulation system in helping normalize pancreatic function in overcoming Diabetes Mellitus (Maharani et al, 2013).

However, the people of Indonesia, especially South Sumatra in the working area of the

Makrayu Health Center, Palembang, guava leaves have not been widely used due to lack of information about the benefits of guava leaves. In fact, many people in the working area of the Makrayu Health Center do not know that guava leaves can also reduce blood glucose levels in people with type II Diabetes Mellitus.

Nurses have an important role in caring for people with diabetes mellitus, which is required to be able to demonstrate how to give guava leaf decoction and can be done / imitated by patients well. This is in accordance with the role of nurses specializing in medical surgery, namely as coordinators, service providers, continuous nursing planners, educators, advocates, and agents of change (Handayani, 2016).

Based on this background, researchers are interested in conducting research on the effect of drinking guava leaf decoction water on blood glucose levels to people with type II diabetes mellitus in the working area of the Makrayu Health Center Palembang in 2019.

There have been several studies that have been conducted previously that support this research, research conducted by Maharani, Rosalina, and Puji Purwaningsih (2013) showed that there was an effect of drinking guava leaf on blood glucose levels with the mean blood glucose level before being given guava leaf decoction was 232.07 mg/dL with a standard deviation 45.218 mg/dL and after treatment there was a decrease in blood glucose levels of 192.21 mg/dL with a standard deviation of 27.246 mg/dL.

Another study conducted by Umi Hani (2016) about the effect of drinking guava leaf on blood glucose levels in patients with Type II Diabetes Mellitus in the work area of Pekkabata Health Center Polewali Mandar Regency 2016 with the results of the analysis using the Mc test. Nemar obtained a



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significance value of 0.031 which means it is smaller than = 0.05, which means that there is a significant effect between blood glucose before administration of boiled guava water on blood glucose levels in patients with type II Diabetes Mellitus in the working area of Pekkabata Public Health Center, Polewali Mandar Regency.

### TYPE AND DESIGN OF RESEARCH

This study used a quantitative approach with a quasi-experimental method. The type of design in this study was non equivalent (*pretest & posttest*) control group design.

This study had two groups, namely the intervention group and the control group. In the intervention group before and after the intervention, measurements or observations were made on blood glucose levels. While in the control group, researchers did not provide intervention, only provided health education and measured blood glucose levels to determine blood glucose levels in people with diabetes mellitus.

The research population was people with type II diabetes mellitus in the working area of the Makrayu Health Center as many as 100 people. The sample was 32 respondents (16 in the intervention group who were given guava leaf decoction and 16 in the control group who were given health education).

The sampling technique in this study was *quota sampling*, namely the sampling technique was only based on the consideration of the researcher, only here the size and criteria of the sample had been determined first (Notoadmodjo, 2010). The sample in this study were some people with type II diabetes mellitus in the working area of the Makrayu Palembang Health Center 2019 who were willing to be researched.

The instruments used in this study were as follows:

#### 1. Observation Sheet

Observation sheet used in this study related to guava leaf boiled water and blood sugar levels in patients with diabetes mellitus. Changes in blood sugar levels can be observed, namely by blood sugar levels before and after giving guava leaf boiled water (attached).

#### 2. Blood Sugar Meter (Blood Glucose Test)

The instruments used to obtain data regarding the amount of blood sugar that is *Easy Touch GCU* that serves to measure blood sugar levels when (Witriyani, 2016).

## RESULTS AND DISCUSSION

### Results

#### 1. Univariate Analysis

##### 1) Mean Of Blood Glucose Levels in the Intervention Group Before Intervention

In this study, it was found that the mean difference in blood glucose levels in the intervention group before intervention can be seen from the following table 5.1

**Table 5.1**  
**Distribution Mean of Blood Glucose Levels in the Intervention Group Before Intervention**

Examination	Mean	Median	Std. Deviation	Min - Max	95 % CI
Blood Glucose in the Intervention Group Before Intervention	314.56	335	90.663	210 to 473	293.25 to 389.67

Source: Primary Data 2019

In Table 5.1 shows that the mean of blood glucose levels in the intervention group before intervention was 314.56 mg/dl, with a median value of 335 mg/dl, a minimum value of 210 mg/dL and a maximum value of 473 mg/dL.

##### 2) Mean of Blood Glucose Levels in the Intervention Group After Intervention



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In this study, it was found that the mean difference in blood glucose levels in the intervention group after intervention is shown in table 5.2 below.

**Table 5.2**  
**Distribution the Mean of Blood Glucose Levels in the Intervention Group After Intervention**

Examination	Mean	Median	Std. Deviation	Min – Max	95% CI
Blood Glucose in the Intervention Group After Intervention	243.75	242	52.669	170 to 387	215.68 to 271.82

Source: Primary Data 2019

Table 5.2 shows that the mean of blood glucose levels in the intervention group after intervention was 243.75 mg/dL, with a median value of 242mg/dL, a minimum value of 170 mg/dL and a maximum value of 387 mg/dL.

### 3) Mean Of Blood Glucose Levels in the Control Group

In this study, the mean difference in blood glucose levels in the control group was obtained as shown in table 5.3 below.

**Table 5.3**  
**Distribution Mean Of Blood Glucose Levels in the Control Group**

Examination	Mean	Median	Std. Deviation	Min – Max	95% CI
Blood Glucose Control Group	283.25	260.50	74.215	204 to 446	243.70 to 322.80

Source ; Primary Data 2019

In table 5.3 shows that the mean of blood glucose levels in the control group was 283.25 mg/dL, with a median value of 260.50 mg/dL, a minimum value of 204 mg/dL and a maximum value of 446 mg/dL.

### 2. Bivariate Analysis of the Boiled

1) Effect of Guava Leaf Decoction Water on Blood Glucose Levels  
To answer the researcher's hypothesis on the administration of guava leaf decoction water on blood glucose levels in patients with diabetes mellitus test was conducted, *an independent t-* on the mean decrease in blood glucose levels in the intervention group and control group.

**Table 5.4**  
**Effect Of Guava Leaf Decoction Water On Blood Glucose Levels**

Examination	Research Group	Mean	Std. Deviation	p – value
Blood Glucose Levels Posttest	Intervention	243.75	52.669	0.093
	Control	283.25	74.215	

Source: Primary Data 2019

In table 5.4 shows that there is no significant decrease of blood glucose levels of the participants either in the intervention group who were given guava leaf decoction or in the control group who were given health education for one week with the p - value > 0.05.

The results of statistical tests (*independent t-test*) showed that the *p-value* in the intervention group and control group was 0.093 with *p-value* > 0.05, it can be concluded that there is no effect of drinking guava leaf decoction water on blood glucose levels to people with type II diabetes mellitus in the working area of the Makrayu Health Center Palembang in 2019.

### Discussion

Diabetes mellitus is one of the most threatening diseases for humans. The number of people with diabetes mellitus in the world from year to year has increased. IDF data in 2017 states that 425 million of the world's total



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population, or about 8.8 percent of adults aged 20-79 years, are diabetic. The data reveals that it ranks sixth as the highest number of adult diabetics in the world with a total of more than 10.3 million people. In Indonesia, the number of Diabetes Mellitus patients has increased significantly over the last five years. In 2013, the prevalence of diabetes in adults reached 6.9 percent, and in 2018 the number continued to increase to 8.5 percent (Risikesdas, 2018).

Maharani, 2013 explained that non-pharmacological therapy for Diabetes Mellitus, especially type II, can use herbal plants. Some plants that can be used as raw materials for diabetes mellitus drugs include star fruit, brotowali, corn, guava, black cumin, avocado, apple and so on. However, in several studies guava is an herbal plant that is often used as a raw material for diabetes mellitus drugs. Besides guava plants are easy to find, the content contained in guava is more effective than other plants in overcoming Diabetes Mellitus.

In accordance with the theory put forward by Anastasia Bangun (2004) in a chemotaxonomic study that guava leaves contain tannin and calcium compounds, where tannins function as glucosidase inhibitors which are useful for delaying glucose absorption after eating, thereby inhibiting postprandial hyperglycemia conditions. While the calcium in guava leaves is able to increase the production of pancreatic cells to produce insulin. Therefore, guava leaves are one of the herbs that are useful as a normalizing function of the pancreas gland with pharmacological effects to facilitate the blood circulation system in helping normalize pancreatic function in overcoming Diabetes Mellitus (Maharani et al, 2013).

Maharani, Rosalina, and Puji Purwaningsih (2013) research entitled the effect of drinking

guava leaf (*Psidium Guajava*) on blood glucose levels in patients with Type II Diabetes Mellitus in Leyangan Village, East Ungaran District, Semarang Regency. Dependent and independent t-test analysis showed that there was an effect of drinking guava leaf (*Psidium guajava*) on blood glucose levels in patients with type II diabetes mellitus in Leyangan Village, Kec. East Ungaran Kab. Semarang with (*p-value* 0.014 < (0.05)).

Guava leaf decoction therapy can be used as an alternative intervention for management in reducing blood glucose levels in patients with type II diabetes mellitus. Umi Hani's research (2016) on the effect of drinking guava leaf on blood glucose levels in patients with type II Diabetes Mellitus in the work area of the Pekkabata Public Health Center, Polewali Mandar Regency, showed that there was an effect of drinking guava leaf on blood glucose levels in people with Diabetes Mellitus type II in the working area of the Pekkabata Public Health Center, Polewali Mandar Regency. By using the Mc test. Nemar obtained a significance value of 0.031 which means it is < 0.05 which means that there is a significant difference between blood glucose before giving 10 pieces of guava leaf decoction and after giving 10 pieces of guava leaf decoction so that  $H_0$  is rejected and the hypothesis  $H_a$  accepted. However, the results of the analysis of the *p-value* of the *independent t-test* for the research group (intervention group and control group) with blood glucose levels *posttest* were 0.093 (*p-value* > 0.05), which means  $H_a$  was rejected. It can be concluded that there is no effect of drinking guava leaf decoction water on blood glucose levels to people with type II diabetes mellitus. This is inversely proportional to the results of previous studies which revealed that there was



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an effect of drinking guava leaf on blood glucose levels. This happens because of other confounding variables such as age, gender, education, socio-economic status, and length of suffering in the respondent. However, in addition to the confounding variables, there are also factors that cause blood glucose levels in patients with type II diabetes mellitus, namely the sufferer's diet. Most people with diabetes mellitus do not carry out a diet according to what has been recommended. This causes an increase in blood glucose levels in patients with type II diabetes mellitus.

In accordance with the theory according to Nurrahmani (2012) and Wijoyo (2010) said there are several factors that can affect blood glucose levels including the lack of sensitivity of body tissues to insulin because the number or activity of insulin receptors is reduced in cells, excessive eating patterns cause glucose levels in the blood to increase due to limitations of cells  $\beta$  of the pancreas to secrete insulin, resulting in excessive fat obesity this will cause resistance to insulin. However, according to researchers, given guava leaf decoction is very important as a treatment *non-pharmacological* for people with diabetes mellitus. The benefits of guava leaf decoction for people with diabetes mellitus are to reduce blood glucose levels in people with type II diabetes mellitus. Thus blood glucose levels in diabetics can decrease along with other supporting factors.

### CONCLUSIONS AND SUGGESTIONS

#### Conclusions

Based on research conducted on 32 respondents with 16 intervention groups and 16 control groups on the effect of drinking guava leaf decoction water on blood glucose levels to people with type II diabetes mellitus in the working area of the Makrayu Health

Center Palembang in 2019 it can be concluded concluded as follows:

There is no significant decrease of blood glucose levels of the participants either in the intervention group who were given guava leaf decoction or in the control group who were given health education for one week with the p - value  $>0.05$ . It can be concluded that there is no effect of drinking guava leaf decoction water on blood glucose levels to people with type II diabetes mellitus in the working area of the Makrayu Health Center Palembang in 2019.

#### Suggestions

For further researchers, the results of this study can be used as comparisons or basic data for further research related to diabetes mellitus. It is hoped that further researchers can control diet from the beginning of the study to the end of the study in the intervention group to stabilize blood glucose levels in the intervention group.

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### The Effect of Progressive Muscle Relaxation Therapy on Nausea And Vomiting In Post Sectio Caecarea Patients With Spinal Anesthesia In PKU Muhammadiyah Bantul

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#### ABSTRACT

**Background:** The main reason for regional anesthesia at the time of cesarean section is the risk of failed endotracheal intubation. Incidence of nausea and vomiting during spinal anesthesia procedures for *Sectio Caesarean* ranged from 28%-63%. Progressive muscle relaxation therapy is a therapy by relaxing certain muscles and then relaxation. Progressive relaxation techniques are used to treat stress, such as peptic ulcers, anxiety, hypertension and insomnia, and are also based on the relationship between muscle tension and emotional tension. **Objective :**To determine the effect of progressive muscle relaxation therapy on nausea and vomiting in post-operative patients *caesarean section* with spinal anesthesia. **Methods :** quasi-experimental research with non-randomized *pretest and posttest with control group design*. The number of samples of 60 respondents was taken by consecutive sampling according to the inclusion and exclusion criteria. **Result :** It shows that respondents who are not given progressive muscle relaxation therapy mostly feel nauseated and vomiting, while in the group that is given progressive muscle relaxation therapy, most of them feel nauseous without vomiting. The results of statistical tests with Mann Whitney obtained a p-value of 0.047 ( $p < 0.05$ ). **Conclusion :** The provision of progressive muscle relaxation therapy has an effect on reducing nausea and vomiting scores in post sectio caesarea patients with spinal anesthesia.

**Keywords :** nausea vomiting; relaxation therapy; Post Section Caecarea

#### INTRODUCTION

#### INTRODUCTION

*Sectio caesarea* surgery is giving birth to a baby through an abdominal incision and the uterine wall. The techniques

commonly used are regional anesthesia and general anesthesia (Bisri, 2013). Spinal anesthesia is widely used in cesarean section because anesthetic drugs are not harmful to the baby, the technique is simple, and the mother remains



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conscious during surgery, so that the mother hears the baby's first cry and can initiate early breastfeeding for the baby (Javed, 2011). According to Javed (2011) in addition to having advantages, spinal anesthesia can cause complications.

Complications of spinal anesthesia are generally associated with the presence of sympathetic nerve blockade, namely hypotension, bradycardia, nausea and vomiting, inadequate anesthesia, back pain due to tissue tears passed by the spinal needle, total spinal, hematoma at the injection site, post dural puncture headache (PDPH), meningitis, and epidural abscess (Pramono, 2015).

PONV accounts for 30% of the 230 million major surgeries performed annually in each region, with an incidence of 69 million (80%) people in the high-risk group. In addition, about 1% of them had to be hospitalized overnight to treat uncontrolled PONV (Chang & Wong, 2017). The results of research related to nausea, vomiting and stress experienced by respondents showed that most of them felt nauseated for 2-4 hours in the last 12 hours. Most of the respondents who experienced vomiting <100 cc in the last 12 hours (Dita Arisandi & Putra Astika, 2019).

According to Stoelting (2013) PONV consists of 3 main symptoms that can occur immediately or after surgery consisting of nausea, vomiting, and reacting. The incidence of postoperative nausea and vomiting is about 30% of all patients undergoing inpatient surgery and 70% of cases occur within the first 24

hours (Gan in Qudsi & Dwi, 2015). The incidence of nausea and vomiting during spinal anesthesia procedures for Sectio Caesarea ranges from 28%-63%.

Management for nausea and vomiting currently includes pharmacological and non-pharmacological therapy (Syarif, 2018). Progressive muscle relaxation technique is a therapy that focuses on maintaining a state of deep relaxation that involves contraction and relaxation of various muscle groups starting from the feet up or from the head down (Sundari & Dewi, 2020). Relaxation aims to reduce anxiety, reduce muscle tension and will indirectly relieve pain (Maruli, Elsy, 2016). According to Agustini's research (2013) shows that giving progressive muscle relaxation reduces the effects of nausea that occur in breast cancer patients undergoing chemotherapy.

Based on a preliminary study at PKU Muhammadiyah Bantul Hospital, it was found that the number of sectio caesarea patients who were operated on with spinal anesthesia in the last three months, namely from October-December 2018 was 141 patients, if on average, 47 patients received surgery with spinal anesthesia every month. Samples taken from five patient medical records consisted of three patients experiencing nausea and vomiting 2-3 times in the form of liquid in the first 6 hours while 2 patients did not experience nausea and vomiting during the first 6 hours.

This study aims to determine the effect of progressive muscle relaxation therapy on nausea and vomiting in post



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sectio caesarea patients with spinal anesthesia. The benefit of this study is to prove and support the theory of the effect of progressive muscle relaxation therapy on the incidence of post-sectio caesarean nausea and vomiting with spinal anesthesia.

### MATERIALS AND METHODS

This type of research is a quasi-experimental with non randomized pretest and posttest with control group design (Nursalam, 2017). The sampling technique in this study used consecutive sampling, using the Gordon score of 60 respondents. Data analysis using Wilcoxon and Mann Whitney test. In this study there are two variables studied, namely the independent variable (influence) and the dependent variable (influenced). The independent variable is progressive muscle relaxation while the dependent variable is nausea and vomiting in post spinal anesthesia patients with an indication of sectio caesarea.

### RESULTS

#### Pre and Post Nausea Vomiting Incidence in the Intervention Group

#### Occurrence of Nausea Vomiting 1st hour to 6th hour intervention group

Table. 1 occurrence of nausea and vomiting at the 1st hour to the 6th hour

Nausea Vomiting g Score	1	2	3	4	5	6
	%	%	%	%	%	%

No	36.7	23.3	23.3	20	16.7	33.3
<b>Nausea and Vomiting</b>						
<b>Nauseous</b>	53.3	53.4	56.7	63.3	70	46.7
<b>Nausea and Vomiting</b>	10.0	23.3	20.0	16.7	13.3	20.0

Based on Table 1. it can be seen that the majority experienced nausea at every hour, at the 1st and 2nd hours, 53.3%, starting to rise at the 3rd, 4th and 5th hours. 6 45.7%.

#### Differences in the incidence of pre and post nausea and vomiting in the intervention group

Table 2. Wilcoxon test difference between pre and post in the intervention group

Category	Aspects of Health Services During Pandemic	me	Su	Z	Sig
<b>Posttest</b>	18	10	181		
<b>&lt; Pretest</b>				-2.484	p= 0.013
<b>Posttest</b>	3	16	49		
<b>&gt;Pretest</b>					
<b>Posttest</b>	9				
<b>= Pretest</b>					

The results of the Wilcoxon test obtained a significance value of p value = 0.013 ( $p < 0.05$ ), which means that there is a difference in nausea and vomiting scores in the intervention group given progressive muscle relaxation therapy.



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### Differences in the incidence of pre and post nausea and vomiting in the comparison group

Table 3. Wilcoxon test differences between pre and post in the comparison group

Category	f	me	Su	Z	Sig
		an	m		
Posttest	12	9	114		
<Pretest					p=
Posttest	8	12	96	-0.369	
>Pretest					0.712
Posttest	10				
= Pretest					

Wilcoxon test results obtained a significance value of p value = 0.712 ( $p > 0.05$ ), which means that there is no difference in nausea and vomiting scores in the comparison group.

### Differences in the Decreased Incidence of Nausea and Vomiting in the Intervention Group and the Comparison Group

Table 4. the difference in the decrease in the incidence of nausea and vomiting in the intervention group and the comparison group

Category	me	Sum	Z	Sig
	an			
Intervention	26	797		p=
Comparison	34	1033	-1.987	0.047

The results of the Mann Whitney test obtained a significance value of p value =

0.047 ( $p < 0.05$ ), which means that there is a difference in nausea and vomiting scores in the intervention group and the comparison group.

### DISCUSSION

#### Differences in the incidence of pre and post nausea and vomiting in the intervention group

Based on Table 2. it is known that there was a decrease in the response to nausea and vomiting of patients in the intervention group as many as 18 respondents with a p-value of 0.013. This shows a decrease in the response to nausea and vomiting in the intervention group respondents after progressive muscle relaxation therapy was carried out.

Relaxation aims to reduce anxiety, reduce muscle tension and will indirectly relieve pain (Maruli, Elsy, 2016). Progressive muscle relaxation therapy is a deep muscle relaxation technique that does not require imagination, persistence, or suggestion. This relaxation technique is carried out systematically and deeply by repeatedly tense and relaxed muscles combined with breathing exercises (Rohimah, 2016).

With the main component, namely muscle relaxation, so that the parasympathetic system will dominate during and after the implementation of progressive muscle relaxation, thereby



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reducing heart rate, respiratory rate, and blood pressure. It also affects the deep somatic nervous system and affects the parasympathetic nervous system thereby reducing anxiety (Ekasari, 2018).

The incidence of nausea and vomiting in respondents is individual and influenced by other factors that trigger nausea and vomiting after anesthesia. The decrease in post-nausea vomiting response in the intervention group was probably due to the provision of progressive muscle relaxation therapy. Respondents will feel tense and there is a response to nausea and vomiting, after being given progressive muscle relaxation therapy, the respondent will feel relaxed and inhibit the response to nausea and vomiting.

### Differences in the incidence of pre and post nausea and vomiting in the comparison group

Based on table 3. there was a decrease in the response to nausea and vomiting of patients in the comparison group as many as 12 respondents, with a p-value of 0.712.

Stimulation of vomiting in postoperative patients can be caused by various factors including risk factors from the patient (gender, age, history of nausea and vomiting, anxiety, smoking habits, digestive conditions and the presence of accompanying chronic diseases), the length of the surgical procedure, factors of

use. anesthesia and the postoperative condition itself. Each factor will increase the risk of postoperative nausea and vomiting by 18-22%. The increase in post-nausea-vomiting response in most patients may be due to a slow response to nausea and vomiting or other factors such as this can be due to several factors in each patient, the factor of high injection area or spinal block, and surgical risk factors.

### Differences in the incidence of pre-post nausea and vomiting in the intervention group and comparison group

Mann Whitney test obtained p value = 0.047 ( $p < 0.05$ ), which means  $H_a$  is accepted, namely there is a difference in the decrease in nausea and vomiting scores in the intervention group given progressive muscle relaxation therapy with the comparison group not receiving progressive muscle relaxation therapy.

Relaxation aims to reduce anxiety, reduce muscle tension and will indirectly relieve pain (Maruli, Elsy, 2016).

With the main component, namely muscle relaxation, so that the parasympathetic system will dominate during and after the implementation of progressive muscle relaxation, thereby reducing heart rate, respiratory rate, and blood pressure. It also affects the deep somatic nervous system and affects the parasympathetic nervous system thereby reducing anxiety (Ekasari, 2018).



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Progressive muscle relaxation can increase relaxation by decreasing sympathetic nerve activity and increasing parasympathetic nerve activity resulting in vasodilation of arteriolar diameter.

Progressive muscle relaxation calmly, relaxes and relaxes muscles that are trained for 15 minutes, the secretion of CRH (corticotropin releasing hormone) and ACTH (adrenocorticotropic hormone) in the hypothalamus decreases. The decrease in the secretion of these two hormones causes decreased sympathetic nerve activity so that the release of adrenaline and noradrenaline decreases. So that the effect of progressive muscle relaxation therapy can make the body relax and suppress the sympathetic and parasympathetic nerves resulting in the release of -endorphins and stimulate CTZ to the brain center and result in reduced nausea and vomiting responses.

Based on the results of the analysis, it can be concluded that there is an effect of complementary progressive muscle relaxation therapy on postoperative nausea and vomiting at IBS PKU Muhammadiyah Hospital, Bantul. Progressive muscle relaxation therapy is a form of holistic nursing care. In the principle or implementation of progressive muscle relaxation therapy, there is the principle of healing touch which shows caring behavior that can

provide calm, comfort for clients so that the therapeutic relationship between nurses and clients is closer. Progressive muscle relaxation therapy is one of the complementary.

Based on Table 1. it can be seen that the majority experienced nausea at every hour, at the 1st and 2nd hours, 53.3%, starting to rise at the 3rd, 4th and 5th hours. 6 45.7%. This could be due to the effect of progressive muscle relaxation therapy starting to decrease at the 3rd postoperative hour. The provision of progressive muscle relaxation therapy can inhibit the time of nausea and vomiting on average 90 minutes in post-chemotherapy breast cancer patients. In this study, the average increase in the response to nausea and vomiting occurred at the 4th and 5th hours. This study does not support previous studies due to differences in respondents, namely in this study the post sectio caesarea patients while the previous research was post breast cancer chemotherapy patients.

## CONCLUSION

1. There is a difference in the incidence of pre and post nausea and vomiting in the intervention group
2. There is no difference in the incidence of pre and post nausea and vomiting in the comparison group
3. Progressive muscle relaxation therapy



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affects the incidence of nausea and vomiting after sectio caesarea with spinal anesthesia at IBS PKU Muhammadiyah Hospital Bantul

### SUGGESTION

1. For IBS PKU Muhammadiyah Hospital Bantul  
Can apply complementary therapies such as progressive muscle relaxation therapy as one of the actions of nursing care in the treatment room or postoperative recovery.
2. For Anesthesia Nurses  
As an anesthesiologist, you should be able to have competence or expertise in complementary therapies such as progressive muscle relaxation therapy that can be applied in an intensive environment for patients in carrying out anesthesia nursing care.
3. For other Researchers  
Future researchers are expected to conduct research on the effect of progressive muscle relaxation therapy on the incidence of nausea and vomiting in post sectio caesarea patients with spinal anesthesia which is more focused on decreasing the patient's nausea and vomiting response, and giving progressive muscle relaxation therapy that is repeated every 2 hours.

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## Factors Affecting Tuberculosis Infection in Children Living with Tuberculosis Patients At Waingapu Public Health Center, East Sumba Regency East Nusa Tenggara Province

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### ABSTRACT

**INTRODUCTION:** *Tuberculosis (TB) is a major problem encountered by the majority of the world communities, particularly those living in developing countries. It is estimated that out of 100,000 people of Indonesia, 119 suffered from positive acid fast bacillus lung TB, 15% of which were children. In 2017, in East Sumba Timur Regency there were 300 adults and 242 children suffering from positive acid fast bacillus lung TB. Prevalence of lung TB in the regency was 73.3%, presumably because of the high risk of infection particularly caused by direct contact with TB patients living in the same house. The study was to find out factors affecting TB infection in children living together with lung TB patients.*

**Method:** *The study was a descriptive study with cross sectional design. Sample of the study were 55 children of 0-20 years in age living in the same house with the positive acid fast bacillus lung TB patients who were undergoing medication or post medication for 1 year. The samples were obtained using a total sampling technique with questionnaires, body weighting, and TB measurement as research instruments. Data analysis used a frequency distribution table.*

**Result:** *Result of the study showed that out of 55 respondents investigated, there were factors affecting the incidence of TB infection in children living at the same house with TB patients. Occupation affected knowledge (*Pvalue = 0.000*), behavior (*Pvalue = 0.000*), nutrition status (*Pvalue = 0.000*) and immunization status (*Pvalue = 0.053*), while age affected knowledge (*Pvalue = 0.000*), behavior (*Pvalue = 0.000*), nutrition status (*Pvalue = 0.000*), immunization status (*Pvalue = 0.053*), occupation density of 61.8% with a ‘moderately dense’ category, and unqualified residential condition of 58.2%.*

**Conclusion:** *There is an influence between Knowledge, Behavior, Nutritional Status, residential density and housing conditions in children infected with Tuberculosis who are in contact with the patient at home and there is no effect between work, immunization status in children infected with Tuberculosis in household contact with the patient*

**Keywords** *Tuberculosis, knowledge, behavior, nutritional status, occupancy density*

## INTRODUCTION

Pulmonary tuberculosis disease is one of the infectious diseases and is chronic and can affect anyone (male, female, old, young, poor, rich and so on). The disease is still a public health problem and is an important factor of pain and death especially in developing countries.[1]

According to WHO about 8 million people in the world are attacked by tuberculosis with the death of 2 million people / year. [2]

WHO estimates between 2002-2020 about 1 billion people will be infected with tuberculosis in other words the increase in the number of tuberculosis infections 56 million per year 5-10% of infections develop into diseases and 40% among which develop ends in death. Therefore it is not excessive that *Micobacterium Tuberculosis* is said to be a mass-killing bacterium. [2]

Based on these calculations, WHO declared a global emergency for TB disease because it is estimated that most of the world's population has been infected with Tuberculosis germs[2]

Indonesia based on the Household Health Survey 2015, Pulmonary tuberculosis again emerged as the leading cause of death after heart and other respiratory tract

diseases in all age groups and number one for infectious diseases so that pulmonary tuberculosis disease is still considered a public health problem. tuberculosis disease affects most productive age groups, especially in low socioeconomic groups.<sup>3</sup> Indonesia is the 3rd contributor of tuberculosis cases in the world after India and China.[2]

It is estimated that every year there are new cases ranging from 500 to 600 people and 425 people / day die from tuberculosis. In 1999 was the year of the start of an important era in tuberculosis prevention in Indonesia with the priority of dots strategy that is more aimed at the discovery and treatment of tuberculosis in adults while child tuberculosis is not targeted in the eradication of tuberculosis in Indonesia. Tuberculosis children are an important factor in developing countries because the number of children under 5 years old is not targeted in the eradication of tuberculosis in Indonesia.[1]

East Sumba Regency based on data from the last 4 years (2015-2019) the number of lung TB sufferers with acid- fast bacilli (+) is 924 cases. While Tuberculosis children the last three years are 291 cases, and the most found in 2017 is 242 cases. This case is relatively high because it was

found through the Tuberkulin Test Survey in several Health Centers and the highest cases were in the working region of Waingapu Health Center with 55 cases (incident rate 16.03%). In the case of Tuberculosis in children that occurred at the Waingapu Health Center (55 cases) all of them had a history of household contact with Tuberculosis sufferers.

Based on these data, it is considered necessary to conduct research on the analysis of factors that affect tuberculosis infection of children who are in contact with patients in the working area of Waingapu Health Center, East Sumba Regency, East Nusa Tenggara Province.

## RESEARCH METHODS

This type of research is a descriptive study using cross sectional design, conducted at Waingapu Health Center of East Sumba Regency, East Nusa Tenggara Province with a sample number of 55 people. With the study subjects are families and children aged 0-20 years who live at home with TB sufferers and are willing to be study respondents. Sampling technique uses the technique of total sampling where the researcher makes a list of all subjects to be studied.

**Table 1: Effect of Work on family tuberculosis Knowledge Level**

Work	Family Knowledge			total
	Good	Enough	Not enough	
Civil servants	3 5,5%	0 0,0%	0 0,0%	3 5,5%
Entrepreneur	13 23,6	0 0,0%	0 0,0%	13 23,6%
Farmer	11 20,0 %	0 0,0%	0 0,0%	11 20,0 %

The table shows that there is an influence between work and the level of family knowledge in children infected with Tuberculosis who are in household contact with patients with the results of the Pearson Chi-Square value statistical test ( $98.351a$ ),  $df = 8$   $Pvalue: 0.000 < 0.05$   $n=55$

**Table 2: Influence of Work on tuberculosis Prevention Behavior**

Respondent jobs	Respondent behavior			total
	Always	Sometimes	Never	
Civil servants	3 5,5%	0 0,0%	0 0,0%	3 5,5%
Entrepreneur	12 21,8	1 1,8%	0 0,0%	13 23,6%
Farmer	0 0,0%	11 20,0%	0 0,0%	11 20,0%
Housewife	0 0,0%	17 30,9%	1 1,8%	18 32,7%
Does not work	0 0,0%	0 0,0%	10 18,2%	10 18,2%
Total	15 27,3%	29 52,7%	11 20,0%	55 100%

Dari tabel tersebut menunjukkan ada pengaruh antara pekerjaan dengan perilaku pencegahan keluarga pada anak terinfeksi Tuberculosis yang

kontak serumah dengan penderita dengan hasil uji statistik menggunakan komputer menunjukkan bahwa Pearson Chi-Square value (98,351a), df = 8, Asymp.Sig (2-sided) dengan Pvalue :  $0,000 < \alpha 0.05$  n=55

**Table 3: Effect of Age on Nutritional Status of Children infected with Tuberculosis**

Respondent age	Nutritional status of children infected with tuberculosis			total
	Normal	Kurus	Sangat Kurus	
0 – 5 years	22 40,0%	6 10,9%	0 0,0%	28 50,9%
6 – 15 years	0 0,0%	15 27,3%	5 9,1%	20 36,4%
16 – 20 years	0 0,0%	0 0,0%	7 12,7%	7 12,7%
Total	22 40,0%	21 38,2%	12 21,8%	55 100%

From the table it shows that there is an influence between the age of the child and the nutritional status of the child infected with Tuberculosis who is in household contact with the patient with the results of the Pearson Chi-Square statistical test, namely Asymp.Sig (2-sided) with Pvalue:  $0.000 < 0.05$  n=55.[3]

**Table 4. Characteristics of research subjects analyzed the level of occupancy density that affects tuberculosis infection in**

**children who are in household contact with sufferers.**

Occupancy density in children with Tuberculosis disease		
Solid	Not solid	Total
34 61,8%	21 38,2%	55 100%
Total 34 61,8%	21 38,2%	55 100%

The table shows that the densely populated conditions greatly affect the occurrence of Tuberculosis infection in children who are in household contact with sufferers. [3]

**Table 5. Characteristics of research subjects analysis of residential conditions that affect tuberculosis infection in children who are in household contact with sufferers**

Residential conditions of children with TB disease		
Eligible	Not eligible	Total
34 61,8%	21 38,2%	55 100%
Total 34 61,8%	21 38,2%	55 100%

The table shows that housing conditions that do not meet health requirements greatly affect the occurrence of Tuberculosis infection in children who are in household contact with sufferers.[4]

## CONCLUSION

From the results of research that has been carried out at the Waingapu Health Center, East Sumba Regency, East Nusa Tenggara Province, it can be concluded that there is an influence between family knowledge, preventive behavior, nutritional status, residential density and housing conditions in children infected with tuberculosis who are in household contact with sufferers.[3]

## SUGGESTION

The need for local government support in eradicating TB by increasing health promotion and family supervision, especially for children who are in household contact with sufferers[5]

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### THE EFFECT OF IMAGE MEDIA ON KNOWLEDGE AND SEXUAL VIOLENCE PREVENTION ATTITUDE TO STATE ELEMENTRY SCHOOL STUDENTS 60 KEC. SINGARAN PATTI AND ELEMENTRY SCHOOLSTATE 77 PADANG SERAI BENGKULU CITY YEAR 2019

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#### ABSTRACT

Sexual violence that occurs can cause psychological impacts including mental trauma, shame, even suicidal ideation or attempts. The Effect Of Image Media On Knowledge And Sexual Violence Prevention Attitude To State Elementry School Students 60 Kec. Singaran Patti And state Elementry School 77 Padang Serai Bengkulu City. The research design was quasi-experimental with pre-test and post-test with control group design. The number of samples was 62 people consisting of 31 intervention groups and 31 control groups. The sampling technique is consecutive sampling. Analysis using t-test at  $< 5\%$ . The results showed that the average knowledge about preventing sexual violence in the intervention group before being given the media with pictures was 55, 98 and after being given the intervention there was an increase in the average knowledge of 78.70 ( $p = 0.015$ ). The mean attitude about preventing sexual violence in the intervention group before being given the intervention was 87.31 and after being given the illustrated media there was an increase in the mean attitude to 88.38 ( $p=0.965$ ). In this study, the method of providing pictorial media was able to increase knowledge about preventing sexual violence in children but could not improve children's attitudes about preventing sexual violence.

**Keywords:** Knowledge, Attitudes Of Sexual Violence, Meme



### THE EFFECT OF IMAGE MEDIA ON KNOWLEDGE AND SEXUAL VIOLENCE PREVENTION ATTITUDE TO STATE ELEMENTRY SCHOOL STUDENTS 60 KEC. SINGARAN PATTI AND ELEMENTRY SCHOOLSTATE 77 PADANG SERAI BENGKULU CITY YEAR 2019

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#### INTRODUCTION

Law of the Republic of Indonesia Number 23 of 2002 concerning Child Protection in Article 4 stipulates that "Every child has the right to be able to live, grow, develop, and participate properly in accordance with human dignity and protection, and receive protection from violence and discrimination". This law aims to provide awareness to all parties, especially parents, teachers, and schools that children must be saved from situations that threaten their survival, growth and development, because healthy, smart, and cheerful children are the dreams of every parent in the world. the world (Depkes RI, 2009).

Violence against children in the world is any treatment that threatens the welfare of children that occurs continuously both physically, psychologically, economically, emotionally and sexually, such as murder, sexual acts, bullying and enforcement of discipline that is too harsh. Violence against children is often not seen and accepted as a norm in society which can lead to death and injury(Heldifanny & Rachmawati, 2016; Sminkey, 2018; Fisnawati et al, 2014).

Sexual violence is a priority issue in the health sector, which is one of the most common forms of violence against children, which is considered a public health crisis. Sexual violence is mostly done by parents, people known and trusted by children.(Mantula et al, 2017).

The National Commission for Child Protection (KNPA) informs that cases of sexual violence such as sexual harassment often occur in children aged around 9-12 years (Jatmika, 2017). The number of reports of cases of sexual violence against children has prompted the Indonesian Child Protection Commission (KPAI) to trigger an emergency on sexual violence against children.(Probosiwi & Bahransyaf, 2015).

*United Nations International Children's Emergency Fund (UNICEF)* states that 1 in 10 girls in the world experience violence. The incidence of sexual harassment is a domestic problem throughout the world. Data from the World Health Organization (WHO) in 2018 showed cases of child abuse that occurred in children aged 2-17 years in the world reached one billion cases. In 2011, the incidence of sexual harassment in the world amounted to 12.7%. Data from 40 studies conducted in 14 Southeast



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Asian countries found that 10% of boys and 15% of girls had experienced some form of sexual violence(Ben, 2016; Rumble et al, 2018; Sminkey, 2018).

The number of cases of sexual violence against children is the first rank of the number of cases of violence against children (Probosiwi & Bahransyaf, 2015). According to data from the Center for Information and Information (PuElementry Schoolatin), the National Commission for Child Protection (KPA) shows that the number of sexual violence has increased every year. In 2013 there were 2,676 cases, 54% of which were cases of sexual violence. In 2014, there were 3,339 cases, 52% of which were cases of sexual violence. In 2015, there were 2,898 cases, 59% of which were cases of sexual violence. In 2016, there were 2,898 cases, 34% of which were cases of sexual violence. In 2017, there were 2,737 cases, 52% of which were cases of sexual violence(Sururin, 2015; Evelyn, Mawarni & Dharmino, 2016; Muas, 2017).

Cases of sexual violence experienced by children in Bengkulu are in the red zone. A phenomenal case of sexual violence that occurred in Bengkulu in 2016 was experienced by a little girl from Rejang Lebong Regency, which was a case of sexual violence and murder committed by 14 youths.(Handayani, 2017). Data from the Department of Women's Empowerment, Child Protection, Population Protection and Family Planning (DP3AP2KB) Bengkulu Province recorded 130 cases of sexual violence in 2017, consisting of 6 in Kaur, 22 cases in Rejang Lebong, 9

cases in Kepahiang, 43 cases in North Bengkulu, 12 cases in Bengkulu City, 4 cases in Central Bengkulu, 14 cases in South Bengkulu, 11 cases in Seluma, 5 cases in Muko-muko, 6 cases in Lebong.

Data on recapitulation of sexual violence cases in 2017 from DP3AP2KB Bengkulu City contained 7 cases of sexual violence against children, 3 of them cases of sexual abuse of minors, 2 cases of sexual harassment, 1 case of sodomy and 1 case of rape. Data for January-September 2018 has recorded 6 cases of sexual violence, 3 of which are cases of sexual abuse of minors, 2 cases of rape and 1 case of sexual harassment.

High cases of sexual violence internationally, nationally and regionally. Prevention efforts that have been carried out so far are still on a macro scale and are poorly coordinated. Directive and educational prevention of sexual violence is needed for children to increase knowledge and attitudes in order to avoid acts of sexual violence (Mashudi, 2015).Health promotion efforts as prevention of sexual violence in children need to be taught from the primary (early) level of elementary school students at school. (Skarbek, Hahn & Parrish, 2009).

Nurses play an important role in the prevention, identification and intervention in cases of sexual violence against children which can be done through education and support from children and families. Sexual education can start from the most basic level regarding the organs and functions of the body(Justica 2017)Nurses also



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provide health education to families in improving health and well-being to improve parenting skills to assess children's growth, development and behavior.(Statement et al. 2016)

Research by Sudiyat et al, 2017 can increase students' knowledge of 12.5% while leaflet media can increase knowledge of 8.3% of healthy sexuality. Research conducted by Saputro (2014) said that learning with comics media that was developed was effective in increasing students' knowledge and attitudes with cognitive learning outcomes reaching 88% completeness, and 56% good student motivation, 44% very good. However, the media still needs to be re-innovated considering the results of the data shown are still minimal.

Innovations related to technology that are currently booming for educational methods can be done with illustrated media (Nugraha, 2015). Pictures can lead to diverse student creativity in discussing them. The advantages of pictorial media can clarify a problem by looking at clear images and in accordance with the subject matter. Students will be clearer on a subject or material presented (Septiana Pina & Suaebah, 2018).

The results of a preliminary study on 10 children at Elementary School 77 Padang Serai, Bengkulu City, showed that 30% of children did not know the meaning of sexual violence, 45% did not know the forms of sexual violence and 25% did not know how to prevent sexual violence. The results of the study at Elementary School 60 Kec. Singaran Pati from 20 children showed that 20% of children

knew the meaning of sexual violence, 20% of children knew the forms of sexual violence and 60% of children did not know the action to prevent sexual violence. The data obtained shows that so far the knowledge and attitudes of children towards sexual violence are still low because the forms of learning provided by schools are delivered directly without learning media such as leaflets, booklets and posters.

Based on the description above, the researchers are interested in researching about: The Effect of Pictorial Media on Knowledge and Attitudes About Prevention of Sexual Violence in Bengkulu City Elementary School Students.

### MATERIALS AND METHOD

This type of research is a quantitative research, with a quasi-experimental research design using a pre-post test design with a control group. The sample is children aged 9-12 years, totaling 62 people consisting of 31 people in the control group and 31 people in the intervention group.

This is study, the dependent variable, namely knowledge and attitudes that can change, is influenced by pictorial media which is the independent variable. Variable of this study....

The research location was selected using a random sampling technique and the sample was taken using a consecutive sampling technique. Data analysis using paired t test and independent t test.



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In this study, the illustrated media used has been tested by IT from University Bengkulu

## RESULT

### 1. Characteristic Overview Respondent

No	Variabel	Kontrol	Kelompok Intervensi	p value
1.	<b>Usia</b>			
	Mean	10,5	10,3	
	Min	10	10	
	Max	11	11	0,122
	SD	0,508	0,461	
	SE	0,091	0,083	
	CI95%	10,30;10,67	10,12;10,46	
2.	<b>Penghasilan Orang Tua</b>			
	Mean	2,8	2,8	
	Min	1,0	1,0	
	Max	6,0	6,0	1,00
	SD	1,56	1,537	
	SE	2,810	2,751	
	CI95%	2,200;3,348	2,148;3,272	
3.	<b>Pernah mengalami kekerasan seksual</b>			
	Pernah	31 (100%)	1 (1,6%)	
	Tidak pernah		30 (98,4%)	1,00
4.	<b>Pendidikan Orang Tua (ibu)</b>			
	SD/SMP	17 (54,8%)	5(16,1%)	
	SMA/SMK	14 (45,2%)	17 (54,8%)	0,003*
	PT	0 (0%)	9 (29,0%)	

Table 5.1 illustrates the mean age in the intervention group was 10.5 years with an ELEMENTRY SCHOOL of 0.508 and in the control group the mean age was 10.3 years with an Elementry School of 0.461. The average income of parents in the intervention group is 2.8 million with Elementry School 1.56 and in the control group the average income of parents is 2.8 million with Elementry School 1.537. On average, children had experienced sexual violence in the control group, 100% of the 32 respondents had never experienced sexual violence and in the intervention group 1.6% of the 32 respondents had experienced sexual violence. The education of the respondents' parents was highest in the SMA/SMK education intervention group (54.8%) and in the Elementry School/SMP control group (54.8%).

### 2. Knowledge Overview Before Intervention

Variabel	Sebelum Diberikan Intervensi	
	Kelompok kontrol	Kelompok Intervensi
Pengetahuan Pencegahan Kekerasan Seksual Mean	55,26	56,98
Min-Max	0,00-100,00	0,86,77
SD	30,51	24,93
SE	5,480	4,478
CI 95 %	44,07;66,46	47,84;66,13

Table 5.2 describes the average knowledge about prevention of sexual violence before being given pictorial media in the control group of 55.26 (less) with an Elementry School of 30.51 while in the intervention group it is 56.98 (enough) with an Elementry School of 24.93.

### 3. Overview of Attitude Before Intervention

Variabel	Sebelum Diberikan Intervensi	
	Kelompok kontrol	Kelompok Intervensi
Sikap Pencegahan Kekerasan Seksual Mean	88,38	87,31
Min-Max	73,33-100	70-100
SD	8,60	8,96
SE	1,54	1,60
CI 95 %	85,23;91,54	84,02;90,59

Table 5.3 illustrates the average attitude about preventing sexual violence before being given pictorial media in the control group of 88.38 (very good) with an Elementry School of 8.60 while in the intervention group it is 87.37 (very good) with an Elementry School of 8.96.

### 4. Difference Overview Respondent Knowledge Before And After Giving Intervention



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Variabel Pengetahuan Pencegahan Kekerasan Seksual sebelum di berikan Intervensi							Variabel Sikap Pencegahan Kekerasan Seksual setelah di berikan Intervensi									
	Mean	Min	Max	SD	SE	CI 95 %	P value dalam kelompok		Mean	Min	Max	SD	SE	CI 95 %	P value dalam kelompok	P value antar kelompok
Kelompok kontrol	55,26	0,00-	100,00	30,51	5,480	44,07-66,46		Kelompok kontrol	88,38	73,33-	8,60	1,54		85,23-91,54		
Kelompok Intervensi	56,98	0-86,77	24,93	4,478		47,84-66,13	0.809	Kelompok Intervensi	87,31	70-100	8,96	1,60		84,02-90,59	0,632	
<b>setelah di berikan Intervensi</b>								<b>setelah di berikan Intervensi</b>								
Kelompok kontrol	63,01	13,33-	100,00	30,92	5,55	51,66-74,35	0,013	Kelompok kontrol	88,49	73,33-	8,38	1,50		85,42-91,56	0,823	
Kelompok Intervensi	78,70	40,00-	100,00	16,45	2,95	72,67-84,74	0,000	Kelompok Intervensi	88,38	66,67-	10,64	1,91		84,48-92,29	0,520	0,695

Table 5.4 illustrates that the average difference in the knowledge of respondents about preventing sexual violence carried out so far before being given pictorial media in the control group was 55.26 (less) with an Elementry School of 30.51 while after being given media it was 63.01 (enough) with an Elementry School of 30.92 statistical test results showed a p value of 0.809 ( $p \leq \alpha = 0.05$ ) stating that there was no difference in the mean knowledge about prevention of sexual violence given the leaflet.

Table 5.4 illustrates that the average difference in respondents' knowledge about the prevention of sexual violence carried out so far before being given pictured media in the intervention group has a mean value of 78.70 (Good) with Elementry School 24.93 while after being given a media of 88.38 (very good) with an Elementry School of 16.45 the statistical test results showed a p value of 0.015 ( $p \leq \alpha = 0.05$ ) stating that there was a difference in knowledge about the prevention of sexual violence given illustrated media.

### 5. An overview of the differences in the attitudes of respondents before and after the intervention

Table 5.5 illustrates that the average difference in respondents' attitudes about preventing sexual violence carried out so far before being given given pictorial media in the control group the average value is 88.38 (very good) with an Elementry School of 8.60 while after being given media it is 88.49 (very good). ) with an Elementry School of 8.38, the statistical test results showed a p value of 0.632 ( $p \leq \alpha = 0.05$ ) stating that there was no difference in attitudes about preventing sexual violence given the leaflet media. Table 5.5 illustrates that the average difference in respondents' attitudes about preventing sexual violence carried out so far before being given picture media in the intervention group has a mean value of 87.31 (very good) with an Elementry School of 8.96 while after being given media it is 88.38 (very good). ) with ELEMENTRY SCHOOL 10.64 statistical test results showed a p value of 0.695 ( $p \leq \alpha = 0.05$ ) stating that there was no difference in Attitudes About Prevention of Sexual Violence given illustrated media.

### 6. Differences in Knowledge and Attitudes About Prevention Sexual Violence



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Variabel perbedaan pengetahuan dan sikap tentang pencegahan kekerasan seksual	? mean	Min-Max	SD	SE	CI95%	P value
Kelompok kontrol penggetahuan	7,74	-33,34-46,66	16,24	2,918	1,78;13,70	0,003
Kelompok intervensi penggetahuan	21,72	-6,66-66,67	19,77	3,551	14,46;28,974	
Kelompok kontrol sikap	0,10	-10-10	2,65	0,476	-0,86;1,07	0,577
Kelompok intervensi sikap	1,07	-23-13,34	9,20	1,65	-0,69;1,34	

Table 5.6 illustrates that the difference in mean knowledge in the control group is 7.74 with Elementry School 16,247 while in the intervention group there is a significant increase in the mean value of knowledge with a mean increase of 21.72 with Elementry School of 19.77. The results of statistical tests using t-independent obtained p value value of 0.003 so that it can be interpreted that there is an average influence of knowledge on pictorial media about preventing sexual violence in students of Elementry School Sttate Padang Serai, Bengkulu City.

Table 5.6 illustrates that the difference in the mean of knowledge in the control group is 0.10 with an Elementry School of 2.65 while in the intervention group there is a significant increase in the mean value of attitudes with a mean increase of 1.07 with an Elementry School of 9.20. The results of statistical tests using t-independent are obtained. p value 0.577 so that it can be interpreted that there is no influence on the average attitude towards pictorial media on the prevention of sexual violence in Padang Serai Elementary School students, Bengkulu City.

## DISCUSSION

### 1. Characteristics of Respondents

#### a. Age

The results showed that the average age of respondents in the intervention group and the control group was 10 years. According to Notoatmodjo (2010), age is the time of life or existence (since born or held). The older a person is, the more mature they are in thinking and working (Lestari fitri Putri, Indriyani Diyan, & Suryaningsih, 2017).

Age affects a person's knowledge because the mindset continues to change throughout his life. As you get older, your grasping power will also develop and your mindset will decrease as you get older (Yoisangadji, 2016).

#### b. Have Experienced Sexual Violence

The results showed that the average respondent who had experienced sexual violence in the dick group was 100% none had ever experienced acts of sexual violence while in the intervention group there were 1.6% or 1 out of 32 respondents had experienced sexual violence. According to Novia (2015) if children who have experienced sexual violence can be seen signs of changes in behavior such as children will experience depression, changes in children's cognition often daydream and do not want to go to school, social and emotional changes such as children not wanting to socialize, and physical changes such as There are sores on the genitals.

#### c. Parental Education

The highest education was in elementary/junior high school, 54.8% in the control group and



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54.8% in the intervention group for high school/vocational education. Education level is one of the factors that influence parents' knowledge about sex education for their children. Education is a learning process to develop or improve abilities.

Parental education is a very important ability because the higher the level of education it will expand or support the knowledge and attitudes given to children, good parent education can easily receive all information from outside about sexual education (Yoisangadji, 2016).

### d. Parents' Income

The income of the respondent's parents is in the range of 1 - 6 million, the average income of the parents is 2.8 million. Low income can lead to violence against children due to increased stressors in the family. Lack of economic resources makes parents vulnerable to acts of violence (Rofidah Zuhratul, Baroya Ni'mal & Wati, Dwi Martiana, 2017). The results of this study are also in line with previous research conducted by (Verawati Metti & Ernawati Hery, 2014) which stated that the average income of parents was less than the minimum wage (53.7%).

## 2. Average Knowledge of Sexual Violence Prevention

In this study, knowledge about sexual violence before being given media in the control group averaged. Knowledge about Prevention of Sexual Violence before being given media was 55.26 (Less) after intervention through media illustrated with leaflets in the intervention group amounted to 32

people with an average knowledge about preventing sexual violence. 63.01 (enough).

This can be caused by factors that influence knowledge and attitudes about sexual violence such as age, parental income, parental education, and individual habits. (Evelyn, Mawarni & Dharmnto, 2016). According to Notoatmodjo (2012), knowledge is obtained from the learning process, so the higher a person's education will make knowledge about objects better.

## 3. Overview of Attitudes About Prevention of Sexual Violence

In this study, attitudes about sexual violence before being given leaflet media in the control group with an average value of Attitudes About Prevention of Violence of 88.38 (very good) while after the intervention through illustrated media leaflets in the control group were 32 people with attitudes about preventing sexual violence of 88.49 (Excellent).

Attitude is a form of readiness or willingness to act, and is not the implementation of certain motives (Notoatmodjo, 2010). Attitudes to each individual can be different, if they like or agree with an object, they will approach, find out, and join, on the contrary if they don't like or disagree, they will avoid or stay away (Hasanah, 2017).

## 4. Knowledge Difference About Sexual Violence Prevention

The results of the study on Knowledge About Prevention of



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Sexual Violence that were carried out so far before being given the media in the control group the average value of Knowledge about Prevention of Sexual Violence that had been carried out so far was 55.26 (less) while after being given the media the average value of Knowledge about the Prevention of Sexual Violence was carried out during This is 63.01 (Sufficient) with a P value in the control group of 0.013 ( $p \leq \alpha = 0.05$ ) stating that there is a difference in Knowledge about Prevention of Sexual Violence before and after being given leaflet illustrated media.

Knowledge about Prevention of Sexual Violence that has been carried out so far before being given media in the intervention group the average value of Knowledge about Prevention of Sexual Violence that has been carried out so far is 56.98 (Enough) while after being given illustrated media the average value of Knowledge About Prevention of Sexual Violence carried out so far is equal to 78.70 (very good) with a P value in the intervention group of 0.000 ( $p \leq \alpha = 0.05$ ) stating that there is a difference in knowledge about the prevention of sexual violence before and after being given the media.

Sufficient knowledge of the respondent means that the respondent already understands some of the sex education that has been given, such as telling children what types of touch are appropriate and inappropriate by other people, instilling the soul to behave according to gender, instilling shame from an early age, teaching children about the place of sexual intercourse.

the body that is not allowed to be touched by anyone other than the closest person, introduces body parts and forms children's understanding of sex differences between men and women.

### 5. Differences in Attitudes About Sexual Violence Prevention

Research result Attitudes About Prevention of Sexual Violence that have been carried out so far before being given media in the control group the average value of Attitudes About Prevention of Sexual Violence that has been carried out so far is 88.38 (very good) while after being given the media the average value of Attitudes About Prevention of Sexual Violence that has been carried out so far is 88.49 (very good) with a P value of the control group of 0.520 ( $p \leq \alpha = 0.05$ ) stated that there was no difference in Attitudes About Prevention of Sexual Violence before and after being given leaflet pictorial media.

Attitudes About Prevention of Sexual Violence that have been carried out so far before being given the media in the intervention group the average value of Attitudes About Prevention of Sexual Violence that has been carried out so far is 87.31 (very good) while after being given the media the average value of Attitudes About Prevention of Sexual Violence that has been carried out so far is 88.38 (very good) with a P value in the intervention group of 0.823 ( $p \leq \alpha = 0.05$ ) stating that there is no difference in attitudes about preventing sexual violence before and after being given pictorial media.

Attitudes can not be seen directly but can only be estimated beforehand



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from some behavior. The existence of a positive or supportive attitude can be caused by knowledge and experience. Increased knowledge has a positive relationship with behavior change, which will later be implemented on behavior. Where there is an increase in knowledge, a change in behavior occurs and from a change in behavior it can cause a change in attitude (Amalia, 2018).

### 6. Differences in Knowledge and Attitudes About Prevention of Sexual Violence

#### a. Differences in Knowledge About Prevention of Sexual Violence

The difference in the mean difference in knowledge on prevention of sexual violence before and after the intervention group was given pictorial media intervention in the intervention group was 21.72 and the difference in the mean difference in knowledge on preventing sexual violence before and after being given leaflet intervention in the control group was 7.74. With a group p value of 0.003 which means that there is an influence of meme pictorial media on knowledge about the prevention of sexual violence.

These results are in line with research on The discourse of humor in memes in online media was carried out by Listiyorini (2017), it was found that meme media contained topics of social life, contained suggestive meanings and words that were often used contained many hyperbole words, abbreviations, repetition of smiles, metaphors and proverbs (Listiyorini, 2017).

#### b. Differences in Attitudes About Prevention of Sexual Violence

The difference in the mean attitude of preventing sexual violence before and after the intervention was given to the intervention group was 0.32 and the difference in the mean of preventing sexual violence before and after the intervention was given to the control group was 0.03. With a group p value of 0.576, it means that there is no influence of meme pictorial media on attitudes about preventing sexual violence.

However, in this study, the drawing media showed that there was no difference in attitude after being given meme pictorial media because attitudes cannot be seen directly but can only be estimated beforehand from some behavior. The existence of a positive or supportive attitude can be caused by knowledge and experience. Increased knowledge has a positive relationship with behavior change, which will later be implemented on behavior. Where there is an increase in knowledge, there is a change in behavior (Amalia, 2018). Because with good knowledge children are able to apply their knowledge in preventing acts of sexual violence in taking a stand.

## CONCLUSIONS AND SUGGESTIONS

### 1. Conclusion

PThe Effect of Pictorial Media on Knowledge and Attitudes About Prevention of Sexual Violence in



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Elementary School Students 60 Kec. Singaran Pati and ELEMENTRY SCHOOL Negeri 77 Padang Serai in Bengkulu City. The research design was quasi-experimental with pre-test and post-test with control group design. The number of samples was 62 people consisting of 31 intervention groups and 31 control groups. The sampling technique is consecutive sampling. Analysis using t-test at  $< 5\%$ .

The results showed that the average knowledge about prevention of sexual violence in the intervention group before being given pictorial media was 55.98 and after being given the intervention there was an increase in the average knowledge of 78.70 ( $p = 0.015$ ). The mean attitude about preventing sexual violence in the intervention group before being given the intervention was 87.31 and after being given the illustrated media there was an increase in the mean attitude to 88.38 ( $p=0.965$ ).

### 2. Suggestion

It is hoped that this research can be used as a reference for further research so as to obtain better research results.

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### Literature Study of Sports Impact on Prevention of Complication At DM Type 2 Patients

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### ABSTRACT

Diabetes Mellitus (DM) is a chronic disease characterized by hyperglycemia due to insufficient insulin, insulin dysfunction, or both, where it is caused by instant changes in lifestyle and depends on technology. The International Diabetes Federation (IDF) diabetes atlas 9th edition in 2019 released data on 5 countries with the most DM sufferers in the western pacific area, one of the 5 countries is Indonesia is the second country with the most DM, namely 10,700,000 sufferers. Purpose: researching this literature study to see how the effect or impact of exercise on reducing blood sugar levels so as to prevent complications. Methods: research a literature study by searching the results of scientific publications from 2015-2020 using the Google Scholar database. Result: the search was then analyzed and concluded, the results of the study: based on the results of the literature search, there were 7 literatures that met the inclusion criteria. And in accordance with the research statement, which identifies various kinds of sports that can reduce high blood sugar levels so that they can prevent the risk of complications in type 2 DM patients. days ranging from light exercise to vigorous exercise can increase insulin sensitivity so that it can control high blood sugar levels and can prevent the risk of complications in (DM) type 2. From various studies on exercise in preventing the risk of complications, the results are almost the same, namely regular exercise every day ranging from light exercise to strenuous exercise can increase insulin sensitivity so that it can control high blood sugar levels and can prevent the risk of complications in type 2 diabetes.

Keywords : DM type 2, Complications, Sports

### INTRODUCTION

Diabetes Mellitus (DM) is a chronic disease characterized by hyperglycemia due to insufficient insulin, insulin dysfunction, or both, where this is caused by instant changes in lifestyle and depending on technology. According to the World Health Organization (WHO) in its report published in 2016, in 2014 there were 422 million adults with DM (Chan, 2016).

International Diabetes Federation (IDF) diabetes atlas 9th edition in 2019. IDF released data on 5 countries with the most DM sufferers in the western pacific area. The 5 countries in a row are: China (116,400,000 sufferers), Indonesia (10,700,000 sufferers), Japan (7,400,000 sufferers), Thailand (4,300,000 sufferers), and the Philippines (4,000,000 sufferers) (International Diabetes Federation, 2019). In

2019 the IDF showed a decline in the number of DM aged 20-79 years, namely 163 million people and it is estimated that there will be an increase to 212 million people in 2045 (IDF, 2019). In America, DM is the 7th highest cause of death where in 2015 there were 79,535 deaths that were stated to be directly caused by DM and 252,806 deaths that stated diabetes as a contributor to the cause of death (American Diabetes Association, 2015).

Indonesia itself, based on the latest data from Basic Health Research (Risikesdas, 2018) the prevalence of diabetes mellitus in the population aged 15 years and over is 2.0% and for all ages is 1.5%, where for the age with the highest prevalence is age 55-64 with a prevalence of 6.3 %, then age 65-74 with 6.0%, and age 45-54 with a prevalence of 3.9% (Ministry of Health RI, 2018). South Sulawesi Province the prevalence of DM has increased every year. Where in 2013 the



prevalence of DM diagnosed by doctors was 1.63% and increased in 2018 by 1.80% (Risikesdas, 2018). In Makassar itself, from the latest data in 2016, there were 4,555 DM sufferers (Kemenkes RI, 2018).

The cause of the increasing number of DM in Indonesia is due to an unhealthy lifestyle and lack of exercise. The state of hyperglycemia that continues for a long time will cause various kinds of complications. And to prevent hyperglycemia is to do regular exercise. Because regular exercise is an important element of the pillars of DM management which can prevent hyperglycemia and can reduce the risk of complications.

Previous research study by Ratih Saralangi in 2016 at RSUD dr. Moewardi Surakarta, where most of the type 2 DM patients did less exercise and some of the type 2 DM patients experienced complications. Based on this phenomenon, researchers are interested in conducting a literature study with the title "The Impact of Exercise on the Prevention of Complications Risk in Type 2 Diabetes Mellitus Patients".

#### METHOD

The type of research is literature study research. The technique of collecting search data from scientific publications in the 2015-2020 range using the Google Scholar database. The type of data in this literature research is secondary data where the data obtained or collected by researchers from various existing sources. Research materials are journals, articles, books and so on.

Inclusion criteria: articles published in the 2015-2020 period, the minimum amount of literature used is 7 and a maximum of 10, published by accredited journals d. Total population and representative samples. Exclusion Criteria: literature

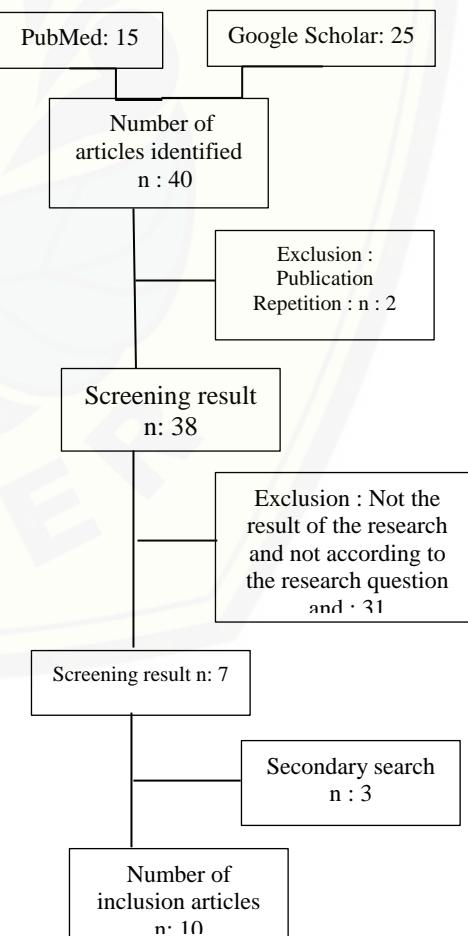
review articles, regular articles.

#### RESULTS

Searching the Google scholar database by entering the keyword Exercise and blood sugar levels "OR" Aerobic exercise on diabetic complication from the search results by combining keywords obtained 25 research articles.

A search on the PubMed database by entering the keyword Exercise and blood sugar levels "OR" Aerobic exercise on diabetic complication from the search results by combining keywords obtained 15 research articles.

From the results of the identification of the two search databases, 40 research articles were found for screening, Eligibility, the range of 2015-2020, according to the title of the literature study was 7 articles and secondary data search was 3 articles with a total of 10 articles.





Based on the results of the literature search, 10 articles were obtained that met the inclusion criteria. The research article identified various types of exercise that can reduce high blood sugar levels so as to prevent the risk of complications in type 2 DM patients.

From the results of the analysis of the literature study, it was found that 2 articles stated that physical activity ranging from mild to moderate accompanied by taking anti-diabetic drugs could control blood sugar levels and improve quality of life, 1 article stated that good self-care is associated with complications that occur in DM patients. Type 2, 3 articles suggest that regular exercise can stabilize blood sugar levels in diabetics accompanied by diet, and 4 articles suggest that aerobic exercise and diabetes exercise can reduce blood sugar levels in type 2 DM patients.

Based on Gita's research (2017), it is stated that there is a relationship that regular exercise habits can reduce the occurrence of microvascular complications in diabetics. Rahmawati and Lestari's research (2019) states that diet and exercise compliance can control blood sugar levels in diabetics, this statement is in accordance with research conducted by Suryani *et. al.* (2015) who said that exercise and diet can be the most effective treatment in controlling and controlling blood sugar levels.

In the research of Widodo *et al.* (2016) showed that high category physical activity and adherence to diabetes medication can maintain the stability of blood glucose levels in people with diabetes mellitus. Rustini and Maulidia's research (2018) that moderate

activity by doing daily activities on a regular basis can stabilize blood sugar levels in diabetics.

And in the research of Dewi *et al.* (2019) showed that aerobic exercise with an intensity of 30 minutes performed 3 times a week can reduce blood sugar levels in diabetics and reduce atherosclerosis. In the study of Puji *et.al.* (2017) that there is an effect of aerobic exercise with a decrease in blood sugar levels in patients with type 2 diabetes. And in the research of Astutik *et al.* (2017) stated that diabetes exercise and giving active assistive range of motion were more effective in lowering blood sugar levels. And in the research of Hokon *et al.* (2016) that after doing aerobic exercise in diabetics there is a decrease in blood sugar levels.

## DISCUSSION

Complications of DM is an emergency that can occur in the course of DM. Complications of DM are grouped into two parts, namely microvascular and macrovascular. To prevent complications, one of which is by exercising, exercising regularly can have a good effect or impact on people with DM, where exercise can increase insulin sensitivity which can reduce blood glucose levels in the body so as to prevent complications in patients with type 2 diabetes.

In Gita's research (2017), which discusses exercise habits and microvascular complications of DM in the elderly, the important thing that we need to obtain is that exercise in the elderly who suffer from DM and complications occur is very useful because it can maintain normal glucose levels, prevent obesity and overcome lipid attachment. on the walls of blood vessels, this study is in line with research by Mandagii (2010), namely type DM sufferers must remain healthy, so that daily activities will be smooth. In Hartono's research (2019), which discusses self-care or self-care to prevent complications, this is very important because self-care is very much needed for DM sufferers who experience complications. This study is in line with the



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research of Ayele *et al.* (2012) Treatment for DM patients in preventing or minimizing acute or chronic complications, especially by following self-care practices which include exercise, recommended diet, self-intake which includes exercise, medication and blood glucose monitoring. self-care including knowledge factors, physical skills factors and influence factors from other people,

In the research of Cahyono *et al.* (2016), who examined physical activity on blood sugar levels, the important thing in this study is that physical activity can improve heart work and reduce blood sugar levels in type 2 DM and can prevent complications because physical activity can also increase insulin sensitivity so that it can improve lipid profile and prevent insulin resistance. This study is in line with the research of Shenoy *et al.* (2010) on the effectiveness of exercise programs, showed results that aerobic and walking programs could reduce blood glucose by 37%. With exercise or physical activity, in nursing, diabetics need to take care of themselves independently and actively participate (Rustini & Maulidia, 2018).

Research by Rahmawati *et al.*, 2019 which examined exercise on blood sugar stability in DM patients, regular physical exercise at least 3-4 times a week such as aerobics in diabetics can improve insulin sensitivity and reduce the risk of cardiovascular disease. Walking, leisurely cycling, jogging, and swimming are aerobic exercises, while the frequency of exercise duration is 30-40 minutes. The results of this study are in accordance with research (Sulistiyowati, 2004) which states that there is a relationship between exercise habits and blood sugar levels, good exercise habits include the frequency of exercise, duration

of exercise and the type of exercise that is in accordance with the diabetes suffered. Good exercise will be useful in regulating blood glucose levels in DM patients which will affect the control of their blood sugar levels (Rahmawati & Lestari, 2019).

In Suryani *et al.*'s 2015 research, which examined exercise as a control of blood sugar levels in type 2 DM patients, Astutik *et al.*'s 2017 research, regarding the effectiveness of Active Assistive Range Of Motion exercise and diabetes exercise on reducing blood glucose levels. AAROM exercises and diabetes exercises are indeed effective for lowering blood sugar levels because of AAROM exercises. Active assistive range of motion is only centered on the foot area, while diabetes exercise is combined with muscle movement, breathing and relaxation techniques, by doing diabetes exercises fat in the body can be burned, burning fat in the body will reduce the level of leptin in the plasma to decrease so that leptin will affect the hypothalamus to regulate fat in the body and fat will be burned into energy resulting in weight loss so that it can control blood sugar levels (Suryani *et al.*, 2016).

According to Dewi and Susilawaty (2019), this aerobic exercise intervention can improve the work and function of the heart, lungs and blood vessels, which is characterized by a decreased resting pulse rate, reduced lactic acid buildup, increased HDL cholesterol, and reduced atherosclerosis. Research Indriyani *et al.* (2017) physical exercise aerobic exercise has an effect on reducing blood sugar levels in people with type 2 diabetes mellitus. And research conducted by Hokon *et al.* (2016) knowing the difference in blood glucose before and after aerobic exercise in the elderly.

### CONCLUSION

From various studies on exercise in preventing the risk of complications, the results are almost the same, namely regular exercise every day ranging from light exercise to strenuous



exercise can increase insulin sensitivity so that it can control high blood sugar levels and can prevent the risk of complications in type 2 diabetes.

### SUGGESTION

Future researchers are expected to be able to pay attention to and minimize confounding factors for decreasing blood glucose levels and can then be carried out in a different setting by modifying the existing limitations of this study. further research, for example by adding other variables such as the role of health workers, conditions of health services, health facilities and others in the research, or it could be by using other research designs such as experimental research, or qualitative research.

### THANK-YOU NOTE

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### EFFECT OF BOOKLET FIRST AID SPORTS TREATMENT ON KNOWLEDGE ABOUT SPORTS INJURY CARE IN STUDENTS 07 PRIVATE VOCATIONAL SCHOOL OF BENGKULU CITY

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#### ABSTRACT

**Background:** Almost all sports have a risk of injury from mild to severe light. The lack of knowledge about the effects of injury if wrong in the act of rescue is at risk of making injuries worse. Health problems in school children that often occur related to handling accidents that often occur in school children are injury injuries, nosebleeds, bites, fainting. Teenagers are at risk of experiencing sports injuries because of their physical and physiological growth and development process because certain muscles strengthen not the same as other muscles that cause imbalance and instability. **Objective:** To see the effect of giving a first aid booklet injury to the knowledge of sports injury care actions in Bengkulu City Senior High School 07 students. **Metode:** The type of quasi-experimental research with one group pretest-posttest design sample collection using simple stratified random sampling with a sample of 40 people. Data were analyzed by Wilcoxon statistical test. **Results:** showed an increase in annual average of 18.73. There is an effect of giving a first aid book injury to knowledge (p value 0.000). **Conclusion:** concluded that there was a difference in the average knowledge of sports injury care for junior high school students after being given an injury relief booklet and It is expected that the school will provide information through booklet media to increase students' knowledge in handling sports injuries.

Keywords: Booklet, Knowledge, sports injuries

## INTRODUCTION

Sports injuries are injuries to the muscular and skeletal system caused by sports activities. Sports injury is pain caused by sports, so that it can cause disability, injury, and damage to muscles or joints as well as other parts of the body injuries at school that occur during rest and sports (Artanayasa, 2014).

According to Salminen et al., (2014) in Poland 37% of children experiencing school injuries for ages 7-15 years occurred at rest and 33% during sports, while in Germany 47% of school injuries were related to sports, 30% during play and 17% occurred while learning in class, for all school age. As many as 85% of injuries in schools in Sweden occur during breaks and sports together comprise about a third of school time and boys are injured more often during sports and breaks.

Adolescents are at risk for sports injuries because of their physical and physiological growth and development processes (Caine et al, 2014), when compared to adult bones, bones in adolescents are more prone to causing injuries in the adolescent age group such as growth fractures and greenstick fractures (Yu, Green & Walker, 2018). Studies have found that during the pubertal period there is an increase in injuries caused by certain muscles being strengthened in contrast to other muscles causing imbalance and instability. In the United States, 4.3% of individuals aged 11-18 years visit an emergency hospital each year for sports injuries. (Yu, Green & Walker, 2018).

The need for safety guidelines in sports activities at

school is very much needed by schools in order to be able to overcome accidents when carrying out sports activities. In sports that are very susceptible to injury, especially among school children who still have an unstable emotional level, it can cause children when they experience an injury to have high enough anxiety that can cause trauma to carry out these activities and that trauma can result in loss of life. Confidence (Luh & Tuti, 2014).

One of the safety guidelines that can be used is a first aid book on injuries, which are teaching books about explanations that can direct or provide instructions about injuries, and injuries. Guidebooks can be used as learning resources and to make it easier for students to learn learning materials (Dewantara, 2016).

According to Madania research results, (2014) there was a 6.23% increase in knowledge after being given a media booklet, an increase in knowledge to respondents who were given a media booklet because the booklet had advantages, among others, because it was given to each individual to take home, giving rise to responsibility independently and can be done at any time.

Health problems in school children that often occur are related to the handling of accidents that often occur in school children, among others; injuries, nosebleeds, bites, fainting. Thus knowledge about handling accidents needs to be taught (Notokusumo, 2016).

The best way to deal with sports injuries is to prevent them, because preventing is the most

effective way to create a safe and smooth environment in activities, including sports. Two important parts that are needed in maintaining safety. Every student needs information about safe behavior and chooses this behavior to avoid the possibility of injury during sports, one of the injuries that can be experienced during sports is sprains / sprains in the legs (Dharmadi, 2015). Handling injuries at an early age is very significant in its function as a determining factor for the success of the healing process of injured patients. If there is a wrong first action in handling the injury (Simatupang, 2016). Handling of injuries is carried out by the RICE method with rest (rest), ice (ice), compression (compression) and elevation (elevation). (Aji, 2013).

The initial survey was carried out in early October 2018 at three junior high schools in Bengkulu city, namely SMPN 07 Bengkulu city, SMPN 17 Bengkulu city, and SMPN 22 Bengkulu city by interviewing school teachers, it was found that there were many injuries in schools such as minor injuries that were not handled by the school. The school's School Health Unit (UKS) but injuries occurred in the last 1 month at SMPN 17 and SMPN 22 Bengkulu city 1-2 students who were injured. While the survey at SMPN 07 Bengkulu city 3-4 students from 832 students who were injured. And at SMPN 07 Bengkulu city UKS does not have a nurse who can care for students who are injured while playing/sports so they refer to the nearest puskesmas/hospital. So far, there is no manual for injury first aid made

by the UKS team.

Based on the description above, the injury first aid manual is an alternative solution that can be given to students to increase knowledge about handling injuries, especially during sports. Therefore, researchers are interested in conducting research on the Effect of First Aid Booklets on Knowledge About Sports Injury Treatment in SMPN 07 Students in Bengkulu City.

## MATERIALS AND METHODS

This type of research is a quantitative research, with a quasi-experimental research design using a pre-post test without control design. This study aims to determine the difference in the average knowledge about sports injury treatment actions in junior high school children before and after being given the intervention. The sample is part of the population that represents the population to be taken. The sample in this study were all adolescent students at SMPN 07 in Bengkulu City. The sampling technique used by Stratified Random Sampling is to meet the sample according to the criteria set according to the research criteria.



## RESULTS

**Table 5.1**

**Description of the characteristics of respondents in students of SMPN 07 Bengkulu City**

Variable	n (%)
<b>Age</b>	
13 years old	13 (32.5%)
14 Years	21 (52.5%)
15 Years	6 (15.0%)
<b>History of injury</b>	
Light	14 (35.0%)
Currently	21 (52.5%)
Heavy	5 (12.5%)
<b>Join the PMR organization</b>	
Yes	3 (7.5%)
No	37 (92.5%)
<b>Parent's education</b>	
Elementary/Junior High	7 (17.5%)
SMA/SMK	23 (57.5%)
College (PT)	10 (25.0%)

### Bivariate analysis

Bivariate analysis was carried out to determine the average value before and after being given a booklet media, there was a difference in the average value of knowledge before and after being given a booklet media.

Researchers conducted a normality test of knowledge data through the Shapiro-Wilk method. Obtained a P value of 0.002, which can be concluded that the knowledge data is not normally distributed

Based on the normality test of the data, the results of the data processed by knowledge are not normally distributed, so the test carried out is a non-parametric test, namely the Wilcoxon test, the Wilcoxon test is used to test the average value of knowledge and skills before and after being given a media booklet.

The difference in the average knowledge of respondents before and after being given a media booklet in the group at SMPN 07 Bengkulu City 2019 teenagers in the group can be seen in the following table:

**Table 5.2**

**The difference in the average knowledge of respondents before and after being given a media booklet at SMPN 07 Kota Bengkulu**

Variable knowledge	N	Mean	Min	Max	SD	95% CI	P value
- Before	40	52.63	25	65	10.19	49.37-55.88	*0.000
- After	40	70.38	35	95	13.60	66.02-74.73	

From table 5.2 above, the average knowledge of respondents before being given a booklet was 52.63 with a standard deviation of 10.19. The average knowledge after being given a booklet media increased to 70.38 with a standard deviation of 13.60 so that there was an increase in the average knowledge of 18.73.

## DISCUSSION

In this chapter the author will discuss the research results that have been obtained covering the characteristics of the respondents (age, history of injury, participating in PMR organizations, parental education, and the influence of booklet media on knowledge of sports injury care actions in SMPN 07 Bengkulu City. , will describe the limitations of the research that has been done and the implications of research results for services and research.

#### A. Characteristics of respondents

##### 1. Age

The results showed that the average age of the respondents was 14 years. The older you are, the more experience you will have. Experience can be used as a way to increase one's knowledge and expertise about something(Rizqiani Amalia, 2016).

The results of this study are also in line with previous research conducted by(Benita, 2012) which states that the majority of adolescents are 14 years old with an interval of 13-17 years.

##### 2. History of injury

The results of the study show The most history of injury in respondents was moderate injury (52.5%). Based on the history of the injury and the influencing factors are experiences that the respondents have to increase knowledge. According to (Hastuti, 2013).

##### 3. Join the PMR (Youth Red Cross) organization

The results showed that there were 3 respondents who were PMR members. The Youth Red Cross (PMR) is a development of the Indonesian Red Cross (PMI) which has humanitarian activities in the health sector(Reza, Junaedi and Yasep, 2016). The respondent's membership in the PMR organization affects actions against injuries, because they have an

understanding in carrying out the proper handling and provision of first aid for each type of injury experienced.(Febrina and Semiarty, 2014).

##### 4. Parental Education

The highest education is in SMA/SMK 57.5%. The level of education is one of the factors that affect the knowledge of parents about school education in children. Education is a learning process to develop or improve abilities. Parental education is a very important ability because the higher the level of education it will expand or support the knowledge and attitudes given to children, good parent education can easily receive all information from outside about sexual education (Yoisangadji, 2016).

The results of this study are also in line with previous research conducted by (Istifada et al., 2013)which states that the highest parental education is in high school education, namely (41.6%).

#### B. The effect of booklets on knowledge

Knowledge is the result of human sensing, or the result of someone knowing about objects through their senses, including the senses of sight, hearing, smell, feeling, and touch (Notoatmodjo, 2015). This theory is supported by the theory of knowledge according to (Hastuti, 2013). explaining the factors that influence knowledge, including education, occupation, age,





interests, experience, surrounding culture, and information. (Hastuti, 2013). stated that the easier it is for someone to access information, the faster that person will acquire new knowledge. Information can be obtained by someone through the mass media, both electronic media and print media.

From research results it was found that there was a difference in the average increase in knowledge of 18.73, after being given a booklet, an effective booklet for increasing knowledge had the effect of knowledge after being given a booklet media. It was concluded that there was an increase in the average of respondents who were given health education with sports injury knowledge booklet media between before and after being given booklet media.

This is in line with research (Madania, 2014) carried out on students through The Effect of Giving Booklets on Students' Knowledge and Attitudes Regarding Drug Abuse in SMA Negeri 01 Gorontalo City the results showed a change in the level of knowledge between before and after the booklet was given. The change meansthere is a significant effect between before and after being given a media booklet ( $p = 0.000$ )

According to Hardiyati (in Madania, 2014) the possibility that causes an increase in knowledge of respondents who are given booklet media because booklets have advantages, among

others, because they are given to each individual to take home, giving rise to independent responsibility and can be studied at any time. In addition, booklets can also present material in an interesting and very necessary way (Madania, 2014).

Similarly, the results of Kanayana's research (in Zulaekah, 2012) showed that nutritional education about iodized salt by means of lectures, question and answer, slides and VCD methods could increase knowledge and use of quality iodized salt in goiter endemic areas. In line with these studies, it shows that health education with the discussion method can further improve knowledge and attitudes and reduce blood sugar levels in patients with type II diabetes mellitus.

The level of final nutrition knowledge in all samples has increased when compared to the initial level of nutritional knowledge, with less (25.0 %), sufficient (47.2%) and good (27.8%) categories. This shows that the provision of nutrition education with booklet aids will improve the level of knowledge of children, as indicated by the decreasing proportion of the sample who has a level of knowledge of less nutrition and turns into a level of knowledge of adequate and good nutrition after the sample has received nutrition education.(Zulaekah, 2012).

## CONCLUSIONS AND SUGGESTIONS

#### A. Conclusion

Based on the results of the discussion, it can be concluded that:

1. There was an increase in knowledge after giving a booklet of 18.73
2. The difference in the average knowledge between before and after being given a media booklet to the respondents was found to be a p value < 0.05, which means 0.000 There is a difference in the average knowledge about sports injury care for junior high school students after being given an injury relief booklet

developed into rights, to increase the intellectual ownership of students and lecturers.

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- B. Suggestion
- Based on the results of the research and discussion, the researcher would like to provide suggestions to several related parties, including:
1. For the School  
Identified knowledge and skills of students regarding the treatment of sports injuries and history of injuries experienced. Can increase knowledge of sports injuries that have not previously been given by the school. Get a manual that can be used by students in handling sports injuries.
  2. For Further Researchers  
For further researchers, it is expected to examine comparing booklet media with other media with the control group.
  3. For Educational Institutions  
It is hoped for institutions and used as reference material in the library to add insight into the care of sports injuries, can be





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### ETHICAL CONFLICT IN SOCIALIZATION OF PERITONEAL DIALYSIS TO HOSPITAL PATIENTS: A CASE STUDY

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### ABSTRACT

**Background:** During Covid-19 pandemics nurses have been facing multiple problems including ethical conflicts. The ethical conflicts have an impact on the quality of nursing services, nurses' roles and relationships with patients, and other health professions. One of them is the conflict that is due to the socialization gap of Peritoneal Dialysis (PD). **Objectives:** To suggest structured PD socialization program in hospital. **Methods:** This research used a case study. The instrument was a case management template of American Board of Occupational Health Nursing (ABOHN). The data were taken from a patient with a history of chronic renal failure. The data were processed by using the SWOT Analysis model. **Results:** The results showed that the patient named Mr. A, 63 years old, had undergone hemodialysis therapy for 2 the last years, but had never heard of the term peritoneal dialysis (PD). After the SWOT analysis, the result projected: Strengths (S): the patient was aware of his medical condition and was open to all information as long as it was in the interest of his health. Weaknesses (W): PD socialization procedure did not yet exist in the workplace. Opportunity (O): in the future, the number of cases and health professionals are increasing. Treats (T): the patients' interests, professional organizations, organizational reputations were at stake. **Conclusion:** This study recommends structured program that is written in a policy and procedure document from the nursing viewpoint to avoid the ethical cases related to the socialization of PD to patients. Its implementation requires management support.

**Keywords:** Ethical conflict, Peritoneal Dialysis, SWOT Analysis.



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### INTRODUCTION

One of the healthcare professions that has felt the greatest impact from the Covid-19 pandemic is the nursing profession (ICN, 2020). Covid-19 has resulted in major changes in nursing education, nursing practices and procedures, professional character to ethical issues in the workplace (Kalateh Sadati et al., 2021). Professional ethics in the workplace often occurs because nurses do not work alone (Sperling, 2021). However, it involves other health professionals, patients, patient's families, colleagues, administrative staff, and the public (Jeleč et al., 2016). The nursing position is taken into consideration in carrying out the nursing practices. The issue faced by nurses regarding the ethical problem is because the nurse's position is in a dilemma when it comes to giving patients choices in making decisions (Turale et al., 2020). On the other hand, ethically and morally nurses also have a responsibility to respect the health professions, especially those who work, for example with the medical profession as the closest partner in the dialysis department (Afzal et al., 2021). The dialysis department is generally divided into two units, namely hemodialysis and Continuous Ambulatory Peritoneal Dialysis (CAPD) units (Figueiredo et al., 2016a). Although both have the same principle to meet the needs of patients related to chronic kidney failure therapy, the indications and contraindications are different (Aydede et al., 2014).

The differences raise a dilemma in advising to patients, especially in terms of the advantages and disadvantages of each procedure (Hagen et al., 2014). Despite the differences of opinion

regarding the two issues, some developed countries recommend the use of CAPD rather than Hemodialysis (HD) (Novelia et al., 2017). Therefore, CAPD nurses need to understand the issue (Zazzeroni et al., 2017). Lack of understanding will affect nursing interventions, especially related to handling chronic kidney failure (Kemenkes, 2018). When patients have to choose, nurses are expected to be impartial and provide clear and fair information (Afzal et al., 2021). The basic principle of nursing is to put the patient's interests above personal or group interests (Kotila et al., 2018). However, the conditions in the field are sometimes different, especially if they are not supported by clear procedures (Sperling, 2021).

This article attempts to present the issue of nursing ethics in a case study. The main material is based on the ethical conflict between placing the interests of patients, the role of CAPD nurses, and the position of the medical profession in a nursing perspective regarding the selection of CAPD procedures and HD. The aim is to develop the formulation of a CAPD socialization model for patients in the workplace, to avoid ethical conflicts with fellow health workers in the future.

### METHODS

This research method is a case study. The method applied the case management process by the American Board of Occupational Health Nurses (ABOHN). The approach was taken because the client, in this case, was considered an employee who was working in an industry of manpower agency company. The nursing process



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used the nursing process standard which included assessment, planning, implementation, and evaluation. The initial step in the assessment was based on the standard case management format by the ABOHN. During the assessment process, the client was asked whether he or she agreed to be interviewed for the research. After the assessment, the next step was planning which included: identifying problems, determining problem priorities, and preparing problem-solving plans based on recommendations from scientific research. The third step was to evaluate

the current dialysis procedures taken and complications if any as a Chronic Kidney Disease (CKD) patient. The fourth step was to record all the findings of the patient's condition, identify all the factors that influence the nursing service provided. After that, SWOT analysis by Humphrey was carried out as the last step (Friesner, 2018), to identify all supporting aspects or barriers that existed in the socialization of PD patients. A similar model was used by many nursing researchers (Abay, 2016; Ladd et al., 2020; Pertiwi et al., 2018).



Diagram 1: SWOT Analysis

The diagram shows the strengths and weaknesses are all factors from within but the opportunity and treats are from outside factors (Tanya Sammut-Bonici, 2017).

The case study was compiled in October 2021. Other instruments used in this case study were interviews, client observations, and enriched by scientific journals related to case management studies. The data was also obtained from the results of the physical examination provided by the client as

well as the ABOHN standard guidelines. The ABOHN Case Management concept was used because it is an accredited and standardized occupational health nursing institution in the USA and the world (ABOHN, 2016). The study was conducted after obtaining the consent of the client. It was started after approval from the Health Research Ethics Committee of the Ministry of Health, Jayapura, Ministry of Health No.077/KEPK-J/IX/2021, September 6, 2021.



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## RESULTS

### Assessment

The interview was conducted by telephone on October 11, 2021. Our patient named Mr. A, 63 years old, works as an administrator for a manpower agency. Mr. A said that he had been suffering from chronic kidney failure for the past ten years. During that time he received specialist treatment. At its peak, hemodialysis was performed two years ago. He lives in Jakarta, where many specialist health care centers treat cases of CKD. Mr. A lived with his family. During HD therapy he felt comfortable and did not experience any significant disturbances. When asked if he had ever heard of the term Peritoneal Dialysis, he said he had never. This is the first time I've heard of it from researchers. After getting an explanation about CAPD he was advised to tell the doctor who treated him. After being explained about the advantages and disadvantages of CAPD, he said he was already comfortable with PD, so he didn't want to change the procedure. Moreover, the distance between the house and the hospital where the PD procedure is done is about 7 kilometers. The general health condition of Mr. A is good enough. He claimed to have had hypertension for more than 10 years. He was exposed to Covid-19 but was treated at home. All vital signs were within normal limits. There are no signs of experiencing mental stress. Physically, there were no significant abnormalities.

### Planning

The ABOHN standard of case management recommends that, if significant abnormalities were found in the case, the client should be referred to a physician (ABOHN, 2016). If any lifestyle risks were identified, the nurse should provide appropriate advice to the client (Kono et al., 2017).

At the planning stage, we identified risks based on the results of interviews, made observations, collected objective and subjective data, including if there were health problems in family members who lived with the client. At the planning stage, the data collected includes the client's duties and responsibilities at work, daily habits or lifestyle, as well as identification of all potential problems that could harm him, his co-workers, the organization, his family, and other people or the public because the client had been exposed to Covid-19. Priority problems were arranged by the principles of occupational health and safety and the nursing process according to basic human needs. The need for information fulfillment was no exception regarding the management of chronic kidney failure cases in using dialysis therapy.

### Implementation and Evaluation

At this stage, we have already collected all patient's data, identified the problem, and prioritized it according to the ABOHN standard format. In addition to patient data, we also collected other related data from different sources such as



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journals, government rules and regulations, health law, and world institutions. Once completed, we put

them into a SWOT Analysis table, in the following section.

### SWOT Analysis

**Table 1:** SWOT Analysis

SWOT Analysis			
Components	Objective Data	Subjective Data	Other Sources
Strength	<ul style="list-style-type: none"> <li>- Patient is educated</li> <li>- Open-minded</li> <li>- He was living in city</li> <li>- His residence near healthcare facilities and technology and information available.</li> <li>- Supported by family.</li> <li>- His house was near the workplace.</li> <li>- His vital signs were all within normal limits, but BP was under medication.</li> <li>- He was willing to learn many new things regarding his treatment.</li> </ul>	<ul style="list-style-type: none"> <li>- The patient seemed still active and highly motivated to work and handle his office works though from home.</li> </ul>	<ul style="list-style-type: none"> <li>- The patient said the hospital was a medium-size organization with more than 40 beds of HD in the Dialysis Department.</li> <li>- There must be available sufficient nursing staff as the hospital location was medium-size, and was in the capital.</li> <li>- Many major hospitals in developing countries have promoted the CAPD (Nakao et al., 2003).</li> </ul>
Weaknesses	<ul style="list-style-type: none"> <li>- Patient was 63 years old with a history of CKD and hypertension for more than 10 years.</li> <li>- He felt comfortable with HD and did not want to change with other means.</li> <li>- He frequently visited the specialist for his medical conditions</li> </ul>	<ul style="list-style-type: none"> <li>- His medical condition may be deteriorated due to multiple health problems.</li> <li>- The patient did not reveal all his medical conditions during Covid-19.</li> <li>- Nobody told him</li> </ul>	<ul style="list-style-type: none"> <li>- Training on socialization procedures may not be available.</li> <li>- The organization may not support in optimizing the nurses' roles in CAPD by written document,</li> </ul>



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	<p>during his sickness.</p> <ul style="list-style-type: none"> <li>- He was exposed to Covid-19 in July-August 2021.</li> </ul>	<p>about the CAPD.</p> <ul style="list-style-type: none"> <li>- The roles of nurses may not be clear in the CAPD socialization program to patients.</li> </ul>	<p>therefore CAPD nurses did not convey the CAPD information to patient in the early stage.</p>
Opportunity	<ul style="list-style-type: none"> <li>- The number of CKD cases is increasing. Automatically the demands on dialysis procedures are higher.</li> <li>- The dialysis unit is developing especially in the capital due to the dense population who need better services.</li> </ul>	<ul style="list-style-type: none"> <li>- Nurses can be trained in anticipating the trend to do socialization through in-house or external training organization.</li> </ul>	<ul style="list-style-type: none"> <li>- Many nurses in public health centers can be involved in dialysis socialization programs in general and to promote CAPD in particular.</li> </ul>
Treats	<ul style="list-style-type: none"> <li>- CAPD training for nurses is very limited and focused only in major cities (Nugraha et al., 2017).</li> <li>- Many dialysis nurses are not yet registered (Afzal &amp; Hardy, 2021).</li> </ul>	<ul style="list-style-type: none"> <li>- Dialysis nurses' organization may not develop nurses' roles in CAPD due to various factors so that the potential CAPD patients are not aware of the treatment choices.</li> <li>- Socialization of CAPD does not occur as the existing procedure does not develop. This is supported by proof that the patient who does not know it after 2 years of treatment.</li> <li>- The number of</li> </ul>	<ul style="list-style-type: none"> <li>- CAPD nursing specialist education is not yet (Tukayo et al., 2021).</li> <li>- Lack of coordination in optimizing the general nurses' roles in handling the CKD cases (Afzal &amp; Hardy, 2021).</li> </ul>



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CAPD patients  
does not  
increase  
significantly  
(IRR, 2018).

The above description shows, the ethical conflict that occurs in the case study on the socialization of peritoneal dialysis by nurses is caused by: first, communication that has not been established among nurses, patients and fellow healthcare professionals. Second, there are no internal documents designed in a policy and procedures that support the socialization process. The third, less intensive training for CAPD nurses that discusses clearly on the role of nurses in CAPD socialization.

### DISCUSSION

#### Communication

In this case study Mr. A, as a patient for 2 years undergoing hemodialysis therapy, had never heard of the term CAPD. The hospital where he was undergoing therapy had a large dialysis unit. It was located in the capital city of Jakarta. The situation proved that communication link between healthcare professionals who worked in the dialysis department and patients was not well established. As a result, patients did not know and did not have the opportunity to choose existing alternative therapies. The patient thought that hemodialysis was the only solution to his CKD problem. Whereas every patient expects and has the right to get full information from each service

of healthcare he/she receives (Etheredge & Fabian, 2017). In the future, to avoid the occurrence of similar cases, it is necessary to ensure from the outset, especially in dialysis polyclinics that information on hemodialysis and CAPD therapy should be provided to patients. Submission of such information needs to be supported by a document or distinct policy procedures.

#### Policy and procedures

The patient's ignorance of information about CAPD in this case from nurses or other health workers at the hospital where he received therapy indicated that there was no any socialization procedure or introduction of various therapies as an option. Every patient has the right to get full information on all actions that will be accepted in dialysis therapy (National Kidney Foundation, 2013). The rights and obligations of the patients are written in a Dialysis guideline (Cullis et al., 2021). The existence of the guideline will greatly assist the smooth running of an orderly, sequential and systematic work process (Woodrow et al., 2017). The absence of the procedure could be seen because there was no action taken by the nurses who cared for the patient. Therefore, it



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is necessary to strive for a clear procedure that is supported by guidelines that can be used as a reference in treating dialysis patients. In the procedure is to include the types of procedures as the patient's choice accompanied by indications and contraindications from the side of nursing science, so that abnormalities can be identified early on (Woodrow et al., 2017). Documents like this not only benefit the patient but also bring the good name of the profession and raise the reputation of the organization.

### Training of CAPD nurses

Patient Mr. A stated that he had never received any explanation from the dialysis nurse about various types of dialysis therapy, both related to hemodialysis and CAPD. His acknowledgment can be subjective because it "did not rule out the patient's forgetting. However, when the patient was asked if he had heard of other therapies for CKD cases besides hemodialysis, he did not know it. This was the evidence that the patient did not get any information from health workers when he was admitted to the dialysis clinic. Many dialysis units assigned nurses as the first health worker to conduct patient assessment. Administrative officers only do the registration. Such system avoids the missing procedures in during the nursing process of CAPD patients. In the case study the system did not take place.

Patient has the rights in the dialysis guidelines. The existence of guidelines is very helpful in smoothing the roles and responsibilities of CAPD nurses. The guidelines are usually included in basic CAPD training (Figueiredo et al., 2016b). Therefore, regular and programmed training is very much needed, including if there is the latest update regarding CKD treatment and therapy. Through training, CAPD nurses will be more competent and skilled in handling cases as well as avoiding ethical conflicts as happened in this case study.

### CONCLUSION

The novel Covid-19 pandemic has hit nurses and the nursing professions including in the ethical aspect of the nursing procedures. This study explores three issues behind the occurrence of ethical conflicts in the socialization of CAPD in CKD patients during the pandemic. It explores the significant role of communication in nursing services for patients with chronic kidney failure. The clarity roles of nurses help achieve meeting the patient needs. On the other hand, the lack of nursing communication will result in ethical conflicts as discussed in this study. The three identified problems include lack of communication, the absence of written procedures, and training problems related to the socialization of the CAPD program that must be owned by dialysis nurses (CAPD). The results of the study recommend the importance of communication in nursing, the preparation of policy procedures, and



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the provision of training related to the socialization of the CAPD program to nurses. The weakness of this study is it did not involve patients on a larger scale, besides the study was not conducted directly in the dialysis department. Therefore, in the future, it is highly appreciated if interested researchers are willing to develop this research into more extensive studies and more focused so that its value can have a global impact.

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### The Effect of Health Education on Pain Management on Postoperative Patient Pain Management Compliance In The Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province

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#### ABSTRACT

**Background:** Surgery is a stressful complex event, carried out in a hospital operating room, especially major surgery carried out with preparation, procedures and postoperative care requiring a longer time and more intensive monitoring. Pain is a condition that is more than a single sensation caused by a particular stimulus. If a person experiences pain, it will affect the physiological and psychological aspects of that person. The nurse also said that if health education about pain management to patients is carried out optimally, it is likely that the number of patients who complain of postoperative pain will be reduced. Based on the description above, the researcher wants to investigate further about the effect of health education on pain management on postoperative patient pain management compliance in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province.

**Aim:** The general objective of this study was to determine the effect of health education on pain management on postoperative pain management compliance in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province.

**Methods:** The type of research used in this study is quantitative research, with the aim of knowing the effect of health education on pain management on pain management compliance which includes the population or sample because of the relationship between two research variables or variables, then conclusions can be drawn. **Results:** Judging from the p value, the results of the statistical test of this study showed a significant p value, namely  $p = 0.000$ , even though the dominant background of the respondents was in the elderly, and with a relatively moderate/intermediate level of education, but with the patience of the researcher in providing health education up to 3 times 1 (one) day before the respondent underwent surgery. So that respondents can understand and understand the explanation given, and respondents can apply it independently. **Conclusion:** It can be concluded that there is an influence between health education on pain management on postoperative pain management compliance in patients.

**Keyword :** Health Education; Pain Management on Postoperative; Patient Pain Management Compliance



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### INTRODUCTION

Surgery is a stressful complex event, carried out in a hospital operating room, especially major surgery is carried out with preparation for the procedure and postoperative care requires a longer time and more intensive monitoring (Smeltzer, 2001). Based on data obtained from the World Health Organization (WHO) in Ningrum (2016), the number of patients undergoing surgery has increased significantly from year to year. It was recorded that in 2011 there were 140 million patients in all hospitals in the world, while in 2012 the data experienced an increase of 148 million people.<sup>nd</sup>

Operations in Indonesia in 2012 reached 1.2 million people (WHO in Ningrum, 2016). Based on the data obtained from the Medical Record Room Kutilang RSUD Dr. H. Abdul Moeloek Lampung Province in January March 2018 recorded 120 patients who underwent surgery - laparotomy. The results of the survey on May 08, 2018 in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province of 8 postoperative patients 6 patients (75%) of whom said pain in the operating area, because the patient did not understand about pain management.

Pain is a condition that is more than a single sensation caused by a particular stimulus (Potter & Perry, 2006). If a person

experiences pain, it will affect the physiological and psychological aspects of that person (Niven, 2000). Pain can be overcome by pain management that aims to relieve or reduce pain to the level of comfort felt by the patient. There are two ways of pain management, namely pharmacological and non-pharmacological therapy. The nurse's actions to relieve pain in addition to meditation, eating, and making clients feel comfortable by teaching relaxation techniques (Potter & Perry, 2006).

Basically, the pain felt by the patient will not decrease or disappear if the patient does not care or is not obedient in carrying out therapy/management to deal with pain. For this reason, patient compliance is very influential in the healing process. According to Kozier (2010) compliance is individual behavior (eg: taking medication, complying with diet, or making lifestyle changes) according to therapy and health recommendations. The level of compliance can range from ignoring every aspect of the recommendation to complying with the plan in order for patients to more easily understand pain management, and be encouraged to do and comply with pain management, there is one right way that a nurse can do in training postoperative patients, namely by providing health education (Smeltzer, 2001).



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Smeltzer (2001), said that health education is an essential component in nursing care and is directed at activities to improve, maintain and restore health status; prevent disease and help individuals to cope with residual effects of disease. Health education is not just about communication of information, but also relates to the adoption of motivation, skills and confidence to take action to improve health. (Nursalam, 2008).

Yenni et al. (2014) conducted a study on patient compliance between those who were given and those who were not given health education, in patients with congestive heart failure (CHF), namely there was a significant effect between adherence before and after health education ( $p= 0.000$ ). This study is in line with Suyatna's (2011) research on post-spinal anesthesia patients in the Orchid Room of Mardi Waluyo Metro Hospital. The results of the study there are differences patient compliance after spinal anesthesia between those who were given and those who were not given health education ( $p = 0.001$ ).

The effect of health education on chronic kidney disease (CKD) patient compliance to maintain quality of life has been carried out by Arditawati (2013) at Pandanarang Boyolali Hospital, through her research data obtained that there is an effect of health education on CKD patient compliance to maintain quality of life ( $p = 0.000$ ).

Based on the results of interviews with nurses in the finches room at RSUD Dr. H. Abdul Moeloek Lampung Province, room nurse said that direct health education to patients about postoperative pain management was not explained and practiced optimally to patients due to the imbalance between the number of nurses and the number of patients being treated. The nurse also said that health education about pain management to patients was carried out optimally. it is likely that the number of patients who complain of postoperative pain will decrease.

Based on the description above, the researcher wants to investigate further about the effect of health education on pain management on postoperative patient pain management compliance in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province."

The formulation of the problem in the formulation of the research problem is whether there is an effect of health education on pain management on postoperative patient pain management compliance in the Kutilang Room, Dr. H. Abdul Moeloek Lampung Province?

The general objective of this study was to determine the effect of health education on pain management on postoperative pain management compliance in the Kutilang Room, RSUD Dr. H. Abdul Moeloek



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Lampung Province.

### METHOD

The research study is quasi-experimental pre-post one group design. The population of the study is post operative patients and the samples were patients with mild pain level. The intervention was health education of pain management by providing leaflets in post operative patients. With the aim of knowing the effect of health education on pain management on postoperative patient pain management compliance.

### RESULTS

The research was conducted in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province, the number of samples is 36 respondents with the following characteristics:

Characteristics of Respondents by Age in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province. it is known that the age of most respondents is 46-55 years old (early elderly) with 16 respondents (44.4%), followed by 36-45 years old (late adulthood) and 56-65 years old (late elderly) each with 5 respondents. (13.9%).

Characteristics of Respondents by Education Level in the Kutilang Room,

RSUD Dr. H. Abdul Moeloek Lampung Province. it is known that most of the respondents have moderate education (junior high school and high school) as many as 25 respondents (69.4%).

Characteristics of Respondents by Occupation in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province. it is known that the number of respondents who work is 30 respondents (83.3%), and those who do not work are 6 respondents (16.7%).

. The distribution of pain scores before the Health Education of Pain Management in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province. Of 36 subjects rated at 4.4 with a standard deviation of 1.15, the lowest score at 3 and the highest at 7.

The distribution of pain scores after the Health Education of Pain Management in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province. The average of pain scores was 6.8 with a standard deviation of 2.11, the lowest score at 3 and the highest at 11. The data of pain management compliance were abnormal distribution. Using Wilcoxon Signed Ranks test, the Effect of Health Education of Postoperative Pain



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Management on Pain Management on Compliance in the Kutilang Room, RSUD Dr. H. Abdul Moeloek Lampung Province, it is a significant increase of the average score of pain management compliance before and after being given health education about pain management by 2.4 ( $p=0.00$ ). It can be concluded that there is an influence between health education about pain management on postoperative pain management compliance in patients.

### DISCUSSION

a. Compliance with pain management before being given health education.

Based on the results of the research conducted, it is known that the average score of pain management compliance before being given health education is 4.4, which means that the respondent's level of compliance is low when compared to the mean value of the observational data assessed based on the Guttman measurement scale, which is 7.5 with the highest total score. 15. This can be caused by several factors, the first is age. Age affects the respondent's ability to receive the information provided. The results of this study indicate that the age of most respondents is in the elderly category (early elderly and late elderly) with a

total of 21 respondents (58.3%). According to the results of research by Bakogeorgos, et al (2013) in Firmania (2017), among colorectal cancer patients undergoing chemotherapy in Athens, Greece, elderly patients were more disobedient than younger patients. This is because someone who is already in the elderly stage will tend to surrender both to illness and his life, in contrast to someone who is still not old.

The second factor is the education level of the respondents. The results of this study found that the education level of the most respondents was moderate/intermediate education with a total of 25 respondents (69.4%). According to the results of research by Budiman, et al (2013) in Firmania (2017) on 61 breast cancer patients who underwent chemotherapy at the hospital. Dr. M. Djamil Padang, it was found that there was a relationship between the level of education and adherence to chemotherapy according to schedule ( $p < 0.05$ ). patients with a higher level of education have a greater level of adherence and indicate that low patient education is one of the predisposing factors that affect patient delays in undergoing treatment. This is reinforced by the theory of Notoatmodjo (2010), which states that



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the higher the education, the easier it will be to accept new things and adapt easily to these new things. Someone who is highly educated will easily accept the information provided compared to those with less education.

b. Compliance with pain management after being given health education.

After being given health education, the average score of patient compliance is still low, namely 6.8, compared to the mean value of the observations made based on the Guttman measurement scale, which is 7.5 with the highest score of 15. This is due to the postoperative pain factor experienced by respondents., which resulted in not all respondents being obedient in pain management in accordance with what had been taught. In this study, the highest number of operations was laparotomy, which was 9 respondents (25.0%), this is reinforced by the theory of IASP (1979) in Potter & Perry (2006) which defines pain as a subjective sensory and unpleasant emotional experience related to tissue damage caused by trauma. actual or potential or perceived in the events where the damage occurred. Pain is also a major factor that hinders an individual's ability and desire to recover from an illness.

However, when compared with the

average score of pain management compliance before being given health education, there was an increase in the average score of patient compliance by 2.4. This is caused by several factors, the first is the timing of the provision of health education. The timing of the provision of health education also has an effect on making respondents easier to receive the information provided by health education. In this study, the time for providing health education was 1 (one) day before the patient underwent surgery. According to Potter & Perry (2006) a program of planned instruction on individual needs is planned and implied at the right time. If a health education session is given a few days before surgery, the patient will not remember what was told. If health education is given a few hours after surgery the patient may not be able to concentrate due to pain and residual anesthetic effects.

The second factor is the media. Notoatmodjo (2007) states that health education media are teaching aids used by educators in delivering educational/teaching materials. With visual aids people can better understand health facts that are considered complex, so they can appreciate how valuable health is to life. In this study, the media used by the researchers were



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leaflets and flipcharts. Apart from being simple teaching aids, leaflets and flipcharts are also media that can be accepted by the eye senses. According to research by experts in Notoatmodjo (2007), the senses that channel knowledge the most into the brain are the eyes. Approximately 75% to 87% of human knowledge is obtained / transmitted through the eyes. While the other 13% to 25% are channeled through the other senses.

According to the researcher, the provision of health education also influences in making it easier for respondents to understand and understand the content of messages conveyed in health education, so that respondents can re-enact what has been taught by educators independently. In this study, health education researchers 3 times a day before giving respondents as surgery.

In accordance with the results of this study compiled using the Wilcoxon signed ranks test, the results obtained p value of  $0.00 < (0.05)$  which means  $H_0$  is rejected, which means that there is an influence between health education on pain management on postoperative pain management compliance.

In accordance with Notoatmodjo's (2010) theory, health education carried out in hospitals is to help patients and

their families to be able to overcome their health problems, especially to accelerate the healing of diseases after surgery. So that patients take the steps that have been taught in health education to overcome their health problems, and accelerate the healing of the disease.

These results are in line with research conducted by Yenni, et al (2014) regarding the Effect of Health Education on Cardiac Rehabilitation Exercises on Early Mobilization Compliance in Congestive Heart Failure (CHF) patients, stating that there is a significant effect between adherence before and after health education is given to 40 respondents with  $p= 0.000$ .

The results of this study are also in line with the results of research by Arditawati (2013) regarding the Effect of Health Education on Chronic Kidney Disease (CKD) Patient Compliance To Maintain Quality of Life at Pandanarang Hospital Boyolali, it was found that patient compliance before being given health education in the experimental group was quite as much as 23 people (69.7%), while the patient's compliance after being given health education in the experimental group was good, namely 33 people (100.0%). From these results it was



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concluded that there was an effect of health education on CKD patient compliance to maintain quality of life in Pandanarang Hospital, Boyolali.

The results of this study are also in line with the results of research conducted by Suyatna (2011) regarding the difference in patient compliance after spinal anesthesia between those who were given and those who were not given health education in the Orchid Room of Mardi Waluyo Metro Hospital. Which states that there is a difference in patient compliance after spinal anesthesia between those who were given and those who were not given health education with a p value = 0.001.

Even so, the researcher assumes that the research conducted by the researcher is better than the research above. Judging from the p value, the results of the statistical test of this study showed a significant p value, namely  $p = 0.000$ , even though the dominant background of the respondents was in the elderly, and with a relatively moderate/intermediate level of education, but with the patience of the researcher in providing health education up to 3 times 1 (one) day before the respondent underwent surgery. So that respondents can understand and understand the

explanation given, and respondents can apply it independently.

### CONCLUSION

Based on the results of research conducted in the finches room, RSUD Dr. H. Abdul Moeloek Lampung Province, it can be concluded that:

1. The average pain management compliance score before being given health education about pain management was 4.4.
2. The average pain management compliance score after being given health education about pain management was 6.8.
3. There is a significant increase in the average score of pain management compliance before and after being given health education about pain management by 2.4.

The results of statistical analysis using the Wilcoxon signed ranks test showed a p value of  $0.00 < (0.05)$  which means  $H_0$  is rejected, so it can be concluded that there is an influence between health education on pain management on postoperative pain management compliance in patients.

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## PARENT EMPOWERMENT IN CHILDREN WITH SPECIAL NEEDS WITH HOLISTIC CARE APPROACH : LITERATURE REVIEW

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### ABSTRACT

**Background:** Children are a gift from God Almighty to every parent, the responsibility of parents is to care for, educate, love both normal children and children with special needs. Children with special needs experience limitations both physically, mentally, intellectually, socially and emotionally which significantly affect the process of growth and development compared to other children of their age so that they are very dependent on their parents and family in the process of daily survival, so it is necessary to optimize the empowerment of parents. holistically in daily care. **Aim:** Describe the empowerment of parents in children with special needs with a holistic care approach based on a literature review. **Methods:** literature review of 10 related studies, published in 2017-2021 in 4 databases, namely Scopus, Sage, CINAHL, Pubmed. **Results:** A narrative review of the 10 articles found that parent empowerment is one of the successes in growth and development, fulfillment of daily needs, formation of children's character and behavior. **Conclusion:** Caring for family members with physical disabilities can have an impact on daily life. Holism asserts that organisms always behave as a unified whole, not as a series of distinct parts or components. Soul and body are not two separate elements but part of a whole and what happens in one part will affect the other part.

Keyword : Parent empowerment; Child with special need; Holistic care



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## INTRODUCTION

Children with disabilities or special needs are children who experience physical, mental, intellectual, social and emotional limitations that significantly affect the process of growth and development compared to other children of their age (Burton *et al.*, 2018). The incidence rate of children with special needs in the world is ± 10-25% of the total population, in Indonesia ± 14 million people according to the Central Statistics Agency (BPS) in 2020 (Wu *et al.*, 2021). Types of special needs according to the Regulation of the Minister of Education and Culture of the Republic of Indonesia No.157 of 2014 include visually impaired, deaf, speech impaired, mentally retarded, physically disabled, mentally retarded, autistic, learning difficulties, motor disorders, victims of narcotics abuse(Hassen *et al.*, 2020).

The significant number of children with special needs is a fairly complex problem in terms of quantity and quality (Ganapathy Sankar and Monisha, 2020). Different types of children with special needs have different problems, it is necessary to empower parents appropriately in the implementation of life skills according to the interests and potential of children, it is hoped that children can be more independent (Higazi *et al.*, 2021). Empowering parents as families and primary service providers for children with special needs (Kim *et al.*,

2017). Children with special needs in general still lack the awareness and responsibility to provide equal rights and opportunities for growth and development where most parents leave it entirely to institutions such as special schools (SLB) (Berry *et al.*, 2019). Empowerment of parents is an important factor in facilitating growth and development, protection, care, educating and nurturing (Coppo *et al.*, 2020).

Nursing philosophy is the nurse's rationale for obtaining a framework in thinking, making decisions, and how to act that must be done within the range of health and illness (Satherley *et al.*, 2021). The concept of holistic nursing has two perspectives in interpreting holism, namely the element of interrelationship between bio-psycho-social-spiritual as a whole in the individual and the element of understanding that the individual is a unique being and becomes an integral part that is not separated from a mutually beneficial environment (Mariano, 2013).

## MATERIALS AND METHOD

A comprehensive summary in the form of a literature review regarding the parent empowerment in children with special needs with a holistic care approach. Literature review which is a comprehensive summary of several studies, research that is determined based on a specific theme. The search for literature was carried out in October-November 2021. The data used in the study were secondary data obtained, not from direct observation but obtained from the results of research that had been conducted by previous researchers. The



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secondary data source obtained is in the form of reputable journal articles both nationally and internationally within the last 3 years with a predetermined theme. The literature review search in this case used five databases with high and medium quality criteria, namely Scopus, ProQuest, Pubmed, Sage, Scient Direct. Searching for articles or journals uses keyword and Boolean operators (AND OR NOT or AND NOT) which are used to expand or specify a search, making it easier to determine which articles or journals are used. Key words in the review literature are adjusted accordingly Medical Subject Heading (MeSH) and consists of holistic, parent empowerment, disability as shown the table below:

Table 1. Keyword in the review literature are adjusted accordingly Medical Subject Heading (MeSH) and consists of holistic, parent, empowerment, disability

Holistic	Parent	Empowerment	Disability
OR	OR	OR	OR
Holistic health	Fossils	Role	Defective
AND	AND	AND	AND
Holistic approve	Oldster	Sappy	Deformed

Based on the results of literature searches through publications in five databases and using keywords that have been adjusted to MeSH. The researchers obtained 200 articles that match these keywords. The search result that have been obtained are then checked for duplication, it is determined that there are 60 similar articles so they were

excluded and the remaining 140 articles. The author then conducted a screening based on the eligibility of the inclusion and exclusion criteria obtained as many as 25 articles that can be used in the literature review.

## RESULTS

The review results contained 10 journals regarding parent empowerment from the inclusion criteria of quantitative and qualitative research from 5 databases electronic searches contain namely Scopus, ProQuest, Pubmed, Sage, Scient Direct obtain the following results:

- Article title: "Empowering Marginal Parents: an Emerging Parent Empowerment Model for School Counselors".

This article parental empowerment is an integral part of school counseling to cover the gap in children's learning achievement in school.

- Article title: "Understanding Asian American Student Achievement : do their Immigrant Parents' Networks and Empowerment Contribute to their Academic Performance".

Of 317 Asian immigrant parents were surveyed and their family involvement. Parent network and several components of parental empowerment including competence, parental contact with school counselors are significantly related to academic performance. The importance of school counselors empowering Asian



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immigrant parents in improving their children's education academically.

3. Article title: "Outcome Evaluation of the Hands On Parent Empowerment (HOPE) Program".

This article reported HOPE program such as reading, spending time talking warmly with children. The HOPE significantly decreased child behavior problems, parenting stress, and increased support in the intervention group compared to the control group as well as the changes of the communication relationship between parents and children.

4. Article title: "Implementing a Parent Education Intervention in Colombia : Assessing Parent Outcomes and Perceptions Across Delivery Modes ".

The parent empowerment in children composed of parents understanding in their children strengths and needs. Parents in the student-led group reported significantly lower depressive symptoms whereas in the focus group parents expressed satisfaction with the intervention and described how they used the information.

5. Article title: "The Nurturing Program : Intervention for Parents of Children with Special Needs".

Parenting patterns of parents who have children with spesial needs mosly have a rough attitude towards

children so that family empowerment is needed to provide support to parents. Caregivers in the intervention condition increased empathy for children F (1,54)>p=0,4 all families both control and treatment increased the attitude of parents who often gave physical punishment with post test F (1,54)>p=0,13.

6. Article title: "Assessing the Feasibility of a Parent Life Coaching Intervention to Support Parents and Children Who have Experienced Domestic Violence and Abuse".

The role of parents in caring for children who experience violence during the care of older people, both verbal and non-verbal violence, causing physical disturbances and even disability, parents should provide protection to children so that children do not experience trauma, both physically and psychologically.

7. Article title: "Identify the Family Needs of Children with Autism from the perspective of Specialists and Parents: Qualitative Study ".

Parents who have children with spesial needs in this case autism need a stong role in terms of parenting which is very different from children in general requiring support from a large family in meeting the main needs of the family including knowledge, skill, attitudes, social needs, financial needs and mental services as a consultation on the growth and development of austistic children.

8. Article title: "Parental Empowerment in



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### Pediatric Rehabilitation: Exploring the Role of a Digital Tool to Help Parents Prepare for Consultation with a Physician".

The era of digitalization changes all aspects of life by making it easier to communicate and consult with health experts, namely doctors where parents play a role in the daily care of children with special needs through telecommunications media using digital tools that can be accessed anywhere and anytime as long as they have internet quota.

9. Article title: "Disability-Responsive Adaptations: Child-Parent-Relationship Therapy for Children with Disabilities.

Children with disabilities have unique and often specialized needs. Parents of children with disabilities play an integral role in supporting, advocating and caring for their children with an approach focused on strengthening the relationship between parents and children through parent-child relationship therapy (CPRT). Disability response adaptations and recommendations are provided for CPRT, specifically for deaf and deaf children, children with physical disabilities, and children with autism spectrum disorders.

10. Article title: " Shopping for Schools : Parents of Students with Disabilities in the Education Marketplace in Stockholm".

The Swedish government has facilitated a shop that sells all the needs of children with special needs in Stockholm where parents of students with disabilities can buy to meet their daily needs.

The nature of the child is a gift from God Almighty to parents who are considered capable of providing comprehensive care and protection without discriminating against other family members, if the child is born with a disability, most of the parents experience vulnerability in the form of shame, rejection both in the short and long term therefore, the role of parents is needed through empowerment in daily care (Di Renzo *et al.*, 2021).

Empowerment of parents in order to be able to accept the condition of the child broadly requires a support system from other family members as well as support from the local community holistically to be able to accept the situation and achieve wellness. The realization of physical and spiritual well-being can create a balanced and orderly family structure in providing proper care, protection, and education for children with special needs (Schönenberger *et al.*, 2020).

## DISCUSSION

from several articles on empowering parents, it focuses on caring for children with special needs and being able to accept the presence of the child in the midst of their extended family.

Parent empowerment as a recursive process changes over time with increasing parental knowledge and technology, self-



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teachers as external institutions outside the family.

development efforts and the use of different knowledge in changing situations so that they can adapt to current conditions (Leung, Tsang and Dean, 2011).

Parents are also agents of participatory change through the use of methods in parenting, education involving teachers where schools can develop special systems for the needs of parents of children with special needs. Development of parents as agents of change in the lives of children with disabilities by facilitating conditions of empowerment in the school environment holistically.

The Swedish government has facilitated a shop that sells all the needs of children with special needs in Stockholm where parents of students with disabilities can buy to meet their daily needs whereas in Indonesia there are no special shops in the provision of daily needs for children with disabilities.

Several things that can be applied to support children with disabilities individually and the strengths they have in one family are the involvement of parents and other family members in meeting basic needs, care, education is comprehensive and holistic which is the main focus in making decisions, facilitating collaboration between family with health professionals and

## CONCLUSION

Caring for and caring for family members with physical disabilities can have an impact on daily life. Holism asserts that organisms always behave as a unified whole, not as a series of distinct parts or components. Soul and body are not two separate elements but part of one whole and what happens in one part will affect the other part.

Holistic view in personality, among others, normal personality is characterized by unity, integration, consistency and coherence (unity, integration, consistency, and coherence), organisms can be analyzed by distinguishing each part, but no part can be studied in isolation. The whole functions according to laws that are not contained in the parts, the organism has one powerful impulse, namely self-actualization. People struggle continuously (continuously) to realize their potential, the influence of the external environment on normal development is minimal so that the role of parents and families is needed in providing education, nurturing, fulfilling children's basic needs.

## ACKNOWLEDGEMENT

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### The Effect of Rosella Tea Consumption on the Increase of HB Levels in Adolescent Girls

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### ABSTRACT

Adolescence is a period of transition from childhood to adulthood, usually occurring between the ages of 10 and 18 years. The problem that often occurs at this age is anemia, this can be due to the need for iron in adolescence to grow and develop. In addition, bleeding during menstruation is one of the contributing factors. Objective: This study aims to examine the effectiveness of the application of non-pharmacological therapy in the form of rosella tea to increase hemoglobin levels in cases of anemia experienced by adolescent girls.

Methods: The research method used is correlational analysis. This type of research design uses a true experimental pretest posttest with a control group.

Results: The results of the research conducted at SMK Perwira Kendal showed that non-pharmacological therapy in the form of rosella tea had the benefit of increasing HB levels in cases of anemia experienced by adolescent girls.

Conclusion: Non-pharmacological therapy in the form of drinking rosella tea is very effective in increasing HB levels in cases of anemia experienced by adolescent girls. This step will be effective if taken in a row for 7 to 10 days.

Keywords: HB level increase, young women, anemia

### INTRODUCTION

Teenagers (10-19) years are at the maturity of the reproductive organs.

Marked by menstruation for young women. In adolescent girls, menstruation is an event of periodic discharge of blood, mucus, and epithelial cells from the uterus.



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Menstruation is part of the menstrual cycle, an important component in the female reproductive cycle (Reeder et al, 2013).

Menstruation in young women is different from one another, depending on the immune system of each young woman. It is not uncommon for young women to experience anemia. Anemia is a health problem throughout the world, especially developing countries where an estimated 30% of the world's population suffers from anemia. Anemia in adolescent girls is still quite high, according to the World Health Organization (WHO) (2013), World prevalence of anemia ranges from 40-88%. The number of adolescent population (10-19 years) in Indonesia is 26.2% consisting of 50.9% male and 49.1% female (Kemenkes RI, 2013).

Anemia is a condition where the component in the blood, namely hemoglobin (Hb) in the blood, is less than normal levels. Adolescent girls have a ten times greater risk of suffering from anemia because young women experience menstruation every month and are in a period of growth so they need more iron intake. Determination of anemia can also be done by measuring the hematocrit (Ht) which on average is equivalent to three times the hemoglobin level. The limit of Hb levels for adolescent girls to diagnose

anemia is if the Hb level is less than 12 g/dl (Tawoto, et al, 2010).

Anemia in adolescents can cause delays in physical growth, behavioral and emotional disorders. This can affect the process of growth and development of brain cells so that it can cause decreased body resistance, easily weak and hungry, impaired learning concentration, decreased learning achievement and can result in low work productivity (Sayogo, 2006).

In general, the high prevalence of anemia is caused by several factors including low intake of iron and other nutrients such as vitamins A, C, folate, riboflavin and B12 to meet daily iron needs, this can be done by consuming animal food sources as a good source of iron, easily absorbed, consuming plant food sources which are high sources of iron but difficult to absorb (Briawan, 2014).

In a study conducted by FK Unand students who examined the relationship between iron consumption and the incidence of anemia in students of SMP Negeri 27 Padang. This study used a cross-sectional design from February to July 2015. The number of samples was 102 students who were selected by systematic random sampling. Iron consumption was measured by a food recall questionnaire 2 x 24 hours and hemoglobin levels were determined using a digital hemometer



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method. Statistical analysis used Pearson correlation test. The results of the study show that the strength of the relationship is very weak. Positive pattern, meaning that the higher the consumption of iron, the higher the hemoglobin level. There is no significant relationship between iron consumption and the incidence of anemia in SMP Negeri 27 Padang students.

The results of research on factors related to the incidence of anemia in adolescent girls at SMP Negeri 8 Percut Sei Tuan, Deli Serdang Regency in 2018 showed that there was a significant relationship with the incidence of anemia in adolescent girls at SMP Negeri 8 Percut Sei Tuan was knowledge ( $p=0.037$ ), parental income ( $p=0.017$ ), nutritional status ( $p=0.009$ ) and menstruation ( $p=0.000$ ). While the variable that is not significantly related is the level of parental education ( $p = 0.339$ ). (Harahap, 2018)

To prevent anemia, adolescent girls need to consume Vitamin C to increase iron absorption in the form of non-heme, the increase can reach four times through the process of converting from ferric to ferrous in the small intestine, making it easy to absorb, it also inhibits the formation of hemosiderin which is difficult to mobilize to liberate iron. if needed. One way to overcome this is by consuming

foods that contain vitamin C to help absorption. Roselle flower (*Hibiscus Sabdarifa*) is a traditional herbal plant that has many health benefits. Flowers originating from India and Africa have many advantages, namely they contain calcium, vitamins C, D, B1, B2, magnesium, omega-3, beta-carotene, and 18 essential amino acids for the body, including lysine and agrine. The content of vitamin C in roselle flowers is 3 times that of black grapes, 9 times that of citrus oranges and 10 times that of star fruit (Nur Kholis, 2011).

The results of a preliminary survey conducted by researchers in July 2020 of 10 female students found 3 (30%) had anemia. Based on these problems, an alternative solution is needed to prevent the emergence of anemia that occurs in adolescent girls. Processing rosella flower plants can be an alternative solution. Based on the above data , the researcher is interested in conducting research on the effect of giving roselle gum and fe tablets with an increase in HB levels in adolescent girls .

## MATERIALS AND METHOD

The research method is correlational analysis using true experimental pretest posttest with the control group. The research was carried



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out at the Kendal Perwira Vocational School on October 6, 2021 at 08.00 WIB with a population of 30 Kendal Perwira Vocational School students and the samples were 11th and 12th grade students who had a history of anemia. Measurement of data using Hb test results for students in grades 11 and 12 who have a history of anemia with the research method used, namely correlational analysis.

### RESULTS

Based on the research conducted, the findings obtained are evidence that rosella tea can increase Hb levels in adolescents who have a history of anemia. This happens because the rosella flower contains fresh petals in 100 g including; water 9.2 g, protein 1.145 g, fat 2.61 g, fiber 12.0 g, Ash 6.90 g, Calcium 1.263 mg, phosphorus 273.2 mg, iron 8.98 mg, carotene 0.029 mg, thiamine 0.117 mg, riboflavin 0.277 mg, niacin 3.765 mg, ascorbic acid 6.7 mg. various content contained in the rosella plant is beneficial for health, among others; vitamin D, vitamin C, vitamin A, vitamins B1 & B2, omega 3, calcium, protein, carbohydrates, fiber, minerals, and calories. Rosella flowers can improve the fitness of people with anemia. Dr. drh Bayyinatul Muchtaromah MSi "Rosela contains compounds that are beneficial for the body, especially for people with anemia,

such as iron, vitamin C, folic acid, and some essential amino acids. To prevent anemia, one of them can be with rosella flowers which have many benefits for our bodies. From the results of research in the technical chemistry laboratory, it is known that 100 grams of rosella flowers contain chemical substances which include 49 calories, 84.5% H2O, 1.9 grams protein, 0.1 grams fats, 12.3 grams carbohydrates, 1.2 grams fiber, 0 calcium . , 0172 gr, phosphorus 0.57, iron 0.029 gr, b-carotene 3 gr, ascorbic acid 0.14 gr. (Adapted from James A.duke, 1983, Hnbook of energy crops. Unpublish).

Roselle plants have enormous benefits in maintaining a healthy body. Flowers originating from India and Africa have many advantages, namely they contain calcium, vitamins C, D, B1, B2, magnesium, omega-3, beta-carotene, and 18 essential amino acids for the body, including lysine and agrine. The content of vitamin C in roselle flowers is 3 times that of black grapes, 9 times that of citrus oranges and 10 times that of star fruit (Nur Kholis, 2011).

The study was conducted by taking samples of Hb from 11th grade and 12th grade students of Kendal Vocational High School. Then after getting the data, the student was given rosella tea products to



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drink for 7 days. After 7 days, we took HB samples from the female students who had consumed the rosella tea. The results of his research are

### CONCLUSION

Based on the results of the analysis and discussion of research that has been carried out regarding the effect of rosella flower tea on the hemoglobin levels of female students of Perwari Vocational School in grades 11 and 12, it was concluded that there was an increase in hemoglobin in adolescents who consumed rosella flower tea with each student brewing and drinking it for 7 consecutive days. - come along. Consistency is needed in consuming this non-pharmacological therapy, meaning that adolescents must also regularly and regularly consume this therapy for the desired result, namely an increase in hemoglobin levels in the blood.

9.	T	18	13,1	12,8
10.	E	17	13,5	12,4
11.	K	18	14,8	14,7
12.	O	17	14,8	14,6
13.	N	17	14,0	14,5
14.	S	16	13,2	13,9
15.	N	17	9,3	11,4
16.	E	16	12,6	13,0
17.	N	16	10	10,8
18.	T	16	10,3	11,7
19.	D	17	9,2	10,7
20.	M	16	13,2	14,2
21.	L	16	15,0	14,6
22.	I	17	12,9	10,9
23.	I	17	9,0	9,6
24.	A	17	7,3	17,7
25.	F	17	11,6	12,0
26.	I	17	13,2	13,8

No.	Name	Age	Result HB 1	Result HB 2
1.	N	17	14,3	13,9
2.	S	19	14,3	14,7
3.	M	17	6,4	14,3
4.	A	17	15,1	14,8
5.	A	16	14,4	12,3
6.	S	17	15,5	15,8
7.	D	17	13,5	14,5
8.	J	18	11,9	11,5

From the table it is evident that rosella tea has the benefit of increasing hb levels in adolescents who have a history of anemia.

### CONFESION

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### An Overview of Anxiety Level in Women Over 45 Years of Age with Non-communicable Disease Hypertension and Diabetes Mellitus During the COVID-19 Pandemic

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#### ABSTRACT

**Background:** Patients with Non-Communicable Diseases (NCDs) Hypertension and Diabetes Mellitus who are more than 45 years old are vulnerable group and comorbid with COVID-19. The increasing number of deaths and COVID-19 infections in people with comorbidities causes psychological stress like anxiety. Women are the group most psychologically affected during the COVID-19 pandemic. This study aims to determine the level of anxiety of women aged over 45 years who have a history of Hypertension and/or Diabetes Mellitus during the COVID-19 pandemic in the 1<sup>st</sup> hamlet, Bandengan Village.

**Methods:** The type of research used is quantitative research with a cross sectional approach. The research sample are 21 people with the determination of the sample using purposive sampling technique. Data collection using google forms with the ZSAR-S (Zung Self Anxiety Rating-Scale) questionnaire. **Results:** The results showed that the level of anxiety in the normal/non-anxious category was 8 people (38.1%), 10 people had mild anxiety (47.6%), moderate anxiety was 3 people (14.3%) and there were no participants with severe anxiety.

**Conclusion:** Participants experienced anxiety at various levels. The major level anxiety of participants is mild anxiety. Identification of factors that influence differences in anxiety levels should be studied more deeply.

Keyword : Anxiety; NCDs; Hypertension; Diabetes Mellitus; COVID-19.

#### INTRODUCTION

The whole world is dealing head-on with a double burden of disease. The prevalence of communicable disease (CDs) and non-communicable diseases (NCDs) is a concern. NCDs accounts for at least 70% of deaths in the world [1][2].

Meanwhile, the prevalence of infectious diseases got worse after the emergence of the COVID-19 virus. COVID-19 is a burden of disease that has a direct impact on NCDs [1]. According to the Indonesian Ministry of Health in 2020, people with risk factors and people with NCDs are a



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vulnerable group and comorbid COVID-19 [3]

Patients with NCDs are often found in old age. The study, which was conducted at the COVID-19 Inpatient Installation of Bhakti Dharma Husada Hospital, Surabaya Indonesia, observed patients who had comorbidities on average more than 45 years old [4]. In fact, patients aged 65 years and over with comorbidities and infected with COVID-19 have an increased rate of admission to the Intensive Care Unit (ICU) and cause of death [5]. NCDs of hypertension and diabetes mellitus are comorbid types whose number of sufferers continues to increase [3][5] and have a high risk for respiratory infections and a clear relationship with the severity of COVID-19 [6]

The prevalence of the population with hypertension in Indonesia according to the results of survey in 2018 is 34.11%. The prevalence of hypertension in women (36.85%) is higher than men (31.34%) and prevalence will also increase with increasing age [7]. In the Central Java Province, based on the results of the data recapitulation of new NCDs cases, the total number of NCDs cases reported in 2019 reached more than 3 million cases. Hypertension occupies the largest proportion of all reported NCDs, which is 68.6% and followed by Diabetes Mellitus

in second place at 13.4%. The highest proportion of these two diseases makes them be top priority for controlling NCDs in Central Java. If hypertension and diabetes mellitus are not managed properly, it will cause advanced PTM such as heart, stroke and kidney failure [8].

In the case of infectious diseases, there has been an increase, especially in cases of COVID-19. The very rapid increase in COVID-19 patients worldwide is causing public concern [9]. The increasing number of deaths and COVID-19 infections in patients with comorbidities causes many patients to experience physical problems and psychological stress [10]. Psychological pressure that occurs can be seen from the symptoms found, one of which is anxiety [11]. Anxiety can become overwhelming due to the psychological impact of the COVID-19 pandemic [12]. Women are the group most psychologically affected during the COVID-19 pandemic [13]. Women are more prone to mental health disorders. Anxiety in women is higher during the COVID pandemic, adding to the burden of their previously diverse lives [14].

Currently, there are no studies that measure anxiety in women with NCDs hypertension and diabetes mellitus during the COVID-19 pandemic, especially with the average age range of NCDs sufferers



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above 45 years. This study aims to determine the level of anxiety who felt by women aged over 45 years who have a history of NCDs hypertension and/or diabetes mellitus during the COVID-19 pandemic.

### MATERIALS AND METHOD

The type of research used is quantitative research with a cross sectional approach. This research was conducted in August 2021 in the 1st hamlet, Bandengan Village, Kendal District, Kendal Regency. The sample in this study is 21 people, where the determination of the sample used a purposive sampling technique with inclusion criteria, women aged more than 45 years and had hypertension and/or

diabetes mellitus. The exclusion criteria in the study were unwillingness to be a participant. Data collection by using a questionnaire via google form. The instrument used is the ZSAR-S (Zung Self Anxiety Rating-Scale) questionnaire as an anxiety assessment form which designed by William WK Zung. Anxiety levels were categorized into normal/not anxious (score 20-44); mild anxiety (score 45-59); moderate anxiety (score 60-74); and severe anxiety (score 75-80). Data analysis in this study was carried out univariately using a frequency distribution table. This research has used informed consent as the basis for research ethics.

### RESULTS

**Table 1.** Frequency Distribution of Participants Based on NCDs History (n=21)

Variable	"LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC"		%
Diabetes mellitus	3		14.3
Hypertension	16		76.2
Diabetes Mellitus and Hypertension	2		9.5

**Table 2.** Frequency Distribution of Participants Based on Anxiety Level (n=21)

Anxiety Level	f	%	Mean	Median	Mode	SD	Min-Max
Normal/Not Anxious	8	38.1					
Mild Anxiety	10	47.6					
Moderate Anxiety	3	14.3	47	46	45	8.04984	29-61
Severe Anxiety	0	0.0					



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**Table 3.** Frequency Distribution of Participants Item Responses (n=21)

Response Item	f (%)			
	Never	Sometimes	Often	Always
Feeling more restless or nervous and anxious than usual.	0 (0%)	12 (57.1%)	7 (33.3%)	2 (9.5%)
Feeling scared for no apparent reason.	2 (9.5%)	11 (52.4%)	7 (33.3%)	1 (4.8%)
Feel the body fall apart or crumble.	6 (28.6%)	15 (71.4%)	0 (0%)	0 (0%)
Easy to get angry, offended and panic	0 (0%)	6 (28.6%)	10 (47.6%)	5 (23.8%)
Feeling difficult to do everything or feel something bad will happen.	0 (0%)	9 (42.9%)	12 (57.1%)	0 (0%)
Both hands and feet are shaking.	5 (23.8%)	7 (33.3%)	9 (42.9%)	0 (0%)
Feel disturbed by headache, neck pain or pain muscle.	1 (4.8%)	2 (9.5%)	10 (47.6%)	8 (38.1%)
Feeling weak and tired easily.	0 (0%)	7 (33.3%)	12 (57.1%)	2 (9.5%)
Can't rest or sit quietly	1 (4.8%)	17 (81%)	3 (14.3%)	0 (0%)
Feel the heart beating loudly and fast.	1 (4.8%)	16 (76.25)	4 (19%)	0 (0%)
Feeling dizzy.	0 (0%)	5 (23.8%)	12 (57.1%)	4 (19%)
Fainting or feeling like fainting.	17 (81%)	4 (19%)	0 (0%)	0 (0%)
Shortness of breath.	17 (81%)	3 (14.3%)	1 (4.8%)	0 (0%)
Feeling stiff or numb and tingling in the fingers.	2 (9.5%)	7 (33.3%)	12 (57.1%)	0 (0%)
Feeling sick on the stomach or indigestion	1 (4.8%)	9 (42.9%)	7 (33.3%)	4 (19%)
Urinating more than usual.	0 (0%)	14 (66.7%)	5 (23.8%)	2 (9.5%)
Feeling cold hands and wet with sweat.	1 (4.8%)	5 (23.8%)	10 (47.6%)	5 (23.8%)
Face feels hot and red.	5 (23.8%)	10 (47.6%)	5 (23.8%)	1 (4.8%)
Hard to sleep and can't get a good night's rest.	1 (4.8%)	10 (47.6%)	10 (47.6%)	0 (0%)
Having bad dreams.	5 (23.8%)	9 (42.9%)	6 (28.6%)	1 (4.8%)

Based on table 1, the history of NCDs showed that the participants with hypertension were 16 people (76.2%),

diabetes mellitus 3 people (14.3%) and 2 participants (9.5%) with hypertension and diabetes mellitus.



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Based on table 2 the results of the univariate analysis based on the characteristics of anxiety level show that the anxiety levels of participants with hypertension and/or diabetes mellitus

Based on table 3, there are 8 people always feeling disturbed by headache, neck pain or pain muscle; 5 people always feeling easy to get angry, offended and panic; 5 people always feeling cold hands and wet with sweat; 4 people always feeling dizzy; 4 people always feeling sick on the stomach or indigestion; 2 persons always feeling more restless or nervous and anxious than usual; 2 persons always feeling weak and tired easily; 2 persons always urinating more than usual; 1 person always feeling scared for no apparent reason; 1 person always feel her face hot and red; and 1 person always having bad dreams.

### DISCUSSION

The research data in table 1 shows the results that most of the participants had a history of hypertension as 16 people (76.2%). While participants with diabetes were 3 people (14.3%). In patients with diabetes, the prevalence of symptoms of depression and anxiety is about 2-4 times greater than the general population [16]. In addition, there were 2 hypertension patients who also had diabetes mellitus (9.5%). This is supported by the statement

during the COVID-19 pandemic were normal/not anxious 8 people (38.1%), mild anxiety 10 people (47.6%), moderate anxiety 3 people (14.3%) and severe anxiety (0%).

that hypertension patients are more likely to have diabetes mellitus [12].

The research data in table 2 based on the level of anxiety shows that most of the anxiety levels of participants with NCDs of hypertension and/or diabetes mellitus during the COVID-19 pandemic were included in the category of mild anxiety with 10 people (47.6%). A similar study was conducted on the elderly who suffered from complicated diseases, most (70%) of the respondents experienced mild anxiety due to the COVID-19 pandemic [17]. Anxiety symptoms may be mild at first, but there is a possible risk that anxiety symptoms will suddenly worsen over several days [10]. So that, mild anxiety at times can become moderate anxiety and even severe anxiety

Everyone experiences about levels of anxiety during the COVID-19 pandemic are varied. However, the level of anxiety experienced varies depending on how they adjust and deal with the anxiety that occurs [18]. The results of an anxiety survey during the COVID-19 pandemic in America showed that 48.1% of participants were afraid of the consequences for their personal health and



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17.1% of participants stated that they had excessive worries about COVID-19 [19].

In this study, there are participants who never feel some items complaints about anxiety, but there are also participants who always feel complaints items of anxiety during the COVID-19 pandemic. Based on table 3, there are 8 people always feeling disturbed by headache, neck pain or pain muscle. Anxiety can cause mental or emotional conflict in triggering pain and muscle contractions in the face, jaw, scalp, and neck so that it can cause headaches and pain [15]. Beside that, this study also showed 5 people who always feeling easy to get angry, offended and panic; 5 people always feeling cold hands and wet with sweat; 4 people always feeling dizzy; 4 people always feeling sick on the stomach or indigestion; 2 persons always feeling more restless or nervous and anxious than usual; 2 persons always feeling weak and tired easily; 2 persons always urinating more than usual; 1 person always feeling scared for no apparent reason; 1 person always feel her face hot and red; and 1 person always having bad dreams.

Participants in this study were devoted to women. Women are the group most psychologically affected by the COVID-19 pandemic [13]. The chances of developing anxiety into depression are 1.7 times higher in women than men with

chronic medical illnesses during the COVID-19 pandemic [20]. There was an increase in the percentage of women experiencing anxiety when compared to research conducted before the COVID-19 pandemic. The results of a survey in America, 25.1% of women stated that the anxiety that they felt would cause limitations in daily life [19]. That matter adding an extra burden to the already diverse lives of women before the advent of COVID-19 [14].

Participants in this study also used women aged over 45 years as the average age in NCDs or comorbid COVID-19 was found [4]. Older age and the presence of hypertension and diabetes mellitus increase morbidity and mortality in COVID-19 patients [21], so it can cause psychological stress in the form of anxiety. Having a history of NCDs like hypertension and/or diabetes mellitus can cause anxiety in a person from mild to severe levels. Moreover, during the current COVID-19 pandemic, anxiety is very common and tends to appear in comorbidities among people with COVID-19 [22]. Therefore, an effort is needed to overcome this anxiety. One of the efforts that can be done is religious coping behaviors, such as praying. Many research studies have confirmed the effectiveness of religious coping behaviors in helping to manage feelings of anxiety, by submitting



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completely to God's will, looking positively at suffering and controlling felt fear [23].

### CONCLUSION

Based on research that has been conducted on women aged over 45 years with NCDs of hypertension and/or diabetes mellitus in 1st hamlet, Bandengan Village in 2021, it was found that the participants have history of hypertension with 16 people (76.2%), diabetes mellitus with 3 people (14.3%) and history of both (hypertension with diabetes mellitus) is 2 persons (9.5%). The anxiety level of participants with hypertension and/or diabetes mellitus during the COVID-19 pandemic was included in the mild anxiety category with 10 people (47.6%). Participants experienced anxiety at various levels. Identification of factors that influence differences in anxiety levels should be studied more deeply. There are research limitation in this study such as the few numbers of samples, the sample is still heterogenous and the sampling has not been able to suppress the bias factor.

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### Determinant Factors That Has Associated with Incidence Of Postpartum Blues During The COVID-19 Pandemic

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### ABSTRACT

**Background:** Childbirth is an important event that a mother looks forward to. After giving birth, the mother will experience major changes, namely role changes and psychological changes. If the postpartum mother cannot adjust to these changes, she will experience disturbances, one of which is the postpartum blues. The purpose of this study was to determine the relationship between maternal characteristics and the incidence of postpartum blues. **Methods:** This type of research is analytic with a cross-sectional design. This research was conducted in Demak Regency with a sample of 24 respondents postpartum mother, using purposive sampling technique. Analysis using Chi-square. **Results:** The results of this study indicate that there is a relationship between maternal characteristics and the incidence of postpartum blues, namely there is a relationship between age and postpartum blues ( $p$ -value = 0.033), there is a parity relationship with postpartum blues ( $p$ -value = 0.002), there is a relationship between education and postpartum blues ( $p$ -value = 0.011), there is a relationship between work and postpartum blues ( $p$ -value = 0.005), there is a relationship between family support and postpartum blues ( $p$ -value = 0.017). **Conclusion:** There is an influence between postpartum events on age, parity, education, work, and family support. The recommendation from this research is the handling of postpartum blues.

Keywords : postpartum blues; age; parity; education; occupation

### INTRODUCTION

Childbirth is an important event that a mother looks forward to. After giving birth, the mother will experience major changes, namely changes in roles and psychological [1]. These changes can cause problems because these changes of course require adjustments. These

problems that can be experienced by postpartum mothers are postpartum blues, postpartum depression, and postpartum psychosis [2]. Women who do not manage to adapt to physiological, biological, and physiological changes including changes in the role of pregnant women will tend to experience emotional problems after childbirth. During this COVID-19



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pandemic, stress on postpartum mothers increases. The COVID-19 pandemic has disrupted health services throughout the world, resulting in strict restrictions on health services. Mother's fear during the COVID-19 pandemic made her reluctant to go to the hospital or other health services, because before getting action she had to do a rapid test. So that it has an impact on unpleasant experiences, spending time and money, poor communication with health workers, and the mother's struggle to adapt to the COVID-19 pandemic, mothers also experience numbness and lack of sleep which can increase stress [3].

Postpartum blues is a condition of mild depression that is common and occurs after giving birth until the fourteenth day, this condition will recover spontaneously but if the postpartum blues symptoms persist or become worse, it is necessary to watch out for more severe depression to postpartum psychosis [4]. Postpartum blues can interfere with baby care, interfere with child growth, and the risk of postpartum depression. The highest peak of postpartum blues occurs at 3-15 days[5]. Postpartum blues is a mental health problem experienced by almost all mothers because it can affect the development of children in early life and determine the future of children[6].

The prevalence of postpartum blues is quite high. Based on data from the WHO (World Health Organization) in 2018, the prevalence of postpartum blues reached 3%-8%. The prevalence of

postpartum blues in various regions of the world reaches 15%. In developing countries, the prevalence of postpartum blues reaches 1.7% to 82.1%. Whereas for developed countries the prevalence of postpartum blues reaches 5.2% to 74.0%<sup>6</sup>. Based on the literature study it was found that the prevalence of postpartum blues reached 13.7% - 76.0% [7]. Research in Sri Lanka the prevalence of postpartum blues reached 15.5 % [8]. Research conducted by Manurung and Setyawati found that the prevalence of postpartum blues in Indonesia reached 37% to 67% [9]. Based on research conducted in Klaten, Central Java, the prevalence of postpartum blues reached 36%[10]. Research conducted at the Trucuk Health Center in Central Java, the prevalence of postpartum blues reached 43.7% [11].

50% - 80% of postpartum mothers can experience postpartum blues after giving birth. 10-15% of them do not get treatment so they will tend to develop postpartum depression to postpartum psychosis. The postpartum blues is a problem that must be addressed. Characterized by excessive emotion, sadness, mild emotional disturbance, dysphoria, or restlessness in postpartum mothers [12].

Previous research states that there is a relationship between age, education, occupation, income[13]. Pregnancy and childbirth in adolescents or at an early age can also be caused by the low level of education in women who drop out of school which is also one of the supporting



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factors for the occurrence of postpartum blues. Based on previous research, social support will affect the incidence of postpartum blues, this is because social support from family, friends, and health workers is very influential on postpartum blues [14].

The purpose of this study was to determine the factors that influence the incidence of postpartum blues during the COVID-19 pandemic, this is because the postpartum period affects the health of mothers and children.

### MATERIALS AND METHOD

This type of research is an analytic study with a cross-sectional design. The sampling technique to determine the sample to be used is total sampling. The sample in this study was determined by non-probability sampling method, the sample in this study were all postpartum

mothers in Demak Regency, a total of 24 postpartum mothers. The inclusion criteria in this study were postpartum mothers on days 1-14, no congenital disease, mothers who did not take anti-depressant drugs. Exclusion criteria in this study were postpartum mothers who took anti-depressant drugs, and mothers who were not willing. Respondents in this study were mothers who experienced postpartum blues, days 1 to 14. Measurement of postpartum blues used the Edinburgh Postnatal Depression Scale (EPDS) questionnaire. This questionnaire has a sensitivity of 86%, specificity of 78%, while the predictive value reaches 73%, the alpha coefficient reaches 0.87%. As for the measurement of other characteristics using the observation sheet. Pengolahan data dilakukan dalam tahap-tahap editing, coding, processing, cleaning dan tabulating. Data analysis was done by univariate, bivariate with chi square test.

### RESULTS

**Table 1.** The Incidence Of Postpartum Blues

<i>Postpartum Blues</i>	<b>Frequency</b>	<b>%</b>
Ya	18	75
Tidak	6	25
<b>Total</b>	<b>24</b>	<b>100</b>

Based on table 1, there were 18 respondents (75%) postpartum incidence

rates and 6 respondents 25% who did not experience postpartum blues.



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**Table 2** Distribution Of Respondents Frequency By Age, Parity, Education, Occupation, And Postpartum Blues Status

Variable	Postpartum Blues						P
	Yes		No		Total	Value	
	n	%	n	%	n	%	
<b>Age</b>							
Age > 20 years	6	25	5	21	11	46	0.033
Age < 20 years	12	50	1	4	13	54	
<b>Parity</b>							
Primipara	10	42	4	17	14	58	0.002
Multipara	8	33	2	8	10	42	
<b>Education</b>							
Low	3	13	5	21	8	33	0.011
Medium	13	54	1	4	14	58	
Height	2	8	0	0	2	8	
<b>Work</b>							
Work	12	50	6	25	18	75	0.005
Not Work	6	25	0	0	6	25	
<b>Family support</b>							
Support	6	25	5	21	11	46	0.017
No	12	50	1	4	13	54	

Based on table 2, the results of the univariate analysis showed that the frequency distribution of each variable was 13 respondents aged < 20 years 54% had given birth, while age > 20 years were 11 respondents 46%. In the age variable, a p-value of 0.033 was obtained, which means that there is a relationship between age and the incidence of postpartum blues. While at parity 17 respondents with 79% primipara and 21% multipara. The parity variable obtained p-value <0.05, which is 0.002, which means that there is a relationship between parity and the

incidence of postpartum blues. In the frequency distribution of education variables, as many as 14 respondents with secondary education as much as 58.3%, so it can be said that almost the majority of secondary education obtained p-value <0.005, which is 0.011, which means that there is a relationship between education and the incidence of postpartum blues. In the work variable frequency distribution, there are 18 respondents with working mothers as much as 75%. obtained p-value <0.05, which is 0.005, which means that there is a relationship between work and



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the incidence of postpartum blues. In the family support variable, 13 respondents were not supported by their families as much as 54%. In the family support variable, the p-value was  $<0.005$ , which is 0.017, which means that there is a relationship between family support and the incidence of postpartum blues.

### DISCUSSION

#### 1. Age Relationship with Post partum Blues

The results of this study that there are still 12 postpartum mothers found at an early age, it is known that 75% of respondents experience postpartum blues. Based on the chi-square test, it was found that the  $p=0.033$ . At an early age, the risk of physical and psychological disorders during pregnancy or childbirth is very large. This is because physically the female organs when they are young, are developing and not functioning perfectly, so they are not ready to be fertilized, especially until they are pregnant, and can even increase high blood pressure. Likewise, the delivery process will be disrupted because the anatomy of the pelvic cavity is not large enough for a baby's birth canal. In addition to physical health problems, a woman who is pregnant at a young age is also at a higher risk of having a psychological disorder than a woman who is pregnant and married at a mature age. This relates to readiness to face a new role as a mother and caring for her

baby. Meanwhile, in terms of the health of the baby, babies are more at risk of being born in conditions of low weight and at risk of short stature, besides that, it is not uncommon to also inhibit the development of the brain, heart, and blood vessels [15].

This study is in line with research conducted by Paramasatya, in 2018 it was found that there was a relationship between postpartum maternal age and the incidence of postpartum blues, this can be seen from the p-value  $0.047 < 0.05$  [16]. This is also in line with research Previously, there was a significant relationship between maternal age and the incidence of postpartum blues in Mijen Village, Kaliwungu Sub-district, Kudus Regency in 2018 with a p-value = 0.021 [17].

Age in labor is often associated with problems, an age that is too young to get pregnant will trigger risks for mothers and children in terms of physical and psychological both during pregnancy and childbirth, so that an early age can affect the postpartum blues. This is also because at an earlier age (pregnancy in adolescents) or later, it is believed that it will increase biomedical risk, which results in non-optimal behavior patterns, both in mothers who give birth and babies or children who are born and raised [18].

#### 2. The relationship between parity and the incidence of postpartum blues

Parity affects the occurrence of postpartum blues, seen from 42% of



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postpartum mothers who are primiparous or have given birth for the first time, with a p-value  $<0.05$ , which is 0.002. This study is in line with research conducted by (Tarisa,2020) that parity can affect the occurrence of postpartum blues [19]. This study is also in line with research conducted by [20] that parity can affect the incidence of postpartum blues, seen from the p-value  $> 0.05$ , which is 0.011. The incidence of postpartum blues mostly occurs in primiparous mothers. Primiparous women have just entered their role as mothers, but it is possible for mothers who have given birth, namely if the mother has a previous history of postpartum blues [21]. Mothers who have given birth previously have experience in caring for their babies compared to mothers who have given birth for the first time, primiparas will tend to have mild mood disorders. The first experience of dealing with the process of childbirth and caring for children often gives rise to various attitudes in primiparous mothers. Mothers are in the process of adaptation and inexperienced in caring for children, so they feel they are facing their problems. Therefore, primiparous mothers need people who accompany them during the postpartum period, so that the postpartum period will be passed well [22].

### 3. Relationship of Mother's Education with Postpartum blues

Education can affect the incidence of postpartum blues, this can be seen

from the p-value  $<0.05$ , which is 0.011, so it can be concluded that education can affect the incidence of postpartum blues. This is in line with previous research that education can affect the incidence of postpartum blues, seen from the p-value 0.0049 [23]. Education is a process of changing the attitudes and behavior of a person or group of people in an effort to mature humans through teaching and training efforts. Education has an indirect effect on the incidence of postpartum blues because education affects a person's mindset. A person's mindset will affect coping with stress. In addition, higher education allows more experience and insight compared to someone with low education so that they can better manage the problems they face and avoid psychological problems, one of which is the postpartum blues. Education can affect the occurrence of postpartum blues. This one's education will affect one's mindset. Because in responding to the process during childbirth, low education often occurs postpartum blues [13].

### 4. Relationship between Mother's Work and Postpartum blues

Work can also affect the incidence of postpartum blues, seen from the p-value of 0.005. This study is in line with research conducted by [24] that work can affect the postpartum blues, seen from the p-value of 0.03. Mature career women in particular, find it very difficult to let go of their orderly attitude when caring for babies.



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They think they can handle it, but when the baby fusses with constant crying, irregular hunger, unclear schedule, and sleep deprivation, these women are generally more prone to the postpartum blues. Mothers who have higher education will face role conflicts and social pressures between demands as working mothers and housewives [23]. However, in this study, housewives experienced many postpartum blues, this was due to the lack of information on mothers and their new role as a mother.

### 5. Relationship between Mother's Family Support and Postpartum blues

Family support can affect the incidence of postpartum blues, seen from the p-value of 0.017. Based on the literature review in 2020, the factors that influence the postpartum blues, one of which is family support, this is because the mother after giving birth will experience changes so that support from her husband or family is needed [22]. Previous research stated that there was a relationship between the incidence of postpartum blues and family support, seen from the p-value of 0.010 [25]. This study is also in line with research conducted by Qonita in 2021 that family support can affect the postpartum blues as seen from the p-value of 0.00. Family support is very much needed, especially from the husband, because if the support is lacking then the chance for postpartum blues to occur is 29,777 times [26].

## CONCLUSION

The relationship between maternal characteristics and the incidence of postpartum blues is that there is a relationship between maternal characteristics and the incidence of postpartum blues :

1. Age can affect the occurrence of postpartum blues, with a p-value of 0.033
2. Parity can affect the occurrence of postpartum blues, with a p-value of 0.002
3. Education can affect the occurrence of postpartum blues, with a p-value of 0.011
4. Work can affect the occurrence of postpartum blues, with a p-value of 0.005
5. Family support can affect the occurrence of postpartum blues, with a p-value of 0.017

The results of this study are expected to provide information about the relationship between maternal characteristics and postpartum blues and can be used as supporting material to detect postpartum blues and preventive measures.

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### Descriptions of Maternity Mothers Wearing Aromatherapy Masks During The Early Stage Of Labor

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### ABSTRACT

**Background:** The Covid-19 pandemic is a concern for Indonesia, so the Indonesian Ministry of Health made a decree that maternity mothers should use masks while in the delivery room. The breathing of the birth mother becomes one of the important factors that support the labor process. Aromatherapy can provide a sense of relaxation. **Methods:** This study is a mixed-method (quantitative-qualitative) with a survey and phenomenological approach. The subjects were 15 maternity mothers. Data were collected by questionnaire and in-depth interviews. This study uses descriptive analysis. **Results:** 100% of maternity mothers know the policy of using masks while in the delivery room. 80% get the information from the media and midwives. 86.7% agreed, although 80% said it was uncomfortable using a mask in the delivery room. The average person can use a mask for an hour. The perception of 60% of maternity mothers can receive a mask if given aromatherapy. **Conclusion:** The policy of using masks during childbirth becomes important during the Covid-19 pandemic, but this causes complaints of discomfort such as tightness, so innovation such as the addition of aromatherapy to the mask is needed to make maternity mothers more comfortable while using masks.

Keywords: pandemic; covid-19; maternity; masks; labor

### INTRODUCTION

The COVID-19 pandemic has come to the attention of the world community since the outbreak was first discovered in the China city of Wuhan in last December 2019 and finally spread to more than 200 countries including Indonesia. Globally

based on data reported by the World Health Organization (WHO) until August 13, 2021, there were 205.338.159 positive confirmed cases including 4.333.094 deaths in it.[1] Indonesia is also one of the countries badly affected by COVID-19 where the death rate at the end of March 2020 reached 8.9%. Based on data from



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the Ministry of Health of the Republic of Indonesia until August 15, 2021, there were 3.854.354 positive confirmed cases and 117.588 of them died from COVID-19.[2]

The main key to control and prevention against COVID-19 is compliance in implementing 5M behavior, one of which is compliance with the use of masks. Maternity mothers are among the vulnerable groups at risk of being infected with COVID-19 due to physiological, psychological changes in the body and immune response mechanisms in the body. So based on the guidance of the Ministry of Health (2020) while in the delivery room, mothers still need to wear masks during the delivery process so that there is no COVID-19 infection.[3]

Childbirth is a process that is passed by women to increase offspring. Every woman wants a safe and comfortable delivery. According to data from the Semarang City Health Office as of January to September 2021, the number of deliveries was 12.279. Changes in the stomach that enlarge since the third trimester do not infrequently cause discomfort such as tightness in maternity mothers.[4] Purwati (2015) reports 60% of pregnant women complain of shortness of breath. A large stomach makes the mother's breathing space narrow.[5]

Based on the observation of researchers, It is known that the health facilities that are the place of research provide aromatherapy using diffusers to provide relaxation to maternity mothers during the labor process. Aromatherapy

exerts three effects on the body, namely the pharmacological effects of hormones and enzymes that can cause chemical changes in the body then psychological effects such as relaxation and sedative effects on the body, and physiological effects resulting from the brain's response to inhaling aromatherapy.[6] The inhaled aroma can suppress the activity of the sympathetic nervous system. Volatile compounds can enter the bloodstream through the nose or mucous lungs, or directly diffuse into the olfactory nerve and pass through the limbic system which can affect the sympathetic nervous system.[7]

So researchers tried to explore the perception of the mother how if the mask is given aromatherapy. The purpose of this study was to describe maternity mothers' perceptions of the policy of using masks while in the delivery room and how mothers' interests if masks contain aromatherapy.

### METHOD

The population in this study was maternity mothers in Semarang City. Participants in the study numbered 15 maternity mothers. Participant collection technique by accidental sampling. This study is mixed method quantitative-qualitative with a survey and phenomenological approach. Data were collected by questionnaire and in-depth interviews. This study uses a descriptive analysis design. The results of this study are explained descriptively.



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### RESULTS

There are 6 items to describe perceptions of maternity mothers regarding aromatherapy masks during labor

#### 1. Mother's Knowledge of The Policy of Wearing Masks in the delivery room during the Covid-19 pandemic

Based on the results of interviews that have been conducted on 15 maternity mothers, all know the policies set by the Indonesian Ministry of Health on the use of masks while in the delivery room during the Covid-19 pandemic.

#### 2. Source of Information

It is known that 80% (12 subjects) of maternity mothers said they knew the information through the news media and midwives in the delivery room. 20% (3 subjects) of maternity mothers knew the information about wearing masks through midwives in the delivery room. This shows that the Ministry of Health, health workers succeeded in providing education to the public through various media and efforts.

#### 3. Maternity Mother's Agreement

13,3% (2 subjects) of maternity mothers disagree with the policy of wearing masks while in the delivery room. The reason for these 2 maternity is because feel uncomfortable breathing. According to Mrs. A, when before entering the delivery room, the birth mother had done a swab test and negative Covid-19. No need to wear a mask anymore. However, in contrast to Mrs. A and Mrs. T who disagreed, 86,7% (13 subjects) of maternity

mothers agreed to use masks during labor because they realized the importance of using masks to prevent transmission of covid-19. Although 10 of them feel uncomfortable wearing masks during labor.

#### 4. The comfort of mothers wearing a mask during labor

There are 80% (12 subjects) of maternity mothers uncomfortable using masks during labor. The reason when wearing a mask feels tight but 20% (3 subjects) of maternity mothers can wear a mask during labor.

#### 5. Duration of Endurance Of Mother Using a mask

The average mother can use a mask for 1 hour. Maximum maternity mothers said that they can use it for more than 4 hours and at least 30 minutes.

#### 6. Mother's perception of the mask contains aromatherapy

Perception of the mother how if the mask is given aromatherapy. 60% (9 subjects) mothers said they wanted to try using a scented mask. The remaining 40% (6 subjects) said they didn't like it because they were worried about getting dizzy.

### DISCUSSION

#### 1. Mother's Knowledge of The Policy of Wearing Masks in the delivery room during the Covid-19 pandemic

Cases of the Covid-19 pandemic that entered Indonesia in March 2020 made the Ministry of Health create a health protocol to prevent transmission,



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everyone should use a mask when outside including maternity mothers and delivery companions must use masks during the labor process.[8]–[12]

Not only Indonesia but the same policy was also set in New York. On March 28, 2020, Governor Andrew Cuomo announced an executive order that New York hospitals were required to allow only one person to accompany a patient throughout their labor and delivery.[13] As recommended by the Centers for Disease Control and Prevention and the American College of Obstetricians and Gynecologists, this visitor should be afebrile and screened for symptoms before entry.[14]

All the mothers in the study claimed they are know about the policy of wearing masks while in the delivery room. Padila (2021) reports 4 out of 7 mothers know the obligation to use masks.[15]

### 2. Source of Information

Because the viral Covid-19 outbreak makes the public get a lot of information updates about covid-19, so it is not surprising that 80% of maternity mothers already know the policy of using masks during the labor process through the media and health workers. This is also the case in India, where 78% of the public knows information about covid-19 through social networking sites, and 81.3% on television.[16]

The Indonesian government seeks to increase the source and amount of information related to Covid-19 to

prevent the spread of the virus, namely by complying with health protocols such as wearing masks when outdoors, caring for sick people, washing hands with soap, social distancing, and reduce mobility. Knowledge related to Covid-19 is shared through the official website in various media such as social media, radio, television, posters, flyers, and billboards.[17]

### 3. Maternity Mother's Agreement

Although only 86,7% of maternity mothers agreed to use masks during labor because they realized the importance of using masks to prevent transmission of covid-19. However, they still should use masks while in the delivery room. This is because maternity mothers are a group at risk of contracting Covid-19 infection. Birth mothers have a depressed immune system, putting a higher risk of developing severe or critical illnesses associated with Covid-19, particularly pneumonia and respiratory failure. Preliminary data from a meta-analysis of 41 pregnant women with Covid-19 suggest that they may be at higher risk of miscarriage, premature birth, preeclampsia, and cesarean delivery, especially if they are hospitalized for pneumonia.[18], [19] Avoid this, the policy to use the mask is appropriate.

Based on interviews reports by Padila (2021) it is known that 100% (7 subjects) feel anxious and afraid of infections Covid-19 and then only 1 person who can accompany in the delivery room.[15]



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### 4. The comfort of mothers wearing a mask during labor

Based on the results of a survey conducted, 80% of mothers are not comfortable using masks while in the delivery room. That's because it's hard to breathe. Then other complaints such as feeling hot. It's normal because the large stomach makes a heavy body load in front so that the mother's breathing space becomes narrow. The pain and anxiety of the maternity mother during the labor process further add to the uncomfortable of the maternity mother.[5]

Not only that, the complaints mentioned have been predicted by WHO. The use of the mask will cause the possibility of headaches and difficulty breathing due to the type of mask used, the possibility of experiencing lesions on the skin of the face, irritant dermatitis, or worsening acne if the mask is often used for a long time and difficulty communicating clearly and the possibility of uncomfortable.[20]

A woman's delivery experience is often shared with support people, including her partner, other family members, and possibly a doula.[21] Maternal comfort is something that supports the labor process, but in this case pandemic, covid-19 is an emergency that becomes a joint priority. The primary responsibility of health care professionals shifts from maximizing the best interests of

individual patients to prioritizing the health of the community.[14]

According to current evidence, the spread of the Covid-19 virus occurs mainly between people through droplets. Droplet transmission occurs when in close contact (within 1 meter) with an infected person and exposed to respiratory tract droplets that may be infected, for example through coughing, sneezing, or very close contact with the person so that infectious agents enter through points such as the mouth, nose, or conjunctiva of the eye. Spread can also occur through fomite in the immediate environment of an infected person, therefore, transmission is feared to be transmitted from the surface of the immediate environment or objects used for or by an infected person (e.g., a stethoscope or thermometer). So that in the delivery room it is necessary to use a mask even though it causes a sense of insecurity in the birthing mother[17]

### 5. Duration of Endurance Of Mother Using a mask

Everyone has a different ability to wear a mask. The average mother can use a mask for 1 hour. Maximum maternity mothers said that they can use it for more than 4 hours and at least 30 minutes. Some people are unable to use masks for a long time because they are not used to feeling sultry and claustrophobic.

A good mask is if the mask can cover all parts of the face from the nose to the chin. Do not use a mask under the nose, because it causes dust or virus to



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enter the nose. The effective mask is used for 3-4 hours and a maximum of 8 hours. The ability of the mother to wear a mask depends on the comfort of the mother. Most mothers complain of difficulty breathing and feeling sultry. It should be noted that the material of the mask, and the number of layers, the ease of breathing, can also decrease.[20], [22]

### 6. Mother's perception of the mask contains aromatherapy

WHO continues to collect data and scientific evidence on the effectiveness of the use of various masks and their possible hazards, risks, and disadvantages, as well as the combination of the use of various masks with hand hygiene, physical distance care, and other PPI measures.[17] Related to that, researchers try to explore the perception of maternity mothers to masks with aromatherapy as a combination that may be able to give a sense of comfort and relaxation to the mother during the labor process even though it is necessary to use a mask.

60% (9 subjects) mothers said they wanted to try using a scented mask. The remaining 40% (6 subjects) said they didn't like it because they were worried about getting dizzy. This suggests there is a better chance of using an aromatherapy mask than not.

Nugraha (2021), proves the effectiveness of the use of anesthetic masks on anxiety levels in children. This mask is designed by applying a 1

cm of fragrant lip balm of fruits such as strawberry, oranges, cherries, roses, and chocolate along the 1 cm evenly. Wear a mask for 10 minutes.[23]

## CONCLUSION

The use of masks during the labor process can still be accepted by maternity mothers but does not cover the fact of uncomfortable when using masks during the labor process. The addition of aromatherapy to the mask can be tried to help the mother become more comfortable using the mask during the labor process.

In the future, research can be carried out on the effectiveness of the benefits of aromatherapy masks for maternity mothers.

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### Characteristics Of Midwives: Age, Education And Place Of Work

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### ABSTRACT

**Background:** There are several obstacles faced in the implementation of quality services, including constraints on professionalism, competence, and authority. Different levels of education, different competencies at these levels and overlapping authorities still need to be improved in accordance with currently developing regulations about Law Number 4 of 2019 concerning Midwifery. **Methods:** Analytical survey research. with a cross sectional approach. The research will be carried out in 2020. The population of this research is all midwives who work in the Banyumas Health Office with a total of 890 people. The sample used was 100 people with the sampling technique using random sampling **Results:** The results showed that the highest midwife age ranged from 31-40 years as much as 34 % and the lowest was more than 50 years as much as 7 %. Most midwife education was 71% D3 and the lowest was S2 / S3 with a percentage of 2%. The highest place of work for midwives is Community health centers as much as 79 % and lowest is district health offices as much as 1 %. **Conclusion:** Recommendations for midwives who do not have professional education to attend this education if they want to practice independently.

Keyword : midwifery; words; research

### INTRODUCTION

Midwife service practice is a health service that has a considerable contribution in improving health, especially the health of mothers and children. For this reason, a midwife must be able to maintain the quality and safety by providing services in accordance with her authority, based on clear regulation of practical services.

Regulation midwife practice from time to time always changes in accordance with the needs and developments of the

community and government policies in improving the degree of public health. Regulation of midwifery practices has been made in the form of Law, namely Law No. 4 of 2019 on Midwifery issued with considerations, among others, health services to the community, especially women, infants, and children carried out by midwives are responsible, accountable, safe, and sustainable manner.

But there are several obstacles faced in the implementation of quality services including professional, competency, and



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authority constraints. Differences in education levels, different competencies at these levels and overlapping authorities may still need to be improved in accordance with current regulations.

Banyumas Health Office has a midwife workforce of about 890 people who work in health agencies and hospitals. The number does not include independent practice midwives who provide midwifery services throughout the Banyumas health service area. Based on the description above, researchers are interested in conducting research with the aim of knowing the characteristics of midwives which include age, education and where midwives work in Banyumas Regency. major findings of the study. It should be clear, concise and can be reports on texts or graphics. Please provide some introduction for the information presented on tables or images.(Thin et al., 2017)

### MATERIALS AND METHOD

Analytical survey research. with a cross sectional approach and the population of all midwives who served in the Banyumas Health Service Area with a total of 890 people. The sample used 100 respondents with sampling techniques using random sampling.

### RESULTS

#### Age

The results of the study on the age of midwives in Banyumas Regency are shown in the following table:

**Table 1.** Midwife age frequency distribution

Age (years)	F	%
20-30	27	27
31-40	34	34
41-50	32	32
>51	7	7
Total	100	100

Source: Primary Data Processed Year 2020

From the table it can be seen that the age of the most midwives in the range of 31-40 amounted to 34% and the lowest at the age of more than 51 years was 7%.

#### Education

The results of research on midwife education in Banyumas Regency are shown in the following table:

**Table 2.** Distribution of the frequency of midwife education

Education	F	%
D1	0	0
D3	71	71
D4 / Bachelor	27	27
S2/S3	2	2
Total	100	100

Source: Primary Data Processed Year 2020

Based on table 1, it can be known that the most midwife education D3 71% and the lowest S2 / S3 2 %.



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### Workplace

**Table 3.** Distribution Freviewer of where midwives work

Workplace	F	%
Phc	79	79
Education	10	10
PMB	2	2
RSU	1	1
Clinic	4	4
Not working yet	3	3
Health Service	1	1
Total	100	100

Source: Primary Data Processed Year 2020

Judging from the table where the most midwives work is a community health center as much as 79% and at least RSUs and Health Services each 1%.

### DISCUSSION

#### Age

The results of the study on the age of midwives in Banyumas Regency are shown in the table 1. From the table it can be seen that the age of the most midwives in the range of 31-40 amounted to 34% and the lowest at the age of more than 51 years was 7%. This is in line with abu research, 2015 which mentioned the age of the oldest midwives 54 years and the age of the youngest midwives aged 22 years, the average age of midwives 33.43 years ± 10.28.

According to Indrawati's research, 2009 Private practice midwives who use partographs are seen from age: in young midwives (less than 40 years 11 months) have good results of 69.4%, while those

who have less results as much as 30.6% while in old age (more than 40 years 11 months) who have good results of 82.8%, and who have a less than 17.8% result. From the above results it is known that midwives who use partograph and have better results more midwives with old age. This situation indicates that the age of the respondents who are getting older will be easily adaptable in the practice of labor assistance by using partographs.

The results of Abu Research, 2015 showed variables related to the quality of antenatal care services, namely age ( $r = 0.445$ ) p value (0.014), working period ( $r=0.401$ ) p value (0.028) and knowledge ( $r=0.437$ ) p value (0.016) while unrelated employee status ( $F=0.768$ ) p value (0.474). It is expected that the government will increase supervision and control of antenatal-care service processes by midwives in health centers.

#### Education

The results of research on midwife education in Banyumas Regency are shown in the table 2. Based on table 2, it can be known that the most midwife education D3 71% and the lowest S2 / S3 2 %.

Law No. 4 of 2019 on Midwifery was formed with one of the considerations that health services to the community, especially women, infants, and children carried out by midwives in a responsible, accountable, safe, and sustainable manner, are still faced with the constraints of professionalism, competence, and authority.



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Amalia, Nyour (2017) said the law faced by midwives is the lack of midwife knowledge about midwifery regulations so as to cause fear of midwives in making decisions and this can lead to negligence in providing medical actions. While the ethical dilemma of all midwives has difficulty in convincing the patient's family to make a referral in case of emergency, thus making the midwife act outside his authority.

This means that increasing the knowledge of midwives is very important in relation to midwifery services. Midwives can improve their competence, one of which is through education. In Banyumas Regency itself has implemented an education improvement program from diploma 3 midwives to applied scholars by establishing cooperation between the Banyumas District Health Office and the Semarang Kemenkes Kemenkes Police with the implementation of transfer classes. The education is followed by midwives who work from health centers and hospitals.

This is also in line with ambar Dwi Erawati research, 2019 shows the perception of agreeing to changes in vocational midwife education qualifications (81.3%), disagreeing (18.7%) and perceptions of agreeing to the education of academic midwives (71.9%), disagreeing (28.1%) and perceptions agree with the qualifications of midwife profession education (15.6%) who do not (84.4%). Midwives in the Twig III region of IBI Semarang mostly have a perception of agreeing to changes in vocational

midwife education qualifications and academic midwife education and most perceptions that disagree related to the qualifications of midwife profession education.

Support from DKK Banyumas in the education improvement program is felt to be very meaningful considering the need for increased education in line with the mandate of the law which states that to be able to carry out the practice of independent midwives, midwives must be professionally educated. Even so, there are still many midwives who have not continued their education to the profession because institutions that carry out midwife professional education are also not much so they have to wait for the quota turn to be able to follow it in addition to busy work, superior permission, family reasons economic factors that have not been possible to continue education.

This is in line with prastyoningsih 2019 research on the factor of inhibiting midwives in professional education in the Department of Midwifery Poltekkes Kemenkes Surakarta is the thing that inhibits midwives in continuing education at the professional level, namely: distance and time, family, licensing, and workload. An understanding of the regulation of midwife education at all levels of society is needed to overcome various obstacles from various factors.

Article 75 of Law No. 4 of 2019 mentions that graduates of Midwifery education under diploma three midwifery who have conducted Midwifery Practice before this Law was enacted can still



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do praktik kebidanan for a period of at least October 2020.

Midwives graduated from diploma three education and Midwives graduates of diploma four who have carried out Midwifery Practice independently in the Place of Independent MidwifeRy Practice before this Law was enacted, can carry out Midwifery Practice independently in the Place of Independent Midwife practice for a period of no later T (seven) years after this Law was enacted.

In that time period, midwives of three diploma education graduates who carry out independent practice midwives can follow the equalization of midwives of professional education graduates through the recognition of past learning. The recognition of past learning is carried out in accordance with the provisions of the regulation of invitations (Law No. 4 of 2019)

With the issuance of Law No. 4 of 2019, it becomes a necessity for midwives to be able to improve their competence and for midwives who will carry out the practice of independent midwives, they must continue their education at least the professional level.

### Workplace

Judging from the table 3 where the most midwives work is a community health center as much as 79% and at least RSUs and Health Services each 1%. Work is a thing (copyright, work and karsa) that is done in a conscious state to find something that is desired (Notoatmodjo,

2005). Work is a very important activity for humans. Work is an activity that becomes a means for humans to create their own efficiency.

Job satisfaction affects health provider motivation, worker retention and employee performance, ultimately impacting the successful implementation of health system reforms. Manifestation of delays, absences, evasive behavior, and decreased employee performance. In hospitals, the cost of changing employees, both direct (the cost of retraining new employees) and indirectly (the cost of delaying patient care because staff are lacking) is enormous.

Therefore, studying the possibility of intention to leave a job among employees especially in the hospital is very important. Retention of people working in the field of health is a serious problem because the change of health workers will take a very large amount of funds and harm the performance of organizations and health systems in general (Agustina,2017).

In addition to working at work, a midwife also usually doubles as a mother. Working mothers are activities carried out by mothers in addition to their main function as housewives both activities in the formal and informal sectors that are carried out outside the home regularly with the aim of making a living (Mufida, 2008).

Respondents who had a relatively new working life (6 years) with a long working life (37 years) showed no



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noticeable or less effect on the practice of using paragraphs on normal labor relief.

Yulianto's research (2012) shows that work satisfaction is associated with the likelihood of quitting work, with a correlation coefficient of -0.603. Yulianto stated that the higher job satisfaction, the lower the turnover intention (stop working) employees.

According to Abu, 2015 The length of work of midwives is 26 ta[1]hun and midwife most recently 1 year, the average working life of midwives is 9.73 years ± 7.6

### CONCLUSION

The age of the most midwives in the range of 31-40 amounted to 34% and the lowest at the age of more than 51 years was 7%. Midwife education in Banyumas Regency most D3 71% and lowest S2 / S3 2%. Tempat working the most midwives is Pusat the community as much as 79% and at least RSUs and Health Department 1% each. Recommendations for midwives who do not have professional education if they want to practice independently to follow professional education are facilitated by the Health Service in collaboration with educational institutions that organize professional education programs.

### ACKNOWLEDGMENT

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assisting the research, for example: to research funders, and any research participants in this section.

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- [2]Agustina, Santi , Fitria Sari, Miftahul Jannah, Kusmayra Ambarwati. Journal of Health Sciences Vol. 10, No. 2, December 2017 ISSN : 1693-6868 671 Phenomenon Of Shifting Profession Of Midwives In The Field Of Work (Study Of Learning Process & Working In Study D-Iv Midwife Educator)
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Private Practice Midwives (BPS) on the Use of Neonatal Maternal Reference Partographs in Normal Childbirth Assistance in the Semarang City Health Office Area: Bhakti Husada Midwifery Academy of Semarang City: Indonesian Health Promotion Journal Vol. 4 / No. 2 / August 2009

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“LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC”



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### Self Acupressure at Hegu (Li 4), Sanyinjiao (Sp6) and Taichong (Liv 3) Points in Adolescents With Dismenore

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#### ABSTRACT

**Background:** Adolescence is a period of transition from children to adults where the reproductive organs will experience growth and puberty. Girls will experience their first period or menarche. One of the disorders of reproductive health during menstruation is dysmenorrhea or cramps in the lower abdomen. Alternative nonpharmacological treatments that can be done are self-acupressure at the point of Hegu (LI 4), Sanyinjiao (SP 6) and Taichong (Liv 3). **Methods:** The research design used is mini research with a pre-post experiment design. The sample of this study was 8 students of SMA N 1 Ajibarang which were divided into the control group and the treatment group. The measurement of the dysmenorrhea pain scale was carried out before and after the acupressure therapy treatment using the Numeric Rating Scale (NSC). **Results:** Statistical tests using Mann Whitney with results  $P < 0.017$  which means Acupressure at points Li 4, SP 6 and Liv 3 effectively reduce dysmenorrhea pain. **Conclusion:** Self acupressure at Li 4, SP 6 and Liv 3 points that are implemented independently effectively reduce pain at the time of dysmenorrhea

Keywords: dysmenorrhea; acupressure; adolescence

#### INTRODUCTION

Adolescence is a period of transition from childhood to adulthood, at the age of 11 to 19 years [1]. Adolescents experience maturity psychologically, physically, emotionally and socially. In adolescence the reproductive glands begin to work so that the signs of primary and secondary sex appear and the body

experiences rapid growth. Adolescent girls will experience menarche or menstruation that comes out for the first time and psychological changes occur. Menstruation is the process of bleeding from the uterus through the vagina every month during the fertile age [2].

Dysmenorrhea is pain that occurs during menstruation, usually characterized by pain or cramps centered in the lower abdomen [3]. Dysmenorrhea



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is divided into two groups, namely primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is pain experienced during menstruation without any abnormalities in the pelvis or other reproductive organs. Secondary dysmenorrhea is pain experienced during menstruation caused by abnormalities in the reproductive organs and other organs. The degree of menstruation can be categorized into mild, moderate and severe pain. [4] The incidence of dysmenorrhea in women in the world is more than 50%. Data reported in the United States that the prevalence of dysmenorrhea is about 45% to 95%, Dysmenorrhea is also a cause of absenteeism in women at work or school, as many as 13% to 51% of women attend at least once and about 5% to 14% do not attend repeatedly time. Epidemiological studies conducted in the United States by Klein and Lift stated the prevalence of dysmenorrhea in adolescents aged 12 to 17 years was 59.7%. Complaints of pain experienced can be categorized into 12% severe pain, 37% moderate pain and 49% mild pain. Dysmenorrhea is the cause of 14% of adolescent girls in the United States not attending school.[5]

The incidence of dysmenorrhea in Indonesia is estimated at 55% in women of productive age. Dysmenorrhea is generally not dangerous but if it occurs it can cause discomfort and interfere with women's productivity. [6] The impact that most often arises because of dysmenorrhea is activity disturbance so that women who experience

dysmenorrhea cannot carry out their daily activities normally. Women who experience dysmenorrhea have twice the risk of being disturbed in their activities compared to women who do not experience dysmenorrhea during menstruation. These disturbances are in the form of high levels of absenteeism from school and work, academic performance, limitations in social life, and sports activities. Not attending school or work is the most common impact caused by dysmenorrhea.[6],[7]

Pharmacology is very effective in reducing pain in women during dysmenorrhea. The use of non-pharmacological methods such as herbal medicine, relaxation techniques, aromatherapy, acupressure which also has effectiveness in reducing pain during menstruation. Acupressure at the Sanyinjiao point (SP6) is very effective in reducing pain during dysmenorrhea. [8] Acupressure independently can be done in any situation regardless of time and place and can be done without expensive costs. Acupressure itself is acupressure performed by trained participants without treatment by a practitioner or health care provider.[9]

Acupressure is a massage or pressure based on the science of acupuncture, it can also be called acupuncture without needles. Acupressure is the science of medicine with massage techniques at a certain point. Acupressure has been used for centuries by the Chinese people. The pressure on the acupressure point can



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affect the release of the hormone endorphins, which are proteins made from beta-lipotropin substances in the pituitary gland. Endorphins are responsible for controlling the activity of the endocrine glands where these molecules are stored. If there is a pain stimulus and acupressure is applied, the nervous system will instruct the endocrine system to release endorphins so that the intensity of pain is reduced [10]

Theories that explain acupressure at certain points such as the Sanyinjiao Point (SP6) are very effective in reducing menstrual pain in women, are inexpensive (no cost) and can be done alone.[8] The taichong point is the main point of the heart meridian and the main pathway for the flow of chi. Pressing applied at this point relieves spasm, tension and stiffness in the muscles of the body including the uterus.[10] Acupressure points that can be used to reduce pain during dysmenorrhea include LI 4 points, SP 6 points, SP 8 points, ST 36 points, CV points 3 and CV 4.[11] Based on the description above, the researcher is interested in conducting a mini-research on the effectiveness of Self Acupressure at the points of Hegu (Li 4), Sanyinjiao (Sp6) and Taichong (Liv 3) in Adolescents with Dimenorrhea.

### RESEARCH METHODS

The research design used was a mini research study with a design pre-post experimental by observing the pain

scale during menstruation before and after self-acupressure at Hegu point (LI 4), Sanyinjiao point (SP6), Taichong point (Liv 3). regularly for 3 days before the scheduled menstruation for 20 minutes. This research was conducted in the work area of Ajibarang Health Center 2, Banyumas Regency, Central Java Province with the research sample being 8 students of SMA N Ajibarang, 4 respondents in the treatment group and 4 people in the control group according to the inclusion criteria, namely adolescents aged 15-19 years, regular menstruation and have dysmenorrhea. The limitation in this study is that the research time is short, only 7 weeks so that only 8 respondents are obtained.

The research flow is compiling a mini research proposal; looking for respondents according to the inclusion and exclusion criteria; explaining the intent and purpose and asking whether they are willing to be a respondent; conducting an assessment of the characteristics of respondents through google form and WhatsApp chat. In the control group, respondents were given health education about dysmenorrhea and the treatment was given health education about dysmenorrhea and taught the technique of Self Acupressure points LI 4, SP6 and Liv 3 so that they can do it independently. The evaluation was carried out during menstruation after doing self-acupressure, 3 days before the menstrual schedule for 20 minutes. The research instrument used is a pain scale using the Numerical Rating Scale (NRS).



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Data analysis includes data editing, coding and then the data is analyzed how the NRS changes before and after the intervention and then compared with the control.

This mini-research has received permission from the Ajibarang II Public Health Center and Ajibarang Public High School, but due to time constraints, the research was not carried out through an ethical commission with the consideration that acupressure is safe for adolescents and can be carried by self.

### RESULTS

Based on the results of research conducted by researchers to 8 respondents after analysis obtained the following results:

**Table 1.** Frequency Distribution of Respondents by Age, Menstruation length and knowledge

No	Results	N	Max	Min	Mean
1	Age	8	16	17	16,63
2	Menstruation Length	8	6	10	6,63
3	Knowledge	8	32	61	51

Based on table 1, it was found that the age of the respondents was between 16 -17 years. The average length of menstruation for respondents is 6-7 days. The level of knowledge about dysmenorrhea in adolescents is 51 or intermediate level.

The research design used was a

mini research study with a design pre-post experimental. The normality test was carried out using the Shapiro Wilk test, which showed that the data in the treatment group had not normal distribution, so that the data were further tested using the non-parametric test using the Mann Whitney test.

**Table 2.** Results of Data Analysis of Dysmenorrhea Pain Reduction

No.	Results	Mean	N	P
1	Acupressure	2,50	4	0,017
2	Control	6,50	4	

In table 2 obtained p value 0,017 < 0,05 where self-acupressure at points SP 6, Li 4 and Liv 3 significantly reduces pain during menstruation.

### DISCUSSION

The results of the analysis of changes in the pain scale in the treatment group that performed self-acupressure at the points Li 4, SP 6, Liv 3 showed a significant change compared to the control group. The decrease in the mean pain scale in the treatment group was 2.50 lower than the mean in the control group, which was 6.50. Self-Acupressure at the Li4, SP6 and Li 3 points was proven to reduce complaints of pain during menstruation in adolescents. The emphasis on acupressure points has an impact on the production of endorphins in the body. Endorphine is responsible for killing the pain produced by the body.



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Endorphin is a peptide or protein molecule made of beta-lipotropin found in the pituitary gland. Endorphine is responsible for controlling the activity of the endocrine glands. The nervous system controls the release of endorphins. This nervous system is sensitive to pain so that if there is a painful stimulus, acupressure is applied, the nervous system will control the release of endorphins according to the body's needs so as to reduce pain [12].

Dysmenorrhea is a physiological condition experienced by women during menstruation, this is because stress can affect the hormones prostaglandin and progesterone. The increase in the hormone progesterone causes the uterine muscles to contract, causing ischemia and cramps in the lower abdomen and causing pain [13]. Acupressure applied to the Li4, BL32 and Sp6 points is thought to stimulate the regulatory system and activate various endocrine and neurological mechanisms, which, in turn, stimulate various physiological functions towards homeostasis [14].

Supporting research is the Effect of self-acupressure for symptom management: a systematic review of Acupressure, This study conducted a meta-analysis on the Taichong (Liv 3) and Sanyinjiao (SP6) point acupressure. The results of this study showed that the decrease in the VAS, SF-MPQ, and SF-MDQ scales in the treatment group significantly decreased better than the control group [9]. Another supporting study entitled as acupressure decreases

pain, acupuncture may improve some aspects of quality of life for women with primary dysmenorrhea: a systematic review with meta-analysis. Analyzing 10 articles published online through Ovid Medline, Cochrane library, Science Direct, PubMed, Scopus, PEDro, Web of Science, CINAHL, MANTIS, PsycINFO, AMED, and EMBASE. Acupressure is effective in reducing the effects of pain while in primary dysmenorrhea while acupuncture significantly improves the physical component and quality of life of women [15]

Effects of acupressure on menstrual distress and low back pain in young adult women dysmenorrhea: an experimental study, experimental study acupressure at SP6 point, BL32, Liv 3 committed to Women who suffer from primary dysmenorrhea and has a history low back pain (LBP). Acupressure was carried out 3 times a week for 12 months. The results of this study significantly reduced pain in dysmenorrhea and low back pain which were carried out within 30 minutes, 4, 8 and 12 months. Acupressure is effective in the short, medium and long term.[16]

## CONCLUSIONS

Self-Acupressure at LI 4, SP 6 and Liv 3 points is effective in reducing pain during dysmenorrhea. Acupressure is easy to do independently by teenagers. It is hoped that adolescents can apply acupressure techniques so that their productivity during menstruation is not



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disturbed.

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### The Effectiveness of Combination Prenatal Yoga and Lemon Aromatherapy to Decrease Blood Pressure in Primigravida with Preeclampsia

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#### ABSTRACT

**Background:** Hypertension in pregnancy is the highest cause of death in pregnant and maternity women in East Java with a total of 162 cases (31.15%) during 2019. Probolinggo Regency contributed 8 maternal deaths during the first trimester of 2020. This figure has decreased compared to the previous year in the period the same, namely 11 maternal deaths. Yoga and aromatherapy can be considered as holistic therapy for pregnant women with preeclampsia. **Methods:** This research uses descriptive method with an observational approach. The samples used were three respondents who were given prenatal yoga and lemon aromatherapy treatment for three consecutive days. Measurement of blood pressure before and after treatment. **Results:** Prenatal yoga and lemon aromatherapy can help lower blood pressure in pregnant women with pre-eclampsia. The decrease only occurs in systolic blood pressure. While the above intervention diastolic blood pressure does not affect the decrease in blood pressure in pregnant women. **Conclusion:** Holistic interventions can help lower blood pressure in preeclampsia and it will give a greater effect if done at a longer time.

Keyword : preeclampsia, prenatal yoga, lemon aromatherapy

#### INTRODUCTION

Hypertension in pregnancy is the highest cause of death in pregnant and maternity women in East Java with a total of 162 cases (31.15%) during 2019.

Probolinggo Regency contributed 8 maternal deaths during the first trimester of 2020. This figure has decreased compared to the previous year in the period the same, namely 11 maternal deaths [1].



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The results of study by Salehoddin Bouya, et al. (2021) about The effects of yoga in prevention of pregnancy complications in high-risk pregnancies: A randomized controlled trial showed yoga can potentially be an effective therapy in reducing hypertensive related complications of pregnancy and improving fetal outcomes [2].

The result of study by Masoume Rambod, et al (2020) about The effect of lemon inhalation aromatherapy on blood pressure, electrocardiogram changes, and anxiety in acute myocardial infarction patients: A clinical, multi-centered, assessor-blinded trial design showed that as lemon inhalation aromatherapy in Acute Myocardial Infarction can reduced systolic blood pressure, anxiety, and percentage of ST-segment and T wave changes and regulated heart rate [3]

So far, preeclampsia has been treated with pharmacology, which may have side effects on the condition of the fetus. Holistic care in the form of yoga and aromatherapy is proven to help lower blood pressure without harm the fetus and mother, because yoga affects the body system to be more relaxed, it made the blood pressure will decrease. Lemon aromatherapy have some substance, called linalyl. These substances will stimulate the olfactory nerve then stimulates hypothalamus to made patient be relaxing and decrease blood pressure [4][5]

The purpose of this study was to determine the effect of combination yoga and lemon aromatherapy on reducing blood pressure in pre-eclampsia.

## MATERIALS AND METHOD

This research uses descriptive method with an observational approach, it research was done in Karanganyar, Paiton, Probolinggo for 3 consecutive days from September 13, 2021 to September 15, 2021. The respondents used in this study were 3 people who met the inclusion criteria, the inclusion criteria is primigravida who attended the session until the end and had no history of hypertension before pregnancy. The sample were given prenatal yoga and lemon aromatherapy treatment for three consecutive days. Blood pressure measurements were carried out before and after treatment. This study uses informed consent as a substitute for ethical clearance.

## RESULTS

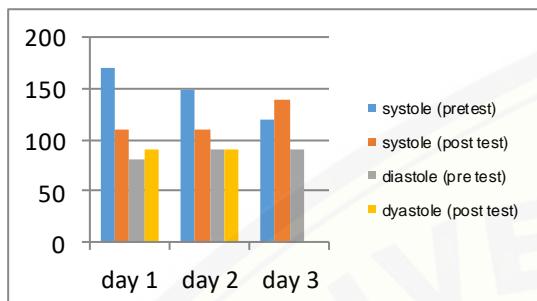
This research was conducted on three primigravida respondents with low risk age criteria. On the first and second days, yoga and lemon aromatherapy were given intervention for 30 minutes. while on the third day, yoga and aromatherapy interventions were carried out for 45 minutes. The respondent's blood pressure was measured before and after the intervention. The results of this study are described in the following chart :



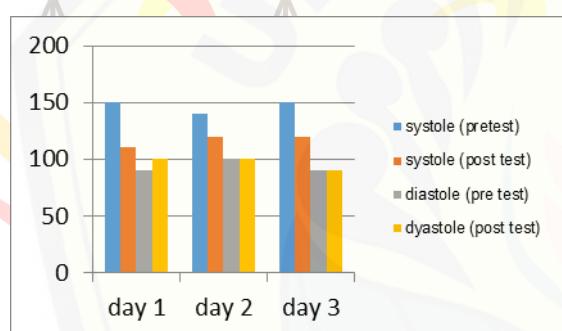
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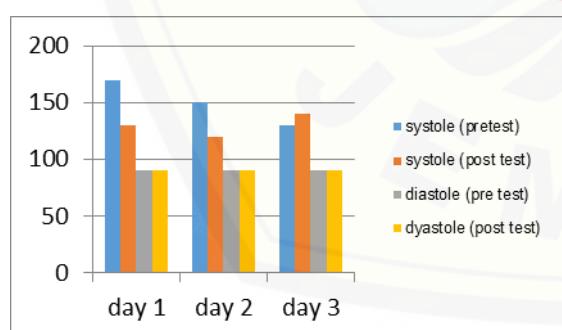
**Chart 1.** The blood pressure measured of Responden 1 (Mrs. N)



**Chart 2.** The blood pressure measured of Responden 2 (Mrs. D)



**Chart 3.** The blood pressure measured of Responden 3 (Mrs. F)



The graph above, it can be seen that on the first and second day, all

respondents blood pressure decreased significantly, especially in systolic. while on the third day of intervention, respondents were given prenatal yoga and lemon aromatherapy for 45 minutes. After giving this intervention, the blood pressure in the three respondents increased in systolic. however, the increase was only modest.

### DISCUSSION

Above the observations, it is known that prenatal yoga and lemon aromatherapy can help to decrease blood pressure in pregnant women with preeclampsia. The decrease only occurs in systolic blood pressure. While the diastolic does not decrease after the respondents get some intervention.

When respondens doing yoga and aromatherapy more than 30 minutes, the blood pressure increase in both systolic and diastolic, although the increase was not too significant. It's because when respondens do exercise more than 30 minutes, they feel tired so that the relaxation effect get will decrease, especially if the pregnant woman has never done exercise before.

This research relevan with the results of Salehoddin Bouya et al, (2021) about The effect of yoga on uterine artery Doppler indices, maternal and fetal complications in pregnant women: A quasi-experimental study, it's showed that in the yoga group, maternal complications (diabetes and preeclampsia) and fetal complications (SAG, IUGR), were significantly lower compared to the control ( $p < 0.01$ ). So, it's showed that



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study revealed the positive effects of yoga on improving fetal development indices and reducing maternal and fetal complications following pregnancy. It can be used as a complementary therapy alongside other treatments for mothers[2].

The study also relevant with research result of Masoume Rambod et al, (2020) about The effect of lemon inhalation aromatherapy on blood pressure, electrocardiogram changes, and anxiety in acute myocardial infarction patients: A clinical, multi-centered, assessor-blinded trial design, it's showed that there a significant difference was observed between the two groups concerning systolic blood pressure. As lemon inhalation aromatherapy in AMI reduced systolic, changes and regulated heart rate, using this kind of aromatherapy is suggested in coronary care units.

Yoga can suppresses the performance of the sympathetic nervous system so that there will be an inhibition of the adrenal medulla stimulus to secrete catecholamines (epinephrine and norepinephrine). The decrease in catecholamines causes vasodilation of the renal blood vessels and almost all visceral organs resulting in a decrease of blood pressure and facilitates the distribution the blood every minute [6].

Yoga is a safe physical exercise for pregnant women. The decrease in systolic blood pressure occurs because prenatal yoga can improve blood flow, improve the supply of oxygen and nutrients and strengthen respiratory and heart muscles. Breathing exercises in yoga optimize lung

capacity and beneficial posture exercises for increasing the ability of the heart muscle [6].

Citric acid correlates with systolic blood pressure, pulse pressure, and red blood cell count. This cannot be separated from the realm of analogy at all about the mechanism of action of citric acid in this study. One of the reported properties of citric acid is to produce calcium citrate from inorganic salts, such as calcium phosphate or calcium carbonate, to increase absorption from the gut, ractate. In addition, there are reports that the citric acid of citrus fruits promotes the absorption of calcium and magnesium in the diet [3].

It is possible that calcium and magnesium are absorbed efficiently indicated in blood pressure. Also regardless of the effect of citric acid in the diet, it is necessary to take into account the effect of intracellular or citric acid in the blood. Lemon flavonoids are mainly contained in the peel and there are reports that the ingredients work on reducing systolic blood pressure. It is possible that the actions of ingredients other than citric acid are also involved in lowering blood pressure [3].

## CONCLUSION

Prenatal yoga and lemon aromatherapy can help to decrease blood pressure in pregnant women with preeclampsia. The decrease only occurs in systolic blood pressure. While the



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diastolic does not decrease after the respondents get some intervention.

This study has limitations in the form of only a few respondents so it is necessary to conduct research on a larger amount of respondents and a wider area.

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### Overview Of Nutritional Status Of Infants And Toddlers Aged 6-59 Months During The Covid-19 Pandemic (Study in Ringinarum Health Center Working Area)

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#### ABSTRACT

**Background:** Preventive efforts in dealing with abnormalities, preventing and minimizing permanent abnormalities in children can be known by carrying out early detection, namely by knowing the growth and development of children carefully. The number of malnutrition reaches 12.1% so that Indonesia ranks 2nd for malnutrition with an average coverage of treatment cases only 2%. This study aims to provide an overview of the nutritional status of infants and toddlers aged 6-59 months during the Covid-19 pandemic in Kedungasri Village.

**Method:** This type of research is descriptive with a retrospective time approach, using a total sampling technique of all infants and toddlers aged 6-59 months as many as 159 respondents. Secondary data collection was taken from the management information system of the baby and toddler health center in Kedungasri Village in January-August 2021. **Results:** Based on data analysis using a frequency distribution technique the number of infants and toddlers aged 6-59 months as many as 159 respondents, judging by the age characteristics of the majority are preschoolers (59.1 %), most of them are male (53.5%) and have normal nutritional status based on (Weight/Age) as many as 152 respondents (95.6%). **Conclusion:** Due to Covid-19, the monitoring of the growth and development of infants and toddlers at the Posyandu in Kedungasri Village, Ringinarum District, is still carried out according to established procedures, and there is no difference in the nutritional status of toddlers in the period before Covid-19 or during Covid-19.

Keyword: Nutritional Status; Infants And Toddlers; Covid-19 Pandemic

#### INTRODUCTION

The period of growth and development that is decisive for children in the future is called the golden age but it

becomes a vulnerable and very critical period in determining growth and development, this period occurs at the age of 0-7 months [1].

Growth or growth is a process of increased quantitative or in terms of



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number, size, organ, or individual that happens to someone who can be determined from measurements of weight, length, bone, as well as the balance of the metabolic system. Development or development is the process of changing an ability from the work system of the body's organs to a state that is easier to control by the will of the function of each organ [2].

Nutritional problems are often experienced by children of various ages, therefore children need more nutritional intake than adults. Nutritional intake has an important role in the body as it carries out its function to produce energy, as well as maintain and build tissues [3]. The current pandemic situation requires extra attention for all parents in providing food intake to maintain the child's immune system.

Covid-19 is a disease caused by the novel coronavirus. The Covid-19 virus was first discovered in Wuhan, China in December 2019 and now by the WHO it has been declared a pandemic. Various efforts have been made by the Indonesian government in dealing with this virus outbreak, including efforts to reduce nutritional deficiencies listed in the 2020-2024 RPJMN. Monitoring the growth of infants and toddlers can still be carried out under any conditions through various alternative efforts to ensure the growth and development of infants and toddlers so that their growth can be monitored [4].

The situation of malnutrition and malnutrition that occurs in Southeast Asia and the Pacific is quite far from the good category or the predetermined target, in

Indonesia the number of malnutrition reaches 12.1%, so that Indonesia ranks 2nd in malnutrition with an average coverage of case handling is only 2% [4].

The standard for measuring nutritional status in Indonesia is based on the standard from the WHO set out in the Decree of the Minister of Health Number 1995/Menkes/SK/XII/2010 concerning Anthropometric Standards for Assessment of Child Nutritional Status. According to these standards, the anthropometric measurement standards of children are measured based on 4 measurement indices, namely Body Weight by Age (W/A), Height or Body Length according to Age (H/A or BL/A), Body Weight by Length/Height (W/BL or W/H), Body Mass Index by Age (BMI/A). Based on the results of basic health research, malnutrition in children under five was 3.9% and 13.8% were undernourished. While the number of short toddlers is 19.3% and there are 11.5% of toddlers with very short status [5].

Many studies have been conducted on toddler nutrition both before the pandemic and after the pandemic. During the pandemic, seen from the West Body per Age (W/A) the growth chart for children under five experienced a decline and stagnation in height growth with results in the very short category of 4.8% decreased to 2.4%, short nutritional status 15.2% to 12% and based on H/A normal nutritional status increased from 78.4% to 85.6% [6]. When viewed from the measurements of W/A and H/A, good nutritional status in toddlers is influenced



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by the behavior of Nutrition Aware Families or called Kadarzi which is well applied, such as toddlers with a history of exclusive breastfeeding having good nutritional status based on the W/A index of 85.7% [3]. Of the 40 toddlers who were exclusively breastfed, 37 had normal nutritional status [7]. Toddlers who eat a variety of foods 59.7% have not reached the target that has been set, the reason is that toddlers do not consume fruits and vegetables. The majority of toddlers in the Gajah 1 Demak Health Center have good nutritional status, namely 69.47%, undernourished 25.26%, malnutrition 4.21%, and over-nutrition 1.05 % [8].

Based on the description of the background above, the researcher will conduct research related to the characteristics and nutritional status of infants and toddlers aged 6-59 months during the Covid-19 pandemic in Kedungasri Village.

### MATERIAL AND METHOD

This research method uses a descriptive research design with a retrospective time approach. The scope of the research is an infant and toddler nutrition. The secondary data collection method was taken from the management information system of the baby and toddler health center in Kedungasri Village in the working area of the Ringinarum Health Center by using a total sampling technique so that the samples in this study were all toddlers in integrated

service post, Flamboyan 15, Flamboyan 17, Flamboyant 19, flamboyant 21, flamboyant 23 and flamboyant 25 Kedungasri Village in January-August 2021 as many as 159 respondents.

Characteristics and nutritional status of toddlers as research variables, to determine the characteristics of toddlers the tool used in data collection is a master table containing toddler's name, age, gender, weight, a nutritional status which is measured based on the Weight/Age index. The data analysis technique uses a frequency distribution.

### RESULTS

**Table 1.** Frequency distribution of respondent characteristics based on age and sex of infants and toddlers in Kedungasri Village

Characteristics	Description	Frequency (n)	(%)
Age	Infants (6-11 months)	21	13.2
	Toddler (12-23 months)	44	27.7
	Preschool (24-59 months)	94	59.1
<b>Amount</b>		159	100
Gender	Woman	74	46.5
	Man	85	53.5
<b>Amount</b>		159	100

Based on the results of the study seen from table 1, it can be concluded that the majority of respondents are in the category of preschoolers (24-59 months)



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as much as (59.1 %). The distribution of sex based on frequency is mostly male, with 85 respondents (53.5%).

**Table 2.** Frequency distribution of nutritional status of infants and toddlers in Kedungasri Village based on Weight/Age

No	Age	Frequency (n)	(%)
1.	More	1	0.6
2.	Normal	152	95.6
3.	Not enough	6	3.8
	<b>Amount</b>	<b>159</b>	<b>100</b>

Based on the research on the nutritional status of children under five, the results showed that most of the respondents had normal nutritional status based on (Weight/Age) as many as 152 respondents (95.6%).

## DISCUSSION

Infants and toddlers who were sampled in this study were aged 6-59 months in Posyandu flamboyant 15, flamboyant 17, flamboyant 19, flamboyant 21, flamboyant 23, and flamboyant 25 Kedungasri Village in January-August 2021 as many as 159 infants and toddlers. Preventive efforts in dealing with abnormalities, preventing and minimizing permanent abnormalities, and developments experienced by children can be known by carrying out early detection, namely knowing the growth and development of children carefully. The golden age is a period that greatly

determines the growth and development of children, this period occurs at the age of 0-5 years [1].

During this period of growth and development, a child needs a balanced nutritional intake for endurance, energy, physical activity, and thinking. A process of growth and development of children according to the stages in their age. The quality of children's growth and development is influenced by internal factors and external factors. Age, gender, number of chromosomes, genetics, family, race/ethnicity are internal factors, while external factors come from childbirth, prenatal and postnatal factors [9]. Parents have an important role in the growth and development of toddlers, especially a mother. The direct involvement of parents and mothers as people who often interact with children and regulate children's eating patterns, therefore a mother must have good knowledge about nutritional intake for her children. Because nutritional intake affects the nutritional status of toddlers [10].

Based on the table above, the majority of respondents in this study were aged 24-59 months (pre-school age) as many as 94 respondents (59.1%), male sex was 85 respondents (53.5%). The rapid growth rate occurs in the prenatal period [9]. Respondents aged 12-23 months (toddler period) were 44 respondents (27.7%). The toddler period is important because the stages of growth and development of toddlers in this period can affect the next child's growth and development. Progress in gross motor



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development, fine motor development, and also excretory function will occur during this period [9].

Weight gain in normal infants is at least 1 kg per month for the first two months, then increases by 0.5 kg every month until the age of 6 months. Changes in the child's weight will decrease to 0.2-0.3 kg every month until the age of 1 year. Normal baby weight is 2.5-4 kg, when the child is 5 months his weight reaches 2 times of birth weight. The baby's weight reaches 3 times the birth weight at the age of 1 year. Bodyweight in toddlers based on the table Weight/Age shows a range of 7.2-18.3 kg with an average of 12.2 kg, while in preschool it shows a range of 10.9-23.9 kg with an average of 16.8 kg [11].

The nutritional status of children under five can be seen from three indicators, namely based on W/A, H/A, and W/H. If there is an imbalance between these three aspects, there will be nutritional problems. If there is a problem with W/A, the problem that will occur is malnutrition [12].

The nutritional status of infants and toddlers based on W/A seen from table 3 the majority of normal nutritional status are 152 respondents (95.6%), respondents with less nutritional status are 6 respondents (3.8%) and 1 respondent is over nutritional status (0.6%). The majority of children under five with good nutritional status (69.47%), under five with poor nutritional status amounted to 25.26%, under five with poor nutrition as many as 4, 21% and children under five

with more nutritional status amounted to 1.05% [8].

Most children aged 3-5 years have normal nutritional status (81.5%), 1 person (3.7%) with obese nutritional status, 4 children with underweight nutritional status (14.8%) and no children with very thin and obese nutritional status were found [13]. Toddlers who have poor nutritional status will affect their intelligence because nutritional status is related to the process of growth and development of children. For children with poor nutritional status, the short-term impact that will be experienced by children is having an apathetic nature, experiencing speech disorders. Meanwhile, in the long term, children will experience decreased sensory integrity, decreased IQ scores, and decreased cognitive development [14].

Toddlers with poor nutrition have 12 times the risk of death compared to healthy toddlers, if toddlers with poor nutrition recover, it will have an impact on their growth and development, especially on brain growth and development. Malnourished toddlers have a 3-fold risk of experiencing stunting [11], besides that stunting will also affect child development (63.6%) [15]. There were 106 respondents (49.3%) of children aged 6-59 months who experienced stunting and experienced abnormal gross motor development as many as 88 respondents (83%). Respondents who experienced stunting had 18,280 times the risk of children experiencing gross motor development



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disorders compared to children who did not experience stunting [16].

Based on management information system data from the nutrition center for infants and toddlers in Kedungasri Village, it was found that 1 (0.6%) under five had more nutritional status and under five with malnutrition were mostly experienced by children aged 24-59 months (pre-school children) who were female.

In the Covid-19 situation, monitoring the growth and development of infants and toddlers must continue to be carried out with various alternative efforts, such as monitoring the growth and development of toddlers at the Posyandu by implementing procedures by health protocols, complying with infection prevention principles, and implementing physical distancing. If monitoring of children's growth and development is not carried out, the current situation becomes riskier, especially for children who have co-morbidities such as pneumonia. Toddlers who suffer from Respiratory Tract Infections 90% occur in toddlers with poor nutritional status [17]. Nutritious food intake, especially in early childhood, must be considered to maintain and increase immunity to prevent and fight Covid-19 [11].

Consuming a variety of foods can improve the nutritional status of toddlers[3] Maintaining a regular diet with balanced nutrition is very important for parents to pay attention to, especially in this situation, so parents must pay attention to their children's food intake patterns to improve a good immune

system. Although until now no food or supplements have been found that can prevent Covid-19 [11].

## CONCLUSION

Based on the results of the research and discussion, it can be concluded that the characteristics of infants and toddlers in Kedungasri Village, Ringinarum District, Kendal Regency, the majority aged 24-59 months (pre-school) as many as 94 respondents (59.1%), male sex as many as 85 respondents (53.5%), 152 respondents (95.6%) had normal nutritional status, which was seen based on the measurement of W/A. Monitoring activities for the growth and development of infants and toddlers during the Covid-19 pandemic at the Posyandu Kedungasri Village, Ringinarum District, will continue to be carried out according to established procedures, and there are no differences in the nutritional status of infants and toddlers in the period before Covid-19 or during Covid-19.

It is recommended for all parents who have infants and toddlers to always maintain and improve nutritional status by providing nutritious food intake, because good food intake helps optimize child growth and development, increases immunity to fight the Covid-19 virus, especially in early childhood, and diligent in monitoring the growth and development of children at the integrated service post. Suggestions for health workers to continue to monitor optimal child growth and development by



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improving services at integrated service posts by implementing health protocols that have been determined by the government.

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### The Effect of Menstrual Hygiene Counseling Using Animated Audio Visual Media on the Knowledge, Attitude And Behavior of Young Women

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#### ABSTRACT

**Background:** The death rate in women due to reproductive system disorders is increasing. One of the causes of reproductive organ infection is due to lack of personal hygiene during menstruation. The importance of health education is given to young women to provide good and correct information about menstrual hygiene in order to avoid the problem of cervical cancer. The purpose of this study was to determine the effect of menstrual hygiene counseling using animated audio-visual media on the knowledge, attitude and behavior of adolescent girls. **Method:** The type of research used is a quasi-experimental using one group pretest posttest design. The population in this study were 32 teenage girls in class VII who met the inclusion criteria and exclusion criteria, the sampling technique used was purposive sampling. The instruments used in this study were questionnaires and animated videos. **Results:** Data analysis using the Wilcoxon Signed Ranks Test showed that  $p = 0.000$  or  $p < 0.05$ . **Conclusion:** It was concluded that counseling using animated audio-visual media had an effect on increasing the knowledge, attitudes and behavior of young women during menstrual hygiene.

Keywords : menstrual; knowledge; attitudes; behavior; audio

#### INTRODUCTION

Adolescence is a period of transition from children to adults. This period is a process of physical, psychological and intellectual growth and development [1]. Adolescents have unique characteristics, one of which is the nature of wanting to imitate something that is seen in the circumstances and the surrounding environment. Physically in adolescent

girls there are changes in sexual organs, which will experience the first menstruation (menarche) which is an indicator of sexual maturity in adolescent girls [2]. Based on Indonesian Health Demographic Survey Previous, Teenage girls on average experience their first menstruation at the age of 12 to 15 years. At that age requires readiness in efforts to maintain reproductive health. One of the efforts to maintain reproductive health that is emphasized for women during



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menstruation is personal hygiene. Personal hygiene during menstruation is a critical issue as a determinant of the health status of adolescent girls that will affect their lives in the future [3].

Adolescent girls are more at risk of experiencing reproductive health problems than young men, due to the anatomical situation of female reproduction that is more susceptible to infection with microorganisms. During menstruation, the blood vessels in the uterus are open so it will be susceptible to infection. Poor personal hygiene practices during menstruation puts adolescents at risk of 25. Previous research proves that as many as 5.2 million young women in Indonesia after menstruation experience complaints of pruritus vulvae due to poor personal hygiene and if the vaginal skin is scratched by scratching nails it can cause secondary infections such as candidiasis, bacterial vaginosis and trichomoniasis [4]. This happens because young women have misunderstandings about personal hygiene during menstruation due to poor access to information [5].

Compared to several countries in Southeast Asia, Indonesian young women are more prone to vaginal discharge due to Indonesia's hot and humid climate, the acidity of the reproductive organs will increase and cause fungal growth and even trigger reproductive tract infections [6]. Reproductive tract infections are caused by 10% weak immunity, 30% poor behavior when personal hygiene, 30% unclean environment and 50% unhealthy use of sanitary napkins [7].

Women who lack personal hygiene are more at risk of cervical cancer 19.3 times more likely to develop cervical cancer [8]. This is evidenced from Data Global Burden of Cancer (GLOBOCAN) released by WHO stated that the number of cases and deaths from cancer until 2018 was 18.1 million cases and 9.6 million deaths in 2018. Cancer deaths are expected to continue to increase to more than 13.1 million in 2030 [9]. The prevalence of cervical cancer cases is 23.4 per 100,000 population with an average death rate of 13.9 per 100,000 population and cervical cancer is the second highest case after breast cancer [10].

To prevent complaints and cases on reproductive health, it is necessary to provide prevention efforts by providing good and correct hygiene management counseling during menstruation from an early age [11]. So far, health education is still using strategies with conventional learning media. Thus, strategies and learning media are needed that are relevant to unique learning materials, because learning strategies and media play an important role as tools to create an active and effective learning process by spreading messages, instilling confidence, so that people are not only aware, know and understand, but also willing and able to make a recommendation about health.

To achieve maximum results, it is necessary to use the right method or media for counseling according to the target of counseling. One of them is by using audio-visual media in the form of animation [11]. Audio-visual media is



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media that combines viewing media and listening media. Thus, the more the five senses used, the stronger and clearer the knowledge or information obtained because one indicator of the success of counseling is the addition or improvement of knowledge that supports better behavior change [12].

The use of animated videos can attract the attention of teenagers with the results of 80% of students stating that learning is fun and can more easily understand the material [13]. Health education using audio-visual media can affect knowledge of personal hygiene in adolescent girls, the average score before being given health knowledge using the pre-test is 9.72% and the post-test is 11.17% [14]. A preliminary study conducted using direct interview techniques from 10 young women showed that 60% of young women did not know menstrual hygiene, 30% knew menstrual hygiene, and 10% had not experienced menstruation so they did not know menstrual hygiene. The actions of adolescent girls about personal hygiene during menstruation are still lacking so that researchers are interested in conducting research on the effect of counseling on menstrual hygiene using animated audio-visual media on the behavior of adolescent girls.

### MATERIALS AND METHOD

This research method is a quasi-experimental method using one group pretest posttest design. This research was

conducted at Pencawan Middle School, Medan City from April to May 2019. The population in this study were 32 teenage girls in grade VII who met the inclusion criteria and exclusion criteria, the sampling technique used purposive sampling. The independent variable is menstrual hygiene counseling using animated audio-visual media and the dependent variable is the knowledge, attitudes and behavior of young women. Giving animated videos for 8 minutes in 1 day and giving knowledge questionnaires after being given counseling and attitude questionnaires, one month after being given counseling.

### RESULTS

Based on the table above, it can be seen that of the 32 young women before being given counseling, the majority of knowledge, attitudes, and actions were lacking. After being given counseling, the majority of knowledge, attitudes, and behavior were good.



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**Table 1.** The level of knowledge, attitudes, behavior before and after being given menstrual hygiene counseling using animated audio-visual media.

N	Variable	Before		After	
		F	%	F	%
<b>32 Knowledge</b>					
Well	0	0	25	78.1	
Enough	4	12.5	7	21.9	
Not enough	28	87.5	0	0	
<b>Total</b>	<b>32</b>	<b>100</b>	<b>32</b>	<b>100</b>	
<b>32 Attitude</b>					
Well	0	0	23	71.9	
Enough	10	31.3	9	28.1	
Not enough	22	68.7	0	0	
<b>Total</b>	<b>32</b>	<b>100</b>	<b>32</b>	<b>100</b>	
<b>32 Behavior</b>					
Well	0	0	24	75	
Enough	14	43.8	8	25	
Not enough	18	56.2	0	0	
<b>Total</b>	<b>32</b>	<b>100</b>	<b>32</b>	<b>100</b>	

Based on the table above, it can be seen that of the 32 young women before being given counseling, the majority of knowledge, attitudes, and actions were lacking. After being given counseling, the majority of knowledge, attitudes, and behavior were good.

**Table 2.** The influence of personal hygiene counseling during menstruation using animated media on the knowledge, attitudes, and behavior of young women.

N	Variable	Mean	Score	Score	Value e
			Min	Max	
<b>32 Knowledge</b>					
Before		5.56	3	10	
After		12.44	10	15	0.000
<b>32 Attitude</b>					
Before		19.66	14	26	
After		33.56	28	40	0.000
<b>32 Behavior</b>					
Before		5.00	3	7	
After		8.22	6	10	0.000

Based on the table above shows that of 32 young women. From the Wilcoxon test results obtained p value = 0.000 or  $p < 0.05$ . This means that there is a significant effect after being given counseling on knowledge, attitudes and behavior.

## DISCUSSION

### A. Knowledge

In 32 adolescent girls before being given counseling about menstrual hygiene, the majority of female adolescent knowledge was lacking (87.5%) after being given counseling using animated audio-visual media, the majority of girls knowledge was good



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(78.1%). The results of this study are not much different from the research, the results obtained before being given health education were 18.8% in the good category, then after being given health education 71% were in the good category [15]. The results of previous research were obtained before being given health education respondents had good knowledge as much as 24%, while after being given health education it was found that it increased to good as many as 71% of respondents who had good knowledge. It can be concluded that knowledge is very important to improve the health of the reproductive system [16].

### B. Attitude and Behavior

In 32 adolescent girls before being given counseling on menstrual hygiene, the majority of female adolescents' attitudes were lacking (68.7%), the majority of female adolescents' actions were lacking (56.2%) after being given counseling using animated audio-visual media, the majority of female adolescents' attitudes were good (71.9 %) and the majority of young women's actions were good (75%). The results of this study are not much different from the research, the results showed that before counseling, 83.33% of respondents' attitudes and behavior were good and increased after 94.44% of respondents' attitudes and actions were good. It can be concluded that attitude and behavior are very

important to improve the health of the reproductive system [17].

### C. The Effect of Menstrual Hygiene Counseling using animated audio-visual media on the knowledge, attitude and behavior of adolescent girls

From the results of processing the hypothesis test using paired t-Test, the normality test data is not normal so that the Wilcoxon test is used to test the effect of menstrual hygiene counseling using animated audio-visual media on the behavior of adolescent girls. The results of hypothesis testing with the Wilcoxon test were obtained before and after counseling the value of  $p = 0.000$  or  $p > 0.05$ , so it can be concluded that there is an effect of menstrual hygiene counseling using animated audio-visual media before and after the intervention is given to the behavior of adolescent girls. It is the same as, the results showed that the influence of counseling affected the behavior of respondents, where the number of respondents who received counseling had good behavior which increased significantly with a value of  $p = 0.000$  or  $p < 0.05$  [18].

The results of this study are in line with research, who said that counseling using animated media is an interactive process that can encourage learning, and this learning is an effort



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to add new knowledge, attitudes, behavior through strengthening certain practices and experiences. And proves that more than 80% of students stated that learning was fun, and could more easily understand the material [13].

### CONCLUSION

The counseling given using animated audiovisuals has a significant effect on the knowledge, attitudes, and behavior of young women in maintaining personal hygiene during menstruation and it is hoped that further researchers can develop existing research with a more detailed approach in terms of confounding variables, samples, research places used, wider scope and research design by comparing the intervention group and control group as well as modifying the extension media without having to phase to phase so that information can be obtained independently considering the increasingly rapid development of technology.

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## Does Stress Levels Correlation with Primary Dysmenorrhea In Adolescents during Covid-19 Pandemic?

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### ABSTRACT

**Background:** Teenagers experience various changes physical and psychological changes, one of which is menstruation. In addition to menstruating, there are various other complaints such as the appearance of pain referred to as primary dysmenorrhea. The results of a survey by the Central Statistics Agency in Indonesia showed a primary dysmenorrhea incidence of 54.89%, in East Java as many as 54% of young women experienced primary dysmenorrhea. Stress conditions in various levels are thought to have a relationship with the prevalence of dysmenorrhea. During the COVID-19 pandemic, there was an increase in psychological disorders in the form of stress, anxiety, and even depression. Swaperiksa data conducted online for 5 months (April-August 2020) showed that 64.8% of respondents experienced psychological problems, with 64.8% experiencing anxiety, 61.5% experienced depression, and 74.8% experiencing severe stress. This study aims to analyze the relationship of stress levels with primary dysmenorrhea pain in adolescent. **Methods:** This research was used the quantitative with a cross-sectional approach, used purposive sampling. Data collection from July - August 2020 used the DASS and WaLiDD questionnaire. The sample number was 40 adolescent. The data were tested with SPSS using the Spearman rank test. **Result:** The results of the study obtained p-value of 0.0001 ( $p < 0.05$ ). with a correlation coefficient value of 0.693. The conclusion is there a relationship between stress levels and the degree of dysmenorrhea pain, where the higher the level of stress make more pain the degree of dysmenorrhea pain felt by them.

**Keywords:** Stress; Dysmenorrhea; Adolescence; pandemic.



## INTRODUCTION

Adolescents experience various changes physical to psychological changes. This change occurs very quickly, both in adolescent boys and girls. Adolescent girls have a characteristic in marking changes in the reproductive system, namely with the occurrence of menstruation. Menstruation is a periodic event of endometrial discharge, which is characterized by the discharge of blood from the vagina of a woman who is approximately 14 years old.[1]

As a periodic event, menstruation is a natural event although accompanied by various disturbing complaints such as changes in emotions, changes in appetite to the appearance of pain.[2] Complaints of short pain sensations that appear in the pelvis, abdomen that occurs during menstruation to interfere with daily activities are referred to as dysmenorrhea.[3]

Dysminore during menstruation is categorized as primary dysmenorrhea, which is a condition associated with the ovulation cycle, while secondary dysmenorrhea is menstrual pain that develops from primary dysmenorrhea that occurs after the age of 25 years and the cause is due to pelvic abnormalities.[2], [4] In primary dysmenorrhea usually occurs in a woman who has menarche, the frequency will decrease with age. Symptoms of primary dysmenorrhea are pain in the waist area, nausea and vomiting, headaches, fatigue, dizziness, fainting, and diarrhea, as well as emotional distress during menstruation.[5], [6]

The incidence rate of dysmenorrhea in the world is quite high. A 2019 study in

America stated that an average of 90% of women has dysmenorrhea. The results of the Central Statistics Agency survey in 2015, in Indonesia the incidence of primary dysmenorrhea was 54.89%. While in East Java Province showed many 2,761,577 adolescent girls aged 10-19 years (54%) experienced primary dysmenorrhea.

The main cause of dysmenorrhea is an increase in levels of prostaglandins that the body uses to stimulate myometrium contractions (Azagew, Kassie, and Walle 2020). In addition to the main cause, dysmenorrhea can be aggravated by a variety of trigger factors. The triggering factors for dysmenorrhea are disturbed psychological and physical states such as stress, shock, narrowing of blood vessels, and decreased body conditions.[7] Education, psychological factors such as stress, and low health such as anemia can worsen the state of dysmenorrhea.[8]

Stress is a form of human response to a stressor obtained (Maryam, Ritonga, and Istriati 2016). Everyone can experience stress, including teenagers. Some studies conducted show that the prevalence of stress experienced by adolescents is very high. Forms of stressors that are often experienced are academic-related stressors, to parents, people around, the teaching and learning process, group activities to control of feelings and self-desire.

WHO declared that COVID-19 became a global pandemic as of March 2020.[9] All countries including Indonesia are encouraged to follow the physical distancing policy to prevent the spread of COVID-19. The Government of Indonesia implemented the appeal by limiting any



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academic activity, through the Minister of Education and Culture who issued the Circular Letter of the Minister of Education and Culture number 36962 / MPK. A/HK/2020 states that all face-to-face learning activities are diverted to learning from home by online methods.[10]

This change causes adolescents to be able to adapt to the new system that has some challenges in its implementation. Among others, the internet network and the number of internet quotas owned are required to be stable, the delivery of learning materials is not effective and as clear as studying in school, as well as academic schedules that are backward or delayed.[11], [12] The impact of changes experienced by adolescents during the COVID-19 pandemic risks causing psychological disorders.[13]

Psychological disorders that are increasingly high in this pandemic period are stress, anxiety, even depression. For adolescents, this pandemic causes stress and anxiety related to changes in the learning process and daily life. The Indonesian Association of Mental Medicine Specialists (PDSKJI) surveyed mental health through swaperiksa conducted online for 5 months (April-August 2020) 64.8% of respondents had psychological problems, with 64.8% experiencing anxiety, 61.5% experienced depression, and 74.8% experiencing severe stress. The most psychological problems are found in the group of women aged 17-29 years and over 60 years.[14]

Stress conditions in various levels are thought to have a relationship with the prevalence of dysmenorrhea. There is a fairly high correlation between the level of

stress and the incidence of dysmenorrhea in adolescents, with positive values, which can be interpreted as the higher the level of stress that is being experienced by adolescents, the more intense the sensation of dysmenorrhea pain felt by adolescents. But other research suggests that there is no meaningful relationship between stress to dysmenorrhea. Another study in medical students also stated that there was no significant association between stress and dysmenorrhea complaints.[15] Based on this background, researchers wanted to analyze the relationship of stress to dysmenorrhea in adolescents, so this study aims to analyze the relationship of stress levels with the incidence of dysmenorrhea.

### MATERIALS AND METHOD

This research is quantitative research with cross-sectional methods. The population in this study was SMAN 1 kencong students of Jember Regency with inclusion criteria: who experienced dysmenorrhea, willing to be respondents, did not experience gynecological diseases or disorders. The sampling technique used in the study was total sampling, with as many as 40 students. Data collection tools in the form of questionnaire sheets are given online and simultaneously. To measure dysmenorrhea used score working ability, location, intensity, days of pains dysmenorrhea (WaLIDD) and to measure stress levels using Depression Anxiety Stress Scales (DASS).

Data analysis uses univariate analysis and bivariate analysis. The study data was analyzed univariately using frequency distribution. Bivariate analysis is used to determine the correlation of stress levels with primary dysmenorrhea events by



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starting the normality test first using shapiro-wilk. The bivariate analysis uses the Spearman Rank test.

### RESULTS

Univariate analysis is used to get an overview of each variable of the characteristics of respondents which include age, length of dysmenorrhea, drug habits, stress levels, and degrees of primary dysmenorrhea pain experienced.

*Table 1 Distribution of respondents' characteristic data Based on age, length of dysmenorrhea, stress level, and degree of primary dysmenorrhea pain*

No.	Criteria	Characteristic	f	%
1.	Age	10-13	0	0
		14-17	33	82.5
		18-21	7	17.5
2.	Long dismenore	Normal	29	72.5
		Unnormal	11	27.5
3.	Stress Levels	Normal	0	0
		Mild	14	35
		Moderate	19	47.5
		Severe	7	17.5
		Extremely severe	0	0
4.	Degree of dysmenorrhea pain	Without dysmenorrhea	0	0
		Mild dysmenorrhea	7	17.5
		Moderate dysmenorrhea	27	67.5
		Severe dysmenorrhea	6	15

Most are in the age range of 14-17 years (82.5%), the majority of respondents experience normal menstrual periods (72.5%), experienced moderate stress (47.5%), and all experience dysmenorrhea

pain with a distribution of 67.5% experiencing moderate pain.

The relationship of stress levels with the degree of primary dysmenorrhea pain can be seen in Table 2 below.

*Table 2 Results of the correlation of stress levels and degrees of primary dysmenorrhea pain*

Variabel	N	R	p value
Relationship of stress levels with intensity of dysmenorrhea pain	40	0,693	0,0001

The results of this study obtained a correlation coefficient of 0.693 with a p-value of  $0.0001 > \alpha (0.05)$  which means that there is a relationship between stress levels and the degree of dysmenorrhea pain that happens to teenagers. The correlation value of 0.679 can be stated as a strong positive correlation relationship between the two variables. It can be concluded that the higher the stress level of the respondent eating the higher the degree of dysmenorrhea pain.

### DISCUSSION

#### Stress

Adolescents who participated in this study experienced stress at different levels. Most stress levels were found to be moderate levels (47.5%). WHO declared that COVID-19 became a global pandemic as of March 2020.[9]

All countries including Indonesia are encouraged to follow the physical distancing policy to prevent the spread of COVID-19. The Indonesian government implemented the appeal by limiting any academic activity so that face-to-face



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learning activities were diverted to learning from home by online methods.[10]

This change causes adolescents to be able to adapt to the new system that has some challenges in its implementation. Among others, the internet network and the number of internet quotas owned are required to be stable, the delivery of learning materials is not effective and as clear as studying in school, as well as academic schedules that are backward or delayed.[11], [12] The impact of changes that adolescents experience during pandemic COVID-19 Risk causes the emergence of psychological disorders such as stress and anxiety.[13]

The time spent studying online during pandemic times is considered one of the most stressful periods. Academic stress is also influenced by each student's level of creativity. The lower the level of creativity, the higher the stress caused by the academic environment. Academic stress in adolescents tends to be caused by stressors that are quite a lot compared to stressors in offline learning. Stress experienced by a person is not entirely related to negative things but can be a positive thing which means stress can be a challenge to overcome the demands faced by him, for example improving self-quality and learning achievement.[16]

### **Primary Dysmenorrhea Incidence**

The frequency of primary dysmenorrhea incidence in adolescent girls SMAN 1 Kencong, as many as (17.5%) experienced dysmenorrhea with mild pain and more than half (67.5%) with moderate pain.

Dysmenorrhea can be categorized into 2, namely primary and secondary dysmenorrhea. Primary dysmenorrhea is a condition associated with the ovulation cycle, while secondary dysmenorrhea is menstrual pain that develops from primary dysmenorrhea that occurs after the age of 25 years and causes it due to pelvic abnormalities.[1], [5], [8]

Primary dysmenorrhea usually occurs in a woman who has menarche after 2-3 years and can be 15-25 years old.[1], [3], [16] The frequency will decrease with age and will stop after giving birth. The presence of a bulge in the activation of prostaglandin F2a performance arising from a breakdown of the balance between prostaglandins E2 and F2a with prostacyclin, which is synthesized by endometrial cells uteri.[2], [6]

Increased production of prostaglandins and their release (especially PGF2a) from the endometrium during menstruation causes uncoordinated and irregular uterine contractions resulting in pain.[1], [2], [6] Signs of symptoms of primary dysmenorrhea are a pain in the waist area, nausea and vomiting, headaches, fatigue, dizziness, fainting, and diarrhea, as well as emotional distress during menstruation.[17], [18]

### **Stress-Level Relationship with Dysmenore**

The results of the study using the Spearman Rank correlation test obtained a p-value of 0.0001 ( $p < 0.05$ ). So it can be stated there is a relationship between stress levels and the degree of dysmenorrhea pain that occurs in adolescents. The correlation value of 0.693 can be stated to be a strong positive correlation relationship between the two variables. It can be concluded that



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the higher the stress level of the respondent make more the degree of dysmenorrhea pain felt by the respondent.

According to the results of research Priyanti & Mustikasari (2014) obtained a value of p-value = 0.02 ( $P < 0.05$ ) that there is a relationship of stress levels with the occurrence of dysmenorrhea in young women. Furthermore, research conducted by Sari (2013) has a meaningful relationship with a moderate correlation between stress levels and primary dysmenorrhea degrees. In times of stress, through the nerves, the stressor senses will be passed to a part of the brain nerves called the limbic system (neurotransmitter). [19] The stimulus will be passed on to the hormone glands (endocrine) which is the immune system of the body and the organs of the body that are retired. [15], [19]

The stimulus will cause the production of adrenaline hormones to increase then enter the blood circulation and affect the heart (palpitations), blood pressure rises, stomach acid increases, emotions are not controlled, and so on. [20] In times of stress, the body will produce the hormones adrenaline, estrogen, progesterone, and prostaglandins excessively. Estrogen can increase uterine contractions. The increase in the hormone adrenaline also causes tense body muscles including uterine muscles which result in decreased perfusion to endometrial tissue, resulting in blood vessels pinched by uterine muscles which cause the oxygen supply to be reduced and become ischemic. [19], [20]

Stress tends to cause dysmenorrhea 3,781 times. [21] Stress can interfere with the work of the endocrine system so that it can cause irregular menstruation and pain during menstruation. When stressed,

a neuroendocrine response arises that causes Corticotropin-Releasing Hormone (CRH) to stimulate the secretion of Adrenocorticotropic Hormone (ACTH) so that adrenal cortisol secretion increases. These hormones will cause the secretion of Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH) to be inhibited so that progesterone secretion and release are disrupted. Decreased progesterone levels will increase pg synthesis especially PGF<sub>2α</sub>. In addition to PG, the body also produces excessive adrenal hormones and estrogen [22].

Increased estrogen can lead to an increase in excessive uterine contractions. In addition, an increase in the hormone adrenaline can cause the tension of the uterine muscles, so that blood vessels are pinched by the uterine muscles which cause the oxygen supply (O<sub>2</sub>) to be reduced and become ischemia causing pain. In addition, the risk of experiencing cramps is twice as large as stress because sympathetic nerve activity becomes higher. Stress affects the musculoskeletal system, muscle tension, and contraction, muscle spasms, increased cholesterol, blood pressure, and decreased immunity. [23]

## CONCLUSION

There is a meaningful relationship between the level of stress and the incidence of primary dysmenorrhea in SMAN 1 Kencong students with a p-value of 0.001 ( $p < 0.005$ ). The correlation value of 0.679 can be stated as a strong positive correlation relationship between the two variables. It can be concluded that the higher the stress level of the respondent eating the higher the degree of dysmenorrhea pain felt by the respondent.



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### LIMITATION OF STUDY

This study was used questionnaires as a data measuring tool. Questionnaires can produce inaccurate data because they are only based on the respondent's memory and honesty. In addition, stress levels, which are only measured using a questionnaire, are subjective depending on mood.

### SCOPE FOR FUTURE RESEARCH

Further investigation of this study may overcome limitations by using larger sample size and assessing risk factors related to primary dysmenorrhea and be able to measure stress by measuring levels of stress like hormone cortisol as a valid and accurate measurement.

### ACKNOWLEDGEMENT

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### Effect Of Long Bean Leaf Extract as a Booster For Breast Milk Production

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#### ABSTRACT

Breast milk is the best food for babies because it contains a variety of good substances needed, especially in the first 6 months of a baby's life. Not all mothers are successful in giving exclusive breastfeeding to their babies. The biggest reason for exclusive breastfeeding failure around the world is that the mother believes her breast milk is insufficient to suit the baby's demands. Breast milk boosters can be used by mothers who consider their breast milk is inadequate to satisfy their babies' needs. Long bean leaves are one of the plants that are suppose to help improve breast milk production. The purpose of this research was to proved that the extracts of long bean leaves may boost breast milk production. The method in this research used quasi experiment design with one group pretest and posttest approach. The sample is breastfeeding mothers who fulfill the inclusion criterias. Analysis data using dependent T-test. The results of the research showed that there was a significant difference in the measurement of the volume of pumped breast milk in mothers, so it is proved that the long bean leaf extract was effective in increasing the milk production of breastfeeding mothers.

Keyword : Long bean leaf; Breast milk; Breastfeeding

#### INTRODUCTION

Giving breast milk to their babies is one of the jobs and responsibilities of mothers in their children's early years. Breast milk is the best food for babies because it contains a variety of good substances needed, especially in the first 6 months of a baby's life [1]. Babies who are not exclusively breastfed are at risk of developing diarrhea. Giving formula milk to a baby might cause diarrhea and malnutrition since the nutritional content is insufficient to meet the baby's

nutritional demands [2]. Unfortunately, not all mothers are successful in giving exclusive breastfeeding to their babies. The biggest reason for exclusive breastfeeding failure around the world is that the mother believes her breast milk is insufficient to suit the baby's demands [3].

Infants aged less than 6 months receiving exclusive breastfeeding are indicators listed in the Strategic Plan of the Ministry of Health for the 2020-2024 period, even in the previous Strategic Plan (2015-2019) this indicator has become an indicator of activity performance of the Directorate of Community Nutrition,



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because it is closely related to the government's priority program, namely the acceleration of stunting reduction [4]. The best meal for newborns is breast milk. Breast milk supplies vital nutrients for an infant's growth and development, such as fat in the form of Omega 3, Omega 6, and DHA, which is important for brain tissue cell proliferation. Lactose is the type of carbohydrate found in breast milk. Carbohydrates are necessary for brain cell proliferation, calcium absorption, and intestinal bifidus maintenance [5].

Lactagogum is a medication that helps to increase or expedite milk production. Synthetic lactagogum is a lesser-known and more relatively expensive [6]. This necessitates the search for lactagogum-alternative medications. Breast milk boosters can be used by mothers who consider their breast milk is inadequate to satisfy their babies' needs. Breast milk boosters made from natural components such as plants are considered safe. Long bean leaves are one of the plants that are suppose to help improve breast milk production [7]. The herbal that use by breastfeeding mothers is commonly linked to increased milk supply and improved mother's stamina following childbirth [8]. A previous study conducted by Ariestini "The Influence Of Long Bean Leaves (*Vigna Sinensis*) On Increasing Breast Milk Production" showed that there was a significant difference in the milk production of mothers who consumed long bean leaf shoots [9].

Another study related to long bean leaves on breast milk production was also carried out by Firdausi on "The

Application of Processed Lembayung Leaves in Breast Milk Production" which found an increase in the production of breast milk for five respondents who had problems with non-fluent breast milk [10]. Despite the fact that the trials were only conducted on mother mice, the research by Adriana found that the long bean leaves extract can increase breast milk production [11].

Nowadays, people require more practical items as time passes and technology advances. Although it has been proved that eating long bean leaves as a vegetable can increase improve breast milk production, it is still thought to be inefficient because the long bean leaves must be prepared first every time they are eaten. Based on these reasons, researchers are interested in converting long bean leaves into extracts to increase breast milk production.

## MATERIALS AND METHOD

The type of this research used the quasi experiment design using one group pretest and posttest approach. This research was carried out at the Niar Pratama Clinic. The time of this research took place from August until September 2019. The population in this research were all the breastfeeding mothers at the Niar Pratama Clinic from June to August 2019, which totaled 60 people. The sampling technique used purposive sampling, namely the sampling was based on certain considerations made by the researcher's self. The sample obtained in this research amounted to 23 respondents. This research's sample was drawn from a population that met the research's inclusion criteria. The inclusion criterias are:

- Exclusive breastfeeding mothers who are willing to be respondents
- Breastfeeding mothers who have babies ranging in age from 14 days to 3 months.

Criterias for exclusion are:



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- Mothers who have abnormal nipples and breasts
- Mothers who have been diagnosed with a psychological disorders or mental illness
- Mothers who take breast milk-stimulating drugs

After researcher got the samples, next step is every respondent will be given the long bean leaf extract with 200 mg/capsule dose [1]. It must be consumed twice a day which is in the morning after breakfast and in the evening before bedtime for 14 days. Then, the measurement for the breast milk volume will be took twice which is before (pretest) and after intervention (posttest). The method to measure breast milk volume is by pumping mother's breast after they did direct breastfeeding to their baby and make sure that the baby is full. And then, it will be measured using a milk bottle and the volume was recorded using an observation sheet. Furthermore, in this research, a checklist sheet was also used to monitor the compliance of mothers in consuming long bean leaf extract capsules. The checklist sheet and observation sheet are the instrument tools on this research.

## RESULTS

The research has been conducted on 23 breastfeeding mothers who agreed to participate as research participants. Long bean leaf extract was given to all participants for 14 days at a dose of 200 mg (1 capsule) twice a day, in the morning and before bedtime. Univariate and bivariate analysis were applied in this research. The characteristics of respondents are described using univariate analysis. Bivariate analysis used to determine the average difference test

before and after consuming long bean leaf extract.

### Univariate analysis:

Description of respondent's characteristics based on baby's gender, mother's age, and parity.

### Distribution of Frequency and Percentage of spondents Characteristics of Breastfeeding Mothers at Pratama Niar Clinic

No	Characteristics of Respondent	F	%
1	<b>Gender of Baby</b>		
	Female	13	56.5
	Male	10	44.5
	Total	23	100
2	<b>Mother's Age</b>		
	21-30 years	18	78.3
	31-35 years	5	21.7
	Total	23	100
3	<b>Parity</b>		
	1	5	21.7
	2	13	56.5
	3	4	17.4
	4	1	4.3
	Total	23	100

Based on the characteristics of respondents according to the gender of baby, it was found that the majority of the respondents were 13 babies who were female (56.5%). The majority of respondents aged 21-30 years were 18 respondents, based on maternal age (78.3%). According to the majority of respondents' parity, as many as 13 people had a second kid (56.5%).



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#### **Descriptive Amount Of Pumped Breast Milk Before and After Intervention**

	N	Min	Max	Mean
Before	23	60 cc	270 cc	153. 9130
After	23	120 cc	310 cc	201. 7391

Pumped breast milk was measured 2 hours after the mother gave direct breastfeeding and obtained an average of 153.9, with the minimum value of pumped breast milk being 60 cc and the maximum value being 270 cc. After the intervention of giving long bean leaf extract for 2 weeks with a dose of 200 mg/capsule and consumed twice a day, the average value was 201.7 with the minimum value of pumped breast milk was 120 cc and the maximum value was 310 cc.

#### **Bivariate Analysis:**

The dependent T test was used to determine the significance of the effect of long bean leaf extract on breast milk production using bivariate data analysis. The following data was acquired from the research conducted in 2019 at the Niar Pratama Clinic, on the effect of providing long bean leaf extract on breast milk production in mothers with babies aged 14 days to 3 months:

#### **Progress in Pumped Breast Milk Production Before and After Giving Long Bean Leaf Extract at Pratama Niar Clinic**

	Mean	Standart Deviation	Mean Difference	P
Before Intervention	153.913	60.96966	-47.2609	.000
After Intervention	201.739	65.6429		

From the analysis test results using the dependent t-test, the value of  $\alpha$  = 0.00 < (0.05) with an average difference of 47.2, it can be concluded that H0 is rejected and Ha is accepted. Based on these data, it can be seen that there are differences in the increase in breast milk production before and after giving long bean leaf extract, so it can be concluded that giving long bean leaf extract has an effect on increasing breast milk production.

#### **DISCUSSION**

The average value of pumped breast milk production before giving long bean leaf extract is 153.9, and the average value of pumped breast milk production after giving long bean leaf extract is 201.7, according to the results of univariate data analysis and bivariate analysis on respondents. There is a difference in average of pumped breast milk production between the respondent group and the result is  $0.00 < 0.05$ , indicating that there is a difference in the amount of pumped breast milk. According to the results of research, long bean leaf extract is helpful in boosting the production of expressed breast milk with a difference value of 47.8.

This is similar with Nuzliati T. Djama's (2018) research, "The Effect of Long Bean Leaves Consumption on Increasing Breast Milk Production in Breastfeeding Mothers" with a total of 30 participants, this research used a one-group before-and-after intervention design, also known as a pre-and-posttest design. Long bean leaves were given to all participants, who consumed up to 200 grams every day for seven days [12].

Another previous research that has similar result was done by Ariestini, et al. In this research, the researchers using two groups which was the intervention group who consumed long bean leaf as vegetable and control group who was not consumed long bean leaf or other breast milk



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booster. The intervention group showed there was 65.7% of breast milk increased. Meanwhile in the control group, the increased of breast milk only 15% [9].

The last semblable research which has similar result is Daniyati, et al's research, entitled "Provision of cowpea leaves (*Vigna Sinensis* L) extract to increase the levels of prolactin hormone among postpartum women". This research also used control group to investigated the differences in prolactin levels. The result showed that the control group which not consumed cowpea leaves extract has smaller mean of prolactin hormone levels increased which was 56.64 ng/ml (38.12%), and the intervention group's mean was 140.63 ng/ml (87.15%) [1].

The two previous studies showed long bean leaves were consumed in the form of vegetables as much as 200 grams per day [12] or 100 grams long bean leaf cooked with coconut milk 500 ml [9] which was consumed for 7 days, meanwhile in the current research, long bean leaves were converted into extracts at a dose of 200 mg per capsule and consumed 2 times a day, in the morning and at night before sleep. Breast milk is produced by a complex process including physical and emotional elements, as well as the interaction of several hormones, including prolactin. After the baby is born and the placenta is expelled, the levels of the mother's hormones progesterone and estrogen decrease so that prolactin levels will increase and milk production (endocrine control) begins. Prolactin levels gradually decrease after a few days, but milk production is maintained, if it is not enhanced, due to local feedback mechanisms such as emptying the breast (autocrine control) [13].

As a result, an increase in prolactin levels

is required to boost milk production but not to keep it stable. The pituitary gland produces the hormone prolactin, and the amount produced is determined by the nutrition taken by the mother. It is also influenced by the baby's sucking frequency; the more often the baby sucks, the more hormones are produced. Increasing the frequency of sucking while pumping or expressing breast milk aids the mother in emptying her breasts. Milk production will diminish if the breasts are not emptied fully and on a regular basis. On the other hand, more frequent and complete emptying of the breasts leads to increased milk production [14]. One of the common reason that causing mothers stop giving breastmilk to their babies is the production of breast milk is low [7]. Lactogogue is a prescription or substance that is considered to aid in the stimulation, maintenance, or increase of breast milk production in breastfeeding mothers. Alkaloids, polyphenols, steroids, and flavonoids are examples of lactogenic compounds. Long bean leaves contain lactogogue substances, including saponins, flavonoids and polyphenols that can stimulate prolactin [12]. When the baby suckles the mother's nipple, the mother's nipple and areola are stimulated by the hormone prolactin to produce breast milk. The vagus nerve sends the stimulus to the pituitary, which subsequently sends it to the anterior lobe [15]. The hormone prolactin will emerge from this lobe, enter the bloodstream, and reach the glands that produce breast milk. Milk production will be boosted in these glands [16]. The back of the pituitary gland produces oxytocin. When the nerve endings around the breast are stimulated by sucking, this hormone is released. Oxytocin is a hormone that aids in the production of milk (milk let down). The purpose of oxytocin in the mammary glands is to stimulate contraction of the myoepithelial cells that surround the alveolus of the mammary



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gland, so that the contents of the alveolus are pushed out into the milk ducts and the alveolus becomes empty, triggering the next milk synthesis [15], [16].

This is in support of the hypothesis that foods containing lactogogum compounds have the ability to activate the hormones oxytocin and prolactin, so boosting and facilitating the production of breast milk [15].

### CONCLUSION

Long bean leaves which contain saponins, flavonoid and polyphenol, acted as laktogogums, causing more breast milk to be produced. The results of the research which showed that there was a significant difference in the measurement of the volume of pumped breast milk in mothers proved that the long bean leaf extract was effective in increasing the milk production of breastfeeding mothers. The impact of herbs' chemical constituents on breast milk must also be widely understood by the public in order for herb ingestion during nursing to be done safely.

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## The Correlation Of Knowledge And Attitude of Young Women With The Prevention Vaginal Discharge (*Fluor Albus*)

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### ABSTRACT

Every young women who has been puberty, will have menstruate. when menstruation, young women may sustain vaginal discharge. Most of young women do not have knowledge and positive attitudes about vaginal discharge and how to prevent it. The purpose of this study was to determine the correlation of knowledge and attitudes of young women and prevention of vaginal discharge. This research is an analytic study with a *cross sectional* approach. The research was done at Pencawan High School Medan in 2019. The sampel in this study were 69 people. Data analysis used univariate, bivariate analysis. The results showed that most of the young women had less knowledge about vaginal discharge 81.2% and a small portion had good knowledge of 18.8%. The attitude of young women about vaginal discharge is mostly negative 53.6% and a small portion is positive 46.4%. There is a significant correlation the knowledge of young women about vaginal discharge and prevention of vaginal discharge at SMA Pencawan Medan in 2019, with *p-value* = 0.004 <0.05. There is a significant correlation the attitudes of young women about vaginal discharge and prevention of vaginal discharge in SMA Pencawan Medan, with *p-value* = 0.000 <0.05. It is recommended to all students of SMA Pencawan Medan to search accurate information about vaginal discharge through books as well as print and electronic media and do a good prevention of vaginal discharge by maintaining personal hygiene, especially the feminine area.

Keyword : Knowledge; Attitude; Prevention of vaginal discharge

### INTRODUCTION

Women in Indonesia have the potential to vaginal discharge as much 90% because Indonesia has a tropical climate, so fungi are easy to grow which

results in many cases of vaginal discharge. Symptoms of vaginal discharge are also suffer by unmarried women or young women aged 15-24 years, which is around 31.8 %. This shows that young women are



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more at risk of vaginal discharge. (Azizah & Widiawati, 2015)

The case of vaginal discharge in Indonesia is increasing. Based on research results stated that in 2010 52% Indonesian women suffer vaginal discharge, then in 2011, 60% of women had suffered vaginal discharge, while in 2012 almost 70% of Indonesian women suffered vaginal discharge, in 2013 from January to August, almost 55% of women have suffered vaginal discharge. (Monica & Wijayanti, 2019)

Most of young people do not have accurate knowledge about reproductive health and sexuality. In addition, they also do not have access to reproductive health services and information, including contraception. Information is usually obtained from friends or the media which is often inaccurate.

Women rarely caring to the cleanliness of their external genitalia. Vaginal infections every year affect women worldwide 10-15% of 100 million women. for example, young women who are infected with candida bacteria around 15% will suffer vaginal discharge. This incident is because teenagers do not know the problems surrounding the reproductive organs (Utami & Riawati, 2014)

In (Mokodongan et al., 2015) research stated that more young women have a high risk of suffer pathological vaginal discharge, who have bad behavior in preventing vaginal discharge (52%), there are 10% of young women who often use female cleaning products, there are 17.59% of young women who do not dry

the external genitalia after urinating or defecating using a dry tissue or towel. Furthermore, 25.76% of young women who clean their external genitalia from back to front, 17% of young women who often use tight underwear in their daily activities. 8.2% of who often wear underwear made of non-cotton materials 2.5% of young women who often share underwear and towels with other people. This group is young women who have a high risk of suffer pathological vaginal discharge.

Based on a preliminary study conducted at Pencawan High School, many students don't know about vaginal discharge and how to properly care for reproductive organs, especially in the vagina. 4 out of 7 female students were suffer vaginal discharge. the characteristics is white fluid coming out of the vagina, itching around the vagina, there is also a smelly not good in the vagina. so, that is make feels uncomfortable during activities. From the results of a preliminary study, it was found that the knowledge and attitudes of students about vaginal discharge and how to care for the reproductive organs were necessary to prevent pathological vaginal discharge.

Based on the data above, the authors are interested in conducting research on the The Correlation Of Knowledge And Attitude of Young Women With The Prevention Vaginal Discharge in SMA Pencawan Medan.



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### MATERIALS AND METHOD

The type of research is an analytic study with a cross sectional design. This research was conducted at SMA Pencawan Medan in 2019. The population in this study were as many as 82 people, the number of samples is 69 people, were taken by simple random sampling technique. Data analysis includes univariate and bivariate using chi-square.

Data collection is done by using a questionnaire. There are 3 types of questionnaires, namely the knowledge questionnaire about vaginal discharge, the attitude of young women and the prevention of vaginal discharge.

### RESULTS

**Table 1. Frequency Distribution of Respondents Based on Knowledge in SMA Pencawan Medan**

No	Knowledge	F	%
1	Well	13	18.8
2	Enough	41	59.5
3	Not enough	15	21.7
<b>Total</b>		<b>69</b>	<b>100.0</b>

The table above shows that most of the respondents have sufficient knowledge about vaginal discharge as many as 41 people (59.5%), a small proportion with good knowledge as many as 13 people (18.8%).

**Table 2. Frequency Distribution of Respondents Based on Attitudes in SMA Pencawan Medan**

No	Attitude	F	%
1	Positive	32	46.4

1	Positive	32	46.4
2	Negative	37	53.6
<b>Total</b>		<b>69</b>	<b>100.0</b>

The table above shows that most respondents have a negative attitude about vaginal discharge as many as 37 people (53.6%), a small number of respondents have a positive attitude as many as 32 people (46.4%).

**Table 3. Frequency Distribution of Respondents Based on Prevention of vaginal discharge in SMA Pencawan Medan**

No	Vaginal discharge	F	%
1	Well	22	31.9
2	Not enough	47	68.1
<b>Total</b>		<b>69</b>	<b>100.0</b>

The table above shows that most of the respondents who did prevention of vaginal discharge were in the poor category as many as 47 people (68.1%), a small proportion in the good category were 22 people (31.9%).

**Table 4. Cross Table of Knowledge of young women about Vaginal discharge with Prevention of Vaginal discharge in SMA Pencawan Medan**

No	Knowledge	Vaginal Discharge				Jumlah	p-value		
		Well		Not Enough					
		f	%	F	%				
1	Well	9	69,2	4	30,8	1	100,0		
2	Enough	8	19,5	3	80,5	4	100,0		
3	Not Enough	5	33,3	1	66,7	1	100,0		



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The table above shows that of the 13 respondents who have good knowledge of vaginal discharge, the majority do prevention of vaginal discharge well as many as 9 people (69.2%). Of the 41 respondents who had sufficient knowledge about vaginal discharge, the majority carried out prevention in the unfavorable category as many as 33 people (80.5%). Of the 15 respondents who had less knowledge about vaginal discharge, the majority carried out prevention in the poor category as many as 10 people (66.7%).

The results of the bivariate test using Chi-Square obtained a p-value of  $0.004 < 0.05$ , which means that there is a significant relationship between knowledge of adolescent girls about vaginal discharge and prevention of vaginal discharge in SMA Pencawan Medan.

**Table 7. Cross Table of young women Attitudes about Vaginal discharge with Prevention of vaginal discharge in SMA Pencawan Medan**

No	Atitude	Prevention of vaginal discharge				Jumlah		p-value	
		Well		Not Enough					
		f	%	f	%				
1	Positive	18	56,3	14	43,8	32	100,0	0,000	
2	Negative	4	10,8	33	89,2	37	100,0		

The table above shows that of the 32 respondents who had a positive attitude about vaginal discharge, the majority carried out prevention of vaginal discharge well as many

as 18 people (56.3%). Of the 37 respondents who had a negative attitude about vaginal discharge, the majority carried out prevention in the unfavorable category as many as 33 people (89.2%).

The results of the bivariate test using Chi-Square obtained a p-value of  $0.000 < 0.05$ , which means that there is a significant correlation between the attitudes of adolescent girls about vaginal discharge and prevention of vaginal discharge in SMA Pencawan Medan.

## DISCUSSION

### The Correlate of Young Women Knowledge about Vaginal Discharge with Prevention of Vaginal Discharge

Based on the results of the study showed that there was a significant correlation between the knowledge of young women about vaginal discharge and prevention of vaginal discharge in SMA Pencawan Medan,  $p\text{-value} = 0.004 < 0.05$ . Of the 13 respondents with good knowledge, the majority of vaginal discharge prevention measures were good as many as 9 people (69.2%). Of the 41 respondents who have sufficient knowledge, the majority of preventive measures are not good as many as 33 people (80.5%). Of the 15 respondents who had less knowledge, the majority of preventive measures were not good as many as 10 people (66.7%).

This study is in line with research conducted by (Remedina, 2015) that based on the results of the Chi Square test on the variable knowledge and prevention of vaginal discharge, the Asymp value was obtained. Sig



0.000 which means that there is a relationship between knowledge and prevention of vaginal discharge in female students at SMK YPKK 2 Sleman.

Based on (Mardalena, 2015) on FKM USU Medan students, that the majority of the proportion who have less knowledge and do not clean the external genitalia are 19 people (95%), the p value of the results of this study is  $p = 0.010$ , therefore based on the Chi-square value obtained ( $p = 0.010$ )  $< 0.05$  so statistically it is proven that there is a significant relationship between knowledge and hygiene measures of external genitalia in female students as an effort to prevent vaginal discharge.

In contrast to the research by (Rembang et al., 2013) at SMAN 9 Manado, it showed that the results of statistical tests through the chi-square test obtained a probability value of 0.495 with an error rate ( $\alpha$ ) of 0.05, which means that there is no significant relationship between the level of knowledge and the prevention of vaginal discharge in female students. at SMAN 9 Manado.

### The Correlate of Young Women Attitudes about Vaginal Discharge with Prevention of Vaginal Discharge

Based on the results of the study showed that there was a significant corelate the attitudes of young women about vaginal discharge and prevention of vaginal discharge in SMA Pencawan,  $p$ -value = 0.000  $< 0.05$ . Of the 32 respondents who had a positive attitude about vaginal discharge, the majority carried

out prevention of vaginal discharge well as many as 18 people (56.3%). Of the 37 respondents who had a negative attitude about vaginal discharge, the majority carried out prevention in the unfavorable category as many as 33 people (89.2%).

The results of this study are in line with research by (Rembang et al., 2013) which found that there is a relationship between attitudes and prevention of vaginal discharge in female students of SMA Negeri 9 Manado. revealed that attitudes about maintaining the cleanliness of the genital organs in preventing vaginal discharge play an important role in shaping the actions of young women to maintain the cleanliness of the genital organs in preventing vaginal discharge.

### CONCLUSION

There was a significant Correlate the knowledge and the attitude of young women about vaginal discharge and prevention of vaginal discharge in SMA Pencawan Medan in 2019. It is hoped that after this research, the young women of SMA Pencawan Medan can search accurate information about vaginal discharge through books or Internet and electronic media and do a good prevention of vaginal discharge by maintaining personal hygiene, especially the feminine area.



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## Relationship of Age, Education, Occupation, and Socio-Economic of Pregnant Women with Anemia at the Ajibarang II Health Center, Banyumas Regency

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### ABSTRACT

**Background:** Anemia in pregnancy is anemia due to iron deficiency, iron deficiency anemia in pregnant women is a health problem experienced by women throughout the world, especially developing countries. Data from the Ministry of Health of the Republic of Indonesia the prevalence of deficiency anemia in pregnant women is 37.2%. This study aims to determine the relationship between age, education, occupation, and socio-economy of pregnant women with anemia at the Ajibarang II Public Health Center, Banyumas Regency.

**Methods:** The method used in this research is descriptive. The study population was all pregnant women in the Ajibarnag II Health Center Work Area in the period January-June 2021 with accidental sampling technique. The sample obtained is 27 respondents. **Results:** The results showed that the distribution of the frequency of pregnant women with anemia found that mothers who had anemia were 18 (66.7%) respondents and those who did not experience anemia were 9 respondents (33.3%). Most of the respondents aged 25-34 years, namely 16 respondents (66.7%). Mothers who have elementary-junior high school education who experience anemia in pregnant women are 11 respondents (40.7%). Mothers who do not work (IRT) have a higher incidence of anemia, namely 18 respondents (66.7%). And the socio-economic who lacked anemia were 17 (63.0%) respondents. **Conclusion:** Mothers who experienced anemia were 18 respondents (66.7%) with maternal age 25-34 years old, elementary-junior high school education, household work (not working) and most of them had poor socio-economic status.

Keyword: Pregnant women with anemia, age, education, occupation, socio-economics.



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## INTRODUCTION

Until now, the high maternal mortality rate in Indonesia is still a priority problem in the health sector. The direct cause of maternal death is anemia (Atik Purwandari, 2016). Data from the World Health Organization (WHO) in 2018 states that 42.8% of the causes of maternal death in developing countries are related to anemia in pregnancy. One of the complications of pregnancy that often occurs is anemia with a range between 20-89% by setting Hb 11 gr% as the basis. The prevalence of deficiency anemia in pregnant women is 37.2% and 32.6% in women of childbearing age (Kemenkes RI, 2019) [1].

Anemia is the biggest health problem in the world, especially for women of childbearing age. The problem that often occurs in pregnant women is anemia and is the biggest and most difficult micro-problem in the world. Anemia in pregnancy is anemia due to iron deficiency, iron deficiency anemia in pregnant women is a health problem experienced by women throughout the world, especially developing countries (Putri Dewi Anggraini, 2018) [2]. The factors that cause anemia are iron deficiency, acute bleeding, malnutrition, malabsorption, chronic diseases. Other factors that can cause anemia in pregnancy are knowledge, socioeconomic status, parity, gestational age, maternal age, genetics, uterine condition, age, education, occupation, consumption of iron and diet. Anemia that is still commonly found in pregnant women is iron deficiency anemia (Ainal Mardiah, 2020) [3].

If the Hb level is below normal and the absence of proper and accurate treatment will result in a decrease in the hemoglobin level below the normal value, it can cause abortion, premature labor, molahidatidosa, antepartum

bleeding, premature rupture of membranes (PROM). The high prevalence of anemia can bring negative consequences such as disturbances and inhibition of growth, both body cells and brain cells, lack of Hb in the blood results in a lack of oxygen carried by body and brain cells in pregnant women, which can result in shape effects on the mother herself and the baby being born. (Tiara Carolin Flower, 2021). [4]

WHO reports that there are 52% of pregnant women who experience anemia in developing countries. In Indonesia, it is reported that from about 4 million pregnant women, half of them suffer from nutritional anemia and one million others experience chronic energy deficiency. Anemia in pregnancy is still a chronic problem in Indonesia as evidenced in the prevalence in pregnant women of 63.5% (Atik Purwandri, 2016) [5].

Cases of anemia are still high, generally due to the low awareness of pregnant women in paying attention to the importance of preventing anemia and the dangers of lack of iron intake. Diagnosis of maternal anemia by measuring hemoglobin levels in the mother's blood (Ika Sumiyarsi, 2018) [6]. Based on data from the recapitulation of the MCH report at the Ajibarang II Health Center, the incidence of anemia is quite high, seen from 2018 the number of pregnant women experiencing anemia was 2 people and there was an increase in 2019 amounting to 85 anemic pregnant women and then decreasing again in 2020 amounting to 8 anemic pregnant women.

Based on a preliminary case study conducted on August 9, 2021 at the Ajibarang Health Center, Banyumas Regency, there have been programs that have been implemented, namely classes for pregnant women and giving blood-added tablets to pregnant women during ANC examinations.

Based on this incident, the researcher is interested in conducting a study entitled The Relationship of Age, Education, Occupation, and Socio-Economic Women with Anemia in Ajibarang II Public Health Center,



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Banyumas Regency.

## RESULTS

### MATERIALS AND METHOD

This research uses descriptive research method. The population in this study were all pregnant women at the Ajibarang II Health Center in 2021. The population in this study were all pregnant women at the Ajibarang II Health Center as of January-June 2021 with a total of 402 pregnant women. The sampling technique used in this research is the sampling technique used is the accidental sampling technique. So that in this sampling technique the researcher took respondents at that time at the Ajibarang II Health Center.

Data collection techniques are carried out in two ways, namely primary and secondary data collection. Primary data collection was carried out using a research instrument in the form of a questionnaire containing the characteristics of respondents and a list of questionnaire questions. Secondary data collection is obtained through the MCH Report which has been provided by the midwife. Questionnaire data collection using a google form drive which was distributed via whatsapp link messages to avoid crowds and interactions during the Java-Bali COVID-19 pandemic PPKM. Descriptive or statistical data analysis aims to process the data that has been collected to answer the problem formulation.

### 1. Characteristic Distribution

Characteristic distribution of respondents consisting of age, education, occupation, and socioeconomic

**Table 1. Characteristics of respondents based on age, education, occupation, and socio-economic.**

espondents Characteristic	n	%
Respondent's age		
- 17-24	8	29,6
- 25-34	19	70,4
Respondent's education		
- Elementary-Junior	12	44,4
High	12	44,4
- Senior School	3	11,1
- College		
Respondent's job		
- Housewife	24	88,9
Kary. Private	3	11,1
Socio-economic		
- < 1.000.000	21	77,8
- > 1.000.000	6	22,2

Based on table 1, the age characteristics of respondents showed 19 respondents aged 25-34 years (70.4%). Education of respondents 44.4% shows the educational status of elementary-junior high schools, namely 12 respondents as well as respondents with high school education. The occupations of 24 respondents indicated that mothers were not working/housewives (88.9%), and on the socio-economic characteristics of 21 respondents had income with sufficient category <1.000.000 (77.8%).

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Total | 18 | 66.7 | 9 | 33.3 | 27 | 100 |

#### Socio-economic

#### 2. Pregnant Women with Anemia

The distribution of pregnant women with anemia at the Ajibarang II Health Center can be seen in the table below:

**Table 2. Distribution of Pregnant Women with Anemia**

Pregnant women with anemia	n	%
Anemia	18	66,7
No anemia	9	33,3

Table 2 shows that the distribution based on pregnant women with anemia who are not anemic is 9 people (33.3%) and pregnant women who have anemia are 18 people (66.7%).

Total	18	66.7	9	33.3	27	100	
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Respondents Characteristic	Pregnant women with anemia			No Anemia			P value
	Anemia	No Anemia	Total	N	%		
Respondent's age							
- 17-24	2	7.4	6	22.2	8	29.6	0.0
- 25-34	16	59.3	3	11.1	19	70.4	0.05

Respondent's education	n	%	n	%	N	%	
- Elementary-Junior High School	11	40.7	1	3.7	12	44.4	0.0
- Senior High School	4	14.8	8	29.6	12	44.4	0.04
- College	3	11.1	0	0	3	11.1	0.04

Respondent's job	n	%	n	%	N	%	
- Housewife	18	66.7	6	22.2	24	88.9	0.0
- Kary. Private	0	0	3	11.1	3	11.1	0.09

Socio-economic	n	%	n	%	N	%	
- <1.00.000	17	63.3	4	14.8	21	77.8	0.0
- >1.00.000	0	0	8	28.6	8	22.2	0.03

Respondents Characteristic	Pregnant women with anemia			P value
	Anemia	No Anemia	Total	
Respondent's age	n	%	n	
- 17-24	2	7.4	6	
- 25-34	16	59.3	3	
Total	18	66.7	9	33.3
				0.003

Respondent's education	n	%	n	%	N	%	
- Elementary-Junior High School	11	40.7	1	3.7	12	44.4	0.004
- Senior High School	4	14.8	8	29.6	12	44.4	
- College	3	11.1	0	0	3	11.1	
Total	18	66.7	9	33.3	27	100	

Respondent's job	n	%	n	%	N	%	
- Housewife	18	66.7	6	22.2	24	88.9	0.009
- Kary. Private	0	0	3	11.1	3	11.1	

Based on the table above shows that pregnant women who experience anemia in the age group 17-24 years only 2 respondents (7.4%). Meanwhile, in the 25-34 year age group, the highest number of pregnant women experienced anemia, namely 16 respondents (66.7%). Based on statistical calculations, it can be seen that p-value = 0.03 means that there is a relationship between maternal age and anemia.

In the elementary-junior high school education group, pregnant women experienced the highest anemia, namely 11 respondents (40.7%), while in the high school education group, mothers experienced anemia, namely 4 respondents (14.8%), and in the college group, pregnant women experienced anemia as many as 3



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respondents (11.1%). Based on statistical calculations, it can be seen that p-value = 0.04 means that there is a relationship between maternal education and anemia.

In the occupational group, the mothers who experienced the most anemia were mothers who only served as IRT, namely 18 respondents (66.7%). Meanwhile, there are no mothers who work in the private sector who experience anemia.

Based on statistical calculations, it can be seen that p-value = 0.009 means that there is a relationship between mother's work and anemia.

Based on the socio-economic status of mothers with socioeconomic groups <1,000,000 more experienced anemia, namely 17 respondents (63.0%). Meanwhile, for mothers who have income > 1,000,000 who have anemia, 1 respondent (3.7%). Based on statistical calculations, it can be seen that p-value = 0.003 means that there is a relationship between maternal socioeconomic status and anemia.

## DISCUSSION

Based on the results of the study showed that of the 27 respondents who experienced anemia as many as 18 (66.7%) respondents. Meanwhile, 9 (33.3%) respondents did not experience anemia.

### a. Relationship between pregnant women and anemia by age.

Based on the results of research conducted on 27 respondents, the majority of respondents aged 25-34 years were 16 respondents (66.7%). Based on statistical calculations, it can be seen that p-value = 0.003 means that there is a relationship between the age of pregnant women and anemia. According to Wintrobe (1987) quoted by Atik

(2016) [5], states that maternal age can affect the incidence of anemia. This is in line with previous research which showed a relationship between the age factor and the incidence of anemia in pregnant women where there was an increase in the incidence of anemia in pregnant women aged 20-35 years (Astriana Willy, 2017).[7] . Muhilal et al, in their research stated that there is a tendency that the older the age of pregnant women, the greater the percentage of anemia.

### b. Relationship of Pregnant Women with Anemia based on Education

Based on the results of research that has been carried out on 27 respondents, the results of elementary-junior high school education in pregnant women who experience anemia are the highest, namely 11 respondents (40.7%) with statistical calculations it can be seen that p-value = 0.004 means there is a relationship between maternal education and anemia. In line with the research conducted by Ainal Mardiah (2020) [3] that there is a relationship between maternal education and the incidence of anemia in pregnant women, with p-value = 0.02. Education is a process of changing the attitudes and behavior of a person or group in an effort to mature humans through the application of the knowledge gained in their knowledge of matters relating to their pregnancy. The education that a person undergoes has an influence on increasing the ability to think. In the sense that someone with higher education will be able to make more rational decisions, generally open to accept changes or new things compared to individuals with lower education. A high level of education makes it easier for pregnant women to receive health information, especially in the field of nutrition, but if they cannot apply it



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correctly in daily life, it will not be able to change a person's health condition.

Based on the results of the research, pregnant women in the Ajibarang II Public Health Center have low education, due to the large number of pregnant women with low education (SD-SMP). Pregnant women who have a poor level of education will get poor physical and psychological well-being as well. The higher the level of education, the lower the acceptance of the concept of healthy living, being independent, creative, and developing. Education level greatly affects the acceptance of nutrition information. The low level of education of pregnant women can cause limited efforts to deal with nutrition and family health problems affecting the reception of information so that information about iron is limited and has an impact on the occurrence of anemia.

#### c. Relationship of Pregnant Women with Anemia by Occupation

Based on table 3, it is known that in the occupational group the mothers who experience anemia the most are mothers who are only household workers, namely 18 respondents (66.7%), with statistical calculations it can be seen that  $p\text{-value} = 0.009$  means that there is a relationship between the work of pregnant women and anemia. The results of this study are in accordance with the theory, work is a symbol of a person's status in society. Work is a bridge to earn money in order to meet the needs of his life. So, the more the number of children the more is needed. So it is very likely that the workload of pregnant women is to meet their daily needs

(Detty, 2020) [8]. In line with research conducted by Rifatolistia (2021) [9] with the result that most of the work status of pregnant women is not working (housewife) as much as 84.5% and the others are private employees as much as 3.4%.

Based on research that has been done on average, pregnant women in the Puskesmas Working Area do not work (housewives), work affects the incidence of anemia, because the work of pregnant women will affect pregnancy and childbirth. Because the greater the workload of pregnant women, the higher the risk of anemia in the mother, work also affects eating patterns and good nutritional status, and the type of work determines the income earned. Pregnant women who have income are related to the mother's ability to gain knowledge about anemia because the family's finances are adequate.

#### d. Relationship of Pregnant Women with Anemia based on Socio-Economic

Based on research that has been conducted from 27 respondents, it is known that mothers with socioeconomic groups <1,000,000 are more likely to experience anemia, namely 17 respondents (63.0%). Based on statistical calculations, it can be seen that  $p\text{-value} = 0.003$  means that there is a relationship between maternal socioeconomic status and anemia. The results of this study are also in line with the statement of the Ministry of Health (2017) [10] which states that economic status is considered to have a significant impact on the likelihood of the occurrence of anemia. This is because the food sources that contain the most iron are those from animal protein which are quite expensive, the high cost of these foods makes it impossible for low-income people to reach them. Research result Bunga T (2019) [4] shows that there is a significant



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relationship between socioeconomic status and the incidence of anemia in pregnancy. Likewise with international journals. This is also in line with research Ivan (2021) [11] which shows that there is a relationship between socioeconomic status and the level of risk of anemia in pregnancy.

There is a significant relationship between economic status and anemia in pregnant women because economic status is a determining factor in meeting the needs of life, especially in terms of consumptive health. The better the economic status of a person, the better the level of life, especially in terms of fulfilling pregnancy nutrition, thereby avoiding the incidence of anemia in pregnancy. The number of pregnant women with low economic status is because the area where this research is conducted is a rural area whose level of standard of living is still low, thus triggering a low level of economic status as well. With the condition of families with low economic status causing consumptive purchasing power and purchasing power for nutritional needs for pregnant women, of course, this is very limited, this can lead to anemia because pregnant women are malnourished. (Bunga Tiara, 2021) [4].

### CONCLUSION

1. The characteristics of respondents are mostly aged 25-34 years as many as 16 respondents (66.7%), Most of the respondents have elementary-junior high school education, namely 11 respondents (40.7%), respondents do not work (IRT) as many as 18 respondents (66.7%) and socio-

economic less in mothers, namely 17 respondents (63.0%)

2. The results showed that 18 respondents (66.7%).

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“LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC”



## “CERDIK” Behaviour As A Prevention Of Non-Communicable Diseases (NCD) In Pregnant Women

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### ABSTRACT

Non-Communicable Diseases (NCD) are diseases that do not show symptoms and do not have special clinical signs so that a person is not aware of the initial conditions of the disease course. This condition has an impact on delays in handling and causing PTM complications that result in premature death. PTM prevention activities are implementing CERDIK behavior which is an acronym for routine health checks, getting rid of cigarette smoke, diligent physical activity, balanced diet, adequate rest and managing stress. This mini research aims to identify CERDIK behavior as an effort to prevent PTM in pregnant women. External factors of behavior using Snehadu B. Karr's theory are community support, affordability of information and enabling situations and conditions. This type of mini research is descriptive. This study used a sample of 45 respondents spread over 4 villages with a sampling namely technique, incidental sampling. The data collection technique in this study was a questionnaire. The results showed that 35 (78%) had implemented CERDIK behavior. Meanwhile, for community support to prevent PTM, the results show that 40 people have received emotional support, 37 people have received appreciation support and 39 people have received informative support. The results of the mini research on the affordability of information to prevent NCDs show that only 20 people or as many as 44% have received complete information about hypertension, diabetes mellitus, asthma, CHD, stroke, breast and cervical cancer. Suggestions that can be given should be included in pregnant women's class activities regarding PTM information.

Keyw ord : Non-communicable disease; behavior; cleverly

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## INTRODUCTION

As a result of health development in Indonesia over the past three decades, the life expectancy of Indonesia's population has increased from 69.8 in 2012 to 71.47 in 2020 [1]. This condition coupled with the success in reducing the morbidity or mortality of various infectious diseases has made Indonesia experience a demographic transition and an epidemiological transition. At this time the pattern of illness shows that Indonesia is experiencing a double burden of disease where infectious diseases are still a challenge and have decreased but non-communicable diseases (NCDs) have increased sharply. [2]

At the global level, in 2016 around 71 percent of the causes of death in the world were non-communicable diseases that killed 36 million people per year, 80 percent of these deaths occurred in middle and low income countries. Non-communicable diseases are chronic diseases with a long duration with a generally slow healing process or control of clinical conditions. The influence of industrialization has resulted in the rapid flow of urbanization of residents to big cities, which has an impact on the growth of unhealthy lifestyles such as unhealthy diets, lack of physical activity, and smoking.

This results in an increasing prevalence of high blood pressure, high blood glucose, high blood fat, overweight and obesity

which in turn increases the prevalence of heart and blood vessel disease, chronic obstructive pulmonary disease, various types of cancer which are the biggest causes of death. [3]

Concerns about the increasing prevalence of NCDs have prompted the birth of various initiatives at the global and regional levels. The annual meeting of the World Health Organization (WHO) – World Health Assembly (WHA) – in 2000 has resulted in an agreement on a Global Strategy for the prevention and control of NCDs, especially in developing countries such as Indonesia. This strategy relies on three pillars, namely surveillance, primary prevention and strengthening the health care system. Since then, various approaches have been adopted to prevent and reduce the common risk factors of PTM, which is the main cause of death. Various resolutions have been produced such as the WHO Framework Convention on Tobacco Control (WHO FCTC) in 2003 (WHA56.1), the Global Strategy on Diet, Physical Activity and Health in 2004 (WHA57.17), and the Global Strategy to Reduce the Harmful Use of Alcohol in 2010 (WHA63.13). In 2008, the WHA inaugurated the 2008-2013 Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases, with a primary focus on developing countries. A similar document has been developed for the years 2013-2020. [3] [4]

PTM globally has received serious attention with the inclusion of PTM as one of the targets in the Sustainable Development Goals 2030(SDGs), especially in Goal 3: Ensure healthy lives and well-being. SDGs 2030 has been formally agreed by 193 country leaders at the UN Summit held in



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New York in 2015. This is based on the fact that occurs in many countries that increasing life expectancy and changes in lifestyle are also accompanied by increasing prevalence of obesity, cancer, heart disease, diabetes and other chronic diseases. Handling PTM requires a long time and expensive technology, thus PTM requires high costs in prevention and control. The publication of the World Economic Forum in April 2015 showed that the potential loss due to non-communicable diseases in Indonesia in the 2012-2030 period is predicted to reach US\$4.47 trillion or 5.1 times GDP 2012. The inclusion of PTM into the 2030 SDGs indicates that PTM must become a national priority. that require cross-sectoral handling. [2]

Various efforts have been made for the prevention and control of NCDs, in line with the WHO approach to the Main NCD diseases associated with common "risk factors (Common Risk Factors). At the community level, the establishment of the PTM Integrated Guidance Post (Posbindu) has been initiated, where early detection of risk factors, counseling and community activities towards Clean and Healthy Behavior has been initiated. At the health service level, there has also been strengthening of the pustekmas as the community's first contact to the health system. However, the above is not enough because multi-sectoral involvement is still limited. It is recognized that PTM is closely related to Social Determinants for Health, especially in risk factors related to behavior

and the environment. [5]

In its development, PTM can happen to anyone, one of them is women of childbearing age and pregnant women. Health problems in pregnant women are not only about pregnancy itself but also developing various other comorbidities. The current maternal mortality rate (MMR) is still far from the Sustainable Development Goals (SDGs) target of 70 per 100,000 live births in 2030. Despite many efforts made by the government, the MMR has not decreased significantly. Problems related to pregnancy and childbirth, including AKI cannot be separated from various factors that influence it, including maternal health status and readiness to become pregnant, examination during pregnancy, delivery assistance and immediate care after delivery as well as socio-cultural factors. [1]

Nationally, according to Detty S. Nurdiati, an expert in Obstetrics and Gynecology, the cause of the highest AKI is bleeding. Meanwhile, according to McCharthy J. Maine DA as quoted by Nurul Aeni (2013), maternal death is a complex event caused by various causes that can be distinguished into close determinants, intermediate determinants and far determinants. Close determinants that are directly related to maternal mortality are obstetric disorders such as bleeding, preeclampsia/eclampsia and infections or diseases suffered by the mother before or during pregnancy that can worsen pregnancy conditions such as heart disease, malaria, tuberculosis, kidney and HIV/AIDS. Close determinants are directly influenced by intermediate determinants related to health factors, such as maternal health status, reproductive status, access to health services, and behavior in using health care facilities. The determinants are much related to demographic and sociocultural factors.

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Low public awareness about the health of pregnant women, poor women's empowerment, educational background, socio-economic family, community and political environment, as well as policies indirectly allegedly play a role in increasing maternal mortality. [6]

The government makes a program to reduce the Maternal Mortality Rate (MMR), namely by preventing pregnancy and childbirth complications through early detection. Early detection in antenatal care is an important way to monitor and support and detect the health of pregnant women so that complications do not occur in pregnancy. However, there is no early detection of risk factors for non-communicable diseases, while the current trend is pregnant women with non-obstetric disease complications. The incomplete data on the history of pregnant women that has been happening so far has caused the determination of an incorrect diagnosis and resulted in errors in decision making, so that the aspect of completeness of the data is very important in making diagnoses and actions. [7]

In 2021 maternal deaths as of the July 2021 quarter in Banyumas were 45 cases with 36 cases of maternal mortality positive for COVID-19 accompanied by comorbidities. Comorbid cases are known after pregnant women are exposed to COVID-19, which worsens pregnancy conditions and comorbidities. The findings in the survey related to the detection of non-communicable diseases, among others, the midwife did not take a history of past

medical history, the physical examination during the first ANC visit was incomplete. In addition to laboratory examinations for the detection of non-communicable diseases, it is not included in the screening during ANC. Simple screening tests that do not require access to a laboratory will have a significant impact on morbidity and mortality from non-communicable diseases. The existence of a clinical decision support system will greatly assist health workers in making decisions related to patient health because the data obtained is faster, more complete and accurate.

### MATERIALS AND METHOD

This research uses a quantitative approach with a descriptive type of research. The quantitative approach is research that produces data in the form of numbers which are then processed and analyzed using statistics to draw conclusions. Descriptive research is research conducted on a set of objects that aims to see a picture of phenomena (including health) that occur in a certain population. This study will describe the description of community support, affordability of information, as well as situations and conditions to prevent PTM by implementing CERDIK behavior. The sample in this study was conducted on pregnant women. The independent variables in this study were community support, affordability of information and situations and conditions to prevent PTM. The dependent variable is SMART behavior.

### RESULTS

Based on the results of research conducted by researchers to 45 respondents after analysis obtained the following results:

Table 1

Frequency Distribution of Respondents by Age Group, Employment and Age Pregnancy

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Characteristics	Frequency (f)	Percentage (%)
Age Group		
<35 years	45	100
>35 years	0	0
occupation		
Household	21	46%
Entrepreneur/priv ate	22	48%
PNS/Teacher/Nak es	2	6%
UK Pregnancy		
TM I	5	11%
TM II	14	31%
TM III	26	58%

Based on table 1, In this study, 45 respondents met the inclusion criteria where the most age was <35 years, namely healthy reproductive age, for maternal work there was no significant difference between housewives and private sector mothers, while the highest number of pregnant women was trimester 3. Univariate analysis was carried out to determine distribution of community support (emotional, rewarding, instrumental and informative), affordability of information and the application of Smart behavior. The results of the calculation of age obtained:

Table 2

Distribution of Respondents Frequency Based on Community Support Groups, Information Affordability and Intelligent Behavior

Characteristics	Frequency(f)	Percentage (%)
Community Support		
Emotional	41	91%
Awards	39	87%
Instrumental	25	56%
Informative	31	69%
Information		
Affordability		
Printed	2	4%
Information Electronic	18	40%
Information Health	25	56%
Health Information		
Intelligent Behavior		
Less	20	44%
Enough	15	33%

Good	10	23%
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Based on table 2, in this study, pregnant women got better emotional support than institutional support, meaning husband and family support to carry out the examination but there is no assistance in the form of costs or time for the detection of PTM. Pregnant women get more information related to PTM from health workers compared to print media. Behavior of pregnant women based on a questionnaire containing CERDIK behavior, it was found that 20 pregnant women lacked the application of the CERDIK lifestyle. This will make pregnant women more at risk of non-communicable diseases both during pregnancy and after pregnancy.

### DISCUSION

CERDIK Lifestyle Education is a health education containing efforts to prevent PTM which is a modification of the Ministry of Health program. The CERDIK program is a preventive measure made so that healthy people can avoid various Non-Communicable Diseases (NCDs). This program consists of: routine health checks, getting rid of cigarette smoke, diligent physical activity, balanced diet, adequate rest and managing stress. [5]

Health education is an effort to increase respondents' understanding and ability in preventing PTM. By providing education on the CERDIK healthy lifestyle, it will increase the knowledge of respondents and their families so that they can apply healthy lifestyle behaviors to prevent recurrent strokes. Healthy behavior is knowledge, attitudes and actions to maintain and prevent the occurrence of a disease by protecting oneself against the threat of disease and being active in public health activities (Notoatmodjo, 2010). The existence of new behavior that becomes

the respondent's new habit starts from his cognitive ability to find out in advance about the stimulus in the

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form of material or object obtained by the respondent which forms an inner response which then turns into action against the stimulus earlier. This means that individuals behave after understanding or knowing in advance the given stimulus. [3]

The results of the behavior of pregnant women are not only seen through the measurement of knowledge and behavior of the CERDIK lifestyle to prevent PTM but also through risk measurements which contain a series of examinations such as blood pressure checks, peripheral GDS examinations, and cholesterol as well as questions related to the causes of PTM such as smoking behavior, exercise habits, heart rate, heart and family history of PTM. The indicators measured in the stroke risk form are factors that influence the occurrence of recurrent stroke. This is in line with the research by Wayunah & Saefulloh (2017) which states that factors related to the incidence of stroke are a history of hypertension, diabetes mellitus (measured GDS levels), a history of cholesterol in the blood, smoking behavior, physical activity and obesity. Likewise with the results of research [8] that these factors are the cause of stroke [9]

Regular physical activity (exercise) will cause heart rate and breathing to increase so that the body produces endorphins which will stabilize blood pressure, this will reduce the occurrence of recurrent strokes. In this case, post-stroke respondents began to carry out activities according to their abilities (stroke level) assisted by their families so that they triggered physical activities that were able to produce endorphins so that they would stabilize blood pressure. Regular exercise will improve the work and function of the heart because there are changes in the circulatory and respiratory systems that take place simultaneously as part of the homeostatic

response so that there is an increase in cardiac output and then there can be an increase in blood pressure which will cause the rupture of thrombus plaques so as to prevent stroke. [8].

So the exercise or physical activity given to the respondent is adjusted to his physical ability by first assessing the stroke level and then determining the type of sport or physical activity of the respondent.

### CONCLUSION

According to a study conducted showed that support, attitudes and behavior of pregnant women on the importance of PTM detection. It is hoped that after this research is completed, the community will continue to carry out PTM examinations and become a new habit for pregnant women, both at risk and not at risk.

### ACKNOWLEDGEMENT

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## Analysis and Design of *Bumil Sehat* Application Innovation Based on Android

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### ABSTRACT

**Background:** Indonesia is one of the countries affected by the Covid-19 pandemic since 2019. Maternal mortality rates are increasing and are still high, especially in Wonosobo Regency of Central Java Province. One of the contributing factors is the lack of knowledge and awareness of communication of pregnant women with midwives during pandemics and reduced direct contact to health facilities. This results in the late recognition of the signs of pregnancy. **Purpose:** from this study is to design an innovation in the form of android-based applications that are focused on pregnant women. **Methods:** This research is a Case Study In Kabupaten Wonosobo with Research and Development methods. **Results:** This research researcher developed a design of android-based application "*Bumil Sehat*". Compounding the application of Bumil Sehat in the development of the system that has been done by researchers using the Prototype method. From the applications that have been created, obtained an effective and efficient android-based application design by providing 3 Menu features; Consulting, Education, and HPL Menu. This application can be used by downloading the application "*Bumil Sehat*" and can be directly used and connected at the intended Community Health Center. **Conclusion:** This application is expected to help improve the quality of facilities and health workers so that maternal deaths can be lowered.

Keyword : *design, application, bumil sehat, android*

### INTRODUCTION

Antenatal services are health services provided to pregnant women periodically to maintain the safety of the mother and fetus [1]. The Covid-19 pandemic resulted in pregnant women becoming reluctant to come to health centers or health care facilities for fear of contracting Covid-19.

Coronavirus (COVID-19) is a new variant of pneumonia that is highly contagious and results in death. Pregnant women are a high-risk population during the Covid-19 pandemic. Covid-19 can cause psychological impacts that can cause maternal concerns in getting pregnant [2].



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The Covid-19 pandemic caused a decrease in pregnancy screening visits and health services for infants, children under five years old (toddlers) and the absence of most posyandu in Indonesia. Based on the conditions in Wonosobo Regency, most pregnant women feel afraid to check their pregnancy into puskesmas. This causes facilities to decrease both in terms of access and quality [3].

The decrease in health care visits of pregnant women is feared to have a negative impact on achieving the government's target in reducing maternal mortality (AKI) in Wonosobo Regency of Central Java Province.

Based on the Wonosobo Regency Health Profile in 2018-2020, maternal mortality (AKI) increased in 2019 to 2020 by 16 cases. Covid-19 entered Indonesia in 2019 and was one of the causes of indirect maternal death in Wonosobo Regency.

Pregnant women are more vulnerable and more at risk of getting the Covid-19 virus due to physiological factors of the body during pregnancy. Pregnant women are at higher risk of severe disease, and morbidity when compared to the general population.

K4 Achievement Target in Indonesia in 2019 by 80% [4]. K4 visits based on Wonosobo Regency Health Profile in 2019 decreased compared to the previous year. It has not reached the target set due to the influence of the Covid-19 pandemic.

Inhibition of pregnancy examination can affect the health condition of the mother and baby. It also affects the

provision of information and education to mothers.

Wonosobo Health Office has made various efforts to increase the scope of visits of fourth pregnant women (K4) with the addition of health workers, especially nurses and midwives who focus on services during the Covid-19 pandemic in Wonosobo Regency.

This is evidenced by the increase in K4 Coverage in 2020 to 94.6% after previously there was a decrease in K4 coverage in 2019 of 91.46% but this figure has still not reached the target of 100% and still high Maternal Mortality Rate (AKI) in Wonosobo Regency.

For this reason, a new breakthrough is needed as a step to facilitate health workers in providing services, education and information to pregnant women during the Covid-19 Pandemic in Wonosobo Regency.

This research is to create a design of health applications for pregnant women as a means of service, convey complaints about pregnancy, communicate with midwives and get education about pregnancy through android smartphones. Android smartphones are currently growing rapidly in use among the public [5].

The purpose of this study is to keep the service running and reduce maternal mortality (AKI) in Wonosobo Regency. This is the use of information technology in health known as digital health or called *telekesehatan* (telehealth) which is proven to be effective in gaining benefits for patients can



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exchange information with health workers, health services in the framework of differential diagnosis, health access more efficiently and cost effectively [6].

Technology today plays a big role in providing assistance to humans to overcome various problems both in the fields of industry, trade, education, and almost all areas of human life.

The application of computer technology in the field of health until now has been very much computer, mobile phone or other electronic tool has been used widely, especially in the field of health. Computers / machines are currently equipped with various abilities capable of recognizing the human condition, one of which is related to health [7].

Android is a mobile phone operating system and touch screen tablet computer based on Linux [8]. Android is included in one of the operating systems used on cellular phones and on touch screen tablet computers with Linux -- based [9].

Internet users in Indonesia at the beginning of 2021 reached 206.6 million people. This number increased by 15.5 percent or as many as 27 million people

when compared to January 2020 so it can be seen that many Indonesians get information through their android / smartphone because it is easier and a factor of the Covid-19 pandemic.

The base of the android operating system, the linux kernel, is open source so that the android operating system allows developers to always create their

own android applications that can be used for various mobile tools. In addition, Android is a mobile operating system that is growing rapidly in smartphones today, supporting the development of new application ideas and innovations to add system functionality [10].

For this reason, a new breakthrough is needed as a step to facilitate health workers in providing education and information to pregnant women, especially during the Covid-19 Pandemic, it is necessary for web-based applications and androids.

This has the opportunity to be used for the development of health service applications that can be accessed by the public through android system (Agustha and Fachrizal, 2017) especially in pregnant women to easily get information and health services.

The purpose of this study is to provide a design of pregnant women's health application "Bumil Sehat Application" as a means of communication of pregnant women with midwives in acquiring knowledge and conveying complaints about pregnancy directly and to keep the service running and reduce maternal mortality (AKI) in Wonosobo Regency.

### MATERIAL AND METHODS

The study was conducted based on a case study in Wonosobo Regency in July-September 2020. This research method uses *Research and Development* because is a process to develop a new product or improve an existing product.



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In this study, researchers only conducted the initial stage of Android-based applications, namely the design and development of a Bumil Sehat innovation in Wosonobo Regency.

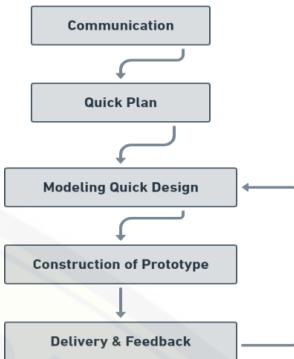
The data collection techniques used are primary data and secondary data, namely researchers conduct literature reviews related to research and make observations and analyze data provided by the Wonosobo District Health and Health Center and conduct interviews together by asking the required questions.

The software design method used in this research is the *Prototype method*. The *prototype* method was an early version of the soft system for demonstrating the results of analysis of the problems found, design experiments and finding solutions.

The *prototype* method used in this study aims to describe the application that wants to be designed and then can be evaluated by the user, the prototype application that has been evaluated will then be used as a reference in building the application as the final product in the construction of the application system.

Prototype models have five main steps; Communication (communication), Quick Plan (Quick Planning), Quick Design Modeling (Rapid Design Modeling), Construction of Prototype (Building Prototype), and Development Delivery & Feedback.

The advantage in using this prototype method is that it can save time in system development.



## RESULTS

Results are presented in the form of images, table graphs that aim to facilitate the reader.

### Old System Analysis



At this stage, researchers conducted surveys and interviews to get complete information about kia conditions and services running currently at the Health Center in Wonosobo Regency during the pandemic. The system used until now in Wonosobo Regency Health Center starts with the flow of pregnant women coming to health center to do administration and go to Poli KIA if there are severe complaints and conduct consultations. Then do an analysis to find out what needs to be optimized with technology and estimate the development of system innovations that can be done next.



## Analysis of the New System



Identify and define innovations and needs that refer to KIA services. This system innovation was made with the aim that pregnant women are easier and do not need to make direct contact with faskes often. In this system if pregnant women want to do consultations and want to get information about pregnancy, you only need to use the application that is already on the mother's smartphone.

The analysis of the needs of Bumil Sehat application is divided into two, namely the analysis of functional needs in the form of a picture of the main functions of applications that connect and support each other's functions and nonfunctional needs analysis serves to support smoothness in the design of *Bumil Sehat* applications.

### Functional Needs Analysis

*Bumil Sehat* Application in the form of what functions can be done by users of the application is divided into 2 rights of access of Midwives and Pregnant Women;

#### 1. Midwife

In general, the general picture on the initial appearance of the user with access rights (Midwife) can register that can be used to login. After the midwife logs in then the midwife can go to the page that contains the menu feature; Account Settings, Patient Consultation, Information about bumil (add, edit,

delete) articles about the education of pregnant women, input of examination results and patient data. In this feature will also be available Menu consultation feature between midwives and patients.

#### 2. Patients

In general on the initial display of users with access rights (pregnant women) can register that can be used to login. After pregnant women login pregnant women can go to the page that contains the Menu feature; Account Settings, Pregnancy Consultation, Information about bumil, and HPL features to find out the interpretation of the estimated day of birth.

### Nonfunctional Needs Analysis

Hardware and software needs used in the design of Bumil Sehat applications;

#### 1. Hardware

Hardware used in supporting the design of healthy applications is:

- Laptop with Specification,

Processor : core i5 2.3 Ghz

Ram : 4 GB DDR3

Harddrive : 250GB

#### 2. Software

Online software used for the analysis and design stage flowchart, wireframe and prototyping is [whimsical.com](http://whimsical.com) & [Figma.com](http://Figma.com).

## DISCUSSION

### Implementation

### Bumil Sehat Application Design

Here is a discussion of the results of the design of the prototype of the Bumil Sehat application divided into 2 pieces



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of access rights, namely midwives and patient access rights (pregnant women);

### 1) Midwife

#### a. Registration Midwife

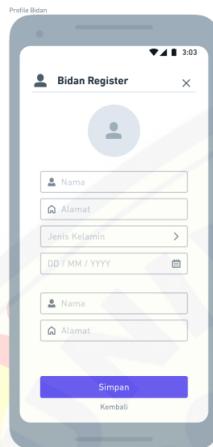


Figure 01 Midwives Main Menu View

Figure 01 is a display specifically for midwives. Midwives register the midwife account first by entering the midwife's complete bio that includes the name, place of birth, duty in what health center area, and No. NIP / STR, and a password that can be used to *login*.

#### b. Midwife Profile Page



Figure 02 Profile Midwife

In figure 02 midwives can *login* by

entering a username and password that has been registered before. Then go to the main page.

#### c. Home Midwife

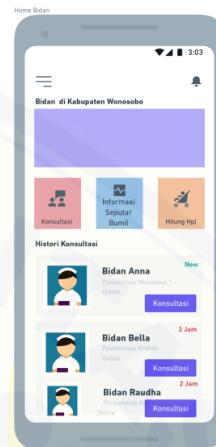
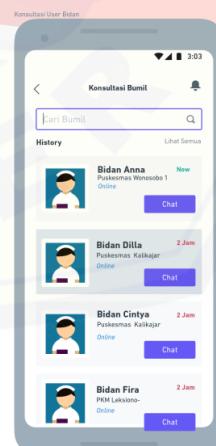


Figure 03 Main Page Of Midwives

After log in midwives will go to the main page which is divided into 3 application menus, namely special menu of patient consultation, information about pregnancy containing articles and related health center information needed especially by pregnant women, and Menu to find out the interpretation of childbirth.

#### d. Midwife User Consultation View





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Figure 04 Midwife User Consultation

In figure 04 is a view of the consultation menu on the midwife's account, on this page the midwife can find out who the patient who did the consultation before, the midwife can give or intervene directly to the intended patient privately, namely to patients who have been registered or registered in the healthy bumil application.

e. Midwife Chat Room View



Figure of 05 Room Chat Midwife

Page will appear when pregnant women choose midwives to consult then chat like this will be automatically sent to pregnant women, and after pregnant women submit complaints or ask midwives can reply and help pregnant women provide information as needed.

f. Bumil Sehat Education Page

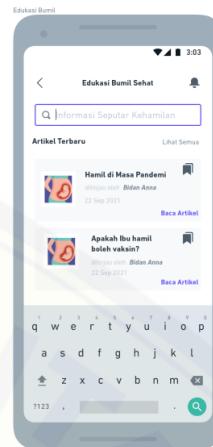
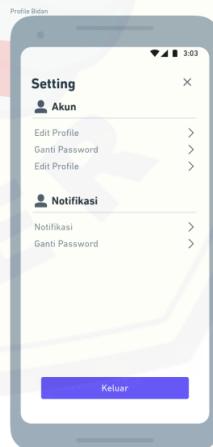


Figure 06 Pages Information About Pregnancy

On this educational menu midwives can provide / share articles about pregnant women and recent articles and even provide interesting info about health center programs and wonosobo health services related to KIA. Where on this page midwives are free or can write, delete or edit articles to be shared.

g. Midwife's Settings/Profile Setting page





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**Figure 07 Setting Profile Midwife**  
This midwife profile settings/edit page is useful for midwives to be able to help profiles such as names, titles, photos, and passwords to be used.

### h. Notifications page

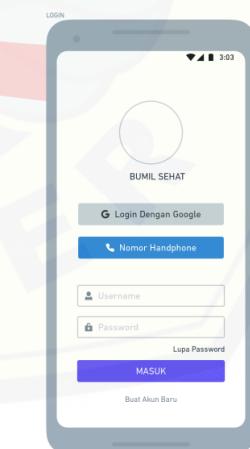


**Figure 08**

On this page midwives can find out the incoming message notifications so that consultation between midwives and pregnant women is effective.

## 2) Pregnant Women

### a. Registration



After registering pregnant women are directed to login by entering the

On a special display pregnant women in the early stages must register first. Pregnant women fill out a complete bio that includes; name, place of birth, address, hp number, name of puskesmas, puskesmas registration no, and fill in the column about pregnancy history such as; multiple pregnancies, HPHT, history of miscarriage, weight, height, history of accompanying disease / hereditary diseases, and in the final stages are required to fill in the password as desired.

### b. Login



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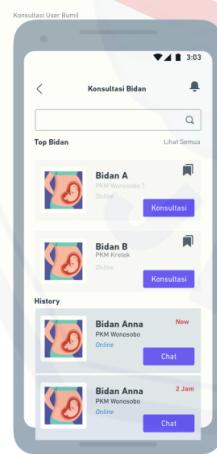
username and password that has been created. Username, password and data on the mother's medical history can only be viewed and accessed by the person concerned and health workers.

### c. Home Bumil



After login the mother goes directly to the main page that provides three main menus including; Consultation, Education, and HPL to find out the estimated day of birth.

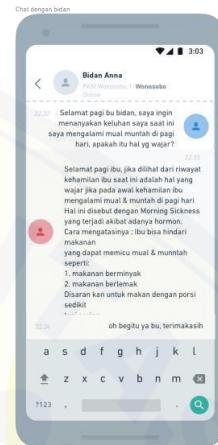
### d. Consultation Menu with Midwives



On the menu of the consultation page the mother can choose to consult with the midwife registered in the bumil

healthy application. Pregnant women can choose with a midwife who the mother wants to consult about pregnancy.

### e. Room Chat Page With Midwives



Page view on mom's chat room with midwives. On this page pregnant women can ask or express the complaints felt and will be responded to by midwives who are in the center. This consultation will automatically go to the health center documentation.

### f. Educational Views about Pregnancy



On the Education About Pregnancy page there are articles that can add knowledge and insight to pregnant



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women such as; Pregnancy is physiological, pathological, a danger sign of pregnancy, nutrition of pregnant women, and on this menu pregnant women can receive information related to health center program related to pregnant women or maternal and child health (KIA).

### g. HPL View



This menu is a feature to be able to find out the interpretation "of the estimated day of the baby's birth. This page has a button count by entering the last day, month, year of menstruation.

### CONCLUSION

*Bumil Sehat* Application Design is made according to the results of analysis and problem needs by using the *Prototype* method to display the design of application *interfaces* with high fidelity. Design can be used as a reference for application development and can be modified during application development and development.

With the creation of an innovation in the design of *bumil Sehat* Application

can help the Wonosobo Health Center in providing services, information and education about pregnancy to pregnant women without making direct contact and making it easier for pregnant women to consult and get information.

### ACKNOWLEDGMENT

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## Asphyxia Neonatorum as the highest Cause of Infant Death in Wonosobo Regency

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### ABSTRACT

The cause of the high infant mortality rate is neonatorum asphyxia. Neonatorum asphyxia can cause hypoxia and ischemia in infants resulting in damage to some tissues and organs. Some of the factors that cause neonatorum asphyxia are maternal factors that include age, parity, gestational age, while baby factors include prematurity, Low Birth Weight (BBLR), congenital abnormalities, and others. In Wonosobo County, Asphyxia neonatorum became the case with the highest infant mortality rate. This study aims to find out the picture of cases of infant mortality with neonatorum asphyxia. The research design used is descriptive retrospective. The population used is all cases of death with neonatorum asphyxia from 2018-2020. Sampling techniques use total sampling. The results of the study obtained are the number of infant mortality with the highest neonatorum asphyxia in 2020, which is 33 cases (44%) with the male sex which is 44 cases (58.7%), the gestational age of the mother is at low risk (37 weeks-42 weeks) which is 65 cases (86.7%), and mothers with high-risk parity (1 and >4) which is 40 cases (53.3%). Most of the incidence of asphyxia neonatorum in Wonosobo Regency occurs in male sex, mothers with low-risk gestational age, mothers with high-risk parity and an increase in asphyxia cases every year.

Keyword : Asphyxia Neonatorum ; Gestasional Age ; parity

### INTRODUCTION

Neonatorum asphyxia is a condition that occurs in newborns characterized by failure at the start and continuing spontaneous and regular breathing process shortly after birth. It is likely that a baby was born with asphyxia or can breathe but then experience the condition of asphyxia some time after birth.[1].

Based on data from the World Health Organization (WHO) in 2015 worldwide recorded cases of maternal death as many as 500,000 people per year and infant deaths, especially neonates as many as 10,000,000 people per year. Then the number of infant

mortality in the world due to asphyxia amounted to 4.6/1000 live births 636,948 cases, while the infant mortality rate due to asphyxia amounted to 2.9/1000 live births 15,990 cases.[2].

In Indonesia, the incidence of asphyxia in provincial referral hospitals that cause death is 41.94%. The cause of neonatal death caused by intrapartum asphyxia was 21%[5]. Asphyxia in newborns that causes death contributes to a figure of 45%.[3].

The risk of asphyxia events can be caused by various factors, even can be influenced by things that are quite related to



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the occurrence of Asfikia. These factors include maternal factors that include age, parity, hypertension, infectious diseases, antepartum bleeding, and anemia. Then there are factors from the baby that include prematurity, Low Birth Weight (BBLR), congenital abnormalities and amniotic water mixed with meconium. While other influential factors such as breech delivery, childbirth with actions such as sexo sesarea, vacuum / forceps and pitocinon dri [4].

One of the effects of the incidence of asphyxia in infants is that it can cause hypoxia and ischemia in infants. This can result in damage to some tissues and organs of the body. From several studies conducted, it is reported that damage will occur to most organs of the body, namely the kidneys, central nervous system, cardiovascular system and lungs [5].

A survey that has been conducted at the Wonosobo District Health Office, obtained results that explain that the infant mortality rate every year has increased and in 2020 amounted to 112 cases of infant mortality. The highest infant mortality was asphyxia neonatorum at 32%. Based on the description above, researchers are interested in conducting a study on how to describe cases of infant deaths caused by neonatorum asphyxia in 2018-2020 in Wonosobo Regency.

### MATERIALS AND METHOD

The type of research used is descriptive retrospective. The study was conducted in Wonosobo County. The population of this study was the entire case of death with neonatorum asphyxia from 2018 to 2020. The sampling technique uses total sampling that takes all cases of death with neonatorum

asphyxia with a total of 75 cases. The data taken in this study is secondary data that is by taking the necessary data from the Wonosobo District Health Office. The variables studied were infant mortality rates with neonatorum asphyxia per year, gender, age and parity. The analysis used is univariate analysis which is an analysis carried out on each research variable.

### RESULTS

Table 1. Number of Cases of Asphyxia Neonatorum each year

Year	Case	Percentage%
2018	20	26,7%
2019	22	29,3%
2020	33	44%
Total	75	100%

Table 1 shows that the highest incidence of neonatorum asphyxia was in 2020 at 33 cases (44%), in 2019 the number of neonatorum asphyxia cases was 22 cases (29.3%), and in 2018 the number of neonatorum asphyxia cases was 20 cases (26.7%).

Table 2. Frequency Distribution of Infant Deaths With Asphyxia By Gender

Gender	Amount	Percentage%
Female	31	41.3%
Male	44	58.7%
Total	75	100%

Table 2 shows that the majority of infant deaths with male neonatorum asphyxia were 44 (58.7%), while the female sex with neonatorum asphyxia was 31 (41.3%).



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Table 3. Distribution of Infant Mortality Frequency With Asphyxia Based on Maternal Pregnancy Risk Factors

Characteristics	Case	Percentage%
High Risk (<37 weeks and >42 weeks)	10	13,3%
Low Risk (37 weeks- 42 weeks)	65	86,7%
<b>Total</b>	<b>75</b>	<b>100%</b>

Table 3 shows that the majority of infants who died due to neonatal asphyxia based on gestational age were mothers who had a low risk (37 weeks – 42 weeks), namely 65 people (86.7%), while mothers who had a high risk of gestational age (<37 weeks). week). weeks and >42 weeks) as many as 10 people (13.3%).

Table 4. Distribution of Infant Mortality Frequency With Asphyxia Based on Maternal Parity Risk Factors

Characteristics	Amount	Percentage%
High Risk (1 and $\geq 4$ )	40	53,3%
Low Risk (2-3)	35	46,7%
<b>Total</b>	<b>75</b>	<b>100%</b>

Table 4 shows that the majority of infant deaths with asphyxia with high parity risk (1 and  $\geq 4$ ) is 40 (53.3%) and mothers at low parity risk (2-3) is 35 people (46.7%).

## DISCUSSION

The study used secondary data from medical records of infant mortality cases with asphyxia in the Wonosobo Health Service. The quality of the data cannot be controlled

directly by the researcher because the data used is secondary data.

The death rate with neonatorum asphyxia increased every year from 2018 to 2020. Some of the factors that cause the infant mortality rate to increase are: low birth weight, long labor, premature rupture of amniotic fluid, cesareae act, maternal age 35 years, history of poor obstetrics, fetal abnormalities, and poor ANC status [5].

In this study it was seen that cases of asphyxia were more common in male infants compared to female infants. The cause of male babies is more common asphyxia, namely that male babies are susceptible to morbidity [6]. This study is in line with Razak's research (2021) that cases of asphyxia are more common in men (56.7%) than women (43.3%) [4].

Asphyxia for babies who are quite months old has antenatal and intrapartum risks and has been identified namely antepartum, antenatal and intrapartum anemia, antepartum bleeding, severe preeclampsia/eclampsia, antepartum, augmentation of labor with oxytocin, premature ruptured amniotic fluid, cesarean section, low-weight birth and malpresentation [7].

The majority of babies with low Apgar scores will not develop cerebral palsy. It is proven that apgar scores are affected by gestational age, maternal medication, resuscitation, and cardiorespiratory and neurological conditions. This is in line with Samba's research (2017) that neonates were treated for 289 (61.8%) and overall deaths during the period were 203 (21.0%) and among the terms neonate with birth asphyxia was 63 (21.8%) [7].



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Based on the distribution of parity, most mothers give birth to children 1 and  $\geq 4$ . Studies show that young mothers and primigravida are among the major risk factors for developing birth asphyxia. Preterm labor is one of the significant risk factors of birth asphyxia.[8]. The fact that a baby is quite months old faces several morbidities including organ systems, immaturity in particular leads to immaturity of the lungs of respiratory failure [6].

In mothers with primipara, mothers are at risk of not being ready medically or mentally. The first pregnancy is a risk factor that has a strong association with the incidence of asphyxia mortality, while parity  $\geq 4$  physically the mother experienced a setback to undergo pregnancy. The mother's condition predisposes to bleeding, placenta previa, uterine rupture, placental solution which can end in asphyxia of the newborns [9].

Babies of primipara women carry a higher risk for birth asphyxia 70 (56.9%) compared to normal 39 (33.3%)[6]. This is in line with the results of research conducted by Sari (2020) at Pramubulih City Hospital, namely a meaningful relationship between Parity and Neonatorum Asphyxia In Newborns with p-value = (0.000) <0.05 [1].

The government's efforts in dealing with asphyxia cases are to improve access and quality of health services for infants and become a top priority in contributing to the reduction of infant mortality in Wonosobo Regency. Improving the Quality of Neonatal Visits & Postpartum Visits with Integrated Management of Young Infants and Improving Child Health Services, and Learning Perinatal Maternal Audit (AMP) [10].

## CONCLUSION

Based on the results of the study, it can be concluded that the incidence of death with asphyxia neonatorum increases every year. Death due to asphyxia neonatorum most often occurs in male sex, mothers with low-risk gestational age (37 weeks-42 weeks) and occurs in mothers with high parity (1 and  $>4$ ).

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#### Review of the Code of Ethics of the Health Profession, a Literature Review

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#### ABSTRACT

**Background:** The professional code of ethics is a comprehensive and integrated guideline regarding the attitudes and behaviors that a health worker must have. Health workers should study, understand, and apply ethics, morals and the values of the code of ethics so that in carrying out professionalism, they do not cause conflicts and lead to negligence in taking medical actions that can lead to legal dilemmas.

This study of the code of ethics of the health profession between expectations and reality aims to see further how the formulation of the code of ethics is seen from the shape, nature, purpose, and cases that have occurred to various health workers.

The study of the code of ethics for health workers is expected to be able to contribute to the development of health resources and education for health workers under the auspices of the Polytechnic of the Ministry of Health in Semarang and the education of other health workers. ethics is expected to be minimized and legal dilemma does not occur.

**Methods:** This research study is a literature review by extracting all research in Indonesia regarding the code of ethics of the health professionals. Almost all groups of health workers have a professional code of ethics. **Results:** However, the writing form is not uniform There are several ethical cases in the health profession that occur with various kinds of sanctions given. **Conclusion:** As a logical consequence of the binding of professional ethics and law to every professional duty actor, every subject of professional duty actors can always be held accountable, both legally and based on professional ethics.

Keyw ord : Code of ethics, the health profession

#### INTRODUCTION

Codes of ethics are norms that must be heeded by every profession in carrying out their professional duties and their lives in society. Code of ethics is a characteristic of the profession derived from the internal and external values of a discipline and is a comprehensive knowledge of a profession that provides guidance for members in

carrying out professional service. (Soepardan 2007). The professional code of ethics is a comprehensive and integrated guideline on the attitudes and behaviors that a health worker must have.

The profession of health workers in its implementation must be subject to the code of ethics established by the profession in addition to basing on service standards set by the laws and regulations. (Turingsih 2012) Health workers



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should study, understand, and apply the ethics, morals, and values of the code of ethics so that in carrying out professionalism does not cause conflict and cause negligence in carrying out medical actions that can cause legal dilemmas..

With a good understanding of the code of ethics and applying it in everyday life, ethical dilemmas are expected to be minimized and legal dilemmas do not occur. Lack of knowledge of health workers about regulations in the field of health, causing fear of midwives in making decisions and causing negligence in carrying out medical actions causes legal dilemmas. (Amila 2017)

The review of the health profession's code of ethics between expectations and reality aims to see further how the formulation of the code of ethics is seen from the form, nature, purpose, and cases that occur in various health workers. The review of the code of ethics of health workers is expected to be able to contribute to the development of health resources and education of health workers under the auspices of the Semarang Ministry of Health In particular and the education of other health workers;



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## MATERIALS AND METHOD

This research study is a literature review, where the selected journals are all research that includes with the code of ethics of health workers in Indonesia. This journal or research was selected by setting a limit or filter that is between 2014-2019 (last five years), full text format. With the keyword: kode ethics profession, healthworkers. The inclusion criteria is a professional code of ethics in the group of health workers in accordance with Law No. 36 of 2014 on health workers, research conducted in Indonesia. The exclusion criteria are groups of health workers who do not have a code of ethics. The code of ethics is taken from the decision of the minister of health that regulates the standards of the health worker profession and the results of research from the journal or journal are journals obtained from the OJS journal website (Open Journal System), then extracted / filtered according to the topic and inclusion criteria. The journals obtained consist of human and health scientific journals, Indonesian Journal of Medical Ethics, Lex Crimen, Permas Scientific Journal, Indonesian Journal of Nursing Practice, Jurnal Citizenship, Online Journal of Students of FK University of Riau, Journal of Legal Interpretation.

## RESULTS AND DISCUSSION

Professional ethics must be understood as signs that have been mutually agreed upon for a group of workers in fulfilling their duties, in order to run in accordance with existing signs and avoid unwanted things.. Ethicsa Profession is a means to help the executors as someone who is professional so as not to be able to damage the ethics of the profession. (Ancient 2020b)

Health workers are one of the professions and regulated in Law No. 36 of 2014 on Health Workers. Grouped in 13 types of health workers and in article 44 states one of the requirements to obtain a certificate of registration is a statement of complying with and implementing the provisions of professional ethics.

The ethics of the health profession are norms or behaviors acting for health officers or professions in serving public health (Amiruddin 2014)

Further studies on the form of health professional ethics based on 5 groups of health workers are as follows:

### 1. Professional Ethics of Medical Personnel

The medical personnel group consists of doctors, dentists, specialists and specialist dentists. (Kemenhumkam RI 2014) The group of medical personnel is bound by the kode of medical ethics.. The formulation of this code of ethics is jointly compiled by the organization of the medical profession and the government in the form of the Indonesian Medical Code of Ethics (KODEKI). The code of ethics of medicine contains the preamble, general obligations, doctors' obligations to patients, doctors' obligations to colleagues, doctors' obligations to themselves and cover.

The code of ethics of medicine is a set of guidelines that are prepared consciously to regulate the behavior of doctors in order to meet the ethical and moral principles of the medical profession in relation to peers, patients, patient families, communities and with professional partners of doctors. (Ancient 2020a)

Examples of ethical cases in the world of medicine where there are pro and cons that arise both from among the medical profession itself, the legal



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2020)

### 3. Ethics of the Nursing Profession

A code of ethics is a statement of professional standards that is used as a code of conduct and becomes a framework for making decisions. The rules that apply to an Indonesian nurse in carrying out the duties / functions of nurses are the Indonesian national nurse code of ethics, where a nurse always sticks to the code of ethics so that incidents of ethical violations can be avoided.. (Ancient 2020a)

The higher the nurse's knowledge of the code of ethics and health law, the better the performance of nurses in carrying out nursing care. To increase the knowledge of nurses familiar with the fode etif din health law, nurses should read books on the code of ethics of nursing and health law. In addition, it can also be through internet technology and through friends (Mudayana 2014)

Indonesia's nurse code of conduct consists of preamble, Nurses and Clients, Nurses and Practices, Nurses and Communities, Nurses and Peers, Nurses and Professions. (Noor 2011)

An example of a case of violation of the nurse's code of ethics is the case of Setya Novanto who allegedly pretended to be sick while at Medika Permata Hijau Hospital, it did see a dilemma faced by nurses. One side as a partner doctor so that the nurse must carry out the doctor's instructions. But on the other hand, the act of pretending to install infusion needles is an act that violates the code of ethics.. (Munir and Susanti 2018)

### 4. Midwifery Professional Ethics

The Midwife Organisation has developed a "professional code of conduct" as a comprehensive and integrational guideline on the attitudes and behaviours a midwife should have. The lack of midwife knowledge about obstetric regulations, causing fear of midwives in making decisions and causing negligence in performing medical actions leads to legal dilemmas.. (Amila 2017)

The midwifery code of ethics consists of seven chapters and the following are as follows: Chapter I Obligations of Midwives to Clients and The, Chapter II Obligations of Midwives To Their Duties,, Chapter III Obligations of Midwives To Colleagues And Other Health

profession, and not to miss the general public. Contra to the judge's ruling (generally from among the medical profession) argued that doctor Dewa Ayu Sosiary Pratiwi, et al did not make a professional mistake because they had carried out medical actions in accordance with the standards of the medical profession. While the pro verdict argues that this verdict is appropriate, because the doctor is considered to have neglected to perform medical actions that cause the death of patients. The case of professional misconduct from doctor Ayu Pratiwi et al on extraordinary legal efforts (PK) was declared free as well. (Seran 2016)

### 2. Professional Ethics of Medical Psychology

The Indonesian Psychological Code of Ethics is a written provision that is expected to be a guideline in behaving and behaving, as well as the firm grip of all Psychologists and groups of Psychological Scientists, in carrying out their professional activities in accordance with their respective competencies and authorities, in order to create a more prosperous community life.. (HMPSI 1998) The Indonesian Psychological Code of Ethics is the result of the XI Himpsi Congress, 2010, the first print, in lieu of the Code of Ethics of the results of Congress VIII in 2000. The contents of the Indonesian Psychologist's Code of Ethics are Mukodimah, Chapter 1 General Guidelines, Chapter 2 Addressing, Chapter 3 Competence, Chapter 4 Inter-Human Relations, Chapter 5 Confidentiality of Records And Results of Psychological Examinations, Chapter 6 Advertising and Public Statements, Chapter 7 Cost of Psychological Services, Chapter 8 Education and or Training, Chapter 9 Research and Publication, Chapter 10 Forensic Psychology, Chapter 11 Assessment, Chapter 12 Intervention, Chapter 13 Psychoeducation, Chapter 14 Counseling Psychology and Psychological Therapy, closing (Indonesian Psychological Association 2010)

Alleged violations of psychologist ethics for example occurred in the case of ICAC and Sherly who issued medical records of counseling results. (Rizka Diputra



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Workers,, Chapter IV Obligations of Midwives To Their Profession,, Chapter V Obligations of Midwives To Themselves,, Chapter VI Obligations of Midwives To Government Nusa, Bangsa And Homeland and Cover (Purba 2020a) Examples of violations of the midwife's code of conduct occurred in Sri Fuji midwives who revoked their licenses. The decision was issued after a recommendation from the Indonesian Midwife Association (IBI) Sampang. The revocation of the practice permit was issued because the coordinating midwife at PKM Bunten Barat was judged to violate the midwifery code of ethics. (BASRI 2020)

### 5. Pharmaceutical Profession Ethics

In carrying out its duties, pharmacists must adhere to professional standards, professional discipline regulations, as well as the pharmacist's code of ethics. This code of conduct will ensure pharmacists have all the relevant competencies to perform their role, including to. If intentionally or unintentionally violates or does not comply with the indonesian pharmacist code of ethics, the pharmacist must admit it. In addition, pharmacists who violate the code of ethics will also receive sanctions from the government, the bonds / organizations of the pharmaceutical profession that handle it, and account for it. (Harismi 2020)

The pharmacist code of ethics based on the decision of the XVIII National Congress of 2009 consists of a preamble, Chapter 1 General obligation, Chapter 2 Pharmacist Obligation to patients, Chapter 3 Pharmacist Obligation to peers, Chapter 4 Pharmacist Obligation to Fellow Other Health Workers, Chapter 5 Cover

A patient gets a prescription for a generic paracetamol drug, but because the trademark paracetamol drug Y is still in the range and the tendency to approach the year of ED, then the generic paracetamol drug in the prescription is replaced with a Y drug that contains the same content. The price of Y drugs is more expensive than generic drugs, but with information to patients that the effects of Y drugs are faster then the patient receives it. (WAHYONO 2018)

From the five professions of health workers above we can recognize that all health workers have compiled a code of ethics. This code of ethics is useful inthe nature of communitylife, where ethics can help us not to lose orientation, and can distinguish between what is true and what changes. Thus it is expected that we will still be able to take a stance that we can account for and include health workers. Health care workers are in touch with clients or patients. Relationships with clients or patients are both in the form of special human relationships and in professional relationships. In practice, client or patient relationships are conducted based on the principle of morality, doing good and not harming the person being served. Therefore, health workers need to understand the values that must be applied in carrying out their duties and responsibilities.. (Ancient 2020a)

A professional code of conduct has been drafted, but several ethical violations have also occurred. Violations of this code of conduct can occur due to conflicts of interest. Conflicts of interest arising from the relationship of patient doctors in medical services is indeed quite unique. The uniqueness of this relationship lies in the existence of a relationship of mutual trust. The patient who comes to the doctor always entrusts all the circumstances of the disease and his health and various personal things to the doctor and if it is felt that the doctor is not fully able to meet his expectations he can turn to another doctor. In such circumstances, the patient and his family are in an inability to be able to objectively assess the extent to which the physician has carried out his role and obligations in accordance with the demands of medical science and expertise in providing medical services.. (Seran 2016)



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## CONCLUSION

Health workers are professions that are related to the health of people or can be said to be related to a person's life. They work because they have competence and are guided by the code of ethics of each profession. Without good competence and ethics, it could be that the health worker performs actions that are not in accordance with procedures, do not guarantee patient safety and may just be for the sake of getting a reward alone, of course this is very far from the responsibility as a professional health worker.. As a logical consequence of the binding of professional ethics and law to every professional duty actor, every subject of professional duty actors can always be held accountable, both legally and based on professional ethics.

## ACKNOWLEDGEMENT

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### Effect of Acupressure Therapy on Blood Pressure in Menopausal Mothers with Hypertension

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#### ABSTRACT

**Background:** Hypertension in menopausal mothers is caused by a decrease in estrogen hormones. One of the efforts of non-pharmacological handlers for people with hypertension is by giving acupressure therapy. Acupressure therapy can stimulate the formation of endorphin and histamine hormones that can cause a sense of relaxation and vasodilatation of blood vessel walls. **Objective:** This study is to find out if there is an effect of acupressure therapy on blood pressure in menopausal mothers with hypertension.

**Method:** This type of research is Pre Eksperiment with one group pretest posttest design research design. The study consisted of 1 group of 15 respondents using consecutive sampling techniques. Respondents were given treatment in the form of acupressure therapy by pressing at 7 acupoint points along with 5 basic acupresses for 60 minutes and given for 3 consecutive days. Analysis of data conducted using the Wilcoxon test. **Results:** The results showed that there was a significant change in systoln blood pressure with a p value of 0.001 ( $< 0.05$ ) and diastole blood pressure with a p value of 0.001 ( $< 0.05$ ). **Conclusion:** There is an effect of acupressure therapy on blood pressure in menopausal mothers with hypertension that is decreased, so it can be used as one of the alternatives in handling hypertension non-pharmacologically

Keyword : Hypertension; Acupressure Therapy; Mrs Menopause

#### INTRODUCTION

Arterial hypertension, known as high blood pressure, is defined as persistent elevation of systolic blood pressure (TDS) at 140 mmHg or more and diastolic blood pressure (TDD) at 90 mmHg or more. (Black and Hawks, 2014, p. 901).

Based on documenting from JNC VII and Health People for the current trend that more than 50 million people — 1 in 4 — are affected by arterial hypertension, with the highest rates occurring among adults, blacks, less educated, and

lower socioeconomic groups. Of all the people who had controlled hypertension at all target levels, it is estimated that there was only 25%. (Black and Hawks, 2014, p. 901)

According to data obtained from the World Health Organization (WHO) obtained 1 in 3 people in the world suffer from hypertension, with the incidence of hypertension as much as 1.3 billion every year the number of people affected by hypertension kin increased, and in 2025 it is estimated that there are about 1.5 people in the



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world diagnosed with hypertension. (Kementerian Kesehatan Republik Indonesia, 2019, p. 1)

Hypertension is also called The Silent Killer because most people with hypertension do not know that he is suffering from hypertension (Kemenkes, 2015, p. 4). The incidence of hypertension in Indonesia is increasing in years judging by the results of Riskesdas in 2013 and 2018. The results obtained through Riskesdas data in 2013, obtained bawha incidence of hypertension in Indonesia from the results of measurements at the age of  $\geq 18$  years, which is 25.8%, with the highest prevalence of hypertension incidence in Bangka Belitung Province by 30.9% and the lowest prevalence of hypertension incidence in Bali Province at 19.9%. While in 2018, the incidence of hypertension in Indonesia is seen from the results of measurements at the age of  $\geq 18$  years the prevalence of hypertension incidence is 34.11%, the highest prevalence in South Kalimantan Province is 44.1%, and the lowest is in Papua Province which is 22.2%. The incidence of hypertension in Indonesia is currently dominated by women, which is 36.85% compared to men, which is 31.34%. This suggests that women are more at risk for hypertension. (Kesehatan, 2018).

Uncontrolled hypertension can cause a 7 times greater chance of having a stroke, and 6 times greater chance of congestive heart failure, and 3 times greater chance of having a heart attack. (Ekowati dan Tuminah, 2009).

Hypertension that occurs in menopausal mothers can be treated both pharmacologically and non-pharmacologically or complementary. The provision of pharmacological treatment becomes the standard of medical services in the health facilities of both treatment with types of diuretics, arteriol vasodilators, and angiotensin antagonists. Non-pharmacological treatments that can be done in people with hypertension include: stress

reduction techniques, weight loss, alcohol restriction, sodium and tobacco, exercise or exercise, relaxation, and acupressure. (Rezky, Hasneli, dan Hasanah, 2015).

Treatment of hypertension with acupressure therapy is medically done by pressing the finger on the surface of the skin, on the meridians at the point of accupoint associated with hypertension where the massage or emphasis stimulates mast cells to produce histamine that can reduce strengthening, improve blood circulation and stimulate the body's energy strength to heal and nourish (Ayu and Widodo, 2019, pp. 181-182), (Dewi, Krisna, Herwinati, and Yuniar, 2017). In Theory Medical China (TCM), the treatment of hypertension is done by balancing two body forces namely yin and yang, emphasis on certain points on the surface of the body can activate and regulate the flow of vital energy (qi) and blood in the body's meridian pathways, when the flow of qi is open then yin and yang can be balanced again so that hypertension can be minimized.

### METHODS

This research is analytical research using the pre-experimental method with the one group pre test posttest design approach. The purpose of this study was to find out the effect of acupressure therapy on blood pressure in menopausal mothers with hypertension. Respondents to this study were menopausal mothers as many as 15 people in the Metro Health Center area with purposive sampling sampling techniques. Inclusion criteria are menopausal mothers who experience hypertension. This study was conducted by providing acupressure therapy at 7 acupoints along with 5 basic acupresses for 60 minutes in 3 consecutive days. The exclusion criteria in this study were patients suffering from skin diseases or skin injuries. Because of the limitations when the research was conducted during the pandemic



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period where the occurrence of PPKM was suggested for researchers to further increase the number of research samples by 29 people for each research group.

### RESULTS AND DISCUSSION

#### Univariate Analysis

**Table 1. Characteristics of Respondents Based on Age, Education, and Occupation**

Variable	Frequency	Presentation
<b>Age</b>		
45-59	6	40 %
60-74	9	60 %
75-90	0	0 %
<b>Education</b>		
SD	6	40 %
SMP	6	40 %
SMA	0	0 %
D1	3	20 %
<b>Work</b>		
Houswife	9	60 %
Merchant	3	20 %
Pension	3	20 %

From the results shown in tabel 1 that menopausal mothers who experience hypertension are at the age of 60-74 years as much as 60%, the education of menopausal mothers suffering from hypertension is elementary and junior high school which is as much as 40%, and as many as 80% of mothers are not working

**Table 2. Average Blood Pressure of Respondents Before and After Acupressure Therapy**

Variabel	Mean	SD	Min	Max
Sistolik				
Pre	153.53	5.535	146.67	160.0
Post	136.0	5.243	130.0	141.67
Diastolik				
Pre	89.53	5.026	83.0	96.67
Post	85.67	2.802	81.67	90.0

Table 2 shows that the average systolic blood pressure before acupressure therapy is 153.53 mmHg and after acupressure therapy is 136.0 mmHg. Diastolic blood pressure before acupressure therapy is 89.53 mmHg and after acupressure therapy to 85.67 mmHg.

#### Bivariat Analysis

Data processing conducted using statistical software with Sapiro wilk normality test obtained P value < 0.05 which shows that the data distribution is not normal so that in bivariate data processing is done using wilcoxon test. Data processing results are presented in table and narrative form as follows:

**Table 3. Effect of Aquapreaur Therapy on Blood Pressure in Menopausal Mothers with Hypertension.**

Blood Pressure	N	P value
Sistolik	15	0,001
Diastolik		0,001

From the results of wilcoxon statistics tests shown by table 3, it was found that systolic blood pressure after acupressure therapy obtained a p value of 0.001 ( $\alpha \leq 0.05$ ) this right indicates that  $H_0$  was rejected and  $H_a$  was accepted which means there is an effect of acupressure therapy on systolic blood pressure in menopausal mothers with hypertension. While in diastolic blood pressure obtained a p value of 0.001 ( $\alpha < 0.05$ ) which means the effect of acupressure therapy on diastolic blood pressure in menopausal mothers with hypertension.

#### Average blood pressure in menopausal mothers with hypertension before being given intervention

Based on the results of research conducted in the Metro Health Center area on 15 respondents obtained an average blood pressure before being given a cystol intervention of 153.53 mmHg and diastole of 89.53 mmHg.



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The results in this study were lower than the results of the study conducted by (Maharani & Widodo, 2019) In the center of Bandarharjo Semarang with a sample of 16 elderly respondents with therapy for 60 minutes. The number of samples in this study is more than the research conducted by (Widodo, Nurhayati, & Fitriana, 2019) It was conducted at synergy mind health clinic using wicoxon test. This study was conducted by giving interventions 3 times for 2 hours with a sample number of 10 respondents.

The cause of high blood pressure in menopausal mothers is due to age factors and decreased levels of estrogen hormones in the body. As we age, it can affect the rise of baroreceptors involved in blood pressure regulation as well as arterial flexibility (LeMone, Burke, & Buaulhoff, 2016). This is what can trigger an increase in blood partners. In addition to age, the increase in blood pressure in menopausal mothers is caused by a decrease in levels of estrogen hormones in the body. Decreased estrogen hormone in the body can result in the reduction and accumulation of fat in the aortic wall, so it can lead to an increase in blood pressure in menopausal mothers. (Suparni & Astutik, 2016, p. 32).

This is supported by the characteristics of respondents obtained in this study based on the age of the most at the age of 60-74 years as many as 9 respondents compared to vulnerable 45-59 as many as 6 respondents. Based on the results of research and related theories, researchers argue that menopausal mothers are at risk for hypertension, in addition to age factors and decreased levels of estrogen hormone stress and emotions that are often experienced by menopausal mothers are also one of the factors of increasing blood pressure. This is based on the results of interviews some respondents stated to have sleep disorders and many thoughts at the time of the study.

### Average blood pressure in menopausal mothers with hypertension after intervention

The results showed changes in blood pressure in 15 respondents, namely decreased acupressure therapy at 7 accupoint points for 3 consecutive days, this can be seen from the average blood pressure before being given acupressure therapy which is 153.53 mmHg and 89.53 mmHg, after being given acupressure therapy obtained 136.0 mmHg and 85.67 mmHg. The average difference in blood pressure before and after acupressure therapy was 21.3 mmHg and diastole was 4 mmHg.

The results of this study are almost the same as the research conducted by the study (Maharani & Widodo, 2019) in the working area of Bandarharjo Health Center Semarang using a paired t-test research test. This study was conducted by pressing 2 points of akupoint on the back of the respondent. The number of respondents amounted to 16 elderly respondents with the provision of therapy for 60 minutes. The results of this study found that there were changes in blood pressure before and after acupressure therapy with average blood pressure before acupressure therapy, namely systol 155 mmHg and diatol 101.25 mmHg. The average blood pressure after admissive therapy is systol 125.75 mmHg and diastole 81.00 mmHg with a large difference in average systolic blood pressure of 29.25 mmHg, and diastolic 19.75 mmHg which indicates a change in blood pressure that decreases.

The administration of acupressure therapy interventions can affect blood pressure as explained (Majid & Rini, 2016). In the book of acupressure emphasis carried out at 7 points accupoint can talk and harmonize the flow of qi contained in the blood, stimulating mast cells for



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histamine as mediator vasodilation, blood vessels, thus increasing blood circulation that makes the body relax so that blood pressure can decrease. Besides being able to produce histamine can also produce endorphin hormones so that it can provide a sense of calm and comfort that can affect blood pressure.

The average drop in blood pressure after acupressure therapy is quite effective by pressing 7 easily accessible accupoint points, this can be used as one of the traditional treatments that can be used as an alternative treatment that is more, economical. The results of this study showed a decrease in blood pressure, but the sample obtained did not meet the minimum sample that had been set as many as 29 respondents, while in this study the sample obtained as many as 15 respondents.

### **Effect of Acupressure Therapy on Blood Pressure Before and After in Menopausal Mothers with Hypertension in the Working Area of Semarang Jaya Village.**

The results of research conducted in the working area of Semarang Jaya Village using wilcoxon test showed a p-value of  $0.001 < 0.05$  then  $H_a$  was accepted and  $H_0$  was rejected which means there is an effect of acupressure therapy on systolic blood pressure in menopausal mothers with hipotence.

Try one of these alternatives or see Help for hints on refining your search (Maharani & Widodo, 2019) in the working area of Bandarharjo Health Center Semarang with a sample of 16 respondents using an experimental quasi design with one group pre test and post test approach. In this study, the systolic p value of 0.000 and p of the diastolic value of 0.000 which means  $< 0.05$ . This research was also conducted by (Widodo, Nurhayati, & Fitriana, 2019) At Synergy Mind Health Surakarta Clinic with a sample of 10

respondents using pre-experimental research design with pre and post test approach without control group design. In this study obtained a value of p value  $0.008 < 0.05$  which means there is an effect of acupressure therapy on hypertensive patients.

While in diastole blood pressure obtained a value of p value  $0.001 < 0.05$  where it shows there is an effect of acupressure therapy on the tenakan of diastolic blood in menopausal mothers with hypertension, this is inversely proportional to research conducted by (Aminuddin, Sudarman and Syakib, 2020) Which showed significant results in the reduction of blood pressure after being given acupressure therapy for 3 times in 2 days against 7 respondents.

Acupressure therapy can lower blood pressure, acupressure stimulation can stimulate mast cells to release histamine as a mediator of vasoldilatation of blood vessels, so that the occurrence of increased blood circulation that makes the body remain more relaxed and blood pressure can decrease. Acupressure provides stimulus or stimulation at the meridian points of the body by using fingers that aim to affect certain organs by activating the flow of energy (qi) of the body. By pressing the accupoint points can provide a stimulus of sensory nerve cells around the acupressure point then passed on to the spinal cord, mesensephalon and hypothalamic ptiutari complex, all of which are activated to release endorphin hormones that can provide a sense of calm and comfort.

Based on the concept of treatment TCM (Traditional Chinese Medicine) believes that high blood pressure in a person due to an imbalance of energy (chi) and fundamental substances (shen) in the body. Shen is defined as the material of life



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that covers spirit, desire, mind, soul and consciousness in action. Menopausal mothers will generally easily experience emotional stress, lack of confidence with their appearance, causing brain work to get heavier so that there is disharmony of functional relationships between organs of the body so that it can interfere with shen in the body. (Majid & Rini, 2016).

Based on the description above that menopause that occurs in women causes a decrease in estrogen production in the body. Reduced levels of estrogens in the body can lead to decreased production of anti-aggregation substances namely prostacycline and endotelin that serve as vasodilatation of arteries that can make blood vessels stiff or the occurrence of vasoconstriction, so that in menopausal women there can be an increase in blood pressure or hypertension, by providing acupressure therapy at 7 acupoints namely KI2 points, SP 6, HT 7, BL 18, BL 23, PC 6 and LR 3 can stimulate mast cells to secrete histamine as a mediator of vasodilation of blood vessels, thereby improving blood circulation that makes the body relax so that blood pressure can decrease (Ayu and Widodo, 2019, p. 181).

In addition to being able to produce endorphin hormone according to Chen, Lin, Wu and Lin in 1999 acupressure therapy can also increase the production of hormone serotonin which can serve as a signaling neurotransmitter to the brain stem that can activate the pineal gland to produce the hormone melatonin, this melatonin hormone that can affect blood pressure. Researchers believe that the decrease in systolic blood pressure of respondents is an influence on acupressure therapy that has been done. Judging from the changes in cytokine blood pressure meaningfully after acupressure. This proves that

acupressure can have an effect on blood pressure, namely the occurrence of a decrease in systolic blood pressure.

### CONCLUSION

Based on the results obtained through statistical tests conducted, namely p value ( $0.001 < 0.05$ ). The conclusion of this study is that there is an effect of acupressure therapy on the blood pressure of menopausal mothers with hypertension, namely a decrease in systolic blood pressure.

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## PRENATAL YOGA REDUCE LOW BACK PAIN IN THIRD TRIMESTER PREGNANT WOMEN IN PUBLIC HEALTH CENTER KEDUNGmundu SEMARANG

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### ABSTRACT

**Background:** Pregnant women have different psychological and physiological changes every quarter, one of them is discomfort that occurs in the third trimester including back pain. Data from Kedungmundu Public Health Center Semarang in December 2018–February 2019 there are 79 (73.1%) third-trimester pregnant women experiencing low back pain. This study analyzed the effect of prenatal yoga on low back pain in third trimester pregnant women at Kedungmundu Public Health Center Semarang. **Research design:** quantitative design with *one group pretest posttest design* without control using purposive random sampling technique. Start from October 2018–July 2019 at Kedungmundu Public Health Center Semarang, respondents were 18 pregnant women. Data was collected by observation sheet, using univariate and bivariate analysis methods. **Results:** The average intensity of back pain before prenatal yoga is 4.17 and after prenatal yoga is 2.50 with the results of the calculation of the T-test amounting to 0.000 ( $\leq 0.05$ ). **Conclusion:** Prenatal yoga has an effect on back pain in third trimester pregnant women at the Kedungmundu Health Center Semarang

**Keyword :** prenatal yoga; low back pain; pregnancy woman; third trimester

### INTRODUCTION

Pregnant women have different psychological and physiological changes that are different in each trimester. Some of the discomforts that occur in the third trimester are increased frequency of urination, leg cramps, hyperventilation, shortness of breath, dependent edema, heartburn, constipation, tingling and numbness in fingers, insomnia, and back pain [1]

Low back pain is one of the most common complaints in pregnancy, especially in the lumbosacral region. Exercises that focus on stretching and strengthening the back and abdominal muscles are often

recommended to relieve pregnancy-related pain [2]

The University of Ulster conducted a survey in 2014, consisting of 157 pregnant women who filled out a questionnaire, 70% complained of pain in the spine [3]. The phenomenon of back pain is usually a problem experienced by every pregnant woman, from 50% to 70%, based on previous studies in various countries [4]

Back pain can be treated pharmacologically and non-pharmacologically. Pharmacological therapy can be given with non-steroidal anti-inflammatory agents, analgesics,



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and muscle relaxants [5]. Non-pharmacological methods can be carried out through activities without drugs, including distraction techniques, self-hypnosis, reducing pain perception, massage stimulation, endorphin, pelvic tilt, exercise warm baths, hot or cold compresses, good body mechanics and regular exercise. Non-pharmacological methods are also cheaper, simple, effective, and without adverse effects [6][7][8]

Yoga is a non-pharmacological method to increase the mother's strength and flexibility and increase her ability to be more in tune with her body, because yoga is a body exercise, breathing exercise, and meditation [9], [10]

Several international studies have shown that yoga is proven to improve quality of life, reduce depression, reduce anxiety, reduce labor pain and shorten the length of labor. In addition, yoga can also improve gait, flexibility and posture stability [11], [12]

Research of Dewi Chandra Official, et al (2017) entitled "The Effect of Yoga on Lower Back Pain in Third Trimester Pregnant Women at the Kalikajar I Health Center, Wonosobo Regency" it was found that there was a significant effect of yoga on reducing the intensity of low back pain in pregnant women [13]

Preliminary survey conducted at the Kedungmundu Health Center Semarang, back pain is one of the physiological problems that many pregnant women experience in the third trimester. There were 79 (73.1%) pregnant women experienced back pain in the third trimester who experienced back pain in the last 1 to 2 months before birth. Health

workers provide calcium therapy to reduce back pain complaints and strengthen bones, as well as health education about mobilization and rest patterns.

The results of interviews with 10 third-trimester pregnant women, 4 of them experienced back pain but were still able to carry out their usual activities. 6 pregnant women who experience back pain need help from their families to do household activities such as sweeping and mopping. Pregnant women in overcoming these complaints, 3 pregnant women do light exercise whenever there is time, such as a short walk in the morning/evening. 7 pregnant women who experience back pain, rest for a while every time back pain comes. Pregnant women routinely take calcium and drugs given by health workers.

The purpose of this study was to analyze the effect of prenatal yoga for low back pain in third trimester pregnant women at Kedungmundu Health Center Semarang. The author is interested in taking the title of the research on "The Effect of Prenatal Yoga on Back Pain in Third Trimester Pregnant Women at the Kedungmundu Health Center Semarang".

### MATERIALS AND METHOD

The research design used was pre-experiment by design one group pretest-posttest design without control. This type of research used is quantitative with purposive random sampling technique. The research design has a pretest before being given treatment and a posttest after being given treatment. This study used



one group. Third trimester pregnant women where prior treatment was carried out pretest (initial test) measured the intensity of back pain using the Numerical Rating Scale (NRS) and after the treatment the sample was given posttest (final test) the intensity of back pain was measured again after being given yoga. Yoga is given 4 times within 2 weeks with a yoga duration of 30 minutes. This measurement aims to compare the results before and after being given treatment. This research has passed ethical clearance with number 442/KH.KEPK/KT/III/2019.

## RESULTS

Table 1 The intensity of back pain in third trimester pregnant women at the Kedungmundu Health Center Semarang before prenatal yoga

Pain Intensity	Mean	Median	SD	Minimal Maximal
Before				
Prenatal Yoga	4.17	4.00	1.581	2-7

Based on table 1, it can be seen that the average pain intensity before prenatal yoga is 4.17, the median value is 4.00, the standard deviation value is 1.581, the minimum and maximum values are between 2-7 pain scales.

Table 2 Intensity of back pain in third trimester pregnant women at Kedungmundu Health Center Semarang after prenatal yoga

Pain Intensity	Mean	Median	SD	Minimal Maximal
After				
Prenatal Yoga	2.50	3.00	1.505	0-5

Based on table 2, it can be seen that the average pain intensity before prenatal yoga is 2.50, the median value is 3.00, the standard deviation value is 1.505, the minimum and maximum values are between 0-5 pain scales.

Table 3 Statistical Test Results of Back Pain Intensity

Pain Intensity	Mean	P-value
Before Prenatal Yoga	4,17	0,000
After Prenatal Yoga	2,50	

Based on table 3 shows the results of bivariate analysis using the Paired T-Test statistical test and obtained a P-value = 0.000 ( $P < 0.05$ ) so that there is an effect of prenatal yoga on back pain in the third trimester pregnant women at the Kedungmundu Health Center Semarang.

## DISCUSSION

Prenatal yoga (yoga during pregnancy) is one type of modification and hatha yoga that is adapted to the condition of pregnant women. The purpose of prenatal yoga is to prepare pregnant women physically, mentally, and spiritually for the birth process [14].

Yoga is a non-pharmacological method to increase the mother's strength and flexibility and increase her ability to be more in tune with her body, because yoga is a body exercise, breathing exercise and meditation. Prenatal yoga practice is beneficial for pregnant women who experience back pain, anxiety, stress, depression and sleep disorders [9]. Yoga is a cost-effective intervention for treating low back pain [15]



The research of Kawanishi et al has mentioned the preventive and therapeutic effects of Yoga in the prenatal phase. Yoga has been helpful in relieving low back pain as well as yoga has helped reduce stress, depression, anxiety, and pregnancy-related complications [16]

Prenatal yoga is an effective exercise in reducing back pain in pregnancy, prenatal yoga teaches relaxation, breathing, and body positioning techniques to increase strength, balance and reduce pain [14]

Musculoskeletal changes during pregnancy will be felt with increasing gestational age which causes stretching and instability of improper body posture. This causes fatigue in the muscles that are at risk of shifting the center of gravity forward due to excessive body weight so that the thoracic spinal compensatory curve (kyphosis) and the lumbar curve become lordosis. This condition will begin to be felt in the second and third trimesters of pregnancy. The incidence of low back pain felt by pregnant women often occurs in the lumbosacral area [17]

The pain can cause difficulty walking. This back pain can be associated with pelvic disorders such as infection. Other complications of back pain are worsening mobility which can impede activities such as driving a vehicle, caring for children and affecting the mother's work, insomnia causing fatigue and irritability [5].

Dr. Vivek Narendran of the Cincinnati Children's Hospital Medical Center in Ohio, United States, said yoga practice can help increase blood flow to the placenta, reduce the distribution of maternal stress hormones to the fetus's body, reduce the release of hormones that trigger birth, there

by reducing the possibility of premature birth [5].

Prenatal yoga can also stimulate the release of endorphins which can provide comfort and relaxation so that it can reduce pain, improve memory, increase appetite, increase breathing, sexual ability and can lower blood pressure [18].

Endorphins are endogenous opioid neurotransmitters or neuromodulators that inhibit the delivery of pain stimuli by attaching to opiate receptors in the peripheral nervous system or central nervous system which can block pain messages released in response to pain and increase pain inhibition. [6]

Yoga can accelerate the body's blood circulation, can flex the back muscles and can increase client awareness so that it can easily respond to the occurrence of pain in the mother's body, yoga poses can stimulate the muscles in the back and lengthen the back muscles and can block the onset of pain, especially in the back. Skeletal muscles that experience spasms due to an increase in prostaglandins will relax, resulting in vasodilation of blood vessels and an increase in blood flow to areas experiencing ischemia and spasm. Smooth blood flow can stimulate the brain to produce endorphins hormones [19]

That way, with prenatal yoga, pregnant women's low back pain can be overcome without pharmacological treatment



## CONCLUSION

The results showed that prenatal yoga can reduce back pain in third-trimester pregnant women because prenatal yoga stimulates the release of endorphins which can provide comfort and relaxation, so that it can reduce pain. It is hoped that pregnant women can apply efforts that can reduce back pain, one of which is prenatal yoga. Health workers can use prenatal yoga to reduce back pain complaints and can develop other Natural Therapy in providing interventions to patients and can minimize the use of pharmacological drugs. Further researchers can use samples with similar patterns of daily activities

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## Factors Associated with Exclusive Breastfeeding at

### Ajibarang II Health Center

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### ABSTRACT

**Background:** Government of 2012 Number 3 that exclusive breastfeeding is breast milk that is given or breastfeeding to babies from birth to 6 months of age. During exclusive breastfeeding, no additional food or drink is given other than medicine. The cause of low exclusive breastfeeding are influenced by Internal and External factors. **Methods:** This research is descriptive with a cross sectional approach. The population in this study all mothers had babies 6-12 months old at the Ajibarang II Health Center in 2021. The sample in this study totaling 41 mothers in July 2021. By accidental sampling technique.

**Results:** The results showed that most of the mothers had less knowledge about exclusive breastfeeding 80% with  $p\text{-value} = 0.001$ , there was a significant relationship between respondents education level and exclusive breastfeeding with  $P\text{ value} = 0.005$ , non-exclusive breastfeeding was more mothers who received less family support 90% compared to mothers who received family support with  $P\text{ value} = 0.002$ , most mothers had been exposed to the promotion of formula milk by milk producers in various ways 36% compared to those who were not exposed by 5 % with  $p\text{-value} = 0.004$ . **Conclusion:** The conclusion is that most of the breastfeeding mothers in the working area of the Ajibarang II Health Center have a low knowledge 80% have a high school, Education 60%, most of the mother are not supported by their families 90% and most of them have exposed to promotion of formula milk 96.6% which is related to exclusive breastfeeding.

Keyword : Breastfeeding; Knowledge;Education; family support; formula milk promotion.

### INTRODUCTION

One of the Goals of the Third Sustainable Development Goals (SDGs) in the second target is by 2030 ending preventable infant and under-five mortality. Therefore, in order to reduce child morbidity

and mortality, the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) recommend early initiation of breastfeeding within one hour after delivery, infants must receive exclusive breastfeeding for as long as possible 6 months, and continued breastfeeding for up to 2 years [1]



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The Infant Mortality Rate (IMR))  
Infant Mortality Rate (IMR) is the main indicator of public health status. IMR in Indonesia continues to decline every year. However, there is still a long way to go to combat AKB. The results of the Indonesian Demographic and Health Survey (IDHS) show that from year to year the IMR has decreased significantly, from 68 deaths per 1,000 live births in 1991, to 24 deaths per 1,000 live births in 2017. However, recent developments from several regions in the country show IMR fluctuating [2]. The best nutrition for babies is breast milk which contains a perfect source of nutrition according to the needs for the baby's growth and development [3].

The policy of the 6-month exclusive breastfeeding program aims to reduce IMR in Indonesia. The number of infant mortality cases decreased from 33,278 in 2015 to 32,007 in 2016 and in 2017 there were 10,294 cases. In Article 128 paragraph 1 of Law Number 36 of 2009 concerning Health, it has been emphasized that every baby has the right to get exclusive breastfeeding since birth for six months except for medical indications. In addition, Article 6 of Government Regulation number 33 of 2012 concerning Exclusive Breastfeeding also states that every mother who gives birth must exclusively breastfeed her baby, unless there are medical indications, the mother is absent or separated from the baby. However, there are still many mothers who have not exclusively breastfed their babies.

In accordance with the regulations issued by the Government in 2012 Number 3 that exclusive breastfeeding is breast milk that is given or breast fed to babies from birth to 6 months of age. During exclusive breastfeeding or from the time the baby is born until the baby is 6 months old, no additional food or drink is given other than medicine.

Based on data from the Banyumas District Health Office, it was found that the coverage of exclusive breastfeeding for infants aged 0-6 months in Banyumas Regency in 2019 was 65.1%, this has decreased when compared to 2018 the coverage of exclusive breastfeeding was 66.1% and in 2020 coverage of exclusive breastfeeding is 65.8% [4]

Data on the coverage of exclusive breastfeeding at every puskesmas in Banyumas Regency showed that the coverage of exclusive breastfeeding had increased and decreased at Ajibarang II Health Center. In 2018 the coverage of exclusive breastfeeding at the Ajibarang II Public Health Center was 54.9%, then it increased in 2019 by 21.1% and decreased in 2020 the coverage of exclusive breastfeeding by 15.3%, this shows that at the Ajibarang II Health Center still has not reached the target of 65% [5]

The cause of low exclusive breastfeeding is influenced by internal factors, including maternal psychology, early initiation of breastfeeding and mother's education. While external factors include family problems, the role of the media, and government involvement [3]. From the results of Lestari's research (2018) there is a significant relationship between respondents' knowledge and exclusive breastfeeding, this is evidenced by the P-value ( $0.008 < 0.05$ ). From the results of this study, it can be concluded that the knowledge factor is related to exclusive breastfeeding, the lower the knowledge, the lower the awareness to give exclusive breastfeeding to the baby [6].



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According to research by Aksamala, Widjarnako and Sugimatono (2018), the results show that there is a relationship between family support and the practice of exclusive breastfeeding. With a *P-value* of 0.004. This can be because the family is the closest person to the mother, the time spent with the family is also more so that the mother will tend to ask about something to the family [7].

Based on a preliminary study conducted on August 9, 2021 at the Ajibarang Health Center, Banyumas Regency, several programs have been implemented by the Ajibarang II Health Center, namely education and counseling for pregnant women at the puskesmas during the ANC examination, exclusive breastfeeding counseling at the posyandu. However, there are several programs that cannot run or are hampered, such as exclusive breastfeeding counseling for postpartum mothers and exclusive breastfeeding materials for pregnant women and toddler classes. This is due to the Covid-19 pandemic situation, which hampers the movement of health workers to conduct counseling.

Based on the above background, the researcher is interested in conducting a study with the title "Factors Associated with exclusive breastfeeding at Ajibarang II Health Center, Banyumas Regency".

## MATERIALS AND METHOD

This type of research is a descriptive study with a *cross sectional* approach. The population used in this study were mothers who gave birth at the Ajibarang II Health Center in 2020 as many as 673 mothers. The sample in this study Mothers who have babies aged 6-12 months in July 2021 as many as 41 mothers The sampling technique used is *Accidental Sampling*. Sampling was based on the inclusion criteria, mothers were in good health, able to communicate well, had android, mother who can reading, and provided to be respondents. Then the exclusion criteria in this study were the baby had a congenital abnormality or defect or an unhealthy condition, the mother suffered from a serious illness. The variables in this study are the Independent variables Knowledge, Education, Family Support and Promotion of formula milk. Meanwhile, the Dependent variable is the success of exclusive breastfeeding. The Instrument used in this study was a Questionnaire in the form of a *Google Form* which was distributed to each respondent through the *Whatsapp* application. This research has obtained permission from the Ajibarang II Public Health Center due to the limited time of the study which was only 7 weeks so that a review from the Ethics Commission was not carried out.



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## RESULTS

**Table 1. Frequency of respondents' age characteristics**

Category	Frequency	Percentage
Age not high risk	23	56,1%
High risk Age	18	43,9%
Total	41	100%

Based on table 1, it can be seen that the age characteristics of the highest respondents were 56.1% at the age not at high risk and at the high risk age at 43.9% of the 41 mothers.

**Table 2. Characteristics of respondent parity frequency**

Category	Frequency	Percentage
Having 1 Child	16	38,1%
Having 2 Child	12	29,2%
Having 3 Child or more	13	31,7%
Total	41	100%

Based on table 2, it can be seen that the parity characteristics of respondents in the category of having 1 child are 38.1%, then mothers who have 2 children are 29.2% and mothers who have 3 or more children are 31.7% with 41 respondents who are breastfeeding mothers.

**Table 3. Characteristics of the frequency of education respondents**

Category	Frequency	Percentage
Basic Education	13	31,7%
Secondary Education	25	61%
Higher Education	3	7,3%
Total	41	100%

In table 3, it can be seen that the educational characteristics of the most respondents in the secondary education category are 25 people with a percentage of 61%, then in the elementary school category as many as 13 people with a percentage of 31.7% and at least 3 people in the tertiary education category with a percentage of 7, 3% of the 41 respondents were breastfeeding mothers.

**Table 4. Characteristics of the frequency of respondents' knowledge level**

Category	Frequency	Percentage
Less	26	63,4%
Enough	13	31,7%
Good	2	4,9%
Total	41	100%

The characteristics of respondents with the highest level of knowledge in the poor category are 26 mothers with a percentage of 63.4%, then in the sufficient knowledge category there are 13 mothers with a percentage of 31.7% and at the level of good knowledge there are 2 mothers with a percentage 4.9%.

**Table 5. Characteristics of the frequency of respondent's family support**

Category	Frequency	Percentage
Low Family Support	32	78%
High Family Support	9	22%
Total	41	100%

In table 5 it can be seen that the highest frequency characteristic of family support is in the low category of 78% with a total of 32 mothers and in the high category there are 9 mothers with a percentage of 22% of the total respondents 41 breastfeeding mothers.

**Table 6. Characteristics of the frequency of formula milk promotion**

Category	Frequency	Percentage
Exposeure to formula	37	90,2%
Milk A		
Not Exposed to Formula	4	9,8%
Milk		
Total	41	100%

The table above shows that the most frequent characteristic of formula milk promotion is in the category exposed to promotion with 37 mothers with a percentage of 90.2% and in the category not exposed to promotion as many as 4 mothers with a percentage of 9.8% of the total respondents 41 breastfeeding mothers.



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**Table 7. Characteristics of the frequency of exclusive breastfeeding**

Category	Frequency	Percentage
Exclusive Breastfeeding	11	26,8%
Not Exclusive Breastfeeding	30	73,2%
Total	41	100%

On the characteristics of exclusive breastfeeding, it can be seen that the most in the non-exclusive breastfeeding category is 73.2% with a total of 30 mothers and in the exclusive breastfeeding category there are 11 people with a percentage of 26.8%.

**Table 8. The relationship between the level of knowledge, education, family support and promotion of formula milk on the success of exclusive breastfeeding**

Variabel Independen	Breastfeeding				Total Σ	Percentage %	P-value
	Exclusive		Not Exclusive				
	f	%	f	%			
<b>Knowledge</b>							
Less	2	18,2	24	80	26	63,4	
Enough	8	72,7	5	16,6	13	31,7	
Good	1	9	1	3,3	2	4,8	0,001
<b>Total</b>	<b>11</b>	<b>100</b>	<b>30</b>	<b>100</b>	<b>41</b>	<b>100</b>	
<b>Education</b>							
Basic	1	10	12	40	13	31,7	
Secondary	7	63,6	18	60	25	61	
High	3	27,2	0	0	3	7,3	0,005
<b>Total</b>	<b>11</b>	<b>100</b>	<b>30</b>	<b>100</b>	<b>41</b>	<b>100</b>	
<b>Family Support</b>							
Low	5	45,4	27	90	32	78	
High	6	54,5	3	10	9	21,9	
<b>Total</b>	<b>11</b>	<b>100</b>	<b>30</b>	<b>100</b>	<b>41</b>	<b>100</b>	0,002
<b>Formula Milk Promotion</b>							
Exposed to formula Milk A	7	63,6	29	96,6	36	87,8	
Not Exposed to Formula Milk	4	36,3	1	3,3	5	12,2	
<b>Total</b>	<b>11</b>	<b>100</b>	<b>30</b>	<b>100</b>	<b>41</b>	<b>100</b>	0,004



## DISCUS

### Relationship level of knowledge about exclusive breastfeeding.

Based on the results of the study, it is known that most mothers have less knowledge about exclusive breastfeeding, namely 24 mothers (80%). The results of statistical tests obtained  $p$ -value = 0.001 then there is a significant relationship between the level of knowledge and the success of exclusive breastfeeding.

The results of this study are in line with the results of research conducted by Nila Marwiyah

(2020) that there is a relationship between exclusive breastfeeding and knowledge [8]. Supported by research by Asemahagn (2016) states that the level of mother's knowledge has a significant role in exclusive breastfeeding [9].

Thus the need for health education about how to express breast milk, how to store breast milk, with the knowledge of mothers about breastfeeding will increase a deep understanding of mothers about the benefits of breastfeeding. This understanding will be the

basis for mothers to behave in exclusive breastfeeding to their babies. In Kristina Goti's research (2016) mothers who have less knowledge about the importance of exclusive breastfeeding tend to have poor behavior in exclusive breastfeeding and assume that breast milk substitutes (formula milk) can help mothers and their babies [10].

### Relationship between education and exclusive breastfeeding.

The results of this study found that the percentage of non-exclusive breastfeeding was greater in mothers who had a high school education level (60%) than mothers who had a college education level (0%). Statistically there is a significant relationship between the

education level of respondents with exclusive breastfeeding with  $P$  value = 0.005.

This is supported by research. This is in line with the research conducted by Victor Mogre (2016) with the results that there is a relationship between education and the practice of exclusive breastfeeding in Ghana [11].

According to Notoatmodjo (2010), education is closely related to knowledge, education is one of the basic human needs that is indispensable for self-development, The higher a person's education level, the easier it will be to receive and develop knowledge and technology, so that they will have good knowledge about health [12].

This is in line with Lestari's research (2018) which states that there is a significant relationship between respondents' education factors and exclusive breastfeeding [6] This is usually because education is based on knowledge and awareness through the learning process, so that the behavior is expected to be long lasting and permanent because it is based on awareness.

This study has the same results as Lindawati's research (2019) which states that there is a significant relationship between education and exclusive breastfeeding in Peucangpari Village, Cigemblong District, Lebak Regency in 2018 [13]. Education will encourage someone to know something, someone who has a higher education is more likely to know the benefits of breastfeeding compared to those with basic education.

### Relationship between family support and exclusive breastfeeding.

The results of this study found that non-exclusive breastfeeding was more common in mothers who received less or less family support (90%) than mothers who received family support with a  $P$  value



= 0.002, so it can be concluded that there is a relationship between exclusive breastfeeding and family support. Most mothers get instrumental support, the family helps with household chores such as (cooking, washing clothes, mopping). However, there is still information support that is not provided by the family, namely seeking information from outside such as books, magazines and others about exclusive breastfeeding.

Family support is very significant due to the high advice and input by families to mothers not to give breast milk to their babies on the grounds that they are milk promotions tend to give non-exclusive breastfeeding, mothers who often get formula milk promotions feel there is an interest in the promotion and in time have the desire to buy to be given to their babies, so that it will affect exclusive breastfeeding is not achieved. Family support from the environment around the mother has a big role in the success of breastfeeding. The support comes from the environment around the mother other than her husband, also from grandmothers and other families who already have breastfeeding experience. Good husband/family support will always support mothers in fostering a positive attitude in breastfeeding [14].

This is in accordance with the theory which states that family support makes a person have self-confidence which will foster a sense of security, confidence, self-esteem, and courage so that the emotional support given by the family is one of the decisions, in this case the mother's decision to Exclusive breastfeed [15]

This is in line with the research of Rina Suhartini (2021) which states that there is a significant relationship between family support for pregnant women regarding exclusive breastfeeding, good family support for exclusive Breastfeeding, the better the mother's attitude in exclusive breastfeeding [16].

### Relationship between formula milk promotion and exclusive breastfeeding.

In this study, the results showed that most of the mothers had been exposed to the promotion of formula milk by formula milk producers in various ways with a percentage (36%) compared to those who were not exposed to 5% with p-value = 0.004. So it can be concluded that there is a relationship between exposure to promotion of formula milk and exclusive breastfeeding. This study shows that mothers who are exposed to formula milk promotions tend to give non-exclusive breastfeeding, mothers who often get formula milk promotions feel there is an interest in the promotion and in time have the desire to buy to be given to their babies, so that it will affect exclusive breastfeeding is not achieved.

Mothers who are exposed to the promotion of formula milk can shake their beliefs so that mothers are interested in using formula milk. The faster you give formula milk, the less suction power the baby will get, because the baby is easily full and lazy to feed on the mother's nipple, so it can affect the milk production to decrease. The increasing number of promotional advertisements for formula milk producers accompanied by prizes and the opinion that formula milk is more practical can then mislead people and misinterpret so that many mothers think that formula milk is better.

The increasing number of promotional advertisements for formula milk producers accompanied by prizes and the opinion that formula milk is more practical can then mislead people and misinterpret so that many mothers think that formula milk is better.



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According to Shimp (2014) promotion of formula milk is a form of sales communication, the use of formula milk products obtained by mothers through advertisements, samples given to babies, pictures or verbal communication received [17].

This research is in line with Saraha's research (2020) which states that all mothers who have been exposed to formula milk advertisements, both through electronic and print media, these conditions can cause mothers to think that formula milk is the same as breast milk or even better than breast milk [18]. Formula milk advertisements can have an effect on mothers with basic or secondary education and lack of knowledge, so it is necessary to empower groups of mothers who are vulnerable to the negative influence of formula milk advertisements.

## CONCLUSION

Based on the results of the study above, it can be ascertained that most of the mothers in the working area of the Ajibarang II Public Health Center, Banyumas Regency, most of the mothers who have a low level of knowledge, have a secondary education level, are not supported by their families and have formula milk promotions have a significant relationship in providing Exclusive breastfeeding. It is recommended that health workers need to increase the capacity of health workers, especially midwives to promote exclusive breastfeeding and need to carry out education and health promotion using social media which can be used as entry points to formulate exclusive breastfeeding campaigns to the community, especially breastfeeding mothers about exclusive breastfeeding for babies.

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## *The Effect of Animated Videos on Knowledge of Prevention Children Sexual Violence In Cirebon City*

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### ABSTRACT

**Background:** The number of sexual violence at primary school age in Indonesia is still high every year. Sexual violence against children usually comes in the environment around children. The impact of sexual violence can disrupt life both physically and psychologically. Therefore, one of the efforts that can be done to prevent sexual violence against children is to teach children about self-security through sexual knowledge. Knowledge is provided through animated videos that have been recommended by UNICEF for children aged 3-12 years. This study aims to determine the effect of animated videos on the level of knowledge of preventing sexual violence in children age of 9-11 years.

**Methods:** Quasi-experimental research with one group pre and post-test design. The sample of this study used a purposive sampling technique with consideration of inclusion and exclusion criteria. Obtained a sample of 34 children. Collecting data using a questionnaire which was analyzed by the Wilcoxon test because the data were not normally distributed.

**Results:** This study shows the value of  $p = 0.000$  ( $p < 0.05$ ), then the animated video has an effect on knowledge about sexual violence in children aged 9-11 years.

**Conclusion:** In further research is expected to add variables and samples.

Keyword : *Children Sexual Violence, Knowledge, Animated Video,*

### INTRODUCTION

Nowadays the world of children is no longer so fun because many cases occur such as child murder, neglect, exploitation, and sexual violence. Sexual violence against children is a frightening and unpleasant reality because it has an impact on psychosocial, growth and

development in the future.

Most of the perpetrators are the closest people to the child or are close to the child's environment, but the child does not know this [1]. The phenomenon of sexual violence is like an iceberg phenomenon because the reporting figures are not necessarily by the reality on the



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ground.

In Indonesia, the number of sexual violence against children is still high. From the Witness and Victim Protection Agency (LPSK) noted that there was an increase in cases of sexual violence against children. Since 2017 there have been 81 cases, and the peak in 2018 was 206 cases. Meanwhile, in January 2019 - June 2019, there were 78 requests for cases of sexual violence against children [2].

Other data obtained according to the commissioner of the Indonesian Child Protection Commission (KPAI) Retno Listyarti in Tempo news, said that during January-June 2019 there were several cases of sexual violence in elementary schools as many as 49 student victims, both boys, and girls [3].

According to data in Cirebon, institution engaged in empowering women and children, namely Women Center Care (WCC), in 2018, there were 75 cases, and in January-September 2019 it reached 40 cases. The WCC said this data could continue to increase. In the process of assisting victims, obstacles are often found, both in terms of law, in terms of knowledge, psychology of children or families, and so on.

Based on a preliminary study on November 28, 2019, at the Pegambiran Health Center with interviews. There were 3 sexual incidents for 2019, One of the latest cases in 2019 was experienced by a 9-year-old child who was in RW 17.

According to the health center officers and local cadres, this incident was carried out near the victim's home with an unknown perpetrator. It is possible that only these 3 cases were reported. With the public stereotype that cases of sexual violence are taboo and feeling of shame when expressed.

The information from the puskesmas officers, it was stated that the puskesmas had provided assistance to victims and provided counseling in kindergarten, junior high, and high school in suppressing cases of sexual violence. However, currently, the focus of health development is being focused on RW 17 which is considered to be assessing the case and needs to be encouraged more from the health center.

According to the results of an in-depth interview with one of the RW 17 cadres, it was stated that currently there has never been any counseling on preventing sexual violence for children aged 9-11 years. According to cadres, the counseling which so far has only focused on junior high or high school students, and the media used is a PowerPoint. The cadres revealed that there needs to be an outreach for elementary school-aged children to have the ability to prevent violence. In addition, the existence of more interesting media can support the counseling process. Due to the characteristics of children who like watching on YouTube and playing smartphones. The existence of cases



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of sexual violence against children is caused by various factors.

Reporting from the journal, The factors that influence sexual violence in children are one of the individual factors. In this factor, it was found that children do not know their rights, are too dependent on adults, and do not have knowledge or skills in preventing sexual violence. If this factor cannot be prevented as early as possible, there may be new cases that are not detected [4].

According to other research, there are 3 impacts of sexual violence on children, namely physical, psychological and social [5]. To overcome this impact, there are currently preventions that have been carried out both from community institutions and government institutions including the Pegambiran Health Center. Such as offering offerings, do's and don'ts, and videos.

Animated video media is one of the media in learning that is considered effective for providing information. Someone will easily capture information with pictures and sound media. This is by other researchers, that video media can make children think critically, and imagine according to the images displayed. By looking at these advantages, it can maximize the process of preventing violence against children [6].

The characteristics of children aged 9-11 years according to the theory of child psychology are in the analysis phase, meaning that

children begin to pay attention to the parts that are around them and focus on something dynamic (Kartono, 1995). While on the memory side, it has big and strong levels. So that in providing information that allows children aged 9-11 years to catch it more quickly The characteristics of children aged 9-11 years according to the theory of child psychology are in the analysis phase, meaning that children begin to pay attention to the parts that are around them and focus on something dynamic [7]. At that age, the child is also unable to understand the directions given. However, there are differences in the results of several studies regarding the influence of the media.

From others research found that there was no significant difference between puppet story media and video media on increasing preschool children's knowledge of personal safety skills. But the results of other researchers obtained a significant effect [6].

The other research showed that knowledge and skills after media-based counseling increased by 92% [8]. Another study explain that the influence of health education on the prevention of sexual violence through multimedia learning videos [8].

The video that will be used in the research is a 2-minute adoption video from UNICEF. This video was released in 2014 and can be given to children aged 3-12 years. It is hoped that with the publication of this video, sexual violence against



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children will decrease every year.

Based on the background, researchers are interested in researching the Effect of Video on Knowledge of Prevention of Violence in Children aged 9-11 Years in RW 17, Pegambiran Public Health Center, Cirebon City in 2020.

### MATERIALS AND METHOD

The design of this research is Quasi Experiment with one group pre and post test design. The independent variable in this study was an animated video on the prevention of sexual violence against children. While the dependent variable in this study is knowledge about the prevention of sexual violence in children aged 9-11 years.

The population in this study were all children aged 9-11 years in RW 17. There were 96 children. While the sample of this study amounted to 34 children using purposive sampling technique with consideration of inclusion and exclusion criteria.

The inclusion and exclusion criteria are as follows:

1. Inclusion criteria
  - a. Children aged 9-11 years
  - b. Go to a public elementary school
  - c. Living or living permanently in RW 17
  - d. Can read and write
  - e. Being in the place of research
  - f. Willing to be a respondent

### 2. Exclusion criteria

Have received counseling on prevention of sexual violence.

The place of this research was carried out in RW 17 working area of Pagambiran Health Center Cirebon City in September 2019-June 2020. This study used primary data, namely data obtained by researchers directly through questionnaires adopted from research which have been tested for validity and reliability with a value of 0.87. This questionnaire consists of 17 questions using closed statements [6].

The instrument for the intervention used an animated video adapted from UNICEF with a duration of 2 minutes. The video used consists of 2 videos. Titled "Si Aksa" and "Si Geni". This video is recommended for children aged 3-12 years in preventing sexual violence against children.

This study used informed consent and explanation before the study which in its implementation was represented by parents in filling out an agreement. The measurement method in this study is to compare scores before and after the video intervention. Then the Wilcoxon test analysis was carried out using the software SPSS.



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### RESULTS

Table 1. Characteristics of Respondents

Item question	The Answer	Respondent	%	N
Age	9 years old	17	50	
	10 years old	9	26,5	34
	11 years old	8	23,5	
Gender	Boy	18	52,9	34
	Girl	16	47,1	
class in elementary school	3 <sup>rd</sup> grade	14	1,2	
	4 <sup>th</sup> grade	12	5,3	34
	5 <sup>th</sup> grade	6	7,6	
	6 <sup>th</sup> grade	2	5,9	

Based on table 1, the characteristics of some respondents aged 9 years old with a total of 17 people, age 10 years old with a total of 9 people, and age 11 years with a total of 8 people. Based on elementary school grade level, the majority of respondents are in grade 3 with a total of 14 respondents, while those in grade 4 are 12 respondents, in grade 5 are 6 respondents and in grade 6 are 2 respondents. For gender group, 18 respondents are boys and 16 respondents are girls.

Table 2. Knowledge Before and After Giving Animated Video Intervention About Sexual Violence Prevention

	N	Median	SD	Min	Max
Pretest	34	16	1.84	10	17
Posttest	34	17	0.82	14	17

Based on the table 2, the median value of the respondent's knowledge before intervention was

16 points with a standard deviation value was 1.84, the minimum value of 10, and a maximum value of 17. whereas In the score after the intervention was 17 in the median value, the standard deviation was 0.82, the minimum was 14 and the maximum was 17.

Based on the statistics in the descriptive data table, the median value was chosen as a measure of the concentration and spread of data. This is because the mean value cannot represent data that has an abnormal distribution.

From the results of the normality test *shapiro Wilk*, the p-value <0.05 means that the distribution is abnormal. Furthermore, the wilcoxon test was used for bivariate analysis.

Table 3. Analysis of the Wilcoxon Test Respondents' Knowledge of Sexual Violence Prevention

		N	Median (Min-Max)	P
Knowledge before Intervention (n=34)	Positive Ranks	29	16 (10-17)	0,000
Knowledge after Intervention (n=34)	Ties	5	17 (14-17)	
	Total	34		

Based on the Wilcoxon test in table 3, a p-value of 0.000 (<0.05) was obtained, so that statistically there was a significant effect of



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respondents' knowledge about violence prevention before and after the intervention. The positive rank points mean that 29 respondents experienced an increase in knowledge scores, while the ties points mean that 5 respondents' knowledge scores it's the same as before and after the intervention.

## DISCUSSION

### Univariate Analysis of Knowledge Scores Before and After Intervention Animated Video Prevention of Sexual Violence

The results of the study in table 2 show that the median of respondents before giving the animated video intervention was 16, the standard deviation was 1.84 with a minimum value of 10 and a maximum value of 17. This means that there are still some respondents who do not know all of the prevention of sexual violence as seen from the value below 17.

Other research states that one of the factors that influence the incidence of sexual violence in children is individual or child factors [4]. Where children have less knowledge about self-awareness, ignorance of the limits of normal touch, and how to

respond when sexual violence occurs. Meanwhile, parents are reluctant to discuss this because it is considered a taboo subject. Likewise with educators. Therefore, children need to be given knowledge about preventing sexual violence from qualified parties such as health workers.

Giving knowledge to children also needs to pay attention to the method. In this all-digital era, it is possible for children to be interested in dynamic things such as animated videos. It is hoped that with this method there is an increase obtained by the respondents. This statement is supported by the theory that according, that education and health promotion media are used because these tools are used to facilitate the reception of health messages for the public or clients in general [9].

After showing an animated video about preventing sexual violence, it was found that the knowledge of children on the median result was 17, the standard deviation was 0.82, the minimum value was 14 and the maximum was 17. So it can be concluded that there was an increase in the median value and the minimum respondent value. This is in line with the theory, knowledge is the result of "knowing" and this occurs after people have sensed a certain object. Sensing occurs through the five



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human senses, namely the senses of sight, hearing, smell, taste and touch [9].

### Bivariate Analysis of the Effect of Animated Videos on Knowledge of Sexual Violence Prevention

Based on table 3 shows that the p-value is 0.000 (< 0.05) in the Wilcoxon test, so Ha is accepted. This means that there is a statistically significant difference in the respondents' knowledge about the prevention of sexual violence before and after the intervention. Respondents with increased knowledge score 29 people and still 5 people.

The results of this study are supported by the theory, that one of the factors that influence knowledge is age [9]. This is because a person's age will affect the level of maturity and strength in thinking and working. The majority of respondents were 9 years old with a total of 17. Meanwhile, 9 years old was 9 people and 11 years old were 8 people.

This research influences the value before and after giving animated videos. Thus this study is by research, on the Prevention of Sexual Violence in Children Through Media-Based Reproductive Health Education in Early Childhood Education (PAUD) School Students. As many as 92% of PAUD children experienced an increase in average scores before and after counseling using the media [10].

Similar results were also obtained in research, on Improving Student Biology Learning Outcomes Through the Application of Three-dimensional (3D) Animation Video Media for SMP 19 Kerinci Students showing the percentage of students who achieved the Minimum Completeness Criteria (KKM) of 88.8% [11]. An increase was also found in research, it can be concluded that the use of media can increase children's knowledge in preventing sexual violence [12]. In addition, there is the theory of Edgar Dale which says the same thing.

According to Edgar Dale's theory, it is necessary to pay attention to the elements of learning objectives. Edgar Dale's 1969 pyramid theory cited by other research [13] . The pyramid describes one of them that what he sees with sound will increase to 50% in learning. Learning with other media such as booklets, powerpoints, and comics, is only in the form of pictures. While animated videos can provide a real experience. So that children can understand information. From other research shows that the use of media based on Edgar Dale's learning theory is effective in improving fiqh learning outcomes for fardu prayer and prostration of sahwi at MTs Negeri 2 Bulukumba [13].

There are 29 respondents increased and 5 respondents with a



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fixed score. According to the theory of Piaget that the stage of intellectual development in children aged 6-12 years is included in the concrete operational stage [14]. At this stage, the child is mature enough to use logical thinking or operations, but only for current physical objects. Meanwhile, 5 people with knowledge results caused by the results of the scores before and before the intervention were the same, namely 17. This means that respondents can answer all correctly on the questionnaire. This allows respondents not to realize that they understand in general terms the prevention of sexual violence. So in this case it can be said that good knowledge if it is owned will still be goo

### CONCLUSION

Based on the p-value of 0.000, it was concluded that there was an effect of animated video on knowledge about preventing sexual violence in children age of 9-11 years.

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## Bonding Attachment Of Mothers And Babies In Midwife Practice During Pandemic Covid-19

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### ABSTRACT

**Background:** The emotional attachment of parents and children/bathers called bonding attachment processes between mother and baby affects the successful adaptation of mother's psychological changes during postpartum. **Purpose :** To describe bonding attachment of mothers and babies in midwife practice during pandemic Covid-19. **Methode:** descriptive research method. The population of this study were the mother who gave birth in midwifery practice in last three months (Mei – July). The sampling technique used was *non-probability sampling (non-random sampling)* with *purposive sampling*. The sample obtained is 10 respondents. **Results:** the frequency distribution of bonding attachments was from 10 respondents, 5 respondents (50%) had good bonding attachments and 5 respondents (50%) were not good at it. Most of the respondents were 20-30 years old, namely 8 respondents (80%). 40% of mothers with poor bonding attachment have primipara parity status. 30% of mothers who have high school education have good bonding attachments, and 50% of mothers who do not work have good bonding attachments with their babies. **Conclusion:** 50% of mothers who have bad bonding attachments with most of them have primipara status, senior high school as last education and no employed. **Suggestion:** This research is expected to become further research data on increasing maternal and infant bonding attachments during the COVID-19 pandemic.

**Keywords:** Bonding Attachment, Age, Parity, Employment



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#### INTRODUCTION

Such as postpartum is a period of change and transition of reproductive organs back before pregnancy [1]. During this transition period, not only physical changes occur, but also psychological changes such as sadness and still denying their new role [2][3]. This adaptation to changes in the postpartum period also coincides with the mother's experience in getting the experience of caring for her baby as well as in stimulating early growth and development of the baby from what the mother and baby grow [4]. The emotional bond that parents and their children/babies have is called bonding attachment[5].

The bonding process between mother and baby in influencing adaptation to adaptation to maternal psychological changes. Postpartum mothers who experience postpartum blues are around 53.3%, and those who have a moderate risk of experiencing postpartum depression are 43.3%[6]. During the Covid-19 pandemic, this also affected the psychology of mothers regarding some of the anxiety that they feel. In the study, it was found that 87% of postpartum mothers during the Covid - 19 pandemic experienced mild to severe anxiety [7]. In a study conducted by Chandra et al (2019), it was shown that 42% of depressed mothers will develop bonds and children's development disrupted[8].

This also has an impact on the quality of the mother's role in infant care, interaction with her baby, and the willingness to breastfeed [9]. The existence of a strong bond between mother and baby will affect the mother's psychology and build

character, adaptation of the baby in a new environment, psychological (emotional) development of the baby, growth and development, cognitive development, warmth and comfort as well as a deep feeling of being loved [10][11] [12].

This growing relationship is also determined by the length of time and frequency of interaction between mother and baby, one of which is by touch[12]. This is in the form of physical, emotional and mental if it is constantly grown, then a strong relationship between the two such as touch, voice, eye contact, etc.[13]. Bonding attachments can be grown since the baby is born or after delivery such as exclusive breastfeeding, eye contact, joining the baby, sound, aroma, entrainment, borytme, and early breastfeeding initiation where the mother and baby will make skin contact for the first time [14][15]. Therefore, the researcher aims to find out the description of the bonding attachment of mothers and babies in midwife practice, Duren Village, Semarang Regency during the Covid-19 pandemic.

#### MATERIALS AND METHOD

This research uses descriptive research method. The population of this study were all mothers who gave birth at midwife practice in the last 3 months (May-July). The sampling technique was used non-probability sampling (non random sampling) with purposive sampling type with consideration of the criteria by the researcher. So that the number of samples obtained is 10 with inclusion criteria, namely postpartum mothers who check and give birth at Midwife



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Practices are in good condition (healthy) and are willing to be respondents. The exclusion criteria are mothers who cannot read, and do not have the WhatsApp application or cannot use the google form.

This research was conducted at midwife practice in Duren Village, Tengaran District, Semarang Regency, Central Java. The process of collecting data and measuring Bonding Attachment using a questionnaire adopted from the research of Uly Alfiannas (2018). The questions in the questionnaire consisting of 22 questions are composed of elements of bonding attachments, including touch, eye contact, sound, aroma, entrainment and biorhythms [16]. This questionnaire has been tested with a reliability validity of 0.568 – 0.943 (> 0.444) and 0.937 (> 0.6). Questionnaire data collection uses a google drive form that is distributed via a WhatsApp link message to avoid crowds and interactions during PPKM during the Java-Bali Covid-19 pandemic. Then the results of filling out the questionnaires are summed and categorized into two, namely good bonding attachments and bad bonding attachments. Categorization based on cut off point data. The analysis used in this study is univariate analysis, namely the analysis carried out on each variable from the results of the study.

## RESULTS

### 1. Respondent's Characteristics

The distribution of respondent characteristics consisting of age, parity, education and employment can be seen in the table below:

**Table 1 Distribution of Respondents Characteristics in Midwife Practice**

Characteristics	Criteria	Amount	
Respondent	(Years old)	N	%
Age	20 - 30	8	80
	> 30	2	20
Parity	Primipara	7	70
	Multipara	3	30
Education	JHS	1	10
	SHS	6	60
	College	3	30
Employment	No employed	9	90
	Employed	1	10

Based on table 1, the age characteristics of the respondents show that 8 respondents are 20-30 years old (80%). The parity of the respondents was 70% indicating status primipara that were 7 respondents. On the characteristics of the last education of respondents 6 respondents have high school education (60%). The work of 9 respondents showed that the mother did not work (90%).

### 2. Bonding Attachment

The distribution of respondents bonding attachments at midwifery practice can be seen in the table below:

**Table 2 Distribution Frequency of Bonding Attachment**

Bonding Attachment	N	%
Bad	5	50
good	5	50
Amount	10	100

Table 2 shows that the distribution based on the bonding attachment is bad, there are 5 (50%) and good bonding attachment is 5 respondent (50%). This shows that during the



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Covid-19 pandemic the bonding attachments of good and bad mothers and babies show the same comparison.

**Table 3 Distribution Frequency of Bonding Attachment based on Parity**

Parity	Bonding Attachment				$\Sigma$	%		
	Bad		good					
	N	%	N	%				
Primipara	4	40	3	30	7	70		
Multipara	1	10	2	20	3	30		
Amount	5	50	5	50	10	100		

Based on table 3 shows that mothers who have bad bonding attachments that parity status are primipara with a total of 4 respondents (40%). Mothers with good bonding attachment have status paritas primipara that are 3 respondents.

**Table 4 Distribution Frequency of Bonding Attachment based on Education**

Education	Bonding Attachment				$\Sigma$	%		
	Bad		good					
	N	%	N	%				
JHS	0	0	1	10	1	10		
SHS	3	30	3	30	6	60		
Collage	2	20	1	10	3	30		
Amount	5	50	5	50	10	100		

Based on table 4, it shows that the mothers whose bonding attachment is bad the most who have the latest high school education, namely 3 respondents (30%) as well as the bonding attachment of good respondents.

**Table 5 Distribution Frequency of Bonding Attachment based on Employment**

Employment	Bonding Attachment				$\Sigma$	%
	Bad	good	n	%		
No employed	4	40	5	50	9	90
Employed	1	10	0	0	1	10
Amount	5	50	5	50	10	100

Based on table 5, it shows that most respondents with a good bonding attachment with no employed status with a total of 5 respondents (50%).

## DISCUSSION

The results of the study show that out of 10 respondents who have bad attachment attachments, the percentage of respondents with good bonding attachments is the same. During the Covid-19 pandemic, of course, it also affected the mother's anxiety, then this coincided with the psychological adaptation process of the mother in taking on her new role. This is in line with research conducted by Ernawati et al (2020) which showed that postpartum mothers during the Covid-19 pandemic had a risk of postpartum depression[6]. Mothers with emotional instability can affect bonding attachments with their babies [8].

Based on the results of the study, it showed that mothers who had a lot of bonding attachments were not good based on parity with primipara status. This shows that most of the primipara mothers have poor bonding attachments. This is in line with several research results which show that



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primipara mothers will be vulnerable to emotional instability and postpartum blues [17]. This will trigger the quality of the interaction or bond between mother and baby. Mothers who give birth for the first time and take on a new role as a mother will find it difficult to interact with their babies, causing anxiety, and reducing the quality of mother-baby interactions where this is the key in a bond [18]. Primipara mothers also lacked experience in how to care for their own babies.

Table 4 shows that respondents who have a good bonding attachment are mostly mothers with high school education. This is in line with research conducted by Chung Ha et al (2018) which shows that education affects the interactions between mothers and babies[11]. Education affects a person's mindset in managing coping problems in this case as his new role as a mother [17]. In addition, mothers who have upper secondary education will have more knowledge and insight than those with low education[17]. Insights in seeking other knowledge in her new role as a mother by enriching knowledge in caring for her baby.

Table 5 shows that the most good bonding attachments are mothers who do not work. Mothers who do not work will have more time than mothers who work in terms of mother-infant interaction. This is in accordance with Roesli Utami that babies who are often in the mother's arms will feel the affection given by the mother, for example in the breastfeeding process[19]. Direct breastfeeding will foster a stronger bond between mother and baby.

## CONCLUSION

50% of mothers who have bad bonding attachments with most of them have primipara status, senior high school as last education and no employed.

## ACKNOWLEDGEMENT

This research is expected to become further research data on increasing maternal and infant bonding attachments during the COVID-19 pandemic.

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### The Benefits of Using Lemon Aromatherapy and Reciting Shalawat for Prophet Muhammad in Reducing Anxiety and Decreasing Maternity Mothers' Blood Pressure with Pre-eclampsia at Bhakti Wira Tamtama Hospital Semarang

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#### ABSTRACT

**Background:** One of the causes of Maternal Mortality Rate (MMR) was preeclampsia. The risk of preeclampsia increased in pregnant women who experienced anxiety. One of the non-pharmacological therapy to reduce anxiety and blood pressure was giving lemon aromatherapy and prophet sholawat. The purpose of the study was to determine the effect of lemon aromatherapy and prophet sholawat on reducing anxiety and blood pressure of preeclampsia maternity mothers at the hospital of Bhakti Wira Tamtama Semarang

**Methods:** This study is a quasi-experimental research with a non-equivalent control group design. The study population was all of the preeclampsia pregnant women who gave delivery at the hospital of Bhakti Wira Tamtama in February-May 2021. The sampling technique was purposive sampling. The total of samples was 13 people in the intervention group and 13 people in the control group. The measuring instrument used a HARS questionnaire and a digital sphygmomanometer. The statistical test used paired t-test and independent t-test.

**Results:** The analysis of paired t-test showed that there was a difference in mean anxiety and blood pressure in the intervention group, while in the control group there was a difference in mean anxiety but no difference in mean blood pressure. The independent t-test values obtained p-value 0,000 (<0,05) means that there was a difference in anxiety and blood pressure in the intervention and control group. **Conclusion:** The result of this study revealed that lemon aromatherapy and prophet sholawat could be used as non-pharmacological therapy to reduce anxiety and decrease blood pressure of preeclampsia maternity mothers so that the delivery process is normal.

Keywords : Lemon Aromatherapy; Prophet Shalawat; Anxiety; Blood Pressure; Pre Eclampsia



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## INTRODUCTION

The indicator of the success of maternal health is by looking at the Maternal Mortality Rate (MMR). Data from the Directorate General of Public Health stated that the number of maternal deaths in Indonesia in 2019 was 4,221 cases with the cause of death due to hypertension in pregnancy 1,066 cases (25.3%)[1]

The number of MMR in Central Java Province decreased in 2015-2019 from 111.16 to 76.9 per 100,000 KH. With the cause of hypertension in pregnancy of 29.6% [2]. Based on data from the Semarang City Health Office, the maternal mortality rate in 2019 was 18 cases out of 23,544 live births or about 75.8 per 100,000 live births. The maternal mortality rate increased slightly from 2018, which was 75.77 per 100,000 live births. Maternal mortality caused by preeclampsia or eclampsia is 11%. [3]

Hypertension is still one of the main causes of maternal death. Pre-eclampsia can even occur, which is characterized by an increase in blood pressure followed by the presence of urine protein during pregnancy over 20 weeks. Study from [4] described that correlation between anxiety and pre eclampsia.

According to Stuart, anxiety is vague and diffuse related to feelings of uncertainty and helplessness. The responses to anxiety such as worry, restlessness, restlessness

can be accompanied by physical disturbances. [5] These are physiological processes experienced by almost all women, yet the increased feeling of childbirth can cause anxiety. Anxiety experienced by mothers in labor is caused by several things such as anxiety about the delivery process, anxiety about the condition of the fetus, and anxiety about the delivery process [6]. In Indonesia, 28.7% of pregnant women experience severe anxiety in childbirth. [7] Emotional factors, feelings of anxiety, and fear in facing challenges can increase the risk of hypertension, pre-eclampsia, or eclampsia. [8]

Childbirth is a definitive therapy for pre-eclampsia where the main goal of pre-eclampsia management is the safe condition of the mother and the care of a healthy baby. Childbirth in pre-eclampsia mothers requires close supervision to see the condition/welfare of the mother and baby. Physiologically at the time of delivery, the blood pressure of pregnant women will be increased by 10-20 mmHg (systolic) and 5-10 mmHg (diastolic) during contractions and will be normal between contractions. This blood pressure is still high after the contractions increase. It will be pathological and endanger the delivery process [9].

As cited by Isworo (2012), the risk of pre-eclampsia can increase up to 7.84 times in



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pregnant women who experience anxiety [10]. If there is anxiety in mothers with pre-eclampsia, it will further aggravate the condition of pre-eclampsia. If this condition is not managed properly, it will have an impact on the welfare of the mother during childbirth and the baby being born. The physical and psychological effects can continue into strokes, seizures, prolonged labor, low birth weight babies, and even death of the mother and fetus. [8][6]

Anxiety and high blood pressure can be reduced by pharmacological and non-pharmacological management. Pharmacological management is using anti-hypertensive and anti-anxiety drugs. While the non-pharmacological treatment given can be in the form of distraction techniques, namely murottal listening.

In this study, the researchers provided intervention in the form of shalawat for the prophet Muhammad SAW. Research conducted by Nofiah, Arofiati, and Primanda (2020) showed a decrease in anxiety in postoperative patients or after listening to and reading the prophet's prayer. [11] Shalawat for prophet is a combination of the holy verses of the Quran and praise poems aimed at the prophet sung by a human voice. Physically the recitation of the Quran contains elements of the human voice, while the human voice is an amazing healing

instrument and the most accessible tool. This can reduce stress hormones, activate natural endorphins, increase feelings of relaxation and activate fear, anxiety, tension, improve the body's chemical system so that it lowers blood pressure and slows breathing, heart rate, heart rate, and brain wave activity. [12]

Another way that can be done is to offer aromatherapy. Aromatherapy commonly used include sandalwood (*Santalum album*), lemon (*Citrus lemon*), jasmine (*Jasminum Grandiflorum*), rose (*Rosa Centifolia*), and lavender (*Lavendula Angustifolia*). Results of research conducted by Saputra, Juniawan, and Putra (2018) proved that lemon aromatherapy can reduce blood pressure in the elderly who have hypertension.[13] Lemon aromatherapy contains 20-50% Linalool. Substances contained in this lemon provides the effect of lowering blood pressure and a sense of calm. Lemon aromatherapy can also be used to reduce pain in maternity so that the mother can be lowered. [14]

Bhakti Wira Tamtama Hospital Semarang is a type C military hospital under the auspices of the Indonesian Army. Its strategic location in the city center makes it a referral hospital for the community, midwives/health centers both inside and outside the city. According to data from the hospital's medical services section,



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preeclampsia cases are categorized as the top ten obstetric cases that often occur. In 2017 there were 183 cases of preeclampsia/eclampsia (7.67%) from 2,386 mothers giving birth, an increase in 2018 by 311 cases (8.31%) from 3,743 women giving birth and a decrease in 2019 by 277 cases (7.83%) of 3,534 mothers giving birth. While in 2020 there were 4 cases of maternal death that occurred as the most cases of maternal death. One of them is caused by eclampsia.

A preliminary study carried out at the Bhakti Wira Tamtama Hospital towards 6 pre-eclamptic mothers obtained that these mothers experienced anxiety with varying levels of anxiety. The data gained were 50% (3 people) of pre-eclampsia maternity mothers experienced moderate anxiety, 33.7% (2 people) experienced mild anxiety and 16.7% (1 person) experienced severe anxiety. In providing care for pre-eclampsia maternity mothers, midwives only provide direction by keeping the mother calm and practicing deep breathing. The provision of other non-pharmacological therapies has never been applied to help reduce anxiety.

### MATERIALS AND METHOD

This research is a quasi-experimental type with a non-equivalent control group design. The research was carried out from February to May 2021 in the delivery

room at Bhakti Wira Tamtama Hospital, Semarang. The population in this study were all pre-eclampsia pregnant women who were about to give birth. The number of samples was 26 people which were divided into 13 people in the intervention group and 13 people in the control group. The sampling technique used is purposive sampling, namely the sampling technique based on certain considerations (Sugiyono, 2014).

The instruments used in this study were the HARS (Hamilton Anxiety Rating Scale) questionnaire to measure anxiety levels, a digital sphygmomanometer to measure blood pressure, a lemon aromatherapy diffuser, and MP3 recordings of shalawat for the Prophet Muhammad SAW. In the intervention group, lemon aromatherapy and shalawat prophet were given for  $\pm$  30 minutes 2 times with a rest interval of  $\pm$  30 minutes. Meanwhile, the control group offered treatment by directing the mother to deep relaxation. Data analysis in this study used paired t-test and independent t-test.

### RESULTS

#### 1. Characteristics of respondens

Tabel 1 frequency distribution on characteristics of respondens in Bhakti Wira Tamtama Semarang hospital

Characteristic	Intervention		control	
	F	%	F	%
Age				
< 20 years	1	7,7	1	7,7
20-35 years	10	76,9	11	84,6



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> 35 years	2	15,4	1	7,7
Total	13	100	13	100
<b>Parity</b>				
Nullipara	4	30,8	4	30,8
Primipara	6	46,2	5	38,4
Multipara	3	23,1	4	30,8
Total	13	100	13	100
<b>Education</b>				
Basic	7	53,8	8	61,5
Secondary	6	46,2	5	38,5
Total	13	100	13	100
<b>Occupation</b>				
Housewife	8	61,5	10	76,9
Employee	3	23,1	1	7,7
Entrepreneur	2	15,4	2	15,4
Total	13	100	13	100

Table 1 shows the characteristics of respondents in this study. A total 21 women (80,8%) were diagnosed with pre-eclampsia. Their age on 20-35 years. Based on parity, 11 women (42,3%) were primipara, 8 (30,8%) were nullipara and 7 orang (26,9%) were multipara. On education, there were 15 (57,7%) women on basic education and 11 (42,3%) women were on secondary education. A total 18 (69,2%) women as housewife, 4 (15,4%) women as employee and 4 (15,4%) women as entrepreneur.

#### 2. Anxiety and Pressure Levels in the Intervention Group Before and After Giving Lemon Aromatherapy and Sholawat Nabi

#### Table 2. Results of the Bivariate Test of Anxiety Levels and Blood Pressure in the Intervention Group in Bhakti Wira Tamtama Hospital Semarang

Variable	N	mean	SD	p-value
Anxiety level				

Pre	13	23,54	4,789	0,000
Post	13	16,62	4,114	
<b>Systolic</b>				
Pre	13	148,23	5,036	0,000
Post	13	131,08	13,72	
<b>Diastolic</b>				
Pre	13	98,15	5,505	0,000
Post	13	89,23	6,313	

Table 2 shows that the average level of anxiety of maternity mothers with pre-eclampsia in the intervention group before being given lemon aromatherapy and shalawat prophet was 23.54 with a standard deviation of 4.789. After being given lemon aromatherapy and the prophet's prayer, the average level of anxiety became 16.62 with a standard deviation of 4.114. The result of paired t-test revealed p-value = 0.000 (<0.05), so it can be said that there is difference in anxiety level of pre-eclampsia maternity mothers before and after given lemon aromatherapy and prophet shalawat.

The results show that the average systolic blood pressure before being given lemon aromatherapy and prophet shalawat was 148.23 mmHg and previously it was 131.08 mmHg. While the diastolic blood pressure is from 98.15 mmHg to 89.23 mmHg. The results of the Paired t-test in the intervention group for systolic and diastolic blood pressure obtained p-value = 0.000 (<0.05). It means that there is a difference in maternal blood pressure in pre-eclampsia before and before being



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given lemon aromatherapy and prophet shalawat.

### 3. Levels of Anxiety and Pressure in the Control Group Before and After Without Lemon Aromatherapy and Prophet Shalawat

**Table 3 Bivariate Test Results Anxiety Levels and Blood Pressure in the Control Group in Bhakti Wira Tamtama Hospital Semarang**

Variable	N	mean	SD	p-value
<b>Anxiety Level</b>				
Pre	13	23	3,894	
Post	13	20,38	4,874	0,001
<b>Systolic</b>				
Pre	13	145,92	5,795	
Post	13	144,46	6,553	0,520
<b>Diastolic</b>				
Pre	13	95,54	5,379	
Post	13	94,23	3,586	0,285

Table 3 describes the average level of maternal anxiety in preeclampsia in the control group before treatment was 23 with a standard deviation of 3.894 and before treatment (deep breathing) was 20.38 with a standard deviation of 4.874. Paired t-test results obtained p-value = 0.001 (<0.05), it can be said that there is difference before and after treatment in the control group without giving lemon aromatherapy and sholawat prophet.

In the control group, the mean systolic blood pressure before treatment (breath) without lemon aromatherapy and sholawat prophet was 145.92 mmHg and previously it was 144.46 mmHg. While the average

diastolic blood pressure is from 95.54 mmHg to 94.23 mmHg. The results of the Paired t-test obtained a value for systolic blood pressure p-value = 0.520 (> 0.05) and a diastolic p-value = 0.285 (> 0.05), so it can be ascertained that there is no difference in systolic or diastolic blood pressure in the control group.

### 4. Differences in Anxiety Levels and Blood Pressure in the Intervention and Control Group

**Table 4 Bivariate Test Results Anxiety Levels and Blood Pressure in the Intervention and Control Group in Bhakti Wira Tamtama Hospital Semarang**

Variable	N	mean	SD	p-value
<b>Mean difference of anxiety</b>				
Intervention	13	6,92	1,605	
Control	13	2,62	2,103	0,000
<b>Mean difference of systolic</b>				
Intervention	13	17,15	10,431	
Control	13	1,46	7,954	0,000
<b>Mean difference of diastolic</b>				
Intervention	13	8,92	3,968	
Control	13	1,31	4,211	0,000

Table 4 shows the average of difference in anxiety in the intervention group is 6.92 with a standard deviation of 1.605. While in the control group of 2.62 with a standard deviation of 2.103. The results of the Independent t-test test obtained p-value = 0.000, meaning that at alpha 0.05 there was a difference in the level of anxiety of preeclampsia maternity mothers between the intervention and control groups. So it can be concluded that there is an effect of



giving lemon aromatherapy and sholawat prophet to decrease anxiety in preeclampsia maternity mothers.

The results showed that the average difference between systolic and diastolic blood pressure in the intervention group was 17.15 mmHg and 8.92 mmHg, while in the control group it was 1.46 mmHg and 1.31 mmHg. The results of the Independent t-test for systolic and diastolic blood pressure obtained  $p$ -value = 0.000, meaning that at an alpha of 0.05 there was a difference in systolic and diastolic blood pressure of preeclamptic women between the intervention and control groups. So it can be concluded that there is an effect of giving lemon aromatherapy and sholawat prophet to decrease blood pressure of preeclampsia maternity mothers.

## DISCUSSION

The results of this study showed a decrease in the level of anxiety of preeclampsia maternity mothers before and before the treatment was given. Anxiety according to (Stuart, 2006) is unclear and diffuse, related to feelings of uncertainty and helplessness. This emotional state has no specific object. The response to anxiety is worry, restlessness, restlessness and can be accompanied by physical disturbances.[5] Anxiety is considered a stressor that affects the receptors of the limbic system. This limbic system will affect the

hypothalamus. The hypothalamus is an endocrine system or reticular system that affects the autonomic nervous system, the sympathetic nervous system which will cause an increase in heart rate, muscle contractions increasing blood pressure.

The occurrence of an increase in blood pressure from the hypothalamus secretes the hormone CRF which affects the pituitary gland then the pituitary gland affects vasopressin and secretes the hormone ACTH. With the release of the ACTH hormone, it will affect the adrenal glands to produce epinephrine and cortisol which can cause an increase in heart rate, body muscle contractions, and increased blood pressure. [15]

High anxiety in pregnant women will increase the risk of hypertension in pregnancy. This condition can be aggravated at the time of delivery if the pregnant woman has threatening feelings such as the emergence of excessive worry, anxiety in the face of birth, not understanding what will happen to her delivery. These symptoms will affect the condition of pregnant women with hypertension both physically and psychologically. As a result, the risk of hypertension can lead to stroke, seizures, and even death on the mother and fetus. [8]

In this study, we presented treatment in the form of lemon aromatherapy and listening



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to the prophet's prayer in the intervention group, while in the control group by doing deep breathing relaxation. Aromatherapy is one of the complementary therapies that can be used by pregnant, maternity, and postpartum women. [16]

The results of the study are in line with Sandi's research (2018) which states that the average decrease in anxiety is 4.6 in hypertensive patients before and before being given dhikr therapy and lemon aromatherapy. This research is also supported by research.

Aromatherapy is a therapy that uses essential oils or pure oil series which aims to help improve or maintain health, raise spirits, watch body and soul, and enhance the healing process and improve physical, mental, and emotional health. The odor released from essential oil aromatherapy can trigger endocrine action on the pituitary gland and produce an aphrodisiac effect. [17] Lemon essential oil (citrus lemon) is most widely used as a safe herbal oil in pregnancy and childbirth. [18] Lemon aromatherapy can scare the body away from the release of euphoria, relaxation, and sedatives. When aromatherapy is inhaled, volatile oil molecules are transmitted to the limbic system. This will evoke memories and emotional responses. Lemon aromatherapy can also be used to reduce pain in

maternity so that the mother can be lowered. [14]

Lemon essential oil triggers the sense of smell in the limbic system, influencing enzymes, ion channels, and receptors that ultimately provide stimulation to the brain so that it can improve mood and reduce anxiety during childbirth. [19] Linalool is a substance contained in lemons that is useful for applying to the nervous system so that a calming effect can be generated after swallowing it.[20]

The content of essential oils in lemon aromatherapy can relieve mental fatigue, dizziness, fatigue, relieve nerves, anti-stress, reduce pain, have a positive effect, and eliminate negative thoughts. [20]

The results of this study are also supported by Nofiah, Arofiati, and Primanda (2020) that there is a decrease in post-or if anxiety levels at Ngudi Waluyo, Wlingi Hospital before and after listening to and reading the prophet's prayer. Sholawat to Prophet Muhammad SAW is a form of worship that draws closer to Allah SWT as well as dhikr. The benefits are to be calm and serene where worry and anxiety are reduced and change with pleasure and serenity. The effect of this prayer on each individual will be different because a person's spiritual level is different. The level of spirituality that can be observed and measured includes the meaning of life,



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positive emotions, spiritual experiences, and rituals [21]

One way to pray with sholawat to the prophet can relieve pain. If it is done repeatedly, it can eliminate anxiety and anxiety as a concern for attention to other stimulation.[11] Belief in Allah SWT can help deal with problems or illness by believing that their prayers will be answered. Prayer will strengthen the soul, body, and mind so that the autonomic nervous system decreases and decreases physiological responses. This will eliminate the difficulties and anxieties he faces [11]

The results of this study also showed a significant decrease in blood pressure both systolic and diastolic before and before being given lemon aromatherapy and sholawat prophet. Suwaryo's research (2019) showed that lemon aromatherapy affects reducing blood pressure in chronic kidney failure patients undergoing hemodialysis. Lemon aromatherapy works as an antioxidant, antiseptic, fights viruses and bacteria. In addition, lemon aromatherapy is good for overcoming hypertension, blockage of the liver and lymph glands, improving metabolism, boosting the immune system, and slowing weight gain. [22]

Sholawat prophet is a combination of the holy verses of the Quran and praise poems aimed at the prophet sung by a human

voice. Physically the recitation of the Quran contains elements of the human voice, while the human voice is an amazing healing instrument and the most accessible tool. This can reduce stress hormones, activate natural endorphins, increase feelings of relaxation and activate fear, anxiety, tension, improve the body's chemical system so that it lowers blood pressure and slows breathing, regulates heart, pulse, and brain wave activity. [12]

### CONCLUSION

This study can be concluded that there is a difference in the level of anxiety and blood pressure of preeclampsia in the intervention group before and before being given lemon aromatherapy and sholawat prophet. There is a difference in the mean level of anxiety, there is a difference in the mean blood pressure of pre-eclamptic mothers before and before the control group without being given lemon aromatherapy and sholawat prophet. There is an effect of giving lemon aromatherapy and sholawat prophet on the level of anxiety and blood pressure of pregnant women with pre-eclampsia at Bhakti Wira Tamtama Hospital, Semarang.

It can be concluded that lemon aromatherapy and prophet sholawat could be used as non-pharmacological therapy to reduce anxiety and decrease blood



pressure of preeclampsia maternity mothers.

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### Policy Analysis Recovery KIA-KB Services Impact of the Covid-19 Pandemic

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### ABSTRACT

**Background:** The Covid-19 pandemic that occurred throughout Indonesia, including in Lumajang Regency had an impact on maternal and child health (KIA), family planning (KB) services in Lumajang Regency. Policies and restrictions imposed during the Covid-19 pandemic certainly contribute to KIA programs and services not being able to function optimally. **Methods:** Descriptive method of the Lumajang Health Service's innovative efforts to suppress the spread of Covid-19 through the Application of Discipline and Law Enforcement of Health Protocols according to Perbup Number 54 of 2020. **Results** Pregnant women and immunization services are carried out at the village hall and optimizing home visits, fulfilling personal protective equipment (APD) for services in Puskesmas, services for pregnant women through electronic media, fulfillment of First Level Health Facilities (FKTP) and Advanced Level Health Facilities (FKTL), optimizing referrals for COVID-19 maternal cases in all hospitals throughout Lumajang Regency, utilizing village funds in optimizing case referrals, implementation of Covid-19 maternal screening through Rapid Tests and Swabs. **Conclusion:** The KIA-KB service is recovering gradually in Lumajang Regency due to the impact of the Covid-19 Pandemic through innovations carried out.

Keyword : Covid-19, Maternal and Child Health

### INTRODUCTION

Lumajang Regency shows the direct impact of the Covid-19 pandemic on MCH and family planning services. Policies and restrictions

imposed during the Covid-19 pandemic certainly contribute to KIA-KB programs and services not being able to function optimally. The number of visits to health services has



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decreased due to the social distancing policy be temporarily stopped. The

during the beginning of the pandemic before the implementation of the New Habit Adaptation. There are also KIA-KB services that do not function optimally as before the pandemic, causing KIA-KB services to be inaccessible to the public optimally. There are several services that are still unable to operate until now, namely the Posyandu service. This has an impact on service indicators for the first pregnancy visit (K1), the fourth pregnancy visit (K4), delivery at health facilities (LINAKES), and the growth and development of infants monitored for toddlers which decreased at the beginning of the Covid-19 pandemic in Lumajang Regency. The K1 indicator decreased from April to May 2020, while the K4 and Maternity indicators in Health Services decreased from May to July 2020 with a significant decline with the percentage decline reaching 25%. Services for pregnant women and immunizations are carried out at the village hall so that access is far away which causes people with far reach not to come. Toddlers who were monitored for growth and development also experienced a decrease in coverage because the Posyandu service had to

## RESULTS

The Lumajang Regency government's efforts to suppress the spread of Covid-19 are carried

coverage of children under five who were monitored for growth and development also decreased in April 2020, then increased again in May, but the decline continued in June and July 2020. The limitations of health workers who were concentrated in the tracing process and handling Covid-19 led to the implementation of the MCH program in Indonesia. The Lumajang District Health Center is not optimal. This contributed greatly to the maternal mortality rate in 2020 which increased when compared to maternal mortality in 2019. In addition, the increasing number of maternal deaths was caused by the condition of the referral system between FKTP and FKTRL which was quite complex during the pandemic, including the use of referral hospitals. Covid-19 has not been maximized and is still centered in one Referral Hospital so that the service is not optimal.

## MATERIALS AND METHOD

Descriptive method of the Lumajang Health Service's innovative efforts to suppress the spread of Covid-19 through the Application of Discipline and Law Enforcement of Health Protocols according to Perbup Number 54 of 2020.

out by implementing Discipline and Law Enforcement of Health Protocols as an Effort



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for Prevention and Control of Corona Virus Disease 2019 (Perbup Number 54 of 2020).

1. Implementation of KIA-KB program services based on the covid area zone: the green zone can be done face-to-face (maximum 10 participants) by following strict health protocols
2. The Lumajang District Health Office shifted the budget for refocusing the KIA-KB covid program sourced from the DAU, Jampersal, Cigarette Tax, and BOK funds, with details of activities including: delivery services at non-BPJS health centers during the pandemic, financing for maternity delivery services, postpartum and postnatal care. High Risk Newborns, High Risk Pregnant Women Referral Cases
3. Yellow / red zone implementation of SME activities is postponed or carried out online.
4. In addition, the preparation of facilities - infrastructure in accordance with the standards of adaptation of new habits: relocation of service rooms that allow patients for physical distancing, provision of hand sanitizers in affordable places.

### CONCLUSION

The implementation of health improvement due to the impact of the Covid-19 pandemic in Lumajang Regency is still not optimal, but the gradual recovery of KIA-KB services in Lumajang Regency due to the impact of the Covid-19 Pandemic through the innovations made is already visible.

5. The solution to the problem of referral and improvement of Health Human Resources is to carry out the following activities: Optimizing Referrals; Preparation of Puskesmas and Hospitals to be able to provide optimal services
6. Capacity building of officers in the latest service standards (the era of Adaptation to New Habits); Assistance of Puskesmas in maternal services during the pandemic.
7. Planning for the Provision of Alokon, PPE and BMHP KB services at the Puskesmas in coordination with the Dalduk KB – PP Office and advocating to the Regency Budget Team.
8. During this pandemic, the Lumajang District Health Office used social media to spread health education with the theme of maternal and child health. Communication and coordination with village level stakeholders for monitoring maternal and neonatal cases as well as communication between midwives and pregnant women intensively using WhatsApp media. All Public Health Centers in Lumajang Regency have a place for delivery assistance complete with a delivery chamber.

### ACKNOWLEDGEMENT

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### The Effectiveness Of Consumption Of Ambon Banana And Tomato Juice On Blood Pressure Reduction For Pregnant Women With Hypertension in Pregnancy

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#### ABSTRACT

Hypertension in pregnancy can lead to maternal complications in the form of preeclampsia and eclampsia or seizures. Efforts that can be made to prevent complications in pregnant women with hypertension can be done by pharmacological and non-pharmacological methods. The purpose of this study was to determine the effectiveness of consumption of Ambon banana and tomato juice on reducing blood pressure in pregnant women with hypertension in pregnancy. The research method was pre-experimental design with two group pretest posttest design. The research was conducted in June 2020 in the working area of Karangrayung I Health Center, Penawangan I and II Health Centers. A population of 37 people and a sample of 32 ( $n_1=n_2=16$ ) were taken using a simple random sampling technique. The two-sample difference test is interconnected using the Wilcoxon test, while for the two-sample difference test, the independent samples are independent using the Mann Whitney Test. The conclusion of the study is that there is a difference in effectiveness before and after consumption of tomato juice on reducing blood pressure (systolic and diastolic) of pregnant women with hypertension in pregnancy ( $p = 0.000$ ). There was a difference in effectiveness before and after consumption of bananas on reducing blood pressure (systolic and diastolic) of pregnant women with hypertension in pregnancy ( $p=0.000$ ). There was no difference in the effectiveness of consumption of bananas ( $p=0.407$ ) and tomato juice ( $p=0.095$ ) in reducing blood pressure of pregnant women with hypertension in pregnancy. Ambon bananas and tomato can reduce blood pressure in the same way. Pregnant women with hypertension can add these fruit in daily food consumption to reduce and maintain the normal blood pressure.

Keyword : midwifery; Ambon banana consumption; tomato juice; blood pressure; pregnancy



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#### INTRODUCTION

Hypertension in pregnancy can lead to maternal complications in the form of preeclampsia and eclampsia or seizures. Seizures can cause cardiac arrest, pulmonary edema, shock and cerebral hemorrhage and renal failure. Seizures in the mother can also increase infant mortality due to hypoxia, acidosis, and placental abruption. In addition, mothers can also experience blindness and paralysis due to intracranial hemorrhage, postpartum hemorrhage, toxic delirium, and the long-term consequence is the emergence of permanent hypertension [1].

Preeclampsia is one of the leading causes of maternal and infant mortality almost worldwide, with an estimated preeclampsia causing the death of more than 70,000 women per year and more than 500,000 fetuses and newborns (Magee et al., 2016). The Maternal Mortality Rate in Indonesia based on the Inter-Census Population Survey (SUPAS) in 2015 was 305/100,000 live births. While in Central Java Province the Maternal Mortality Rate in 2018 was 421/100,000 live births with the cause of death being preeclampsia as the most common cause at 36.80%, bleeding at 22.60%, infection 5.20% and other causes at 35.40% [2].

Grobogan Regency is one of the regencies in Central Java province which almost every year always ranks the highest in the number of maternal mortality rates compared to other districts. In 2017 the MMR in Grobogan Regency was 83.52/100,000 live births, then increased in 2018 by 152.54/ 100,000 live births as many as 31 cases, with the highest cause of death, namely hypertension as many as 14 cases or 45%[3]. In 2019 the number of maternal deaths in Grobogan Regency reached 36

cases with the highest cause of death being hypertension as many as 14 cases (38.8%), circulatory system disorders as many as 11 cases (30.5%) and others as many as 7 cases (19.4%) [3].

Based on the data above, the most cases of maternal death were in the ex-kawedanan area of Godong, Grobogan Regency, as many as 10 cases with 8 of them due to hypertension including severe preeclampsia and eclampsia. Among the 6 health centers in the area, it was found that the most cases of pregnant women with severe preeclampsia in 2018 were in the Karangrayung I Health Center area as many as 28 cases, at the Penawangan II Health Center as many as 26 cases, at the Penawangan I Health Center as many as 10 cases. Whereas in 2019 in the Karangrayung I Health Center there were 32 cases, in the Penawangan II Health Center there were 21 cases and in the Penawangan I Health Center there were 19 cases [4]. Even though the number of cases fluctuates, this should be a concern so that pregnant women with hypertension, especially in the area, avoid complications, both severe preeclampsia and eclampsia, so as not to increase the number of maternal deaths.

Efforts that can be made to prevent complications in pregnant women with hypertension can be done by pharmacological and non-pharmacological methods. The principle of handling hypertension in pregnancy is to prevent the risk of increasing blood pressure, prevent the development of the disease, and prevent seizures and consider termination of pregnancy if the mother or fetus is in



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danger. Pharmacological treatment must be tailored to individual conditions and consider the risks and benefits to pregnant women. While non-pharmacological efforts can be applied if the systolic blood pressure ranges from 140-160 mmHg or diastolic blood pressure of 90-99 mmHg. That is through pressure control bleeding, restriction of activity, rest or lying on the left side. In these conditions, mothers are advised to consume a normal diet without limiting salt consumption [5].

Handling of pregnant women with hypertension has been carried out by means of routine blood pressure monitoring during pregnancy examinations, urine examinations for early detection of preeclampsia, and the implementation of referrals from the public health center to hospitals for further treatment and treatment for women suffering from hypertension. However, during this time there is often a delay in handling where mothers who have gestational hypertension have experienced symptoms of severe preeclampsia and sometimes eclampsia occurs. Meanwhile, non-medical efforts that have been made are suggesting mothers with hypertension to get enough rest, not doing heavy work, limiting salt consumption which may not be very effective in preventing complications. It is proven that there are still many cases of preeclampsia and eclampsia that result in maternal death.

Non-medical or non-pharmacological efforts can be done by providing education, early prenatal detection, and by regulating diet [1]. In one study, it was shown that consumption of vegetables and fruit as well as adequate intake of folic acid is one of the protective factors against the occurrence of preeclampsia [6]. One of the content contained in vegetables and fruits that affect blood pressure is potassium.

Potassium is one type of nutrient that is important for body health. The functions of potassium include maintaining fluid and electrolyte balance in the body, ensuring

normal functioning of the brain, nerves, muscles, and heart and helping stabilize blood pressure, preventing stroke, heart disease, kidney damage, and bone loss [7]. Foods containing potassium are very easy to find and can be added to the daily diet including nuts, green vegetables, fruits such as bananas, and tomatoes [8].

Bananas and tomatoes are fruits that are easily found in Grobogan Regency. Besides that, it tastes good, the price is cheap and has many health benefits, making bananas one of the most popular fruits in the community. Meanwhile, to get the benefits of tomatoes, people can also easily process them into food and drinks. According to WHO, from various types of samples of bananas and tomatoes from around the world, it is estimated that in 100 grams of bananas and in 100 grams of tomatoes there is an average potassium content of 300 mg based on various food composition databases [8]. A medium banana contains about 422 mg of potassium and a medium-sized raw tomato contains 292 mg of potassium. In Indonesia there are about 230 types of bananas which are grouped into three, namely fiber bananas, ornamental bananas and fruit bananas that can be consumed. According to a study on the analysis of potassium content in several types of bananas, it shows that in 100g of white Ambon banana contains 622.13 mg of potassium [9]. Tomatoes can be classified into two according to their use and according to their appearance. Tomatoes that are usually known to the public as fruit tomatoes because they can be eaten directly are plum tomatoes or based on their shape called granola tomatoes, namely tomatoes that are round in shape with a flat base and cover the fruit. According to the Ministry of Health of Indonesia in 100 grams of tomato juice there are



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about 225.2 mg of potassium [10].

Based on research conducted by Sukmawati in 2017 it is proven that consuming bananas Ambon for 7 days is effective for reducing blood pressure in women of reproductive age 20-35 years [11]. Whereas in pregnant women with hypertension, giving bananas for 7 days has been shown to have an effect in reducing diastolic blood pressure [12]. So in this study, white Ambon bananas will be used because these types of bananas are easier to obtain.

In third trimester pregnant women with hypertension, consumption of tomato juice is proven to be a fulfillment of potassium intake to help reduce blood pressure [13]. Likewise, according to research conducted by Izati in 2018 the consumption of tomato juice was proven to be more effective in reducing blood pressure of pregnant women with hypertension than consumption of soy milk.

Based on the description above, the researchers are interested in conducting research on "Effectiveness of consumption of Ambon banana and tomato juice on reducing blood pressure in pregnant women with hypertension in pregnancy".

### MATERIAL AND METHOD

The research method was pre-experimental design with two group pretest posttest design. The research was conducted in June 2020 in the working area of Karangrayung I Health Center, Penawangan I and II Health Centers. The respondents of this research were pregnant women (> 20 weeks) with 140-160 mmhg systole and 90 – 99 mmhg dyastole. The sample of this research were 32 women and devided into 2 grups (n1=n2=16), were taken by simple random sampling technique.

Researchers gave 200 grams of white Ambon banana in group 1 and tomato juice in group 2 which was made

from 200 grams of tomatoes with added 100 ml of water and 5 grams of sugar which was consumed 2 times a day and consumed for 7 days. Ambon banana and tomato juice are consumed on an empty stomach, ie before breakfast or between meals. Blood pressure measurements were carried out before and after giving Ambon bananas and tomato juice

The statistical test with the difference test of two samples is interconnected using the Wilcoxon test, while for the different test the two samples are independent of each other using the Mann Whitney Test.

This research has received a recommendation from the Medical / Health Research Bioethics Commission, Faculty of Medicine, Sultan Agung Islamic University, Semarang with No. 373/XI/2020/Commission on Bioethics.

### RESULT

#### 1. The characteristic of the respondents

The characteristic of the respondents in this researcrh shown in table below.

Tabel 1. The characteristic of the respondents.

Variable	Tomato juice Group		Ambon Banana Group	
	F	%	F	%
<b>Ages (years)</b>				
< 20	0	0	0	0
20-35	14	87,5	14	87,5
> 35	2	12,5	2	12,5
<b>Total</b>	<b>16</b>	<b>100</b>	<b>16</b>	<b>100</b>
<b>Parity</b>				
Primipara	2	12,5	2	12,5
Multipara	14	87,5	14	87,5
<b>Total</b>	<b>16</b>	<b>100</b>	<b>16</b>	<b>100</b>

Based on table 1, the characteristic of the respondents, more than 80% were in good reproductive ages (20 – 35years old) and more than 80% were multipara.

## 2. The effectiveness of consumption of tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

Prior to the bivariate analysis, a normality test was conducted to determine the measuring instrument to be used in the bivariate analysis. The results of the normality test using Shapiro-Wilk on the decrease in blood pressure of pregnant women with hypertension in pregnancy before and after consumption of tomato juice obtained p-values of 0.001 and 0.027 <0.05 so that the data concluded that the distribution was not normal, so using the Wilcoxon Signed Ranks Test correlation test with the results as follows :

Table 2. Calculation Results

Tomato Juice Group	Average Blood Pressure
--------------------	------------------------

Blood pressure	Systole	Dyastole
Pretest	145,43	91,00
Post Test	127,81	78,00
Mean rank	8,50	8,50
p_value	0,000	0,000

Based on bivariate analysis using the Wilcoxon Signed Ranks correlation test (Table 2) the p value of  $0.000 < 0.05$  was obtained, so it can be concluded that there is a difference in effectiveness before and after consumption of tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

## 3. The effectiveness of Ambon banana consumption in reducing blood pressure of pregnant women with hypertension in pregnancy.

Prior to the bivariate analysis, a normality test was conducted to determine the measuring instrument to be used in the bivariate analysis. The results of the normality test using Shapiro-Wilk on decreasing blood pressure of pregnant women with hypertension in pregnancy before and after

consumption Ambon bananas obtained p values of 0.001 and  $0.025 < 0.05$  so that the data concluded that the data was not normally distributed so that using the Wilcoxon Signed Ranks Test correlation test with the following results:

Table 3. Calculation Results Average Blood Pressure of Ambon Banana Group

Blood pressure	Sistole	Diastole
Pretest	144,75	90,93
Post Test	128,87	80,75
Mean rank	8,50	8,50
p_value	0,000	0,000

Based on bivariate analysis using the Wilcoxon Signed Ranks correlation test (Table 3) the p value of  $0.000 < 0.05$  was obtained, so it can be concluded that there is a difference in effectiveness before and after consumption of Ambon banana to reduce blood pressure of pregnant women with hypertension in pregnancy.

## 4. Differences in the effectiveness of consumption of Ambon banana and tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

Prior to the bivariate analysis, a normality test was conducted to determine the measuring instrument to be used in the bivariate analysis. The results of the normality test using Shapiro-Wilk on differences in the effectiveness of consumption of bananas and tomato juice on reducing blood pressure obtained p values of 0.012 and  $0.006 < 0.05$  so that the data concluded that the data was not normally distributed so that using the Mann-Whitney Test correlation test with the following results:



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**Table 4. Average Difference  
Lowering Blood Pressure in the Ambon  
Banana and Tomato Juice Group**

Blood pressure	Toma to Juice	Ambon Banana
Mean	17,81	15,19
Rank		
Sistole		
Mean	19.22	13.78
Rank		
Diastole		
p_value sistole	0,407	
p_value diastole		0,095

Based on the bivariate analysis using the two-sample difference test, the two samples were interconnected with the Mann-Whitney Test (Table 4), the results obtained were p-value of systolic 0.407 and p-value of diastolic 0.095. Because the p value > 0.05, it can be concluded that there is no difference in the effectiveness of the consumption of Ambon banana and tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

## DISCUSSION

### 1. The effectiveness of consumption of tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

Based on bivariate analysis using the Wilcoxon Signed Ranks correlation test, the p value of  $0.000 < 0.05$  was obtained, so it can be concluded that there is a difference in effectiveness before and after consumption of tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

Hypertension in pregnancy is defined as a condition where systolic blood pressure is more than 140 mmHg and/or diastolic blood pressure is more than 90 mmHg [1].

In the Pocket Book of Maternal Health Services in Basic Health Facilities and For reference, hypertension in pregnancy is also

defined as a systolic blood pressure of at least 140 mmHg or 90 mmHg diastolic on two examinations 4 to 6 hours apart in women who were previously normotensive [14].

Potassium contained in tomato juice lowers systolic and diastolic blood pressure by inhibiting the release of renin so that there is an increase in sodium and water excretion such as diuretic function [15]. Renin circulates in the blood and works by catalyzing the breakdown of angiotensin II with the help of Angiotensin Converting Enzyme (ACE). Angiotensin II has great potential to increase blood pressure because it acts as a vasoconstrictor and can stimulate aldosterone secretion [16]. Aldosterone increases blood pressure by way of sodium retention. Sodium and water retention is reduced in the presence of potassium, resulting in a decrease in plasma volume, cardiac output, peripheral pressure, and blood pressure. Substances other than potassium and fiber that play a role in reducing blood pressure are calcium which causes an increase in contractions so that it can maintain an increase in heart stroke volume and blood pressure can be maintained [16].

### 2. The effectiveness of Ambon banana consumption in reducing blood pressure of pregnant women with hypertension in pregnancy.

Based on bivariate analysis using the Wilcoxon Signed Ranks Test correlation test, the p value of  $0.000 < 0.05$  was obtained, so it can be concluded that there is a difference in effectiveness before and after the consumption of Ambon banana to reduce blood pressure of pregnant women with hypertension in pregnancy.

Physiological changes in pregnant women include: the reproductive system, digestion, Cardiovascular, urinary, integumentary, respiratory, neurologic and musculoskeletal. In the heart there is hypertrophy (enlargement) or mild dilatation of the heart may be caused by an



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increase in blood volume and cardiac output. Blood circulation disorders due to enlargement and pressure of the uterus, especially on the pelvic veins when sitting and the inferior vena cava when lying down have increased capillaries [17].

Hypertension in pregnancy in the community is considered a common thing, but we must be careful because hypertension in pregnancy can harm the mother and also the fetus. The factors that influence the decrease in blood pressure are in terms of pharmacological -methyldopa and labetalol, and non-pharmacological: contained in bananas which contain potassium 435 mg per banana.

Bananas taste sweet, cold and astringent. This fruit is useful for maintaining energy, lubricates the intestines, detoxifies, lowers heat (antipyretic), smoothes the skin, anti-inflammatory, sheds urine (diuretic) and acts as a mild laxative. Its high potassium content has an important role in reducing the risk of high blood pressure and overcoming thirst and weakness due to potassium deficiency [18].

In fact, bananas have many benefits, including lowering blood pressure, so consuming bananas is very good for health, in addition to being cheap and often we find it has many benefits and has no side effects for the mother and the fetus it contains.

So, it can be seen that hypertension in pregnant women can be reduced not only by using drugs but also by consuming Ambon bananas regularly every day with an average potassium content in one banana of about 500 mg. The results of a study in the Journal of the American College of Cardiology concluded that a daily potassium intake of 1,600 mg can reduce the risk of stroke by more than 20% [19].

Several studies have proven that bananas are useful to help lower blood pressure in people with hypertension. As research conducted on women of reproductive age with hypertension in Kesugihan District, Cilacap Regency in 2017, the results showed that there was an effectiveness of consuming

Ambon bananas to reduce blood pressure [11]. In another study, it was also concluded that the Ambon banana diet is effective as a non-pharmacological therapy to help lower blood pressure and can be consumed as much as 2

pieces per day [20]. Research on pregnant women with hypertension also shows the same thing that bananas are effective for lowering diastolic blood pressure with an average decrease in blood pressure of 9.27 mmHg after being given bananas for 7 days [12].

### 3. Differences in the effectiveness of consumption of Ambon banana and tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

Based on the bivariate analysis using the two-sample difference test, the two samples were interconnected with the Mann-Whitney Test, the results obtained were p-value of systolic 0.407 and p-value of diastolic 0.095. The mean rank of systolic blood pressure was also obtained at 17.81 in the tomato juice group and 15.19 in the Ambon banana group. Meanwhile, the mean value of diastolic blood pressure rank in the tomato juice group was also higher at 19.22 when compared to the Ambon banana group at 13.78. Based on the mean rank value, it appears that tomato juice is more effective than Ambon banana but because the p value > 0.05, it can be concluded that there is no difference in the effectiveness of consuming bananas and tomato juice on reducing blood pressure of pregnant women with hypertension in pregnancy.

One source of potassium from fruits and vegetables is bananas and tomatoes. From various types of bananas and tomatoes from around the world, it is estimated that in 100 grams of bananas and in 100 grams of tomatoes, the content is the same, namely 300 mg of potassium in 100 grams. Both are fruits that are easily found in Indonesia. The price is affordable, tastes delicious, can be consumed directly or processed easily, and can be planted yourself in the yard of the



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house [8].

Bananas have various types, but those that can be used as medicine include the yellow kepok banana, Ambon banana, raja banana, mas banana, and stone banana.

And what is good for maintaining heart health, smooth blood circulation, and hypertension is the Ambon banana [21]. According to a study on the analysis of potassium content in several types of fruit bananas, it shows that in 100 grams of white Ambon banana contains 622.13 mg of potassium [9].

Tomatoes can be grouped by appearance or by use. The types of tomatoes include plum tomatoes, beef tomatoes, cherry tomatoes, grape tomatoes, pear tomatoes, and green tomatoes.

Meanwhile, from the shape of the tomatoes are divided into granola tomatoes, gondol tomatoes, vegetable tomatoes and cherry tomatoes. In Indonesia, the tomatoes known to the public as fruit tomatoes are a type of plum tomato, and can be called granola tomatoes according to their shape. Called a fruit tomato because it can be consumed directly or made juice. Meanwhile, according to the variety, tomatoes have undergone many modifications so that there are hundreds of varieties of tomatoes.

The health benefits of tomatoes include potassium for heart health, antioxidants to nourish the liver, vitamin A for eye health, sodium, zinc and chromium to help stabilize blood sugar levels, contain vitamins C and E to nourish pregnant women and fetuses [7]. In one study, it was shown that giving 250 ml of tomato juice made from 200 grams of tomatoes, 100 ml of water and 5 grams of dietary sugar, was consumed during 14 days show presence decrease in systolic and diastolic blood pressure in pregnant women with hypertension [13]. To overcome hypertension it is recommended to drink tomato juice or eat fresh tomatoes as much as 1 to 2 pieces every morning on an empty stomach [7].

Research by Izati which examined the effectiveness of soy milk and tomato juice

showed that tomato juice was more effective in lowering blood pressure in pregnant women with hypertension after being consumed for 7 days [22].

### CONCLUSION

There is a difference in effectiveness before and after consumption of tomato juice on reducing blood pressure (systolic and diastolic) of pregnant women with hypertension in pregnancy ( $p=0.000$ ).

There is a difference in effectiveness before and after consumption of bananas on reducing blood pressure (systolic and diastolic) of pregnant women with hypertension in pregnancy ( $p=0.000$ ).

There was no difference in the effectiveness of consumption of bananas ( $p=0.407$ ) and tomato juice ( $p=0.095$ ) in reducing blood pressure of pregnant women with hypertension in pregnancy.

Health provider can provide socialization to the public that tomato juice and Ambon banana can be used as non-pharmacological therapy that can help reduce blood pressure of pregnant women with hypertension.

In further research, more in-depth research should be carried out on the calculation of the daily nutritional intake consumed by respondents as well as nutritional intake from other sources such as supplements consumed and others that may have an effect on reducing blood pressure of pregnant women with hypertension in pregnancy.



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### Does the Pandemic Affect Maternal and Child Health Services based on a Case Study in Wonosobo Regency?

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#### ABSTRACT

The Covid-19 pandemic has had an impact on many sectors from the economic sector, education, social life, as well as public health status. In the public service sector, the Covid-19 pandemic has had a negative impact on the health service sector, especially on maternal and child health (MCH) services which can indirectly increase the MMR and IMR. The aim of this paper is to determine the impact of the pandemic on MCH services in Wonosobo Regency, Central Java. This study uses a combination of qualitative and quantitative methods (mixed methods). In-depth interviews were conducted online and in stages, starting with the district/city Health Office and community health centers (puskesmas). This study utilizes primary data from monthly visits in the period January 2019 to August 2021 from pustekkes and the Health Office to analyze changes in the number of community visits to MCH services. For the result in general, MCH services in Wonosobo Regency, Central Java, have decreased compared to the pre-pandemic period with the impact of increasing MMR and IMR. The study concluded that the pandemic is affecting on Maternal and Child Health (MCH) services in Wonosobo Regency, Central Java. Despite being in a pandemic period, MCH services in Wonosobo Regency are expected to be provided optimally to suppress MMR and IMR.

Keywords: *maternal and child health; covid-19 pandemic; MCH services*

*ASPECTS OF HEALTH SERVICES DURING PANDEMIC”*

#### ABSTRAK

Pandemi Covid-19 berdampak pada banyak sektor dari sektor perekonomian, pendidikan, kehidupan sosial masyarakat Indonesia, serta status kesehatan masyarakat. Pada sektor layanan publik, pandemi Covid-19 berdampak negatif pada sektor layanan kesehatan khususnya pada layanan gizi dan kesehatan ibu dan anak (KIA) yang secara tidak langsung dapat meningkatkan AKI dan AKB. Tujuan penulisan ini untuk mengetahui dampak pandemi terhadap pelayanan KIA di Kabupaten Wonosobo Jawa Tengah. Studi ini menggunakan metode gabungan kualitatif dan kuantitatif (*mixed methods*). Wawancara mendalam dilakukan secara daring dan berjenjang, dimulai dengan pihak Dinas Kesehatan kabupaten/kota dan pusat kesehatan masyarakat (puskesmas). Studi ini memanfaatkan data primer dari kunjungan bulanan dalam periode Januari 2019 hingga Agustus 2021 dari pustekkes dan Dinas Kesehatan untuk menganalisis perubahan jumlah kunjungan masyarakat ke layanan KIA. Hasil studi ini secara umum, pelayanan KIA di Kabupaten Wonosobo Jawa Tengah mengalami penurunan dibandingkan dengan masa sebelum pandemi dengan dampak kenaikan AKI dan AKB. Simpulan studi ini adalah pandemi mempengaruhi pelayanan KIA di Kabupaten Wonosobo. Meskipun berada dalam masa pandemi, pelayanan KIA di Kabupaten Wonosobo diharapkan tetap bisa diberikan secara optimum untuk menekan AKI dan AKB.

Kata Kunci : *kesehatan ibu dan anak; pandemi covid-19; layanan KIA*



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### INTRODUCTION

The Covid-19 pandemic has had impacts on many sectors from the economic sector, education, social life of the Indonesian people, as well as public health status. This pandemic has caused several regional governments to implement Large-Scale Social Restrictions (PSBB) policies which have implications for limiting community activities, including economic activities, educational activities, and other social activities.

In the public service sector, the Covid-19 pandemic has had a negative impact on the health care sector, especially on nutrition and maternal and child health (MCH) services. This is in line with the findings of several studies in several countries showing the impact of the pandemic on maternal and neonatal health services. There was about 50% and 32% decrease in antenatal visits and deliveries by health workers during the Ebola outbreak in Liberia (Shannon et al., 2017) which trend did not even improve after the outbreak ended.<sup>1,2</sup> Other studies have found indications of community reluctance in Sierra Leone. to immunize and weigh their children in health facilities because of their fear of contracting the virus during an Ebola outbreak.<sup>3,4</sup>

In Indonesia, the Covid-19 pandemic has the potential to hinder the access of mothers and children to optimal health services. A decrease in the number of visits to nutrition and MCH services also has the potential to create new nutritional problems and health problems.<sup>5</sup> In this COVID-19 pandemic situation, there are many restrictions on

almost all routine services, including maternal and newborn health services. For example, pregnant women are reluctant to go to the primary health care provider (puskesmas) or another health service facilities for fear of being infected, there are also some recommendations for postponing pregnancy check-ups and classes for pregnant women, as well as the unpreparedness of services in terms of personnel and infrastructure including Personal Protective Equipment.<sup>6</sup> In general, MCH services in Wonosobo Regency Central Java has decreased compared to the period before the pandemic. The impact of this is indicated by an increase in the number of cases of maternal and infant mortality during the pandemic.

To find out the impact of the Covid-19 pandemic on nutrition and MCH services, the authors conducted a case study of the impact of the pandemic on MCH services in Wonosobo Regency, Central Java.

### MATERIALS AND METHOD

This study used a cross sectional study design with a quantitative method. We used a single variable. The population of this study are the maternal (pregnant and postpartum women) and neonatal in Wonosobo regency. This study utilizes primary data from monthly visits in the period January 2019 to August 2021 from the primary health care provider (puskesmas) and the Health Office to analyze changes in the number of community visits to MCH services. The data analysis used the univariate test.



## RESULTS

Nutrition and MCH services in this study are grouped into three types of services, namely (i) antenatal care, (ii) delivery and postpartum services, and (iii) services for infants and toddlers. The impact of the Covid-19 pandemic on the three types of services varies, depending on the severity of the case and innovation in each region.

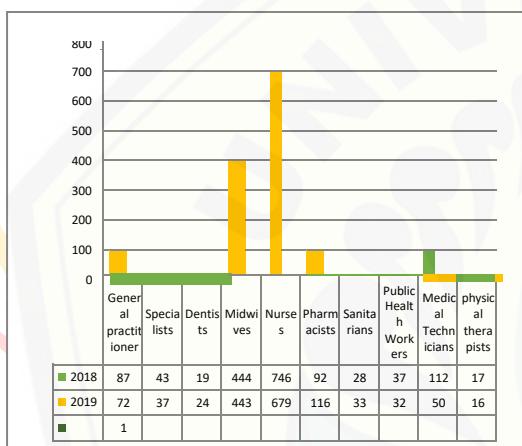


Figure 1. Number of Health Workers in Wonosobo Regency

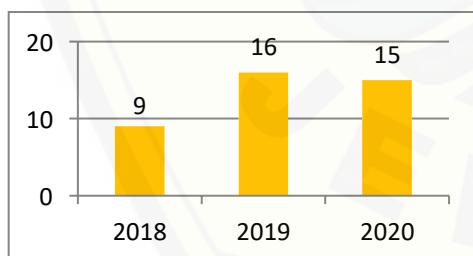


Figure 2. Maternal Mortality Rate in Wonosobo Regency

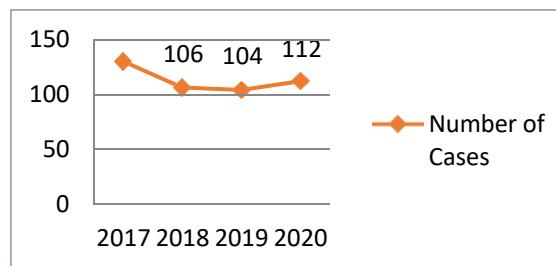


Figure 3. Infant Mortality Rate in Wonosobo Regency

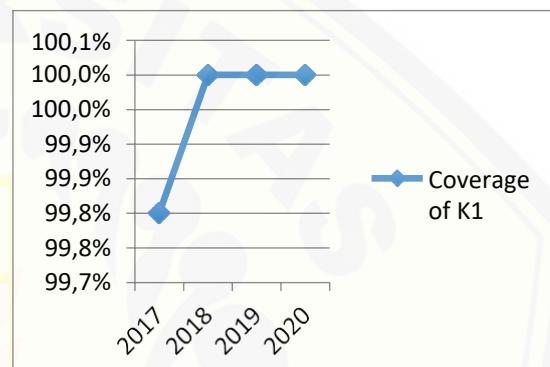


Figure 4. Coverage of K1 Wonosobo Regency

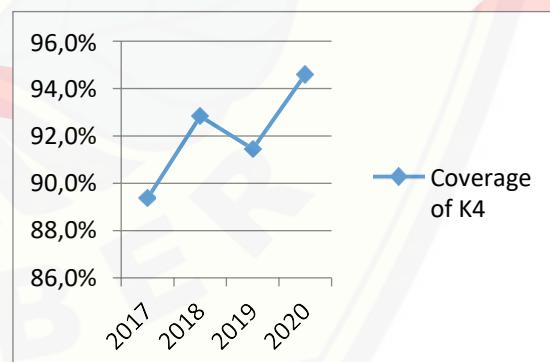


Figure 5. Coverage of K4 Wonosobo Regency

## DISCUSSION

The World Health Organization (WHO) has determined that the corona virus or commonly referred to as Covid-19 has become a pandemic because this



virus has spread to various countries and has even gone global. WHO defines a pandemic as a condition of the world's population and has the potential to cause falls and illness. The Covid-19 pandemic also has an impact on various sectors of life such as the economy, social and education due to the Covid-19 pandemic, some activities have been suspended. Because the holiday has an impact on various fields, one of which is in the health sector.

Maternal and child health services are based on stages in accordance with the continuum of care which in this case starts from Pre-Conception Services for Women of Childbearing Age (WUS) and Couples of Childbearing Age (PUS), Antenatal Services, Childbirth and Newborn Services, Postpartum Services and Family Planning, Infant Health Services, Toddler and Preschool Child Health Services, to School Children and Adolescent Services.

Health services for pregnant women cannot be separated from childbirth, postpartum and newborn services. Integrated Antenatal Services are comprehensive and the quality services including promotive, preventive, curative and rehabilitative services which include MCH services, nutrition, infectious diseases, PTM during pregnancy, which aims to fulfill the right of every pregnant woman to obtain the antenatal care quality so that she is able to have a healthy pregnancy, give birth safely, and give birth to a healthy baby. Based on WHO recommendations in 2016, the implementation of ANC at least 8 times for every pregnant woman is highly recommended to reduce mortality during pregnancy and during childbirth.<sup>7, 8, 9</sup>

In general, during the Covid-19 pandemic, nutrition and MCH services in Wonosobo Regency are still available and run in accordance with the health protocol from the Ministry of Health.

Based on the figure 1, the number of health workers with the largest proportion in Wonosobo Regency in 2020 are nurses, which are 743 people and midwives, 504 people. Based on the data obtained, from 2018 to 2020, the number of health workers increases every year such as general practitioners, nurses, midwives and other health workers. But in 2019-2020 the maternal mortality rate increased. Where the possibility of adding health workers is more focused on handling Covid-19 in Indonesia. This agrees with the policy of the Ministry of Health that during this pandemic, more health workers are needed, including general practitioners, nurses, and midwives. In addition, during this pandemic, many health workers were exposed to Covid-19 so they could not carry out the complete services.

Based on the figure 2, it can be seen from the graph above, in 2018 the maternal mortality rate (MMR) were 9 cases and in 2019 to 2020 it increased to 16 cases. It can be seen that in 2019 Indonesia itself experienced a Covid-19 pandemic and the indirect cause of maternal deaths in 2019 and 2020 was due to Covid-19. So that the increasing number of maternal deaths in 2019 and 2020 is related to the Covid-19 pandemic. The first case of Covid-19 was reported in Wuhan in 2019 and in Indonesia itself Covid-19 has become a serious concern in public health after being declared a pandemic.



Pregnant women are more vulnerable and more at risk of contracting the Covid-19 virus because of the physiological factors of the body during pregnancy. This agrees with the research conducted by Karimi, et al in 2020 which concluded that from a number of studies on previous coronaviruses (SARS-CoV and MERS-CoV) it was stated that pregnant women are at higher risk of severe disease, and morbidity when compared to the general population.<sup>10,11</sup>

The impact of Covid-19 is also very large on mothers who are infected with the Covid-19 virus so that it can cause death. In line with the research conducted by Cahya, et al in 2020 with the title The Impact of Covid-19 on the Health of Pregnant Women: Literature Review concluded that pregnant women are a group that is vulnerable to pathogens that cause respiratory diseases and pneumonia. This can happen because during pregnancy, pregnant women are in an immunosuppressed state and experience physiological changes of pregnancy, such as an increase in the diaphragm, increased oxygen consumption, and edema of the respiratory tract mucosa that can make them susceptible to hypoxia. In addition, the decreased immunity of pregnant women can lead to increased susceptibility to infectious diseases.<sup>12</sup>

So when viewed from the number of cases in 2018-2020 it can be concluded that the Covid-19 pandemic is one of the causes of the increasing number of maternal deaths in 2019 and 2020.

From the figure 3, we can see that the infant mortality rate in Wonosobo

Regency in 2018 was 8.32/1,000 live births (106 cases), a decrease compared to 2017 while the infant mortality rate in 2017 was 10.34/1,000 live births (130 cases). In 2019 it decreased again compared to 2018 while the infant mortality rate in 2019 was 8.24/1,000 live births (104 cases). In 2020 the infant mortality rate was 9.0/1,000 live births (112 cases), an increase when compared to 2019.

For the K1 and K4 coverage, The coverage of the visit of the first pregnant woman (K1) in Wonosobo Regency in 2017 was 99.98%, in 2018 it increased to 100% and in 2019 it remained at 100%, as well as in 2020 it remained 100%. While the fourth visit (K4) in 2017 was 89.37%, it increased in 2018 to 92.84% but the achievement in 2019 decreased to 91.46%, and in 2020 it increased to 94.6%.

The coverage of the fourth visit of pregnant women (K4) has not been able to reach the target of the strategic plan which is 100% due to the fact that there are still pregnant women who make their first visit in pregnancy after the first trimester (more than 12 weeks), and there are some pregnant women who have not reached the fourth visit. pregnancy. The Covid-19 pandemic is one of the factors that can affect the decline in ANC visits to pregnant women in Wonosobo Regency, this is due to the concerns of pregnant women about disease transmission and delays in carrying out pregnancy checks. The purpose of antenatal care is for early detection of pregnancy complications and can improve the health of pregnant women both physically and mentally so that they are able to deal with during childbirth, postpartum and breastfeeding. The delay in antenatal care can affect the health condition of the mother and baby.



The Wonosobo Health Office has made various efforts to increase the coverage of the fourth pregnancy visit (K4) even though the COVID-19 pandemic is a new challenge in terms of maternal and child health. This is evidenced by the increase in K4 Coverage in 2020 to 94.6% after previously decreasing K4 coverage in 2019 (91.46%), where in 2019 Covid began to enter Indonesia.

The decline in nutritional health and MCH services in the study areas has the potential to increase the number of maternal and child deaths. Missing K1 and K4 can reduce efforts to screen the risk of pregnancy which can cause complications in childbirth and maternal death. The scope of delivery by health workers (Pn) is maternity mothers who receive delivery assistance by health workers who have midwifery competence. The coverage of deliveries by health workers (PN) in Wonosobo Regency in 2017 was 99.94%, an increase to 99.97%. The coverage of deliveries by health workers in Wonosobo Regency in 2019 is the same as in 2017 which is 99.94%, in 2020 it has increased to 99.9%. Efforts have been made to achieve the strategic plan target (100%) among others by providing Maternity Insurances (Jampsersal).

The coverage of postpartum maternal services in Wonosobo Regency in 2018 was 98.24%, a slight decrease compared to 2017 (98.30%), in 2019 it increased to 99.67%, but decreased in 2020 to 98.2%. This is because at the beginning of 2020 Indonesia experienced a pandemic and there were many issues circulating in the community related to the corona virus with the addition of the initial implementation of the PPKM policy, so

that it could indirectly influence the community to make post-partum visits and there were still mothers who died during the puerperium and have not received postpartum maternal services according to standards so that the number of postpartum visits has not been able to reach the strategic plan target set at 100%.

In 2020 the coverage of pregnant women who received Fe1 tablets was 13,244 (95.2%) and pregnant women who received Fe3 were 12,602 (95.2%). When compared to 2019, the coverage of pregnant women who received Fe1 tablets decreased by 1.09% but those who received Fe1 actually increased by 559 (2019 pregnant women who received Fe1 as many as 13,803 with 96.29% coverage) and pregnant women who received Fe3 tablets. as many as 13,109 (91.45%). When compared to 2018, the coverage of pregnant women who received Fe1 tablets decreased by 0.29% but those who received Fe1 actually increased by 434 pregnant women. 58% Fe3 as many as 12,820 pregnant women 92.62% compared to 2017 achievement, Fe1 coverage decreased by 0.17% (Year 2017 = 13,221 pregnant women, Coverage 96.75%) while Fe3 coverage increased by 2.69% (Year 2017) 2017 = 12,302 pregnant women, coverage 89.93%).

Cases of malnutrition based on indicators of weight according to height (BB/TB) cumulatively during 2020 were 136 cases with a case prevalence of 0.36% (number of toddlers weighed = 37,884 toddlers), experiencing a fairly large increase in cases, namely 42 cases if compared to cases in 2019 (94 cases, prevalence 0.17%, toddlers weighed =



52,582 toddlers). When compared to 2018 (63 cases, 0.11% prevalence) and 2017 (63 cases, 0.12% prevalence) which means that there has been an increase in cases for three consecutive years. This increase in cases is probably due to the economic conditions of the poor in Wonosobo Regency.

## **CONCLUSION**

The study concluded that the pandemic is affecting on Maternal and Child Health (MCH) services in Wonosobo Regency, Central Java. There were disruptions in pregnant women's access to health services during the Covid-19 pandemic. Therefore, policy makers need to design a health care system with proper strict health protocols. This is to ensure that the safety of the health workers and pregnant women can be well maintained and not infected by the SARS-CoV-2 virus.

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### THE KNOWLEDGE LEVEL OF CERVICAL CANCER SCREENING WITH VIA ON WCA (WOMEN OF CHILDBEARING AGE)

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#### ABSTRACT

Cervical cancer is one of the most prominent health concerns for women around the world with an estimated 500.000 cases of cervical cancer each year in the world and 274.000 or 54.8% of deaths occurring each year. WHO says that screening cervical cancer by methods VIA has high sensitivity and specificity. The VIA test is the main reminder of the treatment. Aims this study to know the knowledge about a screening of cervical cancer with Visual Inspection method with Acetic Acid (VIA) at Women of Childbearing Age (WCA). This design of this research is *descriptive quantitative* with a *cross-sectional* method, the population of research is Women of Childbearing Age at Grudo Panjangrejo Village Pundong Districts Regency year 2018 many as 82 WCA with *total sampling*. Most (52.44%) of Women of Childbearing Age > 35 years, had 2-4 children (multipara) 64.6%, middle education level 60.98%, and most ( 51.22%.) works. Most WCA (52.44%) have a sufficient level of knowledge. Most of the WCA whose level of knowledge is sufficient are multipara (54.7%), a primary education level (73.1%), and non-employment (52.5%). The conclusion of the research is the most respondents are knowledgeable enough, most respondents are aged> 35 years, multiparent, middle-level, and with employment status.

Keywords: Level of knowledge, WCA, screening, VIA method, cervical cancer



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### INTRODUCTION

Cervical cancer is one of the leading health problems striking women worldwide with an estimated 529,409 new cases and about 89% in developing countries. Based on data from *the International Agency Research on Cancer* from the World Health Organization (WHO) in 2012, cervical cancer or better known as cervical cancer is one of the most common cancers of death of women worldwide, including Indonesia<sup>1</sup>. The World Health Organization (WHO) said in 2013 that there are an estimated 500,000 people with cervical cancer every year in the world and 274,000 or 54.8% of deaths occur every year. Every year, there are 500,000 new cases of cervical cancer and more than 250,000 deaths. In Indonesia, which has a population of about 220 million people, there are about 52 million women who are threatened with cervical cancer. About 80% of all cervical cancer deaths are reported to come from developing countries. This condition affects not only the health and lives of women, but also their children, families, and society in general<sup>1</sup>. The incidence of cancer in Indonesia alone in 2012 amounted to 347,792 cases or 1.4% of the population. The incidence of cancer increased by 11.02% and the number of deaths increased by 7.89% from 2008-2012. Yogyakarta Special Region (DIY) is the region that has the highest cancer cases compared to other provinces. yang ada di Indonesia yaitu sebesar 4,1 % <sup>2</sup>. In the journal of the Centre for Disease Control

and Prevention in 2017, every year as many as 20,928 Indonesian women are diagnosed with cervical cancer and 9,498 (45.4%) of them die from this malignant disease.

Based on GLOBOCAN data in 2012, showing Indonesia has the highest death rate, incidence, and prevalence among countries in Southeast Asia, which is estimated every day there are 40-45 new cases, 20-25 people die, that means every one hour an estimated one woman dies from cervical cancer. That is, Indonesia will lose 600-750 women who are still produced every month<sup>3</sup>. The World Health Organization (WHO) states that one-third of all cancers are preventable, one-third can be cured, the remaining third can be relieved of pain if it can be given the drugs available for it. Prevention efforts that can reduce the death rate from cervical cancer that arise with or without symptoms are by screening<sup>4</sup>. Screening is an attempt to identify an unknown disease or disorder using tests, examinations, or other procedures that can quickly distinguish a person who appears completely healthy from a person who appears healthy but suffers from an abnormality. Regular screening of cervical cancer can prevent most cervical cancer incidence<sup>5</sup>.

DIY Provincial Health Data in 2016 showed the incidence of cervical cancer in Yogyakarta City as many as 341 cases, in Sleman Regency as 962 cases, in Gunungkidul Regency as 105 cases,



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Kulonprogo Regency as many as 205 cases, and the most were in Bantul Regency as many as 1,355 cases<sup>6</sup>. Dinkes DIY data over the past 5 years shows Bantul Regency has the lowest cervical cancer screening achievement rate with the lowest VIA method of 4.83%. Screening of cervical cancer with the VIA method in Bantul Regency is lower than Kulonprogo which is as much as 2% or about 1,381 out of 68,624 women of childbearing age in Kulon Progo Regency. Sleman Regency, City District, and Gunung Kidul Regency did not report cervical cancer screening coverage using the VIA method<sup>6</sup>.

Screening cervical cancer with the lowest VIA method was found in Pundong Health Center, Dlingo 1, Dlingo 2, and Sewon 1<sup>(7)</sup>. Pundong district consists of three villages namely Srihardono, Panjangrejo, and Seloharjo. Based on preliminary studies at Pundong Health Center on April 24, 2018, the lowest VIA results were obtained in Panjangrejo Village of 3 people. The purpose of this study is to find out the level of knowledge about screening cervical cancer with visual inspection methods with acetic acid (VIA) in women of childbearing age (WCA) in Grudo Village of Panjangrejo Village of Pundong District of Bantul Regency in 2018 and can provide benefits in the development of science in the field of reproductive health.

The scope of this study is reproductive health science, especially regarding the screening of cervical cancer with the scope of midwifery science. Reproductive Health in question includes cervical cancer and cervical cancer screening with the VIA method of cervical cancer with the lowest VIA method found in Pundong Health Center, Dlingo 1, Dlingo 2, and Sewon 1<sup>(7)</sup>. Pundong district consists of three villages namely Srihardono, Panjangrejo, and Seloharjo. Based on preliminary studies at Pundong Health Center on April 24, 2018, the lowest VIA results were obtained in Panjangrejo Village of 3 people.

The aims of this study is to find out the level of knowledge about screening cervical cancer with visual inspection methods with acetic acid (VIA) in women of childbearing age (WCA) in Grudo Village of Panjangrejo Village of Pundong District of Bantul Regency in 2018 and can provide benefits in the development of science in the field of reproductive health. The scope of this study is reproductive health science, especially regarding the screening of cervical cancer with the scope of midwifery science. Reproductive Health in question includes cervical cancer and cervical cancer screening with the VIA method. VIA examination includes preventive efforts for cervical cancer screening that is quite simple, cheap, fast, and the results can be immediately known.



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### MATERIALS AND METHOD

This study is quantitatively descriptive research. Study was conducted in observations regarding the level of knowledge about screening cervical cancer with visual inspection methods with acetic acid (VIA) in women of childbearing age (WCA). This research place at Grudo, Panjangrejo Village, Pundong Subdistrict, Bantul Regency on July 21, 2018. The population in this study was all Women of Childbearing Age (WCA) aged 15-49 years who had been or had been married at Grudo, Panjangrejo in July 2018 with a total sample of 82 people. Sampling technique with *total sampling* and obtained data as many as 82 people. The type of data in this study is primary data. This research instrument uses a questionnaire that is a knowledge level questionnaire about cervical cancer screening with the VIA method to measure knowledge levels. This questionnaire is about closed-door questions that contain as many as 30 questions. This research was carried out after obtaining a letter of permission from researchers and the Department of Midwifery Of Yogyakarta Ministry of

Health with No. PP.07.01/4.3/966/2018 on July 18, 2018, and obtained permission from BAPPEDA Bantul Regency with letter No. 070 / Reg / 2302 / D / 2018 on July 20, 2018, and the Head of Panjangrejo Village. This research was done at one shoot time by inviting WCA to the house of Head of Grudo Panjangrejo Hamlet on July 21, 2018. The researcher was assisted by a team of researchers (5 people) and Kader Dusun Grudo.

In the event, the researcher explained the purpose of study and conducted informed consent, the researcher explained the research procedure of filling out the questionnaire. Respondents are welcome to fill out the questionnaire after what is known within 30 minutes. Data processing techniques are done by editing, coding, scoring, *transferring*, and compiling data (tabulating). Variables analyzed by the unVIAriate analysis result in frequency and percentage distributions of respondents' characteristic variables, as well as respondents' knowledge level variables.



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### RESULT

Respondents to this study were WCA in Grudo Hamlet as many as 82 people. and the number has uneven characteristics, for

more details are presented in the following table.

Table 1. Distribution of WCA frequency based on Characteristics in Grudo Village Of Panjangrejo Village Pundong District Bantul District in 2018

No.	Characteristic	Frequency	Percentage (%)
<b>Age</b>			
1.	<20 years	1	1,22
2.	20-35 years	38	46,34
3.	>35 years	43	52,44
<b>Total</b>		<b>82</b>	<b>100 %</b>
<b>Number of children</b>			
1.	No/don't have children yet	3	3,66
2.	Have one child	26	31,71
3.	Have 2-4 children	53	64,63
<b>Total</b>		<b>82</b>	<b>100 %</b>
<b>Level of Education</b>			
1.	Basis	26	31,71
2.	Intermediate	50	60,98
3.	High	6	7,3
<b>Total</b>		<b>82</b>	<b>100 %</b>
<b>Work</b>			
1.	Work	42	51,22
2.	Not working	40	48,78
<b>Total</b>		<b>82</b>	<b>100 %</b>



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Table 1 shows that in this study the vast majority (52.44%) of Women of Childbearing Age (WCA) with >35 years of age, had 2-4 children (multipara) as

many as 64.6%, secondary education levels as much as 60.98% and most (51.22%) WCA works

**Table 2. WCA frequency distribution based on Knowledge Level in Grudo Village Of Panjangrejo Village Pundong District Bantul in 2018**

Knowledge Level	Frequency	Percentage (%)
Good	37	45,12
Enough	43	52,44
Less	2	2,44
<b>Total</b>	<b>82</b>	<b>100 %</b>

## DISCUSSION

The results of WCA knowledge research on cervical cancer screening with the VIA method in Grudo Village Longrejo Village Pundong District Bantul showed that most WCA has a sufficient knowledge level of 52.44%. These results provide an idea that the level of knowledge about screening cervical cancer with the VIA method in Grudo Hamlet, Panjangrejo Village of Pundong District of Bantul Regency is good enough. The results of the study are following Nindy Fazar Ningtyas (2018) Overview of The Level of Knowledge of Women of Childbearing Age About Visual Inspection Examination of Acetic Acid (VIA) mostly women of childbearing age in the Polanharjo Klaten Health Center area are

well-informed 40% knowledgeable enough and 60% knowledgeable less<sup>12</sup>.

The results of research that has been conducted show that most WCA have the most knowledge levels (3.8%) at the elementary education level, the results of the study are following Wahyu Kartika Sari (2015) Knowledge Level Overview of VIA in Mothers in Dukuh Village Imogiri Bantul Village in 2015 that most mothers who know less educated SD-SLTP or equVIAgent<sup>8</sup>. Efforts to increase knowledge, cervical cancer early detection examination are carried out comprehensively and multi-sector discipline to prevent cervical cancer<sup>13</sup>. The results showed the highest level of good knowledge (60.5%) at the age of 20-35 years this is because the higher a



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person's age, the wider the knowledge and experience gained by a WCA in getting information<sup>10</sup>. The level of education affects WCA in obtaining information obtained from sources or media. The higher the level of education obtained, the ability to obtain information will be easier. The results showed that most (54.7%) had sufficient knowledge levels in WCA which had 2-4 children. The results of the study follow the theory of Notoadmojo (2012) the more parity of the mother, the higher the knowledge. The results of the study follow Risani Pasaribu (2013) Overview of Maternal Knowledge Aged 25-40 Years About Examination of VIA in Environment XIII Kel. Tegal Sari Mandala II Kec. Denai most (57.14%) multipara with sufficient knowledge<sup>13</sup>. By increasing WCA knowledge about cervical cancer screening, it lowers the risk of cervical cancer by screening as early as possible.

The National Co-ordinating Network for Cervical Screening Working Group in the

Journal revealed that full compliance with current guidelines might prevent another 1,250 cases, but additional steps would be needed to prevent some of the remaining 2,300 cases in women under the age of 70<sup>14</sup>. As many as 80% or more of deaths (up to 5000 deaths per year) are likely to be prevented by screening, meaning that around 100,000 (one in 80) of the 8 million British women born between 1951 and 1970 will be saved from premature death by cervical screening programs at a cost per life saved around £36,000.

The birth cohort trend also provides strong evidence that lifelong mortality rates are much lower in women who were first screened when they were younger<sup>15</sup>. Estimated The number of lives saved by screening (1300 in 1997) was lower than some had suggested but in line with estimates based on our case-control of 2300 prevented cancers (95% 1100 to 3900 confidence intervals)<sup>16</sup>.

## CONCLUSION

The conclusion of the research is the most respondents are knowledgeable enough, most respondents are aged > 35 years, multiparent, middle-level, and with employment status. To get the best results from VIA by reducing the number of pain and death in the WCA, synergy is needed between health workers, especially for midwives and cadres to further emphasize

efforts in providing information about the benefits and purposes of VIA to increase WCA knowledge in conducting cervical cancer screening as an effort to increase WCA in participation in conducting VIA examinations to reduce morbidity and mortality rate from cervical cancer at WCA.



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### SUGGESTION

To get the best results from VIA by reducing the number of pain and death in the WCA, synergy is needed between health workers, especially for midwives and cadres to further emphasize efforts in information from Midwives, Pundong Health Center is expected to increase health promotion efforts about screening cervical cancer with the VIA method in WCA directly to all levels of society. The next Researcher is expected in taking data to choose an efficient time so that the results obtained by the target of achievement

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### An Analysis of Trends and Determinant of Maternal Mortality in Wonosobo District from 2018 to 2020

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#### ABSTRACT

Maternal mortality is one of the indicators in assessing the welfare of people in a region. Maternal mortality in central Java has 416 cases. Based on the Profile of Wonosobo Health Service Maternal Mortality in the last 3 years tends to increase. The study aims to illustrate the trend of maternal deaths in Wonosobo County in 2018-2020. This study is descriptive by using secondary data in the form of recapitulation of Maternal Mortality data in wonosobo health office. The results of this study show that the trend of maternal deaths in Wonosobo District in the last three years tends to increase. Based on the time of death mostly occurred during the postpartum period with a presentation of 67.5% (27 people). The largest cause of death in Wonosobo District over the past 3 years (2018-2020) was Pre Eclampsia with a percentage of 35% (14 people). The study concluded that the trend of maternal deaths in Wonosobo Regency in the period 2018-2020 increased, namely 9 cases of maternal death in 2018, 16 cases of maternal death in 2019 and 15 cases of maternal death in 2020. This study recommends the need of early detection to mothers about treatments and danger signs in pregnancy, childbirth and postpartum so that there is an increased awareness of health care provider against pregnancy complications, especially in mothers with a disease history.

Keywords : maternal mortality, trends, determinant

#### INTRODUCTION

The maternal mortality rate in Indonesia in 2015 was 305 mothers per 100,000 live births. The Indonesian government has proclaimed that by 2030, Indonesia can reduce maternal mortality to below 70 per 100,000 live births in accordance with the Sustainable Development Goals.<sup>1</sup>

The Indonesian Government's program to reduce maternal mortality began in 1990 through the Safe Motherhood Initiative, The Mother's Compassion Movement (1996), Making Pregnancy Safer (2000), Expanding Maternal and Neonatal Survival (2012) and the BPJS-JKN system.<sup>1</sup>

Maternal mortality in central Java has 416 cases.<sup>2</sup> Based on the Wonosobo



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Health Service Profile in 2018, the Maternal Mortality Rate was 70.66/100,000 live births (9 cases). Maternal Mortality increased in 2019 to 126.8/100,000 Live Births (16 cases). By 2020 the maternal mortality rate will fall to 120.5/100,000 Live Births (15 cases).<sup>3</sup>

Based on the results of a study of some of the biggest causes of maternal death in Wonosobo District in 2020 caused by direct causes of Pre Eclampsia / Eclampsia 6 cases (40%). The second largest cause of death was due to indirect causes, namely Covid 19 there were 4 cases (26.67%). The incidence of maternal death in Wonosobo District in 2020 when viewed from the period of death that is the incidence of death during pregnancy there are 6 cases (40%) and died after giving birth a number of 9 cases (60%).<sup>4</sup> The postpartum period is a critical period in the survival of both mother and newborn. Most maternal and newborn deaths occur within the first 1 month after delivery.<sup>5</sup>

Coverage K1 in Wonosobo District in 2020 is 100%. While coverage K4 in 2020 amounted to 94.6%. Coverage of K4 maternal services in Wonosobo District in 2020 is 98.2%.<sup>4</sup> Coverage of K1, K4 and KF3 in Wonosobo District is relatively high, although it has not reached the strategic plan target of 100%, but has not been able to reduce maternal mortality in Wonosobo District.

Maternal deaths occur due to delays in accessing health services, emergencies caused by delays in recognizing distress signs and decision-making. Maternal mortality is influenced by factor 4 T which is too young during childbirth, too old during childbirth, too many children and too close birth distance.<sup>6</sup>

### MATERIAL AND METHODS

This type of research is descriptive analytics with cross-sectional design. The data in this study is secondary data obtained from the results of maternal mortality in the Wonosobo District Health Office in 2018-2020. The population in this study were mothers who died due to pregnancy, childbirth and postpartum for the period 2018-2020 recorded and reported in Wonosobo health office. The sample in the study was all mothers who experienced maternal death during 2018-2020 amounting to 40 people. Sampling techniques use total sampling. The variables used in the study included education, age, frequency of antenatal care, gestational age, gravida, birth care provider, death period, place of death and cause of death. Data analysis uses descriptive univariate testing and is presented in the form of a frequency distribution table/graph/diagram of each variable.



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Variable	2018		2019		2020		Total	
	n	%	N	%	n	%	N	%
<b>Education Level</b>								
Low	7	77.8	11	68.8	10	66.7	28	70.0
Medium	1	11.1	3	18.7	3	20.0	7	17.5
High	1	11.1	2	12.5	2	13.3	5	12.5
<b>Age</b>								
<20 th	1	11.1	1	6.3	2	13.3	4	10.0
20-35 th	3	33.3	9	56.2	10	66.7	22	55.0
>35 th	5	55.6	6	37.5	3	20.0	14	35.0
<b>ANC Frequency</b>								
Well > 4x	9	100.0	15	93.7	13	86.7	37	92.5
Bad <4 x	0	0	1	6.3	2	13.3	3	7.5
<b>Gestational Age</b>								
Preterm (< 38 weeks)	6	66.7	11	68.7	11	73.3	28	70.0
Aterm	2	22.2	5	31.3	4	26.7	11	27.5
Post-term (> 41 weeks)	1	11.1	0	0	0	0	1	2.5
<b>Gravida</b>								
Primigravida	1	11.1	4	25.0	4	26.7	9	22.5
Multigravida	8	88.9	12	75.0	11	73.3	31	77.5
<b>Birth Care Provider</b>								
Obstetrician	6	66.7	9	56.3	8	53.3	23	57.5
Midwife	1	11.1	3	18.7	7	46.7	11	27.5
etc	2	22.2	0	0	0	0	2	5.0
<b>Death Period</b>								
Pregnant	0	0	4	25.0	6	40.0	10	25.0
Maternity	0	0	3	18.7	0	0	3	7.5
Postpartum	9	100.0	9	56.3	9	60.0	27	67.5
<b>Place of Death</b>								
Hospital	7	77.8	12	75.0	13	86.7	32	80.0
Home	2	22.2	3	18.7	1	6.7	6	15.0
Midwife	0	0	1	6.3	0	0	1	2.5
Ind.Practise	0	0	0	0	1	6.7	1	2.5
PHC	0	0	0	0	1	6.7	1	2.5
<b>Cause of Death</b>								
Preeclampsia	2	22.2	6	37.5	6	40.0	14	35.0
Embolism	2	22.2	0	0	1	6.67	3	7.5
Haemorraghe	1	11.11	1	6.25	1	6.67	3	7.5
Circulatory Syst Disorders	0	0	2	12.5	0	0	2	5.0
Covid'19	0	0	0	0	4	26.67	4	10.0
Etc	4	44.45	7	43.75	3	20.00	14	35.0

## RESULTS

### Maternal Mortality



Figure 1. Number of Maternal Mortality in Wonosobo District from 2018 to 2020. This study shows that the trend of maternal deaths from 2018 to 2020 in Wonosobo District tends to increase. The number of maternal deaths in 2018 was 9 cases and increased in 2019 to 16 cases. By 2020, it will decrease slightly to 15 cases of maternal death.

## DISCUSSION

This study shows that the trend of maternal deaths from 2018 to 2020 in Wonosobo District tends to increase. The trend of maternal causes of death in Wonosobo District from 2018 to 2020 is most consecutively caused by, Preeclampsia/Eclampsia 14 cases (35%), Covid'19 10%, Amniotic Water Embolism 3 cases (7.5%), Bleeding 3 cases (7.5%),



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Circulatory System Disorders 2 cases (5%) and caused by other causes as much as 35%.

Based on the table above shows that the majority of maternal deaths in Wonosobo District in 2018-2020 occurred during the postpartum period with a percentage of 67.5% (27 people) while the least occurred during childbirth by 7.5% (3 people). In table 1 shows that the highest maternal mortality trend by the time of death did not change, maternal deaths at the time of postpartum as the largest contributor of deaths during the period 2018-2020.

The research of Nurul Aeni entitled Maternal Mortality Risk Factors which states that based on the time of occurrence, maternal death occurs mostly during the postpartum period up to 42 days after delivery. This study shows that about 40% of maternal deaths occurred a few hours after delivery. Cultural and traditional factors still play a role in the postpartum care process through the influence of families who play a role in postpartum care.<sup>7</sup>

The number of maternal deaths with the largest proportion was mothers with low educational backgrounds (elementary and junior high) which is as much as 70% (28 people). The trend of maternal deaths based on educational background in Wonosobo District has not

changed from 2018-2020, the largest proportion are mothers with elementary and junior high school education backgrounds.

This is in line with research on the factors that cause maternal death in Banjar District in 2018, there is a link between education level and maternal mortality. The results of this study are in line with the theory that education is a risk factor for maternal death. Education taken by a person is one of the demographic factors that greatly affect the health condition of individuals and society. High Educated people will easily receive health information from various media and usually wants to always try to find information about health-related matters that he does not know yet.(Rakhman 2016) Based on the age of the mother, the largest number of deaths is the mother with an age range of 20-35 years, which is 55.0% (22 people). Maternal mortality in Wonosobo County is the largest proportion to occur at reproductive age, this is inversely proportional to the theory that the high risk occurs in the age range too young or too old. This is due to other factors that affect the occurrence of maternal death in that age range such as the history of the disease owned by the mother. This is in line with a study conducted in Surabaya in 2016, from the results of the study can be concluded there is an influence of the



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history of disease on the risk of maternal death. Mothers who have a history of certain diseases have a 27.74 times greater risk of maternal death than those with no history of the disease.<sup>9</sup>

The frequency of antenatal care shows the most maternal deaths occur in mothers with a history of antenatal care more than 4 times, which is as much as 92.5% (37 people). Regular antenatal examination is at least 4 times during pregnancy and the examination is carried out by health workers aimed at early detecting the possibility of complications arising during pregnancy such as pre eclampsia, anemia, chronic energy deficiency, pregnancy infection and antepartum bleeding. These conditions are some of the risk factors for maternal death. Good antenatal care, so far only seen from the number of visits, regardless of the quality of visits pregnant women include understanding and awareness of pregnant women about their condition so that it affects the decision-making process.<sup>10</sup>

Based on this study shows that maternal deaths that occurred in Wonosobo District from 2018-2020 most occurred in multipara mothers.

The table above shows that maternal mortality occurs mostly in mothers with pre-term gestational age categories (<38 weeks). Preterm birth is a multifactorial process in preeclampsia/

eclampsia helpers of childbirth tend to end pregnancy. This leads to an increased prevalence of preterm. Etiology of pre eclampsia/eclampsia is one of the causes of preterm labor due to the presence of inflammation desidua-korioamnion begins with the activation of phospholipids A2 which releases arachidonic acid material from the amniotic membrane of the fetus, so that free arachidonic acid increases for prostagladin synthesis. Andotoxins in amniotic water will stimulate desidua cells to produce cytokines and prostagladines that can initiate the labor process.<sup>11</sup>

This study showed that mothers who experienced deaths in Wonosobo District in 2018-2020 were most helped by Obstetricians, which amounted to 23 people (57.5%). Ministry of Health of Indonesia in 2016, mentioned that labor assistance by health care provider is a safe delivery service carried out by competent health workers and in accordance with the first message of the key to Making Pregnancy Safer (MPS) that every delivery should be helped by trained health workers. The gap in the results of this study is likely due to the practice in the field of health workers lack screening, early screening and handling of complications that are not appropriate and appropriate.<sup>11</sup>

Maternal deaths in Wonosobo District in 2018-2020 were most common in hospitals, which was 80.0% (32 people).



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Maternal mortality in this study was most common in hospitals, as hospitals are referral centers in case of complications during pregnancy, childbirth and postpartum. In developed countries, the incidence of death is more in the hospital, because if there are complications should get treatment or medical services in the hospital. Globally, 80% of maternal causes of death are direct causes of complications during pregnancy, childbirth and postpartum.

### CONCLUSION

The trend of maternal deaths in Wonosobo District tends to increase in the last three years (period 2018-2020), in 2018 as many as 9 people and increased to 16 people in 2019, then experienced a slight decrease in 2020. The most maternal deaths in Wonosobo District in 2018-2020 based on educational background are mothers who have low education (elementary school/middle school) aged 20-35 years, occur in multipara mothers with a good antenatal care history (>4 times). Most maternal deaths in Wonosobo District in 2018-2020 occurred during the niphias with the cause of death of Pre Eclampsia/Eclampsia.

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## PRENATAL YOGA REDUCE LOW BACK PAIN IN THIRD TRIMESTER PREGNANT WOMEN IN PUBLIC HEALTH CENTER KEDUNGmundu SEMARANG

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### ABSTRACT

**Background:** Pregnant women have different psychological and physiological changes every quarter, one of them is discomfort that occurs in the third trimester including back pain. Data from Kedungmundu Public Health Center Semarang in December 2018–February 2019 there are 79 (73.1%) third-trimester pregnant women experiencing low back pain. This study analyzed the effect of prenatal yoga on low back pain in third trimester pregnant women at Kedungmundu Public Health Center Semarang. **Research design:** quantitative design with *one group pretest posttest design* without control using purposive random sampling technique. Start from October 2018–July 2019 at Kedungmundu Public Health Center Semarang, respondents were 18 pregnant women. Data was collected by observation sheet, using univariate and bivariate analysis methods. **Results:** The average intensity of back pain before prenatal yoga is 4.17 and after prenatal yoga is 2.50 with the results of the calculation of the T-test amounting to 0.000 ( $\leq 0.05$ ). **Conclusion:** Prenatal yoga has an effect on back pain in third trimester pregnant women at the Kedungmundu Health Center Semarang

**Keyword :** prenatal yoga; low back pain; pregnancy woman; third trimester

### INTRODUCTION

Pregnant women have different psychological and physiological changes that are different in each trimester. Some of the discomforts that occur in the third trimester are increased frequency of urination, leg cramps, hyperventilation, shortness of breath, dependent edema, heartburn, constipation, tingling and numbness in fingers, insomnia, and back pain [1]

Low back pain is one of the most common complaints in pregnancy, especially in the lumbosacral region. Exercises that focus on stretching and strengthening the back and abdominal muscles are often

recommended to relieve pregnancy-related pain [2]

The University of Ulster conducted a survey in 2014, consisting of 157 pregnant women who filled out a questionnaire, 70% complained of pain in the spine [3]. The phenomenon of back pain is usually a problem experienced by every pregnant woman, from 50% to 70%, based on previous studies in various countries [4]

Back pain can be treated pharmacologically and non-pharmacologically. Pharmacological therapy can be given with non-steroidal anti-inflammatory agents, analgesics,



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and muscle relaxants [5]. Non-pharmacological methods can be carried out through activities without drugs, including distraction techniques, self-hypnosis, reducing pain perception, massage stimulation, endorphin, pelvic tilt, exercise warm baths, hot or cold compresses, good body mechanics and regular exercise. Non-pharmacological methods are also cheaper, simple, effective, and without adverse effects [6][7][8]

Yoga is a non-pharmacological method to increase the mother's strength and flexibility and increase her ability to be more in tune with her body, because yoga is a body exercise, breathing exercise, and meditation [9], [10]

Several international studies have shown that yoga is proven to improve quality of life, reduce depression, reduce anxiety, reduce labor pain and shorten the length of labor. In addition, yoga can also improve gait, flexibility and posture stability [11], [12]

Research of Dewi Chandra Official, et al (2017) entitled "The Effect of Yoga on Lower Back Pain in Third Trimester Pregnant Women at the Kalikajar I Health Center, Wonosobo Regency" it was found that there was a significant effect of yoga on reducing the intensity of low back pain in pregnant women [13]

Preliminary survey conducted at the Kedungmundu Health Center Semarang, back pain is one of the physiological problems that many pregnant women experience in the third trimester. There were 79 (73.1%) pregnant women experienced back pain in the third trimester who experienced back pain in the last 1 to 2 months before birth. Health

workers provide calcium therapy to reduce back pain complaints and strengthen bones, as well as health education about mobilization and rest patterns.

The results of interviews with 10 third-trimester pregnant women, 4 of them experienced back pain but were still able to carry out their usual activities. 6 pregnant women who experience back pain need help from their families to do household activities such as sweeping and mopping. Pregnant women in overcoming these complaints, 3 pregnant women do light exercise whenever there is time, such as a short walk in the morning/evening. 7 pregnant women who experience back pain, rest for a while every time back pain comes. Pregnant women routinely take calcium and drugs given by health workers.

The purpose of this study was to analyze the effect of prenatal yoga for low back pain in third trimester pregnant women at Kedungmundu Health Center Semarang. The author is interested in taking the title of the research on "The Effect of Prenatal Yoga on Back Pain in Third Trimester Pregnant Women at the Kedungmundu Health Center Semarang".

### MATERIALS AND METHOD

The research design used was pre-experiment by design one group pretest-posttest design without control. This type of research used is quantitative with purposive random sampling technique. The research design has a pretest before being given treatment and a posttest after being given treatment. This study used



one group. Third trimester pregnant women where prior treatment was carried out pretest (initial test) measured the intensity of back pain using the Numerical Rating Scale (NRS) and after the treatment the sample was given posttest (final test) the intensity of back pain was measured again after being given yoga. Yoga is given 4 times within 2 weeks with a yoga duration of 30 minutes. This measurement aims to compare the results before and after being given treatment. This research has passed ethical clearance with number 442/KH.KEPK/KT/III/2019.

## RESULTS

Table 1 The intensity of back pain in third trimester pregnant women at the Kedungmundu Health Center Semarang before prenatal yoga

Pain Intensity	Mean	Median	SD	Minimal Maximal
Before				
Prenatal Yoga	4.17	4.00	1.581	2-7

Based on table 1, it can be seen that the average pain intensity before prenatal yoga is 4.17, the median value is 4.00, the standard deviation value is 1.581, the minimum and maximum values are between 2-7 pain scales.

Table 2 Intensity of back pain in third trimester pregnant women at Kedungmundu Health Center Semarang after prenatal yoga

Pain Intensity	Mean	Median	SD	Minimal Maximal
After				
Prenatal Yoga	2.50	3.00	1.505	0-5

Based on table 2, it can be seen that the average pain intensity before prenatal yoga is 2.50, the median value is 3.00, the standard deviation value is 1.505, the minimum and maximum values are between 0-5 pain scales.

Table 3 Statistical Test Results of Back Pain Intensity

Pain Intensity	Mean	P-value
Before Prenatal Yoga	4,17	0,000
After Prenatal Yoga	2,50	

Based on table 3 shows the results of bivariate analysis using the Paired T-Test statistical test and obtained a P-value = 0.000 ( $P < 0.05$ ) so that there is an effect of prenatal yoga on back pain in the third trimester pregnant women at the Kedungmundu Health Center Semarang.

## DISCUSSION

Prenatal yoga (yoga during pregnancy) is one type of modification and hatha yoga that is adapted to the condition of pregnant women. The purpose of prenatal yoga is to prepare pregnant women physically, mentally, and spiritually for the birth process [14].

Yoga is a non-pharmacological method to increase the mother's strength and flexibility and increase her ability to be more in tune with her body, because yoga is a body exercise, breathing exercise and meditation. Prenatal yoga practice is beneficial for pregnant women who experience back pain, anxiety, stress, depression and sleep disorders [9]. Yoga is a cost-effective intervention for treating low back pain [15]



The research of Kawanishi et al has mentioned the preventive and therapeutic effects of Yoga in the prenatal phase. Yoga has been helpful in relieving low back pain as well as yoga has helped reduce stress, depression, anxiety, and pregnancy-related complications [16]

Prenatal yoga is an effective exercise in reducing back pain in pregnancy, prenatal yoga teaches relaxation, breathing, and body positioning techniques to increase strength, balance and reduce pain [14]

Musculoskeletal changes during pregnancy will be felt with increasing gestational age which causes stretching and instability of improper body posture. This causes fatigue in the muscles that are at risk of shifting the center of gravity forward due to excessive body weight so that the thoracic spinal compensatory curve (kyphosis) and the lumbar curve become lordosis. This condition will begin to be felt in the second and third trimesters of pregnancy. The incidence of low back pain felt by pregnant women often occurs in the lumbosacral area [17]

The pain can cause difficulty walking. This back pain can be associated with pelvic disorders such as infection. Other complications of back pain are worsening mobility which can impede activities such as driving a vehicle, caring for children and affecting the mother's work, insomnia causing fatigue and irritability [5].

Dr. Vivek Narendran of the Cincinnati Children's Hospital Medical Center in Ohio, United States, said yoga practice can help increase blood flow to the placenta, reduce the distribution of maternal stress hormones to the fetus's body, reduce the release of hormones that trigger birth, there

by reducing the possibility of premature birth [5].

Prenatal yoga can also stimulate the release of endorphins which can provide comfort and relaxation so that it can reduce pain, improve memory, increase appetite, increase breathing, sexual ability and can lower blood pressure [18].

Endorphins are endogenous opioid neurotransmitters or neuromodulators that inhibit the delivery of pain stimuli by attaching to opiate receptors in the peripheral nervous system or central nervous system which can block pain messages released in response to pain and increase pain inhibition. [6]

Yoga can accelerate the body's blood circulation, can flex the back muscles and can increase client awareness so that it can easily respond to the occurrence of pain in the mother's body, yoga poses can stimulate the muscles in the back and lengthen the back muscles and can block the onset of pain, especially in the back. Skeletal muscles that experience spasms due to an increase in prostaglandins will relax, resulting in vasodilation of blood vessels and an increase in blood flow to areas experiencing ischemia and spasm. Smooth blood flow can stimulate the brain to produce endorphins hormones [19]

That way, with prenatal yoga, pregnant women's low back pain can be overcome without pharmacological treatment



## CONCLUSION

The results showed that prenatal yoga can reduce back pain in third-trimester pregnant women because prenatal yoga stimulates the release of endorphins which can provide comfort and relaxation, so that it can reduce pain. It is hoped that pregnant women can apply efforts that can reduce back pain, one of which is prenatal yoga. Health workers can use prenatal yoga to reduce back pain complaints and can develop other Natural Therapy in providing interventions to patients and can minimize the use of pharmacological drugs. Further researchers can use samples with similar patterns of daily activities

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### The Effectiveness of Herbal Galactagogues in Increasing Breast Milk Production: A Systematic Literature Review

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#### ABSTRACT

**Background:** Galactagogues is defined as a specific substance that may stimulate or increase breast milk production. The breast milk supply is influenced by prolactin hormone. This research identifies the effectiveness of herbal galactagogues in increasing prolactin levels.

**Methods:** Google Scholar and PubMed were used as a database to search articles published between 2011 and 2021. **Results:** Based on 480 initial articles identified, this study analyzed 5 relevant articles that met the inclusion criteria. The articles obtained discussed several herbal galactagogues, namely fenugreek, garlic, katuk, and fennel. Four of five articles show significant results the use of herbs. **Conclusion:** Fenugreek, garlic, katuk, and fennel have been indicated to increase prolactin and improve breast milk due to its high nutritional content and phytochemical. Herbal galactagogues should be consumed carefully and still emphasize balanced nutrition obtained from daily meals to improve milk productions.

Keyword : herbal galactagogues; breast milk; breastfeeding; lactation;

#### INTRODUCTION

Breast milk production influences the successful of exclusive breastfeeding. Several treatments have been found to increase breast milk production. Oxytocin massage is one of them, by massaging the back in a circular motion using both thumbs on both sides of the spine (Triana et al., 2019). The movement is carried out starting from the neck down the spine and repeated (Sulaeman et al., 2016). The use of essential oils, such as lavender essential oil, also may

improve the effect of oxytocin massage (Agustie et al., 2017). This essential oil is used as a relaxing agent that may reduce stress and anxiety (Malcolm and Tallian, 2017). Other treatments that influence milk production are routine breast care, hypnobreastfeeding, marmet massage, breast acupressure, and dry cupping therapy (Dini et al., 2017; Emilda and Juliastuti, 2020; Erbaba and Pinar, 2021; Gustirini and Anggraini, 2020; Parwati et al., 2017). Frequently breast care, twice a day for 14 days, has been shown to increase milk production, indicated by the infant's weight gain (Gustirini and Anggraini, 2020). Another study



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has revealed that the combination of several therapies may significantly increase breast milk (Dini et al., 2017).

In pharmacological intervention, domperidone and metoclopramide have been found, increase milk (Shen et al., 2021). Consumption of domperidone 10 mg three times a day or 20 mg three times a day for 6 weeks showed a clinically significant improve the volume of breast milk (Knoppert et al., 2013). Furthermore, metoclopramide also can elevate the serum prolactin level (Tabrizi et al., 2019). A study explained that sulpiride, thyrotrophin-releasing hormone, oxytocin, growth hormone, and chlorpromazine also may help the mother to boost their milk production (Sultana et al., 2013). Those medicines are part of galactagogues. The word “galactagogues” is defined “as a specific substance that may stimulate or improve milk production and milk flow” (Law and Martin, 2020). Galactagogues are divided by two, pharmacological galactagogues and herbal galactagogues. Medicines as a pharmacological galactagogues may bring several side effect, such as arrhythmia, increase risk of depression, irritability, diarrhea, headache, abdominal pain, risk of engorgement, even tardive dyskinesia (BCW Lactation Service, 2017; Hale et al., 2018) and also effect the body, extremity or face move involuntary (e.g tremor) (Agrawal et al., 2020).

Herbal galactagogues are plant based intervention, such as fennel, torbangun leaves, moringa, curcumin, and others (Monika and Yunita, 2021). The side effects of this type of galactagogues are very few (Sim et al., 2015). It is important to understand the effectiveness of herbal galactagogues. This research identifies the effectiveness of herbal galactagogues in increasing prolactin levels. This review is useful to enrich the literature regarding the breastmilk production intervention based on evidence.

### MATERIALS AND METHOD

Our method as a Systematic Literature Review method. Systematic Literature Review is a secondary study through the linear process by searching, collecting, critically selecting and evaluating, and merging existing primary studies based on appropriate topics regarding a particular problem (Dresch et al., 2015).

The research question was determined based on the aim of the research. The authors used the PICO framework to help arrange the focused question. PICO framework may ensure span of scope for a review steady with the research objectives, this framework is commonly used in a systematic review. The PICO framework's format describes “P” as population or people, “I” as intervention, “C” as control, and “O” as Outcomes (Purssell and McCrae, 2020). Table 1 shows the PICO framework from this study.

Based on the framework, the following research questions can be determined:

(1) What herbal ingredients can be used as a



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galactagogues?

The first research question is to identify the herbal ingredients, like a plant, veggie, fruit, spice, and others that can be consumed as a galactagogues and can smooth breastfeeding.

(2) How is the effectiveness of herbal galactagogues to increase prolactin serum level?

The second research question is concerning the effect of herbal galactagogues, how big the effectiveness of galactagogues in increasing prolactin serum level that implies in increasing of breast milk. Prolactin is the hormone that work to produce breast milk, so that the level of this hormone can be measured as an indicator of breast milk supply.

#### Search Strategy Design

We used two electronic databases, Google Scholar and PubMed. The search used three main keywords, namely "effect", "natural galactagogues", and "prolactin level". We also used several relevant synonyms as alternative keywords, they are "herbal galactagogues, botanical galactagogues, fruit galactagogues, and veggie galactagogues." We used Boolean 'OR' and 'AND' as a connector.

Selected articles with following criteria: 1) Original research article; 2) Publication period 2011-2021; 3) Articles in English; 4) The research subjects were breastfeeding mothers with term babies; 5) Prolactin

measurement. The results of the article search were collected and processed using Mendeley software. To systemize the process of inclusion criteria, we opted Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). The selection of articles is presented in a flow diagram in Figure 1.

This study found 5 relevant articles that related to the research question and inclusion criteria. To provide greater insight into the context, an overview was provided in Table 2.

## RESULTS AND DISCUSSION

The articles obtained discussed several herbal galactagogues, two studies focused on fenugreek (Abdou and Fathey, 2018; Ahmed, 2015), other studies discussed fennel (Keshtkari et al., 2020), katuk leaves (Indrayani et al., 2020), and one article discussed a mixture of herbal ingredients with the main ingredients are fenugreek and garlic (Srinivas et al., 2014). Four of five articles show significant results the use of herbs.

#### Fenugreek seeds as a galactagogue

*Trigonella foenumgraecum* or known as fenugreek (AGRIHORTICO, 2019) is one of the herbs that can be used as a breast milk stimulant. This dicotyledonous plant comes from the Fabaceae family. In each region or country, fenugreek is called by different names. In Hindi fenugreek is known as Methi, in Arabic, it is known as Hilbeh and in Latin, it is called Greek hay (Kumar et al., 2019). However, this plant is native to the Mediterranean, western Asia, and southern Europe regions (Hume and Orr, 2019).



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Fenugreek seeds are rich in nutrients, especially lipid, fiber, fatty acid, and vitamins such as C, B1, B2, and A (Ahmad et al., 2016). The presence of these complex components makes this plant seeds plenty of benefits, including for diabetic treatment, cancer therapy, a high source of antioxidants, help lose weight, reduce heartburn, and enhancing milk production (Garg, 2016; Goldstein and Goldstein, 2012; Hume and Orr, 2019; Pal and Mukherjee, n.d.). For more specific, the fenugreek seed's nutritional component describe in (Table 3) and (Table 4).

According to the research conducted by (Abdou and Fathey, 2018) showed that consuming 200 ml of fenugreek tea that contained 50 gr of fenugreek seeds every day for 15 days may increase prolactin levels in early-stage breastfeeding up to an average of 152.77 ng/ml compared to not consuming fenugreek at all. The study also explained a significant breast milk volume increasing on the third day in both groups, this increase was comparable to the amount of prolactin on the third day as well. However, there was a major difference in the volume of breast milk and prolactin levels between the two groups, the group consuming fenugreek were higher in both parameters. In addition, (Ahmed, 2015) explained 500 mg fenugreek seeds powder may improve prolactin levels with an average increase of 10.9  $\mu\text{g}/\mu\text{l}$  if consumed orally 3 times a day for 12 weeks, mothers in experimental group also experienced

significant weight gain. Moreover, (Ahmed, 2015) quantified the nutrients contained in the fenugreek powder he used, it was found that there was enough decrease in fiber content but the number of carbohydrates, protein, and ash there was not much difference. Consumption of herbs mixed with fenugreek seeds also can promote and increase breast milk volume production and infants' weight (Bumrungpert et al., 2018; El Sakka et al., 2014) in line with the increase of prolactin (Abdou and Fathey, 2018).

However, this is opposed to Reeder's study on mothers of preterm infants, the results showed that there was no effect consumption of three capsules of fenugreek (575 mg x 3) on prolactin levels and also breast milk volume. Even known that prolactin levels in women who were given fenugreek decreased on day 10 and day 15 of the experiment (Reeder et al., 2013). Even though the existence of fenugreek as an herbal galactagogue is quite popular and favorable among lactating mothers (McBride et al., 2021; Othman et al., 2014; Sim et al., 2013).

Based on the study done by (Sevrin et al., 2020) on to rat model, it was concluded that fenugreek seeds might elongate the duration of peak milk synthesis by regulating the axis of insulin, growth hormone, and IGF-1 and activating oxytocin secretion that refers to the increased milk ejection. This occurs due to increased genes related to macronutrients synthesis and energy metabolism, also increased genes in the mammary glands. Fenugreek seeds have a high source of energy which is required by lactating mothers to produce breast milk. High sources of PUFA in fenugreek



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seed especially linoleic acid also needed to enriched breast milk nutrition and fulfill the infants' nutrition intake (Hanson et al., 2015; Mahmood and Yahya, 2017; Munshi et al., 2020). These rich energy and antioxidant seeds may be beneficial for nutrition supplementally (Mahmood and Yahya, 2017), specifically for lactating mothers that may enhance milk production. Fenugreek seeds as galactagogue may be processed into powder (Ahmed, 2015; Bhuvaneswari, 2016), consume the soaked water of fenugreek seeds (Ravi and Joseph, 2020), or made into drinks such as tea (Abdou and Fathey, 2018; El Sakka et al., 2014; Ghasemi et al., 2015; Turkyilmaz et al., 2011). Moreover, it can be consumed together with other ingredients which also have high nutritional value to increase its efficacy as a galactagogue (Bumrungpert et al., 2018; Srinivas et al., 2014).

#### **Garlic as a galactagogue**

Another plant-based galactagogue is garlic. Garlic is the most common spice herb that is usually used for cooking to add flavor (Li et al., 2016). Garlic originates from Central Asia, besides being used as a cooking herb garlic has long been used in the medical sector likewise, including antidiabetic, antimicrobe, antifungal, antivirus, anti-inflammatory, treating asthma, control blood pressure, galactagogue, etc. (Ashraf et al., 2013; Fratianni et al., 2016; Hsieh et al., 2019; Lall, 2018; Mohi El-Din et al., 2014; Omotoso et al., 2019; Pandey et al.,

2020; Srinivas et al., 2014; Younas and Hussain, 2014). This kind of spice herb has the botanical name *Allium sativum L* and belongs to the Amaryllidaceae family (Smyly, 2018). Garlic bulbs may be consumed directly (fresh), processed into pickled, or even cooked mixed with other food ingredients (Lim, 2015). Raw garlic consist of high carbohydrates and protein, vitamins, minerals and is also rich antioxidants, therefore garlic may be very useful for preventing and treating several disease and disorders (Dalhat et al., 2018). The processing of garlic nevertheless can affect its nutritional content, processing using intense heat may lower the garlic's nutrients, particularly by frying (de Queiroz et al., 2014). (Table 5) shows nutritional components contained in raw garlic.

Garlic has a strong aroma. This scent comes from the phytochemical that contained in garlic organosulfur compounds plays role in flavor and odor characteristics in *Allium sativum L* (Miękus et al., 2020). According to Brodnitz (1971), the garlic's scent appears when the garlic bulbs are crushed (cutting, chewing, etc), which activates some enzymes and phytochemicals it contains. Consuming garlic will also cause the body odor smells a slightly onion-like, organosulfur such as *Allyl methyl sulfide* (AMS), *Allyl methyl sulfoxide* (AMSO), and *Allyl methyl sulfone* (AMSO<sub>2</sub>) are often found in urine, sweat, and even breast milk in someone who consumes garlic (Fialová et al., 2016; Gao et al., 2013; Qin et al., 2020; Scheffler et al., 2019). AMS content in breast milk increases immediately or two to three hours after consuming 3 grams of raw garlic, along with AMSO and AMSO<sub>2</sub> content. Increasing these



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three compounds will last for several hours in breast milk and make its little bit smell like garlic (Scheffler et al., 2016). The concentration of soluble AMS, AMSO, and AMSO<sub>2</sub> in breast milk may decrease after being exposed to high temperatures, but this still allows the breast milk to smell garlic-like (Qin et al., 2020).

Meanwhile, the babies mainly the newborn recognizing objects around them with gustatory and olfactory sense (Mizuno, 2011). The human milk odor affects mother-infant interaction during breastfeeding (Loos et al., 2019), as reported by Menella, J. A (1993), at the time mothers consuming garlic as a galactagogue its believed to improves the quality and quantity of suckling time and infants suckle more often due to the light scent of garlic and taste change in breast milk (Dominguez, 2013; Eid and Jaradat, 2020; Oppong Bekoe et al., 2019; Spahn et al., 2019). When the infants feed more often, the milk production will rise and prolactin levels will increase (Liu et al., 2020). Despite some babies love the smell, other babies just can't deal with it. Indeed, the physiological effect of garlic as a breast milk enhancing agent is still unclear, and there is a lack of literature discussing the effectiveness of garlic to increase prolactin levels and enhance milk.

#### Katuk as galactagogue

This green plant is quite popular and has often been utilized and consumed in

Indonesia since a long time ago, people believe that the leaves of this plant may facilitate breastfeeding when consumed. Furthermore, the leaves may also be used and traded as a cough treatment, antifebrile, food coloring, goat food, and some property for traditional rituals or ceremonies (Hayati et al., 2016). There are other benefits as a traditional medicine from the leaves of this shrub plant. It has a high content of antioxidant properties, it may be helpful for antidiabetic, anti anemia, anti-inflammatory, analgesic, anti-bacterial, and as a galactagogue (Desnita et al., 2018; Ermi Hikmawanti et al., 2021; Handayani et al., 2020; Ngadiarti et al., 2021; Nurfadilah et al., 2021; Suparmi et al., 2021; V. S and Bhaskar, 2012). This green leafy plant known as katuk (Indonesia) (*Sauvagesia androgynus* (L.) Merr) goes to *Euphorbiaceae* or spurge family (Siddiq and Uebersax, 2018). *Sauvagesia androgynus* is known as a different name in some other countries, some people name it as sweet leaf, in China it is called mani cai, in Thailand, it is named as pak-wanban, in Malaysia commonly known as cekur manis and in Vietnam, it is called raungot . Katuk growth spread in Asia (e.g. Indonesia, China, Malaysia, Sri Lanka, Vietnam, Papua New Guinea, India, and Philippines), mostly tropical Southern Asia. It can grow with enough water and in a damp atmosphere (Santoso, 2013 in Fikri and Purnama, 2020).

Due to the many good benefits and nutrients of sweet leaf, this plant is also called the multivitamin plant (Agrawal et al., 2014). It has high antioxidant, alkaloids (papaverine), and phytosterol (Ermi Hikmawanti et al., 2021; Kumar



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and George, 2015; Senthamarai Selvi and Baskar, 2012), papaverine and phytosterol content notably quite high in katuk leaves can increase prolactin and oxytocin levels which play role in breastfeeding. Depend on the experiment done by (Soka et al., 2011) using an animal (mice) model, administration of mature katuk leaf extract remarkably increased prolactin and oxytocin gene expression, the higher concentration of extract consumed, the higher oxytocin increased. It is because the alkaloids (papaverine) in mature *Sauropus androgynus* leaves work to facilitate hormonal circulation by vasodilation and relaxing the smooth muscles. Although, concentration of extract consumed was inversely proportional to prolactin releasing. As mentioned by Marwah (2010), the retinol content, vitamin A derivated, contained in *Sauropus androgynus* leaves, will react with fatty acids in the body and triggering the release of prolactin (Fikri and Purnama, 2020). For further full nutrition list, explained in (Table 6).

Practically, katuk leaf has proven some evidence to increase prolactin levels and breast milk volume. (Yani et al., 2016) reported consuming katuk leaf may increase breast milk production in breastfeeding mothers in Jombang, Indonesia. Twelve of fifteen mothers reportedly have smooth and very smooth breast milk production. Unlike previous research, (Mutika, 2018)

combined breast care practice and consumption of katuk leaves to increase prolactin levels and infant weight. This research showed a significant result, the average of two variables both higher than the other group (average infant weight= 3.4773 kg; prolactin levels= 233.42364 mg/ml). Not only the combination of some treatment and katuk leaf ingestion but also the combination of another leaf may be helpful to smooth breast milk production (Purnani et al., 2020). Katuk leaf biscuit also reveals its effectiveness to enhance breast milk volume and rise basal serum prolactin levels. Consume 900 gr (9 pieces) katuk leaf biscuit that contained 100 mg katuk leaf extract per piece shows increasing breast milk volume remarkably on the 10<sup>th</sup> day of the experiment (Handayani et al., 2020). In the same way, the consumption of 9 pieces of biscuits of katuk leaf for 14 days in a row may help increase prolactin serum (Indrayani et al., 2020).

Nonetheless, *Sauropus androgynus* ingestion reported may be liable for developing bronchiolitis obliterans by inducing apoptosis of airway endothelial cells (Hashimoto et al., 2013). Further study found consumption of katuk leaf juice and katuk soup in female Wistar rats significantly cause differentials in macroscopic and microscopic lung volume and bronchial lumen, but there is no physical condition changed (Lorensia et al., 2015). However, this is not clear yet and still requires further research.

### Fennel as galactagogue

Fennel is endemic in Southern Europe and the Mediterranean region (He and Huang, 2011), it derives from the *Apiaceae* family. The name



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fennel (*Foeniculum vulgare* Mill) (Integrated Taxonomic Information System (ITIS) On-Line Database, n.d.) comes from the word “marathon”. Back in 490 BC where there was a war against the Persians in the field full of one kind of plant in Marathon, and until now that plant is known as fennel. Whereas *Foeniculum* is taken from *foenum* (Latin word), the meaning is “hay” (Maheshwari et al., 2014). It is often used as a traditional aromatic culinary herb, besides that fennel has benefits in medical properties and has been used for thousands of years (Nazir et al., 2020). All the parts of this plant are edible, from the bulbs, stems, shoots, leaves, flowers, seeds, fruits, and even the essential oil (Lim, 2013). The seeds are often used as a flavoring agent or spice, treating obesity and hirsutism, renal function protection, hepatoprotective agent, and it may increase the levels of estrogen, progesterone, and also prolactin (A. Elghazaly et al., 2019; Akha et al., 2014; Nazir et al., 2020; Saddiqi and Iqbal, 2011; Sadeghpour et al., 2015; Sadrefozalayi and Farokhi, 2014). Since it may increase these three hormones, it can also manage postmenopausal symptoms including depression and anxiety, as well as a stimulant for breastfeeding in nursing mothers (Ghazanfarpour et al., 2018; Rahimikian et al., 2017). The fennel essential oil also may be beneficial for antimicrobial, anticancer, antidiabetic, antifungal, and help reduce the PCOS symptoms (Belabdelli et al., 2020; El-Soud

et al., 2011; Ghasemian et al., 2020; Ghavi et al., 2019; Zaahkouk et al., 2015). In addition, according to new reports, consumption of *Foeniculum vulgare* may decrease hypertension and reduce menstrual pain (dysmenorrhea) (Abuzaiton et al., 2015; Bokaie et al., 2013).

Fennel has estrogenic activity, a study conducted by (Rifqiyati and Wahyuni, 2019) showed fennel leaves may enlarge the lactiferous ducts' lumen diameter and diameter of alveoli in the mammary gland. Additionally, it may increase milk volume by increasing the activity and total of active alveoli in the mammary gland. The presence of estrogenic activity in *Foeniculum vulgare* because this plant contains photoanethole, dianethole, and anethole. The anethole can increase secretion of prolactin and affect milk production inducing, it because anethol has a structure that is not much different from dopamine (Lis-Balchin, 2009 in Hosseinzadeh et al., 2014). While photoanethole and dianethole, the structure has been related to diethylstilbestrol and stilbene (Garga et al., 2009 in Abbas et al., 2020). Fatty acids content in *Foeniculum vulgare* is also quite high, there are twenty-one types of fatty acids quantified in fennel (Badgujar et al., 2014). For more details, it can be seen in (Table 7) regarding the nutritional content in *Foeniculum vulgare*.

The study has revealed that fennel didn't affect the level of prolactin, breast milk outcome, and the infants' weight gain (Keshtkari et al., 2020), although it is opposed with another study done by (Ghasemi et al., 2014). (Ghasemi et al., 2014) concluded that “*giving 3 g black tea contained 7.5 g fennel seeds three times a day can improve*



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*breast milk sufficiency, including infant weight gain, head circumference, defecation and urine output, and the number breastfeeding times.” But it’s not improved and affects the infants’ height. an experiment using the mice model also showed increases in prolactin, estrogen, and progesterone in female mice who give 100 and 200 mg/kg of fennel seeds extract for 5 days in a row, intraperitoneally (Sadeghpour et al., 2015).*

### CONCLUSION

An herbal galactagogue is quite widely used in society, especially people who respect their local customs. Some types of herbal galactagogue that can be used include fenugreek, garlic, katuk leaves, and fennel. This plant may increase prolactin and improve breast milk due to its high nutritional content and phytochemical. Not to mention some of the side effects that may arise after consuming it. Herbal galactagogue should be consumed carefully and still emphasize balanced nutrition obtained from daily meals to improve milk production.

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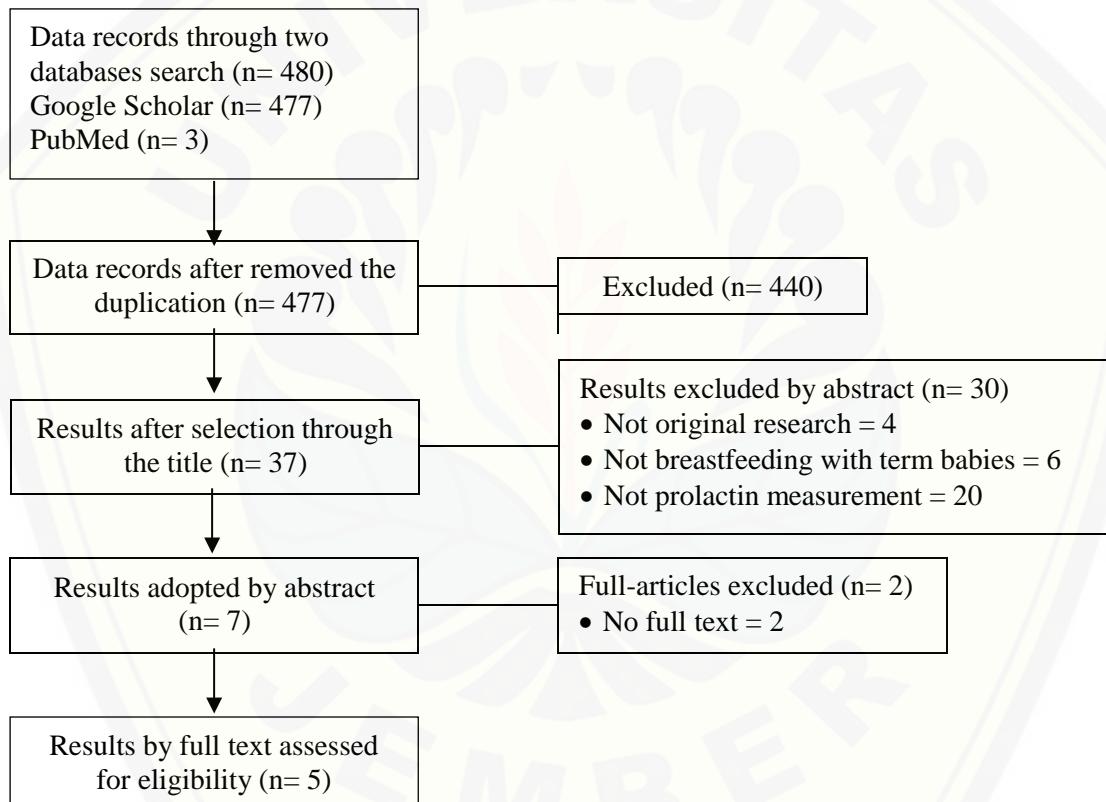


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**Table 1.** PICO Framework

Population	Intervention	Comparison	Outcomes
1. Breastfeeding mothers 2. Mothers with insufficient milk	1. Natural galactagogue 2. Herbal galactagogue 3. Botanical galactagogue 4. Veggie galactagogue 5. Fruit galactagogue	1. No treatment 2. Another galactagogue	All studies linked to result of natural galactagogue for increasing prolactin level in breastfeeding mother



**Fig. 1.** PRISMA-flow diagram of the studies

**Table 2.** Articles overview



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Author and year	Title	Use of herbal galactagogue	Study design	Data collection	Sample size	Result
Srinivas et al, 2014 (Srinivas et al., 2014)	The Effect of Naturally Formulated Galactagogue Mix on Breast Milk Production, Prolactin Level and Short-Term Catch-Up of Birth Weight in the First Week of Life	Two kinds of galactagogue mix: 1. Fenugreek mix: Water, turmeric, ragi flour, fenugreek (20 g), oatmeal, jaggery, coconut powder 2. Garlic mix: Water, curds or buttermilk, ragi flour, garlic (30 g), oatmeal, coconut powder, turmeric, jeera powder, coriander leaves, salt		Mother's clinical profile and demographic were records, infant's anthropometric were measured and compared between the groups before and after the intervention, also the level of prolactin serum was estimated using Electrochemiluminescence Immunoassay (ECLIA) and Elecsys nodule immunoassay analyzer then compared between the groups, before and after intervention	thirty couples of mother-infant in Kovai Medical Centre and Hospital, divided into 3 groups: 10 couples in experimental fenugreek group, 10 couples in experimental garlic group, and the third 10 couples in the control group	The mean prolactin serum level was significantly higher in both experimental groups compared to the control group ( $p<0.05$ ), also the infants in both experimental groups significantly had the lower maximum weight loss ( $p<0.05$ )
Ahmed, 2015 (Ahmed, 2015)	The Effect of Fenugreek Seeds Powder on Prolactin Level in Lactating Sudanese Mothers	500 mg fenugreek seeds powder		Obtained by calculated the mother's prolactin level in serum with Enzyme-linked immunosorbent assay (ELISA) and measured the body weight every 2 weeks for 12 weeks	Twenty lactating women in Khartoum teaching hospital, Sudan selected based on the result of the examination, principally examination of the disease and reproductive disorders. This lactating woman was divided into 2 groups, control and treated groups	The high carbohydrates content in fenugreek seeds powder significantly affected the weight gain of lactating mothers in the treated group ( $p<0.05$ ) and also fenugreek seeds powder consumption showed the increase of prolactin serum level in the treated group so significantly ( $p<0.05$ )
Abdou and Fathey, 2018 (Abdou and Fathey, 2018)	Evaluation of Early Postpartum Fenugreek Supplementation on Expressed Breast Milk Volume and Prolactin Levels Variation	200 ml Fenugreek tea (contained 50 g of fenugreek seeds)	Case-control study	Mothers who enrolled in this study were done health screening and filled out a dietary questionnaire. Data of breast milk volume is taken based on the amount of breast milk pumped per day using a manual breast pump with the same brand which has previously been trained how to use its pump. Mothers were	Sixty healthy mothers who were breastfeeding by expressing breast milk using the manual pump and their newborn babies were in the NICU at Ain	Drunk fenugreek tea has not only been shown to significantly improve volume expression of breast milk ( $p=0.023$ ) but also increase prolactin level ( $p<0.001$ ). However, this



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<p>Indrayani et al, 2020 (Indrayani et al., 2020)</p> <p><b>The Effect of Katuk (<i>Sauvages androgynous (L) Merr</i>) Leaf Biscuit on Increasing Prolactine Levels of Breastfeeding Mother</b></p>	<p>Katuk leaf biscuit</p>	<p>Randomized Controlled Trial design</p>	<p>Blood sampling was taken on the first day and 15<sup>th</sup> day (after the intervention was completed) around 8-10 am. The blood sample was tested using the ELISA method to obtain levels of basal serum prolactin. Monitoring done every two days involve frequency of breastfeeding, health conditions, subjects complaints, and constancy of eating the biscuit</p>	<p>Shams University Pediatric hospital for more than 2 weeks. The sixty mothers will be divided equally into 2 groups, case group and control group</p>	<p>happens only at the prior of lactogenesis, on the 1<sup>st</sup>-day evaluation. In the 8<sup>th</sup> and 15<sup>th</sup> days of intervention, the breast milk volume is not significantly different between the case and control group, as well with the level of prolactin which is not significant differs between 2 groups</p>
<p>Keshikari et al, 2020 (Keshikari et al., 2020)</p> <p><b>Comparison the Effect of Fennel on Maternal Serum Prolactin Level and Neonatal Weight Gain with Effect of Domperidone and Placebo</b></p>	<p>Fennel capsules (contained 1g fennel)</p>	<p>Randomized Clinical Trial design</p>	<p>Blood samples were taken two times before the study began and on the 14<sup>th</sup> day or the day after the intervention was complete. This study used the ELISA method to measure prolactin levels. The mothers' weight was also measured and recorded on the day of birth, 14<sup>th</sup> and 28<sup>th</sup> days</p>	<p>Postpartum mothers in the public health center in Bandung City who met the criteria (45 mothers), split up into 2 groups (treatment and control group). The treatment group consist of 22 mothers and the rest (23 mothers) goes to the control group</p>	<p>The use of katuk leaf biscuits to increasing breast milk is effective. Katuk leaf biscuits consumed for 14 days, 9 biscuits per day can increase basal serum prolactin levels significantly (<math>p &lt;0.05</math>)</p>



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**Table 3.** Nutrient composition of fenugreek raw seeds

Component	Contents	References
Energy value	5544.9 Kcal/100 g	(Mahmood and Yahya, 2017)
Total carbohydrate	66.86 g/100 g	(Mabrouki et al., 2015)
Non fiber carbohydrate	26.45 g/100 g	(Mabrouki et al., 2015)
Crude protein	23.79 g/100 g	(Mabrouki et al., 2015)
Crude fiber	13.42 g/100 g	(Mabrouki et al., 2015)
Neutral Detergent Fiber (NDF)	40.40 g/100 g	(Mabrouki et al., 2015)
Acid Detergent Fiber (ADF)	16.83 g/100 g	(Mabrouki et al., 2015)
Acid Detergent Lignin (ADL)	3.71 g/100 g	(Mabrouki et al., 2015)
Crude fat	7.15 g/100 g	(Mahmood and Yahya, 2017)
Saturated fatty acid	16.19% <sup>a</sup>	(Munshi et al., 2020)
MUFA	13.63% <sup>a</sup>	(Munshi et al., 2020)
PUFA	70.18% <sup>a</sup>	(Munshi et al., 2020)
Stearic acid	4.15% <sup>a</sup>	(Munshi et al., 2020)
Linoleic acid	42.19% <sup>a</sup>	(Munshi et al., 2020)
Ash	3.96 g/100 g	(Mabrouki et al., 2015)

<sup>a</sup>. The average yield of fenugreek seed oil extracted using four different solvents (ethanol, petroleum ether, acetone and hexane)

**Table 4.** Vitamin, mineral, and phytochemical composition of fenugreek raw seeds

Component	Contents	References
Vitamin C	43 mg/100 g <sup>a</sup>	(Doshi et al., 2012)
Vitamin B1	0.43 mg/100 g	(JN et al., 2018)
Vitamin B2	0.36 mg/100 g	(JN et al., 2018)
Vitamin A	3 ug/100 g	(JN et al., 2018)
Niacin	6 mg/100 g	(JN et al., 2018)
Na	18.67 mg/100 g <sup>a</sup>	(Jahangir Chughtai et al., 2017)
K	603.0 mg/100 g	(Al-Jasass and Al-Jasser, n.d.)
Mg	42.0 mg/100 g	(Al-Jasass and Al-Jasser, n.d.)
Cu	0.9 mg/100 g	(Al-Jasass and Al-Jasser, n.d.)
Mn	0.9 mg/100 g	(Al-Jasass and Al-Jasser, n.d.)
Zn	2.4 mg/100 g	(Al-Jasass and Al-Jasser, n.d.)
Fe	25.8 mg/100 g	(Al-Jasass and Al-Jasser, n.d.)
Calcium	84.17 mg/100 g	(Saini et al., 2016)
Phosphorous	515.7 mg/100 g	(Saini et al., 2016)
Folate	84 µg/100 g <sup>a</sup>	(Doshi et al., 2012)
Total Phenolics	132.3 mg GAE <sup>b</sup> /100 g	(Ali et al., 2015)
Tannins	71.8 mg CAE <sup>c</sup> /100 g	(Ali et al., 2015)
Flavonoids	12.3 mg CAE <sup>c</sup> /100 g	(Ali et al., 2015)
Phytic acid	6.57 mg/g DM <sup>d</sup>	(Mabrouki et al., 2015)
β-carotenes	12.12 µg/g DM <sup>d</sup>	(Mabrouki et al., 2015)
Lycopene	11.32 µg/g DM <sup>d</sup>	(Mabrouki et al., 2015)

a. Composition in a fenugreek seed powder

b. GAE= Gallic Acid Equivalent

c. CAE= Catechin Equivalent

d. DM= Dry matter



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**Table 5.** Nutritional components on raw garlic bulbs

Component	Contents	References
Energy	125 kcal/100 g fw <sup>a</sup> , <sup>b</sup>	(Botas et al., 2019)
Moisture	64.83 % <sup>c</sup>	(Najman et al., 2020)
Carbohydrates	23.4 g/100 g <sup>a</sup>	(Botas et al., 2019)
Fat	0.63 g/100 g <sup>a</sup>	(Botas et al., 2019)
Proteins	6.5 g/100 g <sup>a</sup>	(Botas et al., 2019)
Crude fiber	0.69 g/100 g	(Dalhat et al., 2018)
Total sugars	1.17 g/100 g <sup>a</sup>	(Botas et al., 2019)
Saturated fatty acid	43.53 % <sup>a</sup>	(Botas et al., 2019)
MUFA	17.8 % <sup>a</sup>	(Botas et al., 2019)
PUFA	38.7 % <sup>a</sup>	(Botas et al., 2019)
Ash	2.4 g/100 g <sup>a</sup>	(Botas et al., 2019)
Vitamin A	482.96 mg/100 g	(Dalhat et al., 2018)
Vitamin C	4.30 mg/100 g	(Dalhat et al., 2018)
α-Tocopherol	165 µg/100 g <sup>a</sup>	(Botas et al., 2019)
Total flavonoids	42.155 mg/100 g DM <sup>c</sup>	(Najman et al., 2020)
Total phenolic acids	44.29 mg/100 g DM <sup>c</sup>	(Najman et al., 2020)
Antioxidant activity	318.535 µmol TEAC <sup>d</sup> /g DM <sup>c</sup>	(Najman et al., 2020)
Mn	0.007 mg/100 g	(Dalhat et al., 2018)
Ca	83.83 mg/100 g	(Dalhat et al., 2018)
Cu	0.0005 mg/100 g	(Dalhat et al., 2018)
Fe	0.028 mg/100 g	(Dalhat et al., 2018)
Mg	3.14 mg/100 g	(Dalhat et al., 2018)
Na	4.06 mg/100 g	(Khalid et al., 2014)
K	50.66 mg/100 g	(Khalid et al., 2014)
P	9.86 mg/100 g	(Khalid et al., 2014)
Zn	0.53 mg/100 g	(Khalid et al., 2014)

<sup>a</sup> Obtained from the nutrient average yield of raw garlic from three different areas (Algarve, Trás-os-Montes, and Spain)

<sup>b</sup> Fw= Fresh weight

<sup>c</sup> Acquired from the nutrient average of conventional and organic garlic

<sup>d</sup> TEAC= Trolox equivalent antioxidant capacity



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**Table 6.** Katuk leaves nutritional value

Component	Contents	References
Energy	358.71 kcal/100 g	(Iwansyah et al., 2016)
Moisture	9.03 %	(Iwansyah et al., 2016)
Carbohydrates	45.09 g/100 g	(Iwansyah et al., 2016)
Fat	1.00 g/100 g	(Fikri and Purnama, 2020)
Proteins	29.46 g/100 g	(Iwansyah et al., 2016)
Crude fiber	9.86 g/100 g	(Iwansyah et al., 2016)
Fatty acid	62.92 g/100 g	(Awaludin et al., 2020)
Ash	9.71 g/100 g	(Iwansyah et al., 2016)
Ascorbic acid	190.83 mg/100 g	(Andarwulan et al., 2012)
Vitamin B1	0.10 mg/100 g	(Fikri and Purnama, 2020)
β-Carotene	35.58 µg/g	(Arumsari, 2017)
Total carotenoids	5.15 mg βCE <sup>a</sup> /100 g	(Andarwulan et al., 2012)
Total anthocyanin	1.53 mg/100 g	(Andarwulan et al., 2012)
Total flavonoids	43.63 mg QE <sup>b</sup> /g	(Iwansyah et al., 2016)
Total phenolic	27.49 mg GAE/g	(Iwansyah et al., 2016)
Terpenoids	4.03 g/100 g	(Awaludin et al., 2020)
Niacin	69 mg/100 g	(Platel and Srinivasan, 2017)
Alkaloid	1740 mg/100 g	(Platel and Srinivasan, 2017)
Ca	204.00 mg	(Fikri and Purnama, 2020)
Fe	3.89 mg/100 g	(Platel and Srinivasan, 2017)
Mg	664.90 mg/100 g	(Iwansyah et al., 2016)
K	45.70 mg/100 g	(Iwansyah et al., 2016)
P	83.00 g/100 g	(Fikri and Purnama, 2020)
Zn	1.26 mg/100 g	(Platel and Srinivasan, 2017)

<sup>a</sup> βCE= β-carotene equivalents

<sup>b</sup> QE= Quercetin equivalent



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**Table 7.** Nutritional value on *Foeniculum vulgare* seeds

Component	Contents	References
Energy	1440 kJ/100 g	(U.S. Department of Agriculture, 2019)
Moisture	6,24 %	(Bukhari et al., 2014)
Carbohydrates	52.3 g/100 g	(U.S. Department of Agriculture, 2019)
Crude fat	9.76 g/100 g	(Bukhari et al., 2014)
Crude protein	9.38 g/100 g	(Bukhari et al., 2014)
Crude fiber	18.21 g/100 g	(Bukhari et al., 2014)
Saturated fatty acid	0.48 g/100 g	(U.S. Department of Agriculture, 2019)
MUFA	9.91 g/100 g	(U.S. Department of Agriculture, 2019)
PUFA	1.69 g/100g	(U.S. Department of Agriculture, 2019)
Ash	12.97 g/100 g	(Bukhari et al., 2014)
Vitamin A	135 IU/100 g	(U.S. Department of Agriculture, 2019)
Vitamin C	21 mg/100 g	(U.S. Department of Agriculture, 2019)
Thiamin	0.408 mg/100 g	(U.S. Department of Agriculture, 2019)
Riboflavin	0.353 mg/100 g	(U.S. Department of Agriculture, 2019)
Total flavonoids	68.10 CE/100 g DM	(Christova-Bagdassarian et al., 2013)
Total phenolic	115.96 mg GAE/100 g DM	(Christova-Bagdassarian et al., 2013)
Alkaloids	197.62 µg/mg <sup>a</sup>	(Madhu et al., 2016)
Steroids	68.39 µg/mg <sup>b</sup>	(Madhu et al., 2016)
Saponins	49.59 µg/mg <sup>c</sup>	(Madhu et al., 2016)
Mn	6.53 mg/100 g	(U.S. Department of Agriculture, 2019)
Ca	580.6 mg/100 g	(Bukhari et al., 2014)
Cu	1.07 mg/ 100 g	(U.S. Department of Agriculture, 2019)
Fe	9.72 mg/100 g	(Bukhari et al., 2014)
Mg	211.35 mg/100 g	(Bukhari et al., 2014)
Na	16.21 mg/100 g	(Bukhari et al., 2014)
K	852.45 mg/100 g	(Bukhari et al., 2014)
P	487 mg./100 g	(U.S. Department of Agriculture, 2019)
Zn	3.7 mg/100 g	(U.S. Department of Agriculture, 2019)

<sup>a</sup>. Determination of alkaloids in acetone extract

<sup>b</sup>. Determination of steroids in aqueous extract

<sup>c</sup>. Determination of saponins in chloroform extract



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### DIFFERENCES OF THE EFFECTIVENESS OF MASSAGE ENDORPHIN HUSBAND AND MIDWIFE ON THE LEVEL OF LABOR PAIN IN MATERIALS

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#### ABSTRACT

**Background:** Preliminary survey at BPM Mardalena Bogor in July 2021 – August 2021 as many as 14 mothers giving birth normally. The maternity mothers who experience pain with moderate pain intensity 40%, severe pain 60%. **Methods:** quasi-experimental research type with pretest-post-test research design with control design. The sampling technique used was accidental sampling with 10 respondents and divided into two intervention groups (husband endorphin massage) n=5 and control (midwifery endorphin massage) n=5. **Research Results:** The results of the Mann Whitney test showed that the husband's endorphin massage was effective in overcoming pain compared to the midwife's endorphin massage (p-value 0.006) with a mean rank of 8.00 for the husband's endorphin massage, while the mean rank of the midwife's endorphin massage was 3.00.

Keywords : Husband Endorphin Massage; Midwife Endorphin Massage; Labor Pain Rates



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## INTRODUCTION

Childbirth is the process of expelling the products of conception (fetus and placenta) that are already months old or can live outside the womb through the birth canal or, with or without assistance (own strength). (April 2014)

Pain during labor is a manifestation of the contraction (shortening) of the uterine muscles. These contractions cause pain in the waist, abdomen and radiating towards the thighs. This contraction causes the opening of the cervix (cervix). With the opening of the cervix, labor will occur. (Judha 2012)

Severe and prolonged pain in the delivery process is bad for both the mother and the fetus. Pain can lead to hyperventilation which can cause slow deceleration of the fetal heart rate, increase in blood pressure, and increase in the hormone catecholamines, and adrenaline which can reduce uterine activity causing prolonged labor. (Manuaba 2010)

The cause of prolonged labor is influenced by abnormal factors such as power factors (uterine contractions and mother's effort to strain), passenger (fetus), passage (pelvis), psychology (mother's response during labor related to experience of preparation, culture and support during labor). (Margreek 2010)

Labor is always synonymous with pain. Based on the 2015 research survey report, most deliveries are always accompanied by

pain. It was reported that out of 2,700 mothers who gave birth, only about 15% felt mild pain, 35% moderate pain, 30% severe pain, and 20% very severe or uncontrollable pain. (Sri Fortune 2014)

Measures to deal with pain can be divided into two main groups, namely treatment (pharmacological) and no treatment (non-pharmacological). Non-pharmacological approach by applying Natural Basic Therapy (NBT) is a form of treatment aimed at improving the degree of public health including promotive, preventive, curative and rehabilitative with quality safety and comfort using hot cold methods, massage, aroma therapy, correct breathing techniques, acupuncture, reflexology, hypnobirthing. Non-pharmacological pain management can be done more safely, simply and does not cause adverse effects and refers to maternal care. One of them uses the massage method. (April 2014)

Massage which is a form of action to reduce pain. Massage is a form of non-pharmacological action to reduce pain. Various kinds of pain reduction measures using this theory of the endorphin system. One of them is endorphin massage, which is a touch and light massage technique that can normalize heart rate and blood pressure, and increase the relaxed state in the mother's body by triggering a feeling of comfort through the skin's surface. (Kuswandi 2012)

Overcoming pain, previous research has stated that endorphin massage is carried out by health workers, while based on the theory of childbirth companion endorphin massage can be carried out



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by husbands as a form of support for their wives during pregnancy and childbirth. The better the support provided by the husband during the delivery process, the less labor pain felt by the mother. (Kuswandi 2012)

Based on survey data obtained at BPM Mardalena, Bogor, for deliveries in May-July 2021, there were 30 mothers who gave birth. Based on a survey conducted by researchers on midwives about the actions taken to reduce labor pain, the midwife only gave advice to maternity mothers in the form of breathing relaxation techniques and left tilted positions.

The results of interviews with maternity mothers as many as 3 mothers said that they overcome pain by regulating breathing and strengthening their hearts in the hope that the pain will disappear when the baby is born, 2 people tilt to the left and regulate their breath to reduce pain. While 1 mother said to overcome pain by taking a walk.

One of the efforts that can be done to reduce pain during labor is to provide endorphin massage stimulation. Support from the husband is needed by the mother in the delivery process.

The formulation of the problem in this journal is as follows: "Is there a difference in the effectiveness of endorphin massage by husbands and midwives on the level of labor pain in women in labor?"

The purpose of this study was to determine the differences in the effectiveness of

endorphin massage by husbands and midwives on the level of labor pain.

Childbirth is a physiological condition that will be experienced by everyone, but it is a physiological condition that will be experienced by everyone. (Asrinah 2010)

The delivery process is influenced by several factors, namely:

1) Power is the power or strength to give birth which consists of his or uterine contractions, retraction of the uterine muscles and contractions of the abdominal muscles and diaphragm exerting force from the mother.

2) Passage The birth canal that must be passed by the fetus consists of the pelvic cavity, pelvic floor, cervix and vagina.

3) Passenger This is the birth canal of the baby that begins with the exit of the baby's head so that all parts of the baby's body are followed by the release of the placenta.

4) Psychological when going through the labor process such as stress, fear, and anxiety will affect the smooth delivery. (Bobak 2005)

Pain is an unpleasant sensation that is localized to a part of the body. Pain is often described in terms of tissue-destructive processes such as stabbing, burning, twisting, like emotions, in feelings of fear, nausea and drunkenness. (Iramawati 2014)

Pain is one of the natural defense mechanisms of the human body, which is a warning of danger. In pregnancy and childbirth, the sensation of pain is interpreted as a signal to inform the mother that she has entered the stage of the labor process. (Kuswandi 2012)

Endorphin massage is a light touch method first



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developed by Constance Palinsky which is used to manage pain. This technique can be used to reduce discomfort during labor and promote relaxation by triggering feelings of comfort through the skin's surface. (April 2014)

Husbands can improve and guide mothers about breathing techniques that have been learned together. The husband can lead the mother to pray so that the delivery goes smoothly. The husband can be a liaison between the mother and the doctor or midwife who helps in childbirth. (Iramawati 2014)

Pain is an unpleasant sensation that is localized to a part of the body. Pain is often described in terms of tissue-destructive processes such as stabbing, burning, twisting, like emotions, in feelings of fear, nausea and drunkenness. (Iramawati 2014)

Pain during labor is a manifestation of the contraction (shortening) of the uterine muscles. These contractions cause pain in the waist, abdomen and radiating towards the thighs. This contraction causes the opening of the cervix (cervix). (Bobak, L. 2005)

Endorphin massage is a light touch method first developed by Constance Palinsky which is used to manage pain. This technique can be used to reduce discomfort during labor and promote relaxation by triggering feelings of comfort through the skin's surface. Light touch techniques also normalize heart rate and blood pressure.

This light touch includes a very light massage that can make the fine hairs on the surface of the skin stand up. Research has shown that this technique increases the release of endorphins and oxytocin. (Kuswandi 2012)

The presence of the husband in the delivery room will also increase the mother's confidence. Husbands can improve and guide mothers about breathing techniques that have been learned together. The husband can lead the mother to pray so that the delivery goes smoothly. The husband can be a liaison between the mother and the doctor or midwife who helps in childbirth. (Kuswandi 2012)

Midwives are people who are expected by mothers as birth attendants who are reliable and able to provide support, guidance and assistance in childbirth. Supportive care means being active and participating in ongoing activities. (Iramawati 2014)

## MATERIALS AND METHOD

This study used a quasi-experimental design with the pretest-posttest method with control group. The research was conducted at BPM Mardalena. Sampling technique purposive sampling with a sample size of 10 which was divided into the husband's endorphin massage intervention group ( $n=5$ ) and the midwife's massage endorphin control group ( $n=5$ ). Endorphin massage is carried out for 10-15 minutes (3-4 massages during contractions).

The instrument in this study was a pain scale observation sheet Numerical Rating Scale (NRS), husband and midwife endorphin massage SOP sheet.



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**difference in the intensity of pain before and after the husband's endophin massage.**

### RESULTS

**Table 1:** Characteristic distribution respondent

<b>Age</b>	<b>N</b>	<b>%</b>
<20 years	3	30%
20-35 years old	7	70%
<b>Parity</b>	<b>N</b>	<b>%</b>
Never gave birth	5	50%
Give birth time	1	40%
Give birth times	2-3	10%
<b>Gestational Age</b>	<b>N</b>	<b>%</b>
37-39 Weeks	7	70
40 weeks	3	30

Based on table 1, it shows that some respondents aged 20-35 years were 25 (75%), while the parity of primigravida respondents was 12 (38%) and gestational age 37-39 weeks was 23 (72%).

**Table 2 :** Differences in Pain Intensity Before and After Husband's Endorphin Massage Is Done in Maternity

<b>Kolmogorov-Smirnov Test Results</b>			
<b>Variable</b>	<b>N</b>	<b>Value</b>	<b>-value</b>
Before	5	0.046	
After	5	0.200	0.038

Based on table 2, it shows that the normality value of pain levels before the endophin massage of Kolmogorov-Smirnov's husband is sig value of 0.046 and after doing it 0.200. The results of the Wilxocon test with a p-value of 0.038 0.05, so it can be concluded that there is a

**Table 3:**Differences in Pain Intensity Before and After Midwife Endorphin Massage is Done in Maternity

<b>Variable</b>	<b>N</b>	<b>Kolmogorov-Smirnov Test Results</b>	
		<b>v-smirnov</b>	<b>-value</b>
Before	5	0.046	
After	5	0.200	0.038

Based on table 3, it shows that the normality value of pain levels before the midwife shapiro-wilk endorphin massage was sig value of 0.046 and after the midwife endorphin massage was 0.200. The results of the Wilxocon test obtained a p-value of 0.038 0.05, so it can be concluded that there is a difference in the intensity of labor pain before and after the midwife endorphin massage.

**Table 4:** The difference between husband's endorphin massage and midwife's endorphin massage on pain intensity in Maternal Maternity

<b>Variable</b>	<b>N</b>	<b>Mean Rank</b>	
		<b>endorphin massage</b>	<b>-value</b>
husband		5 8.00	
<b>endorphin massage</b>			0.006
midwife		5 3.00	

Based on table 4, the results of the bivariate statistical test using the Man Whitney Test showed that in the group treated with endorphin massage the husband had a mean rank of 8.00, in the group that was treated with endorphin massage, the mean rank was 3.00. Based on the



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results of the bivariate statistical test, the results of the value were 0.006 (<0.05). So Ho is rejected, which means that there is a difference in the effectiveness of the husband's and midwife's endorphin massage on the intensity of labor pain.

### DISCUSSION

Characteristics of age, parity and gestational age in the study also affect pain in labor.

Mother's age greatly determines maternal health because it is related to the conditions of pregnancy, childbirth and the postpartum period as well as how to care for and breastfeed babies. Based on the average age of the respondents included in the healthy reproductive age. Healthy reproductive age is the right age to undergo pregnancy and childbirth.

Parity also affects labor pain. Severe pain that is often felt by primiparous mothers, according to the fact that primiparous mothers have never had childbirth experience, including the experience of pain during childbirth which makes it difficult to anticipate it.

According to the theory of labor pain is a subjective experience of physical sensations that occur due to stretching of the lower uterine segment during uterine contractions, cervical dilatation and is a physiological sensation felt during childbirth. Pain during labor is a manifestation of the contraction

(shortening) of the uterine muscles. These contractions cause pain in the waist, abdomen and radiating towards the thighs. This contraction causes the opening of the cervix (cervix). With the opening of the cervix, labor will occur. (Iramawati 2014)

The results obtained from 10 respondents at BPM Mardalena Bogor showed that in the group treated with endorphin massage the husband had a mean rank of 8.00, in the group that was treated with endorphin massage, the mean rank was 3.00.

Giving a husband's endorphin massage for childbirth can be proven that a gentle massage carried out by a husband in the back and pelvis area will make him more comfortable and calmer because massage and touch that stimulates a sense of comfort will be sent to the brain faster than pain stimuli. So that the pain will be covered by a sense of comfort and can reduce the pain of contractions. Massage and husband's touch on mothers who are about to give birth has been shown to increase the release of oxytocin, a stress-relieving hormone, normalizing heart rate and blood pressure. So that the mother can be more relaxed and comfortable. (Kuswadi 2012)

Support from the closest people, especially husbands, will increase the mother's confidence in attending the opening stages and the delivery process. Mother will also feel comfortable, happy, and feel calm with the presence of her husband who accompanies her. The presence and support of the husband during the delivery process creates a strong bond between mother, husband and baby. (April 2014)



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Midwives are people who are expected by mothers as birth attendants who are reliable and able to provide support, guidance and delivery assistance. (Kuswadi 2012)

According to the theory of applying endorphin massage is a light touch method that was first developed by Constance Palinsky which is used to manage pain. This technique can be used to reduce discomfort during labor and promote relaxation by triggering feelings of comfort through the skin's surface. (Kuswandi 2012)

The results of this study were reinforced by Antik, Arum Lusiana, Esti Handayani (2017) with the title "The Effect of Endorphin Massage on Pain Intensity Scale in Active Phase I", showing that the average result of endorphin massage has an effect on the intensity of labor pain in severe pain, there are 6 respondents (60%) to only 4 respondents (40%).

The results of this study were strengthened by Diana Septi Anggraeni, Sumarni, Ely Eko Agustina (2014) with the title "The Influence of Husband's Support in the Labor Process with Labor Pain at RSIA Bunda Arif", indicating that the better the support provided by the husband during the labor

process, the pain will be worse. labor decreases with the equation model. The better the support provided by the husband during the delivery process, the lower the pain felt by the mother during the delivery process. In this case the husband's support affects the intensity of pain.

### CONCLUSION

The results of this study indicate that there is a difference Differences in the effectiveness of endorphin massage by husbands and midwives on the level of labor pain in laboring mothers. In this study, the husband's endorphin massage was more effective in reducing the intensity of labor pain.

Weaknesses in this study are the factors that affect pain, one of which is psychological factors (fear, anxiety, tension, and stress) that have not been controlled, assessment of uterine contractions has not used biomarkers (biophysical or biochemical markers). Further trials are needed to control for psychological factors and use biomarkers to obtain more valid results.

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## **Adolescent Reproductive Health (ARH) Triad Monopoly Game – Its Effectiveness on Adolescents' Attitudes and Intentions Regarding Reproductive Health**

**Sri Widatiningsih**

### **ABSTRACT**

**Background:** Adolescent attitudes towards reproductive health can have an impact on various problems such as early marriage, free sex, and drug abuse. A behavior begins with an intention for that behavior. The Monopoly Game Genre Kit from BKKBN is rarely used because it is not interesting, as well as the content of the material that has not been focused on. The researcher modified the game in the form of a monopoly game of the Adolescent Reproductive Health Triad (sexuality, HIV/AIDS, and drugs) which could provide an easy as well as simple understanding and formation of attitudes and intentions about reproductive health. This research to analyzes the effectiveness of the Adolescent Reproductive Health (ARH) Triad Monopoly Game on attitudes and intentions regarding reproductive health in adolescents.

**Methods:** This study uses quantitative and qualitative methods. The type of research is quasi-experimental with a pretest-posttest design with control group. The population includes all teenagers in Bojong Village, Magelang Regency, as many as 90 teenagers. The analysis uses the Wilcoxon test, the Mann-Whitney test, and the Spearman rank correlation test. **Results:** The ARH Triad Monopoly game is more effective on attitudes and intentions regarding reproductive health in adolescents. **Conclusion:** It is recommended that all parties provide correct information about the ARH Triad so that teenagers do not fall into misunderstandings. Stakeholders of adolescent health programs need to jointly develop interactive and innovative learning media such as the monopoly game on adolescent reproductive health, especially the Adolescent Reproductive Health Triad.

Keywords: Monopoly game; Adolescent Reproductive Health



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### INTRODUCTION

Adolescents as national assets and successors to the ideals of the Indonesian nation need optimal health conditions, one of which is reproductive health. Optimal adolescent health conditions will continue the healthy generation following their life cycle (Indriyani and Asmuji, 2014). Problems that often occur in adolescents related to risky behavior include smoking, drinking alcoholic beverages, drug abuse, and having premarital sex. (Sihite, Nugroho, and Dharmawan, 2017). Adolescent attitudes that are less supportive of reproductive health can have an impact on many problems such as early marriage, free sex, and drug abuse.

A study (Aritonang, 2015) states that a good attitude will affect premarital sex behavior. Attitude is a predisposing factor contained in a person that motivates to act either positively or negatively (Green, 1991). The formation of a positive attitude to create an appropriate behavior can be done with health education (Sulastri, 2018)

Efforts to create positive behavior begin with an attitude that supports a behavior which then forms an intention towards that behavior. This is following the results of the study (Putri, 2018) which

states that attitudes influence a person's intentions and behavior. Healthy reproductive health behavior is strived to be realized with health education which will have an impact on supportive attitudes and the formation of good intentions in a teenager. One of the efforts to form attitudes and intentions that will realize appropriate adolescent behavior about ARH is by providing health education. Methods that can be used in adolescent reproductive health education are lectures, role-playing, group discussions, game simulations. Meanwhile, the media can use electronic media such as video films, VCD, and PowerPoint or print media such as comic books, storybooks, pamphlets, brochures, and boards (Notoatmodjo, 2010).

Various choices of methods and media can be used to overcome student boredom in receiving health education about adolescent reproductive health. Game simulation methods using game media tend to be considered more charged, because they are not monotonous and directly based on case analysis, and involve the object thoroughly and actively. (BKKBN, 2012).

The game model launched by the BKKBN to shape the attitudes and intentions of adolescents which ultimately aims to realize good



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reproductive health behavior is the Genre Kit which consists of various kinds of games such as snakes and ladders, monopoly, genre apron, and reproductive organ aprons. The results of a preliminary study conducted in August 2019, Genre Kits that are often used for health education methods are snakes ladders, while monopoly, genre aprons, and reproductive organ aprons are rarely used because participants have difficulty understanding the game model.

Researchers feel the need to modify the game in the form of a monopoly of the ARH Triad (sexuality, HIV/AIDS, and drugs) which is expected to provide an easy and simple understanding and formation of attitudes and intentions about reproductive health. The results of interviews with 5 teenagers revealed that with the use of the snake ladder genre kit so far, it turns out that many teenagers are still confused with the material presented so that they do not support the formation of attitudes and intentions for positive behavior about reproductive health. Teenagers are less enthusiastic about health education activities using the game because the game method is less focused. Various reasons were put forward, such as being ashamed of studying the reproductive organs, too much material in one game so it was not easy to

understand, and lack of parental support because they did not know the benefits of these activities.

The modification of the health education media that will be used in this study is a monopoly game that only discusses the ARH Triad (sexuality, HIV/AIDS, and drugs), so that teenagers only focus on these three things, with easier methods and game instructions. The formulation of the problem in this study is: Is health education with the ARH Triad monopoly game effective towards attitudes and intentions about reproductive health in adolescents in Bojong Village, Mungkid District, Magelang Regency?

### MATERIALS AND METHOD

This study uses quantitative and qualitative methods on several factors that are considered important. This type of research is quasi-experimental with a pretest-posttest with control group design. The study was conducted from June - October 2020. The population includes all teenagers in Bojong Village, Mungkid District, as many as 825 teenagers with a total sample of 90 people.

The sampling technique used was purposive sampling. Inclusion criteria in



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the sampling were male and female adolescents aged 13-20 years, had a minimum education of junior high school, and were willing to be respondents. The exclusion criteria were teenagers who were not present when the research was conducted, teenagers with mental retardation problems or school status in special schools, teenagers who were in the process of drug rehabilitation, and teenagers who attended health schools. Research informants consisted of representatives of adolescents, representatives of parents of adolescents, midwives of Bojong village, Head of Bojong Village, BKBN officers of Bojong Village, Head of Mungkid Health Center, Magelang Regency. Univariate analysis was conducted by using frequency distribution, bivariate analysis by using Wilcoxon, Mann Whitney test, and Spearman rank correlation test.

## RESULTS

### 1. Frequency distribution of adolescent attitudes towards reproductive health before and after health education with ARH Triad Monopoly Game and Snake Ladder Genre Kit

Attitude is the response or reaction of individuals who are still closed to a stimulus or object. The ARH Triad monopoly game is the development of a

modified Genre Kit monopoly game model for health education media about Sexuality, HIV/AIDS, and Drugs.

Table 1. Frequency Distribution of Attitude Variables

Indicator	Attitude	Attitude	Attitude	Attitude
	Pre Triad	Post Triad	Pre Genre	Post Genre
Mean	81.33	93.07	84.8	93.24
Median	84	96	88	96
p value uji normalitas	0.003	0.0001	0.002	0.0001
Minimum	60	72	60	72
Maximum	96	100	100	100
Total < Median	18	21	19	21
% Median < 40	46.6	42.2	46.6	46.6
Total ≥ Median	27	24	26	24
% ≥ Median	60	53.4	57.8	53.4

The score of adolescent attitudes towards reproductive health before health education with the ARH Triad monopoly game was an average of 84, with a minimum score of 60 and a maximum score of 96. The attitude score afterward was an average of 96, with a minimum score of 72 and a maximum score of 100.

The score of adolescent attitudes towards reproductive health before being given health education with the Snake Ladder



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Game Genre Kit was an average of 88, with a minimum score of 60 and a maximum score of 100. The attitude score afterward was an average of 96, with a minimum score of 72 and a maximum score of 100.

Table 2. Frequency distribution of adolescent attitude categories before and after health education with the ARH Triad Monopoly game

Attitude	Before		After	
	Standard	Freq	Standard	%
Less support	Score < 84	18 40	Score < 96	nd 21 46.6
Support	Score ≥ 84	27 60	Score ≥ 96	24 53.4
Total		45 100		45 100

The attitude of adolescents who were less supportive was less than the attitude of support, both before and after being given health education with the ARH Triad monopoly game. Reason Action Theory says that attitudes influence behavior through a decision-making process that is thorough, reasoned, and its impact is limited to three things. First, behavior is determined not so much by

general attitudes, but by specific attitudes toward something. Second, behavior is influenced not only by attitudes but also by subjective norms, namely a person's beliefs about what other people want them to do. Third, attitudes toward behavior together with subjective norms form an intention or intention to behave in a certain way. In simple terms, this theory explains that someone will perform a behavior if the behavior is considered to have a positive impact on themselves and there is a belief that other people (significant person) want them to do the behavior. (Bandura, 1999)

Table 3. Frequency distribution of adolescent attitude categories before and after being given health education by playing Snake Ladder Genre Kit

Attitude	Before		After	
	Standard	Freq	Standard	%
Less support	Score < 88	19	Score < 96	21 42.2 46.6
Support	Score ≥ 88	26	Score ≥ 96	24 57.8 53.4



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Total	45	45	Maximum	100	100	100	100
	100	100	Total < Median	6	4	18	9
<hr/>							
% < Median	13.4	8.8	40	20			
Total ≥ Median	39	41	27	36			
% ≥ Median	86.6	91.2	60	80			

The attitude of adolescents is less supportive than those who support both before and after being given health education with the Snake Ladder Game Genre Kit.

### 2. Frequency distribution of adolescent attitudes towards reproductive health before and after health education with the ARH Triad monopoly game and Snake Ladder Genre Kit.

Table 4. Frequency Distribution of Intention Variables

Indicators	Intention				
	PreTriad	PostTriad	PreGenre	PostGenre	
	Mean	96.11	99.56	5.67	98.67
Median	95	100	100	100	
p value normality	0.0001	0.0001	0.0001	0.0001	
Minimum	75	95	70	85	

Adolescents' intention score on reproductive health before being given health education with the ARH Triad monopoly game was an average of 95, with a minimum score of 75 and a maximum score of 100. Adolescents' intention score on reproductive health afterward became an average of 100, with a minimum score of 95 and a maximum score of 100. Adolescents' intentions score on reproductive health before being given health education with the Snake Ladder Game Genre Kit was an average of 100, with a minimum score of 70 and a maximum score of 100. Adolescents' intention score on reproductive health that was more than the median/category supported as many as 27 people or 60%. Adolescents'



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intention scores on reproductive health after being given health education with the kit genre snake and ladder game became an average of 100, with a minimum score of 85 and a maximum score of 100.

**Table 5. Categorical Frequency Distribution of Adolescent Intentions before and after health education with the ARH Triad monopoly game**

Intention	Before		After	
	Standard	Freq	Standard	Freq
	%	%	%	%
Less good score < 95	6	13.3	score < 100	4
Good score ≥ 95	39	86.7	score ≥ 100	41
Total	45	100	45	100

**Table 6. Categorical Frequency Distribution of Adolescent Intentions before and after health education with Snake Ladder Game Genre Kit**

Intention	Before	After

	Standar d	Freq	Standard	Freq
		%	%	%
Less	skor < 100	18	skor < 100	9
		40		20
Good	Skor ≥ 100	27	Skor ≥ 100	36
		60		80
Total		45		45
		100		100

### 3. Differences in attitudes towards reproductive health before and after being given health education with the ARH Triad monopoly game and Snake Ladder Genre Kit

**Table 7. Differences in attitudes towards reproductive health before and after being given health education**

Attitude Change	ARH Triad Monopoly	Snake ladder Genre Kit		
	n	p-Value	n	p-Value
Increase	43	0.0001	35	0.0001
Decrease	0		0	
Steady	2		10	



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The results showed that there was a significant difference in attitudes towards reproductive health before and after being given health education with the ARH Triad monopoly game.

### 4. Differences in Intention to Reproductive Health before and after being given health education with the ARH Triad monopoly game and Snake Ladder Genre Kit

Table 8. Differences in Intentions on Reproductive Health before and after being given health education

Intention Change	ARH Triad Monopoli		Snake ladder Genre Kit		F	F	F	F	F	F	
	n	P Value	n	P Value							
Increase	22	0.0001	13	0.0001	3	18	21	7	14	21	
					14.3	85.7	100	33	66.7	10	
Decrease	0		0					.3		0	
Steady	23		32		Support	1	23	24	2	22	24
						4.2	95.8	100	8.	91.7	10
								3		0	

There is a significant difference in intentions towards reproductive health before and after being given health education with the ARH Triad KRR monopoly game.

### 5. The influence of attitudes about reproductive health on

### intentions about reproductive health with the ARH Triad monopoly game and Snake Ladder Genre Kit

Table 8. The influence of attitudes about reproductive health on intentions about reproductive health with the ARH Triad monopoly game and Snake Ladder Genre Kit

Attitude on RH	Intention of RH			Intention of RH		
	Triad Monopoli			Snake Ladder		
	Less good	Good	Total	Less good	Good	Total
Less support	3	18	21	7	14	21
	14.3	85.7	100	33	66.7	100
Support	1	23	24	2	22	24
	4.2	95.8	100	8.	91.7	100
				3		0
	p-value : 0.514			p value : 0.037		
	Ho accepted			Ho rejected		

The results of statistical analysis show that there is no relationship between attitudes about reproductive health in adolescents and intentions about reproductive health in adolescents with



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the intervention of the ARH Triad monopoly game.

### 6. The effectiveness of health education using the ARH Triad monopoly game on attitudes and intentions about reproductive health in adolescents

Table 9 The effectiveness of health education using the ARH Triad monopoly game method on attitudes about reproductive health in adolescents

Intervention		Mean Before	Mean After	Mean change	P-value
ARH	Triad	81.33	93.07	11.74	0.000
Monopoly					1
Snake	ladder	84.80	93.24	8.44	0.000
Genre Kit					1

Health education with the ARH Triad monopoly game method is more effective on attitudes about reproductive health in adolescents. The game is the development of a modified Genre Kit monopoly game model for health education media about ARH TRIAD. In this game, the material is narrowed down to sexuality, HIV/AIDS, and drugs.

Table 10 The effectiveness of health education with the ARH TRIAD

monopoly game on intentions about reproductive health in adolescents

Intervention		Mean Before	Mean After	Mean change	P-value
ARH	Triad	96.11	99.56	3.45	0.0001
Monopoly					
Snake	ladder	95.67	98.67	3	0.001
Genre Kit					

Health education with the ARH Triad monopoly game method is more effective on intentions about reproductive health in adolescents.

## DISCUSSION

### 1. Frequency distribution of adolescent attitudes towards reproductive health before and after health education with ARH Triad Monopoly Game and Snake Ladder Genre Kit

Attitude towards behavior is a subjective evaluation (positive/negative) based on the perceived advantages or disadvantages of the behavior. Attitude towards behavior is defined as an individual's positive or negative assessment of behavior (Palupi and Sawitri, 2017). In this study, the attitude of adolescents was good. More than half of the supportive attitude, both before



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and after health education is carried out using the ARH Triad monopoly game.

The results of the analysis of adolescent attitudes towards reproductive health before and after being given health education with the ARH Triad monopoly game showed that adolescents still did not understand sexual and sexually transmitted diseases. One of the things that hinder the provision of reproductive health education to adolescents is the general public's view that talking about reproductive health, especially about sexuality, is taboo. Adolescents can be at risk of getting wrong information if a lesson is not prepared to provide correct information about reproductive health. Media plays a very important role in disseminating information. Many teenagers use the media, both print media, and electronic media. (Debbiyantina, 2015).

For this reason, it is necessary to develop a media that is liked by teenagers and is expected to change the attitude of teenagers about reproductive health, especially the ARH Triad. The attitude of adolescents is less supportive than those who support both before and after being given health education with the Snake Ladder Game Genre Kit. Snake ladder game is a medium that is accompanied by games, so it fits the

characteristics of teenagers who like to play. The snake ladder game is a medium that resembles the game of snakes and ladders in general, but each plot contains questions. Each player must pass and answer the question (Afifah and Hartatik, 2019). Learning by using snake ladder game media is very effective. However, this media will be in vain if the learning strategy is still conventional. It would be nice if this game was combined with learning strategies that could improve student learning activities (Chabib, Tri Djatmika, and Kuswandi, 2017)

In this Genre Kit group, teenagers also lack understanding about sexuality. There are even teenagers who do not understand the maturity of marriage age. They should have understood about the ARH Triad and the maturation of the marriage age because based on information from the Mungkid District PLKB, that adolescents were the target of intervention in the form of PIK-Remaja/mahasiswa and BKR. PIK Remaja/Mahasiswa is one of the forums developed in the GenRe program, which is managed from, by, and for adolescents/students to provide information and counseling services on the maturation of marriage age, eight family functions, ARH Triad (sexuality,



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HIV /AIDS and drugs), life skills, gender and advocacy skills and Communication Information Education (Utami and Afwa, 2019).

Planning activities for PIK-Remaja/Mahasiswa in health promotion of marital age maturity includes targeting, the content of materials, media used, advocacy, and regulation. The implementation of this activity in determining the target is still not evenly distributed. Counseling is carried out in the group by using leaflets, posters, and teaching aids which include the subject matter of Marriage Age Maturity (PUP), while individual counseling <sup>nd</sup> uses counseling activities. PIK-Remaja/mahasiswa Advocacy is carried out to related institutions, namely KUA, and District Offices (Wahyuningrum, Gani and Rianti, 2015)

### 2. Frequency distribution of adolescent attitudes towards reproductive health before and after health education with the ARH Triad monopoly game and Snake Ladder Genre Kit.

The intention is a cognitive representation of a person's readiness to perform a behavior or action (Ajzen, 2006). Determinants of intention consist of attitudes, subjective norms, and

perceived behavioral control. Attitude is one's own opinion about behavior while the subjective norm is the opinion of others about behavior. These three determinants will be able to predict behavior (Zainuddin, 2013).

The response of adolescents about their intentions towards reproductive health is very good. They only need support/support from the environment for the realization of these intentions. An individual will have the intention to perform a certain behavior when he has a positive attitude towards the behavior (the individual assesses that the behavior can have a positive impact on himself and the impact is considered a pleasant thing), feels the social urge from the people around him to perform the behavior., and believe that they have the ability and control" to perform the behavior.

Teenagers' intentions about reproductive health will be well-formed and will create a positive behavior if all components, both teachers, parents, community leaders, and the environment are supportive. This is following the results of research on business (Rahayu, Budi and Sensuse, 2017) that although social support does not have a direct impact, it is sufficient to influence building the quality of the relationship



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between buyers and sellers which ultimately affects the buyer's intention to buy products online through the social commerce site Facebook.

Intention is the closest determinant of behavior or it can be said that the behavior displayed by a person will be consistent with his intention towards the behavior. The intention will remain a tendency until the individual displays an effort to realize the intention into behavior because the intention is the closest behavioral tendency to the behavior itself, then by measuring a person's behavioral intention we can predict whether a person will display a certain behavior or not. In this study, the statement of intention about the dating model, smoking behavior, and future family planning participation is still inaccurate. Adolescents in determining intentions, especially dating intentions, need emotional intelligence as stated in the study (Chansa, 2017) that emotional intelligence has a significant influence on the intention to overcome dating violence in college students. Dating must know boundaries so as not to harm the future. The second statement is the intention of smoking in adolescents. They are still in the trial phase. Teenagers have the intention to behave, in this case, smoking is influenced by

someone who is used as a role model for example peers.

Research result (Qodri, BM, and Riyanti, 2016) suggest to teenagers to be able to know the positive and negative influence of peers so that they can be selective and careful in choosing friends and social environment and to be accepted by their friends can be done by increasing achievement not by participating in smoking. It is expected that parents and other family members do not smoke at home to set a positive example for their children. Parents must be aware of their child's association by giving more attention.

### 3.

#### Differences in attitudes towards reproductive health before and after being given health education with the ARH Triad monopoly game and Snake Ladder Genre Kit

The results showed that there was a significant difference in attitudes towards reproductive health before and after being given health education with the ARH Triad monopoly game. Health education with the ARH Triad monopoly game can change the attitude of adolescents about reproductive health. This game is quite interesting and can be played by 2-4 groups, each group of at least 2 people. With this game, teenagers



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do not feel taught but can increase their knowledge, so that a positive attitude will be formed. Following the spirit of teenagers who like to experiment, by playing they are like facing a case and trying to find solutions to problems.

The material in the game should be adapted to the health education goals that will be given as stated in the study (Khairunnisa, Hakam, and Amaliyah, 2018) that the development of monopoly game learning media produced in PAI subjects for class X is designed with in-depth planning according to the material to be studied so that it implies that students will be more active, interactive, and have new experiences that vary in the learning process.

Modifications made to the kit genre snake and ladder game are the provision of question cards placed in certain plots and adjusted game rules. Snake ladder game aims to make teenagers happy to follow health education, so they can behave according to the goals to be achieved. The results of statistical analysis showed that there was a significant difference in attitudes towards reproductive health before and after being given health education with the snake and ladder game genre kit. Snake ladder can provide direction for

youth to act. They will try to satisfy their curiosity about reproductive health.

Adolescence is a period that requires attention because it is a transition period in the span of human life, which is a period of experiencing major and essential changes related to the maturity of spiritual and physical functions, especially sexual function. {Formatting Citation}. The transition period is a time that requires more supervision and attention. Physically, they have resembled adults but in their thinking, they have not been able to fully understand their decisions and behavior, they still follow their peers in taking an action.

Snakes and ladders game media Genre Kit is a game tool that can change adolescent attitudes about reproductive health. In line with research (Mahfudzoh, 2020) that the results of the application of classical guidance services with GenRe KIT media can increase students' understanding of the risks of premarital sexual behavior in class X MIPA-2 SMA N 1 Balapulang, the 2019/2020 school year.

### 4. Differences in Intention to Reproductive Health before and after being given health education with the ARH Triad monopoly game and Snake Ladder Genre Kit



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There is a significant difference in intentions towards reproductive health before and after being given health education with the ARH Triad KRR monopoly game. The ARH Triad Triad monopoly game is the development of a modified Genre Kit monopoly game model for health education media about sexuality, HIV/AIDS, and drugs. Teenagers today tend not to want to learn anything serious. They prefer a relaxed atmosphere but knowledge increases. Based on this, the researchers modified the ARH Triad monopoly game tool. Preparation of media according to research (Karman, 2014) ideally the media organizational structure should ensure the creation of a diversity of ownership. Culturally, the media must prioritize the diversity of content. The media must also be a public space for the wider community. With these rules, it is hoped that the media can provide understanding to users, in this case, teenagers, about reproductive health, especially the ARH Triad.

The KRR Triad monopoly game was able to change the youth's intention about reproductive health. The KRR Triad monopoly game is a form of educational intervention. Sexual and reproductive health education interventions are an effective strategy to protect adolescents

from various kinds of risky sexual activities. Comprehensive sexual and reproductive education interventions must reach all adolescents as the main target so that its application is not only carried out in schools but must reach all adolescents in the community. (Fahrurrajib, 2018)

There is a significant difference in intentions towards reproductive health before and after being given health education with the snake ladder game genre kit. Icek Ajzen defines intention as a dimension of the subjective possibility of individuals to perform certain behaviors. Health education with the snake and ladder game genre kit can change adolescent intentions about reproductive health.

Adolescents have a high sense of curiosity, including the problem of sexuality. Teenagers' curiosity about sexuality is caused by the developmental period of adolescents who enter puberty which is marked by the maturation of the reproductive system and the production of sex hormones. (Sumiatin, Purwanto and Ningsih, 2017). The snake ladder game method of the kit genre can answer the questions that exist in adolescents so that from the results of the analysis it is proven that the intentions of adolescents before and after being given the snake



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and ladder game genre kit experience a positive change.

### 5. The influence of attitudes about reproductive health on intentions about reproductive health with the ARH Triad monopoly game and Snake Ladder Genre Kit

The results of statistical analysis show that there is no relationship between attitudes about reproductive health in adolescents and intentions about reproductive health in adolescents with the intervention of the ARH Triad monopoly game, however descriptive analysis shows that good intentions about reproductive health tend to be shown in adolescents who have a supportive attitude about health reproduction in adolescents.

Reason Action theory says that attitudes influence behavior through a careful, reasoned decision-making process, and the impact is limited to three things. First, behavior is determined not so much by general attitudes, but by specific attitudes toward something. Second, behavior is influenced not only by attitudes but also by subjective norms, namely a person's beliefs about what other people want them to do. Third, attitudes towards behavior together with subjective norms form an intention or intention to behave

in a certain way. In simple terms, this theory says that a person will perform a behavior if the behavior is considered to have a positive impact on themselves and there is a belief that other people (significant person) want them to do the behavior.(Ajzen, 2006)

Based on this, there is no relationship between attitudes about reproductive health in adolescents and intentions about reproductive health in adolescents with the intervention of the ARH Triad monopoly game method, there may be a stronger subjective norm factor. However, when viewed from the descriptive analysis, the intention about reproductive health in adolescents tends to be good for adolescents who have a supportive attitude about reproductive health in adolescents.

Statistical analysis shows that there is a relationship between attitudes about reproductive health in adolescents with intentions about reproductive health in adolescents with the Snake Ladder Game Genre Kit intervention. Likewise, the descriptive analysis states that good intentions about reproductive health in adolescents tend to be shown in adolescents who have a supportive attitude about reproductive health adolescents. Determinants of intention consist of attitudes, subjective norms, and



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perceived behavioral control. Attitude is one's own opinion about behavior while the subjective norm is the opinion of others about behavior. These three determinants will be able to predict behavior (Zainuddin, 2013). Ajzen and Fishbein's theory of reasoned action assumes that behavior is determined by the individual's desire to perform or not to perform a certain behavior or vice versa. Desire is determined by two independent variables including attitudes and subjective norms (Bandura, 1999).

### 6. The effectiveness of health education using the ARH Triad monopoly game on attitudes and intentions about reproductive health in adolescents

Health education with the ARH Triad monopoly game method is more effective on attitudes about reproductive health in adolescents. The game is the development of a modified Genre Kit monopoly game model for health education media about ARH TRIAD. In this game, the material is narrowed down to sexuality, HIV/AIDS, and drugs.

The researcher's effort to narrow the material is so that teenagers are more focused on these 3 things. The material is too broad will be able to confuse teenagers. It is proven that the ARH Triad monopoly game is more effective in changing attitudes about reproductive

health. Monopoly game media is one of the game media that can lead to interesting learning activities and help the learning atmosphere to be happy, lively, and relaxed. Monopoly games are expected to have the ability to involve students in active teaching and learning activities to solve existing problems and be competent to become winners in the game.(Suciati, Septiana and Untari, 2016).

Health education with the ARH Triad monopoly game method is more effective on intentions about reproductive health in adolescents. The ARH Triad monopoly game is the development of a modified Genre Kit monopoly game model for health education media about the KRR Triad. In this game, the material is narrowed down to sexuality, HIV/AIDS, and drugs. The Art Triad monopoly game media only consisted of 3 materials, namely Sexuality, HIV/AIDS, and Drugs to make it easier to understand. The role of the media in shaping adolescent behavior is very large. Mass media is an important dimension of life that may have special meaning during adolescence, especially for risky sexual behavior.

Obtaining information through the media may have an impact on the attitudes and behavior of adolescents,



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one of which is the behavior of KRR. The impact of media on adolescent attitudes and behavior can have positive or negative impacts

Media that has the right information content will have a positive impact on teenagers and vice versa. content analysis on internet-based reproductive health information in 2000, found that 63% of online information is defined as pornographic, and can harm adolescent premarital sexual attitudes and behavior.(Solehati, Rahmat and Kosasih, 2019)

### CONCLUSION

Health education with the ARH Triad monopoly game is more effective than snake and ladder genre kit on attitudes and intentions about reproductive health in adolescents. It is recommended that all parties, including schools, the environment, religious leaders, community leaders, and families, provide correct information about reproductive health, especially the ARH Triad so that teenagers do not fall into the wrong understanding. Holders of youth health programs, both PLKB and Puskesmas, need to jointly develop interactive and innovative learning media such as the monopoly game

on adolescent reproductive health, especially the ARH Triad.

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### Implementation of Slice Thickness on Head CT Scan with Traumatic Brain Injury Case

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### ABSTRACT

**Background:** The implementation of slice thickness on head CT scan with Traumatic Brain Injury (TBI) cases needs to be considered to support the diagnosis. There are differences in the implementation of theory and articles. The purpose of this study was to determine the implementation of slice thickness and optimal values of slice thickness implementation on head CT scan with TBI cases.

**Methods:** The type of this research is literature review based on 7 articles obtained from Google Scholar, Pubmed, Proquest, Elsevier, SpringerLink, and Sciencedirect database with keywords slice thickness, CT Head, Head CT for Traumatic Brain Injury, thin slice, and thick slice. The sample of this studies are 2.329 patients with TBI cases in 7 articles. Data processing and analysis were carried out by making descriptions, summary articles and evaluations. The selection of articles was determined according to the inclusion criteria. The final results and conclusions were drawn.

**Result:** The results showed that the implementation of a 5 mm slice thickness was used in patients with mild, moderate, and severe TBI. The 1.2 mm slice thickness is used in patients with severe TBI. The optimal slice thickness value on a head CT scan with TBI cases is 5 mm because it can be used in patients with mild, moderate, and severe TBI and can reduce artifacts in the skull base.

**Conclusion:** The Implementation of slice thickness in head CT Scan examination with TBI cases better still use 5 mm because it is quite optimal, can be used in mild, moderate, and severe TBI patients, can reduce streaking artifacts at the skull base, shows the lesions caused by TBI clearly, and can be used to assess the brain parenchyma and follow up on whether the abnormality can progress to further nerve damage, so that the diagnostic information obtained will appear informative.

Keywords: *slice thickness; Head CT Scan; Traumatic Brain Injury*

### INTRODUCTION

Traumatic Brain Injury (TBI) is a non-degenerative injury to the brain resulting

from a hard impact that can cause impaired consciousness. Traumatic Brain Injury (TBI) often occurs in traffic accident victims and sports victims. The



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mechanism of Traumatic Brain Injury (TBI) can cause changes in brain metabolism and blood flow resulting in cell dysfunction and the risk of secondary injury such as hypoxia [1].

According WHO (2020) Traumatic Brain Injury (TBI) is one of the leading causes of mortality and morbidity worldwide. Traumatic Brain Injury (TBI) is the third most common disease in the world in 2020. More than 10 million people experienced Traumatic Brain Injury (TBI) in 2020. Patients with Traumatic Brain Injury (TBI) on average consist of ages 17 to 64 years (adult). The most common cause of Traumatic Brain Injury (TBI) in the world is traffic accidents. The prevalence of Traumatic Brain Injury (TBI) in Indonesia is 11.9%. This incident ranks third after lower limb and upper limb injuries with prevalence of 67.9% and 32.7%, respectively [2].

Based on the severity, Traumatic Brain Injury (TBI) is divided into mild, moderate, and severe which is assessed based on the Glasgow Coma Scale (GCS). GCS is used as a standard that can be used to measure the level of consciousness of patients with Traumatic Brain Injury (TBI). The GCS examination assessed was the level of decreased eye opening, verbal response and motor response [3].

Traumatic Brain Injury (TBI) is categorized as mild if the total GCS degree is 13-15. If the total GCS degree is 9-12, it is categorized as moderate, and if the GCS degree is 3-8, it is severe. To evaluate Traumatic Brain Injury (TBI) a CT scan modality is used [3].

CT Scan is a diagnostic imaging that uses a combination of X-rays and computer technology to process, analyze, and reconstruct data into an image of the body that is examined [4]. CT scan uses a complex computer and mechanical imaging system to provide axial, sagittal, and coronal cross-sectional anatomy [5]. CT Scan examination required in patients with Traumatic Brain Injury (TBI) is a head CT Scan examination [3].

Head CT scan is a computerized tomographic examination to determine abnormalities in the intracranial area. One of the indications for a head CT scan is Traumatic Brain Injury (TBI) [4]. In the CT Scan examination of the head with Traumatic Brain Injury (TBI) cases that need to be considered, namely the selection of parameters. Given that TBI itself is an emergency case, the selection of parameters is very important. One parameter that needs to be considered is the implementation of slice thickness [6].

Slice thickness is the thickness of an image slice on a CT scan. In examining small organs or to see small abnormalities, thin slice thickness is used, and vice versa for large organs, thick slice thickness is used. In examinations that require image reconstruction in sagittal and coronal sections, thin slice thickness is required, because if using a thick slice thickness, the image will appear large [7].

The implementation of slice thickness in the head CT scan is using 5 – 8 mm [6]. According to [4] CT Scan examination of the head with a case of Traumatic Brain Injury (TBI) using a slice thickness of 5



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mm. The implementation of the slice thickness is in the helical type scan. But in several articles such as [8] and [9] the implementation of slice thickness in cases of Traumatic Brain Injury (TBI) using a thin-slice thickness of 2.5 mm on helical type scans for all adult patients with the Glasgow Coma Scale (GCS) level of mild (mild), moderate (moderate), to severe (severe).

From this, there are differences in the implementation of slice thickness in cases of Traumatic Brain Injury (TBI). Therefore, it is necessary to conduct further studies regarding the implementation of slice thickness in head CT Scan with Traumatic Brain Injury (TBI) cases.

Based on the explanation above, the authors are interested in conducting a literature review study with the aim of knowing the implementation of slice thickness in head CT Scan examinations in cases of Traumatic Brain Injury (TBI). So that the author is interested in raising it into a thesis entitled "**Implementation of Slice Thickness on Head CT Scan with Traumatic Brain Injury Case**"

### METHOD

The type of this research is literature review based on 7 articles obtained from Google Scholar, Pubmed, Proquest, Elsevier, SpringerLink, and Sciedirect database with keywords slice thickness, CT Head, Head CT for Traumatic Brain Injury, thin slice, and thick slice. The sample of this studies are 2.329 patients with TBI cases in 7 articles. Data

processing and analysis were carried out by making descriptions, summary articles and evaluations. The selection of articles was determined according to the inclusion criteria. The final results and conclusions were drawn.

### RESULTS AND DISCUSSION

The final results of the article search according to the literature selection flow were obtained as many as 7 articles obtained from Google Scholar, Pubmed, Proquest, Elsevier, SpringerLink, and Sciedirect database. The author describes the information on the results of the research articles as data that will be used to answer the formulation of the research problem which is described as follows:

#### First article [10]

This study is an observational study on 50 patients with Traumatic Brain Injury (TBI) for 4 months. The CT Scan modality used is 64 slice MSCT. The scan type used is helical. Slice thickness used is 5 mm, 80-130 kV, 50-320 mAs for TBI patients with Glasgow Coma Scale (GCS) mild, moderate, to severe.

The results of observations in the study in the article found that using a slice thickness of 5 mm on mild, moderate, to severe GCS in TBI patients can show mixed lesions and midline shift regardless of the background of the lesion significantly associated with a decrease in GCS scores in patients with TBI patient. Anatomical information assessed on a CT scan of the head in TBI patients with a slice thickness of 5 mm, namely the



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appearance of the third ventricle, IV ventricle, right lateral ventricle, left lateral ventricle, gyrus, sulcus, basal ganglia, falx cerebri, internal capsule, sella parasella, and interhemispheric fissure.

### Second article [11]

This research is an observational study on 84 patients with Traumatic Brain Injury (TBI) for 3 years. The CT Scan modality used is 64 slice MSCT. The scan type used is helical. Slice thickness used is 5 mm, 120 kV, and 300 mAs.

The results of observations in the research in the article found that using a slice thickness of 5 mm can predict the presence of midline shift in patients with Traumatic Brain Injury (TBI). Midline shift was measured from the distance between the midline of the skull and the septum pellucidum at the level of the foramen Monro. After 20 hours after suffering from Traumatic Brain Injury (TBI), TBI patients were followed up with a CT scan of the head using a slice thickness of 5 mm again. The results of the scan with a slice thickness of 5 mm showed an asymmetrical brain pathology. When unilateral hemispheric pressure is increased (eg with hemorrhage, edema), this can lead to ipsilateral ventricular compression characterized by subfalcine herniation or falx cerebri distortion leading to increased hemispheric pressure and subsequent midline shift.

Anatomical information that appears on a CT scan of the head with a Traumatic Brain Injury (TBI) case using a slice thickness of 5 mm is the third ventricle, IV ventricle, right lateral ventricle, left lateral

ventricle, gyrus, sulcus, basal ganglia, and falx cerebri.

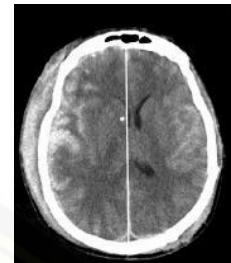


Figure 1. Axial CT scan of the head using a slice thickness of 5 mm in TBI patients (the middle white line indicates a midline shift of 7 mm) [11]

### Third article [12]

This study is an observational study on 410 patients with Traumatic Brain Injury (TBI) for 4 years accompanied by skull fractures. The CT Scan modality used is 64 slice MSCT. The scan type used is helical. Slice thickness used is 5 mm, 120 kV, and 250 mAs.

The results of observations in the study in the article found that using a slice thickness of 5 mm, producing good images, can be used to evaluate brain parenchyma and show horizontal and longitudinal skull fractures well. When compared using a 10 mm slice thickness, the sensitivity in revealing skull fractures in the horizontal direction was 56%. However, with a slice thickness of 10 mm, the sensitivity to reveal skull fractures in the longitudinal direction was 96%. At a slice thickness of 10 mm, Traumatic Brain Injury (TBI) accompanied by a skull fracture in the horizontal direction is more difficult to diagnose.

Anatomical information that appears on a CT scan of the head with a Traumatic Brain Injury (TBI) case using a slice



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thickness of 5 mm, namely the third ventricle, IV ventricle, right lateral ventricle, left lateral ventricle, gyrus, sulcus, basal ganglia, falx cerebri, internal capsule, sella parasella, and fissure interhemisphere. Therefore, the researchers in the article agree with using a slice thickness of 5 mm for a CT Scan of the Head with Traumatic Brain Injury (TBI) cases considering that a CT Scan of the Head is the latest advantage in emergency diagnosis, especially in cases of Traumatic Brain Injury (TBI).

### Fourth article [13]

This study is an observational study on 61 patients with Traumatic Brain Injury (TBI) for 5 months. The CT Scan modality used is 64 slice MSCT. The scan type used is helical. Slice thickness used is 5 mm, 120 kV, and 250 mAs.

The results of observations in the study in the article are that the CT Scan of the head is good for assessing the level of seriousness of injury in patients with Traumatic Brain Injury (TBI). The implementation of a 5 mm slice thickness on a CT scan of the head in TBI patients can detect fractures in the head area, Sub Dural Hematoma (SDH), Extra Dural Hematoma (EDH), Sub Archnoid Haemorrhage (SAH), Intra Cerebral Hematoma (ICH), Brain Contusions, and Diffuse cerebral oedema. CT scan of the head as fracture detection depends on the location, the type of rapid surgical intervention can be done to prevent CSF leakage, infection, bleeding where 37.7% of acute brain trauma patients have open skull fractures and its pathological

manifestations such as depression, impact and abnormal thickening of the skull.

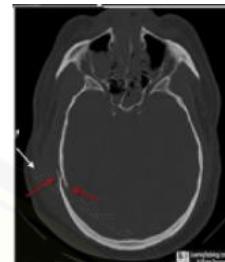


Figure 2. Axial CT scan of the head using a slice thickness of 5 mm in TBI patients (red arrows indicate multiple fractures) [13].

Anatomical information that can be evaluated on a CT Scan of the head in patients with Traumatic Brain Injury (TBI) accompanied by a skull fracture using a 5 mm slice thickness, namely the occipital bone, right and left sphenoidal sinuses, and the brain parenchyma inside. There are also patients with Traumatic Brain Injury (TBI) accompanied by Extra Dural Hematoma (EDH).

Patients with Traumatic Brain Injury (TBI) accompanied by Extra Dural Hematoma (EDH) were scanned using a 5 mm slice thickness. The scan results appear as a collection of hyperdense biconvex ellipses with sharp edges. This Extra Dural Hematoma (EDH) is due to a skull fracture, possibly due to an injury to the middle meningeal artery. Anatomical information that can be evaluated on a CT Scan of the head in patients with Traumatic Brain Injury (TBI) accompanied by Extra Dural Hematoma (EDH) using a 5 mm slice thickness, namely the temporal bone, occipital bone, sulcus, gyrus, falx cerebri, longitudinal fissure, and cisterna.



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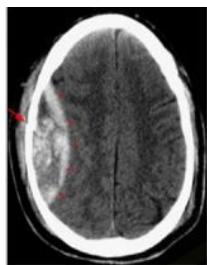


Figure 3. Axial CT Scan of the head using a slice thickness of 5 mm in TBI patients (red arrows indicate Extra Dural Hematoma) [13].

### Fifth article [14]

This research is an observational study on 1,649 Traumatic Brain Injury (TBI) patients for 1 year. The CT Scan modality used is 64 slice MSCT. The scan type used is helical. Slice thickness used is 5 mm, 120 kV, and 250 mAs.

The results of observations in the study in the article found that the implementation of a slice thickness of 5 mm was used to evaluate the facial skeleton in TBI patients accompanied by facial bone fractures. Not only that, TBI patients who are accompanied by facial bone fractures can also be accompanied by sub arachnoid haemorrhage (SAH). If accompanied by sub arachnoid haemorrhage (SAH), of course the head CT scan modality is needed as the right choice. By using a slice thickness of 5 mm in TBI patients with facial bone fractures and sub arachnoid haemorrhage (SAH), it can be selected for evaluation of brain tissue. Anatomical information that can be evaluated on a CT Scan of the head in patients with Traumatic Brain Injury (TBI) using a 5 mm slice thickness is the sulcus, gyrus,

parietal bone, occipital bone, and brain parenchyma.



Figure 4. Axial CT scan of the head using slice thickness 5 mm in TBI patients (white arrows indicate Sub Arachnoid Haemorrhage (SAH) in the basal and ambient cisterns) [14].

### Sixth article [15]

This study is an observational study on 45 patients with Traumatic Brain Injury (TBI) for 24 days. The CT Scan modality used is 64 slice MSCT. The scan type used is helical. Slice thickness used is 5 mm, 120 kV, and 250 mAs.

The results of observations in the research in the article found that on the implementation of slice thickness 5 mm in patients with Traumatic Brain Injury (TBI) found Subdural Hematoma (SDH), Intracerebral Haemorrhage (ICH) and cortical contusions in several locations in the brain. In addition, findings that can be clearly detected on a CT scan of the head in patients with Traumatic Brain Injury (TBI) using a 5 mm slice thickness that should be present at autopsy cannot be found in some cases. Some may not be detectable in thicker slices in the necrotic brain. Anatomical information that can be evaluated on a CT Scan of the head in patients with Traumatic Brain Injury (TBI) using a 5 mm slice thickness is the gyrus,



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sulcus, parietal bone, occipital bone and brain parenchyma.

### Seventh article [16]

This study is an observational study on 30 patients with Traumatic Brain Injury (TBI) for 18 months. The CT Scan modality used is 64 slice MSCT. The scan type used is helical. The slice thickness used is 1.2 mm, 130 kV, and 70 mA.

The results of observations in the study in the article found that the implementation of slice thickness 1.2 mm in patients with Traumatic Brain Injury (TBI) was used for severe Glasgow Coma Scale (GCS). With the implementation of the 1.2 mm slice thickness to the Traumatic Brain Injury (TBI) patient in the article, we found haemorrhagic contusions in bilateral frontal lobes, pneumocephalus along the bilateral frontal lobes, and comminuted displaced fractures on the right side of the frontal bone. The CT scan of the head in patients with Traumatic Brain Injury (TBI) shows more noise. Anatomical information that can be evaluated on a CT scan of the head in patients with Traumatic Brain Injury (TBI) using a 1.2 mm slice thickness, namely the superior sagittal sinus, frontal bone, right and left lateral ventricles, ventricles, occipital bone, temporal bone, right frontal lobe and left, and basal ganglia.

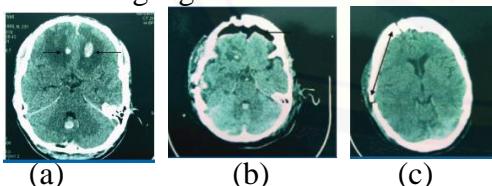


Figure 5. (a) Axial CT scan of the head using a slice thickness of 1.2 mm in TBI patients (black arrows indicate hemorrhagic contusions in bilateral

frontal lobes [16]. (b) Axial CT scan of the head using slice thickness 1.2 mm in TBI patients (black arrow indicates a comminuted displaced fracture on the right side of the frontal bone [16]. (c) Axial CT scan of the head using a slice thickness of 1.2 mm in a TBI patient (black arrows indicate pneumocephalus along bilateral frontal lobes [16].

Implementation of slice thickness on CT Scan of the head with Traumatic Brain Injury (TBI) in the study in the article [10], [11], [12], [13], [14], and [15] with a helical type scan in adult patients using a slice thickness of 5 mm. The implementation of slice thickness 5 mm is used for mild, moderate, and severe Traumatic Brain Injury (TBI). But according to research on the article [16] using a slice thickness of 1.2 mm in cases of Traumatic Brain Injury (TBI). The implementation of slice thickness is applied to adult patients with a diagnosis of Traumatic Brain Injury (TBI) and with severe Glasgow Coma Scale (severe). Implementation of a 1.2 mm slice thickness in severe Traumatic Brain Injury (TBI) is necessary to more clearly see the structures at the base of the skull in the head if there is a fracture that is not visible using a thicker slice thickness.

According to theoretical review [17] slice thickness less than 5 mm the higher the resolution. Thin slice thickness is used to visualize delicate anatomy such as the temporal bone or in the case of acute stroke in Traumatic Brain Injury (TBI), as well as to detect occlusion of blood vessels. Meanwhile, the thicker the slice thickness, the lower the resolution. The implementation of slice thickness in



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patients with Traumatic Brain Injury (TBI) is to use a slice thickness of 5 mm. The implementation of the slice thickness to the helical type scan [4].

From the seven articles, there are 6 articles that are in accordance with the theoretical review and there is 1 article that is different from the theoretical review. According to the author, the implementation of slice thickness in cases of Traumatic Brain Injury should use a slice thickness of 5 mm with a helical type scan. According to the authors, the implementation of slice thickness 5 mm is good for supporting the diagnosis of Traumatic Brain Injury (TBI) in patients with Glasgow Coma Scale from low (mild), moderate (moderate), to severe (severe). With the implementation of a slice thickness of 5 mm the resulting image will appear smoother, not too much noise so that evaluating the brain parenchyma in TBI patients with EDH, SDH, SAH, ICH, and edema will be more informative and clear. If the slice thickness used is less than 5 mm, the resulting image will look rougher and more noise so that it will be less clear to evaluate the brain parenchyma but is good for evaluating fractured bones in patients with Traumatic Brain Injury (TBI).

The implementation of slice thickness 5 mm is more appropriate because it can be used for mild, moderate, and severe Traumatic Brain Injury (TBI). With a slice thickness of 5 mm, it is considered to reduce streaking artifacts at the skull base, can clearly show lesions caused by Traumatic Brain Injury (TBI), can be used

to assess brain parenchyma and can properly reveal Epidural Hematoma (EDH) veins in the anterior fossa. middle cranial cavity adjacent to a fracture of the sphenoid bone caused by a Traumatic Brain Injury (TBI). Image quality will differ between those using a 5 mm slice thickness and those using a 1.2 mm slice thickness.

But according to research on the article [16], the exact slice thickness value on a head CT scan with Traumatic Brain Injury (TBI) cases is 1.2 mm. The implementation of slice thickness 1.2 mm is used for severe Traumatic Brain Injury (TBI) patients. With the implementation of the 1.2 mm slice thickness in patients with Traumatic Brain Injury (TBI) can show the presence of haemorrhagic contusions in the bilateral frontal lobes, the presence of pneumocephalus along the bilateral frontal lobes, and comminuted displaced fractures on the right side of the frontal bone.

According to theoretical review [4] the exact slice thickness value on a head CT scan with Traumatic Brain Injury (TBI) cases is 5 mm. With a slice thickness of 5 mm, it is considered appropriate to diagnose Traumatic Brain Injury (TBI) because the resulting picture will be good and can reveal abnormalities that occur as a result of Traumatic Brain Injury (TBI).

According to the authors, the optimal slice thickness value for head CT Scan with Traumatic Brain Injury (TBI) is 5 mm because it can be used in mild, moderate, and severe Traumatic Brain Injury (TBI) patients. By using a slice thickness of 5 mm, the results of the CT Scan of the head



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will be good and can support the diagnosis of Traumatic Brain Injury (TBI) clearly, well and informatively. With the implementation of a slice thickness of 5 mm the resulting noise is reduced and the contrast resolution is increased. There is a drawback in applying the 5 mm slice thickness, namely the decreased spatial resolution. The advantage of applying the 1.2 mm slice thickness is that the spatial resolution is increased, but there are disadvantages, namely the high noise generated and the decreased contrast resolution. In patients with Traumatic Brain Injury (TBI) who are not accompanied by a fracture, it is better to use a slice thickness of 5 mm so that in revealing the brain parenchyma it will appear softer. In patients with Traumatic Brain Injury (TBI) with fracture, it is better to use a slice thickness of 1.2 mm with a window bone so that if there is a very small fracture, it can be seen more clearly.

### CONCLUSION

The Implementation of slice thickness in CT Scan examinations of the head with cases of Traumatic Brain Injury better still uses 5 mm because it is quite optimal, can be used in mild, moderate, and severe Traumatic Brain Injury (TBI) patients, can reduce streaking artifacts at the skull base, shows the lesions caused by TBI clearly, and can be used to assess the brain parenchyma and follow up on whether the abnormality can progress to further nerve damage, so that the diagnostic information obtained will appear informative.

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### Volume Measurement Analysis of Bleeding in Phantom with Dual Source Computed Tomography (DSCT) in RSUPN Dr. Cipto Mangunkusumo Jakarta

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#### ABSTRACT

Research has been done on the analysis of the accuracy of the results of measuring the volume of bleeding on a Computed Tomography Scanner (CT Scan). Phantom paraffin was used as the object in this study. The background of this research is the measurement of bleeding volume in paraffin's phantom with bleeding volume 29cc in two types of bleeding that are intentionally made in paraffin phantom with slice thickness of 1 mm and 4 mm. The purpose of this study was to analyze the effect of slice thickness on the accuracy of bleeding volume measurement. This study uses a quantitative experimental research method that was conducted on November 18, 2013, where data collection was carried out directly and the standard measurement method was carried out at a CT Scan work station, then compared the results of bleeding measurements with the actual bleeding volume of 29cc. The results of this study are that the size of the 1mm slice thickness in the regular shape is 27.74cc with a standard deviation of 1.26 and the irregular shape is 27.15cc with a standard deviation of 1.85, while the 4mm slice thickness in the regular shape is 27.28cc with standard deviation of 1.72 and in irregular shapes is 26.24cc with a standard deviation of 2.76. The conclusion is that thinner slices have a smaller standard deviation than thicker slices and from this study it was also found that regular-shaped bleeding had a smaller standard deviation than irregular-shaped bleeding.

Keyword : CT Scan, Paraffin's Phantom, Volume, Slice Thickness



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### INTRODUCTION

Computed Tomography Scanner (CT Scan) is one of the latest innovations in the field of diagnostic imaging, it is also a good progress in terms of the use of x-rays as a medical support medium in calculating the volume of bleeding, so that it can help clinicians make decisions in performing drainage of bleeding that occurs.[1]

Bleeding volume plays an important role in predicting a death. The size of the bleeding has a relationship with the neurological deficit in determining the prognosis.[1] The amount of bleeding volume 50cc has a very important value, bleeding over 50cc has a mortality rate of 90%, while bleeding volumes less than 50cc have a mortality rate of only 10%. [2][3][4]

CT Scan has come a long way since it was first introduced by a senior scientist named G.N Hounsfield at the annual congress at the British Institute of Radiology in April 1972, at which time he worked for EMI Limited in Middlesex, England.[5][6][7]

Computed Tomography Scanner (CT Scan) is a technique of taking an image of an object in axial slices with a beam of light around the object, X-rays that experience attenuation after penetrating the object will be captured by a detector facing the x-ray source located behind the object.[1][8][9]

The invention of CT scanning has revolutionized the practice of radiology, the

capabilities of CT scanning are so extraordinary that in many cases, CT scanning is able to provide a lot of diagnostic information compared to conventional x-ray techniques. Since then the development of CT Scan has grown rapidly from the first generation to the present.[8][10][11]

One of the factors that affect the image quality on CT Scan is the slice thickness, so that the selection of the right slice thickness can establish a good diagnosis, so that the measurement of bleeding volume is also more accurate.[12] Research on the measurement of bleeding volume is very important in providing accuracy for clinicians in making appropriate decisions for further medical action.[12]

CT Number plays an important role in determining the type of body tissue, CT Number has a HU (Hounsfield Unit) unit which is taken from the name of the inventor of the first Head CT Scan, namely Godfrey Hounsfield.[8][13] (Table 1)

**Table 1. CT Number with HU units in showing body tissue[14]**



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Tissue type	CT Numbers	Appearance
Cortical Bone	+1000	White
Muscle	+50	Gray
White Matter	+45	Light Gray
Gray Matter	+40	Gray
Blood	+20	Gray
CSF	+15	Gray
Water	0 (baseline)	
Fat	-100	Dark gray to black
Lung	-200	Dark gray to black
Air	-1000	Black

This preliminary study aims to determine the direction of the research method to be carried out, namely the effect of slice thickness on the results of measuring the volume of bleeding and the effect of the shape of a bleeding on the results of measuring the volume of bleeding.

### MATERIALS AND METHOD

#### Study subjects

The study was approved by the local education and research council. Where this experiment was carried out on a phantom made by the researcher himself, where the phantom material uses paraffin which has a mass density of 0.88-0.92, where paraffin itself is one of the recommended materials to make a research phantom. [15](Table 2)

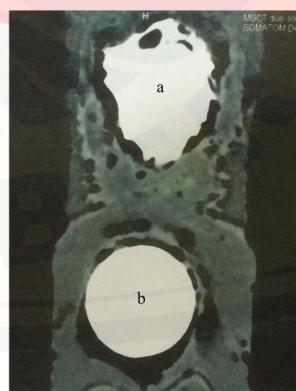
**Table 2. Physical Properties of Various Phantom Materials.[15]**

Material name	Chemical Composition	Mass density (gm/cm <sup>3</sup> )	Number of Electrons/g ( $\times 10^{23}$ )
Paraffin wax	$C_nH_{2n+2}$ , $20 \leq n \leq 40$	0.88 - 0.92	3.44
Solid water	Epoxy resin-based mixture	1.00	3.34
PMMA	$(C_5O_2H_8)_n$	1.16 - 1.20	3.24
Water	$H_2O$	1.00	3.34

#### CT Scan Technical research

The paraffin phantom that was made contained two samples of regular and irregular bleeding, each containing 29cc volume (Figure 1), scanned with a standard head protocol, then during the examination process, the scanned results were immediately reconstructed into slice thicknesses of 1mm and 4mm.

The reconstructed paraffin phantom was then measured using the volume measurement software available at the CT Scan consul. The results of the accuracy of the volume measurement results are seen from the calculation of the standard deviation by comparing the measurement results with the actual bleeding volume which is 29cc.





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**Figure 1.** Scanning image of two bleeding sites in paraffin phantom a) Irregular model and b) Regular model

The way of processing and analyzing data is by comparing the volume of the measurement results with the actual volume. From the data that has been obtained then the percentage of the standar deviation is calculated.

The standard deviation calculation uses a single data standard deviation formula.

**Formula :**

$$S = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n}}$$

S = Standard Deviation

$x_i$  = First data value

$\bar{x}$  = Average number of data

n = Number of data

## RESULTS

The results obtained when performing volume measurements on CT Scan results using the volume measurement software found on the CT Scan tool at two bleeding sites that were intentionally created and placed in phantom paraffin (regular and irregular shaped bleeding sites) with two locations at each location. different slice thickness pieces are 1mm and 4mm respectively and the Hounsfield Unit (HU) range is 20-400 (Tabel 1). where each slice thickness was measured 3 times.

From the volume measurement data, it is found that the thinner slice thickness measurement (1mm) is closer to the actual bleeding volume value compared to the thicker slice thickness measurement (4mm). The shape of a type of bleeding is known to also affect the measurement results, where the measurement results in the regular form of bleeding are closer to the actual volume compared to the irregular form of bleeding.

The results of the study indicate that the size of the 1mm slice thickness in the regular shape is 27.74cc with a standard deviation of 1.26 and the irregular shape is 27.15cc with a standard deviation of 1.85, while the 4mm slice thickness in the regular shape is 27.28cc with standard deviation of 1.72 and in irregular shapes is 26.24cc with a standard deviation of 2.76. (Table 3)

**Table 3.** Measurement results and standars deviation calculation results.

Mold	Slice Thickness (mm)	$x_1$ (cc)	$x_1$ (cc)	$x_2$ (cc)	$x_2$ (cc)	$\bar{x}$ (cc)	S (Standard Deviation)
Irregular	1	29	27,15	27,15	27,15	27,15	1,85
	4		26,24	26,24	26,24	26,24	2,76
Regular	1		27,74	27,74	27,74	27,74	1,26
	4		27,28	27,28	27,28	27,28	1,72

## DISCUSSION

From the results of research that has been carried out, it is known that regular and irregular bleeding forms and the size of the thickness of the slices at the time of imaging



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reconstruction affect the measurement results quite large and can be seen from the standard deviation, in accordance with several journals which say that the optimal volume measurement results are carried out on thin slice thickness. Where the smallest standard deviation is shown in the measurement results in the form of regular bleeding with a slice thickness of 1mm is 1.26, while the largest standard deviation is 2.76 in the measurement results in irregular shapes with a slice thickness of 4mm.

### CONCLUSION

The conclusion from the research that has been done is that regular bleeding with a thin slice thickness (1mm) when performing reconstructive imaging produces a fairly good measurement result because it has the smallest standard deviation of 1.26. So it is recommended that when measuring the volume of bleeding it should be done with a thin slice thickness because of better accuracy.

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This research can be carried out with the help of many parties, starting from the supervisor, namely Mr. Arif Jauhari, S.Si., M.KKK; Mr. Samsun, S.Si.M.Si and Mr. Kukuh Nurcahyo, S.ST who guided the research in the field, I also don't forget to say thank you to the Radiology Department of Dr. RSUPN. Cipto Mangunkusumo Jakarta for allowing me to do research.

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### AMNIOTIC FLUID INDEX DETECTION WITH ULTRASONOGRAPHIC EXAMINATION AT BABELAN I HEALTH CENTRE BEKASI

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#### ABSTRACT

Amniotic Fluid Index is one of important components which must be examined in every pregnant woman. If the value is abnormal, the fetal development will interfere. The most effective modality for this examination is ultrasonography because it is the most non invasive and accurate examination. This exam was performed transabdominally with single pocket technique of quadrant at first trimesters, from second to third trimesters by using four pocket technique with 2-5 MHz frequency convex transducers. The study was conducted at Health Centre of Babelan I Bekasi using descriptive qualitative research method. Population was taken from all of ultrasound obstetrics examinations in September-October 2018. 30 people of sample was taken by purposive random sampling technique, which included by inclusion criteria, from first to third trimester pregnant women who had complaints or not. The result are, from 30 samples there were 16 categorized as normal, 2 oligohydramnios, 11 alerted to oligohydramnios and 1 alerted to polyhydramnios. Thus, for all abnormal samples are given the references letter's appointment to obstetrician for immediate treatment. The ultrasound examination for Amniotic Fluid Index needs to be done from the first to third trimesters because it can detect the abnormalities. Earlier detected makes the faster of treatment, so it can decrease of fetal defects or maternal and fetal deaths. The position and volume of amniotic fluid in every pregnant woman are vary. So this exam should be measured clearly and detail to able to produce an accurate information.

Keyword : Ultrasonography; Amniotic Fluid Index (AFI); Oligohidramnion; Polihidramnion.

#### INTRODUCTION

Measurement of the Amniotic Fluid Index (AFI) is one of the most frequently used of semiquantitative techniques to measure

amniotic fluid volume.(lanny M, 2012)

If it found under <5 cm, it is called oligohydramnios.(Kurjak & Chervenak, 2011) Pregnancy with oligohydramnios



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has a high rate of meconium aspiration, fetal distress, and cesarean section.(G. G. N. L. K. Cunningham, 2016) The incidence of oligohydramnios is about 3.9% of all pregnancies, but it is estimated to be around 12% in pregnancies of 40 weeks or more.(Brace, 2014) Oligohydramnios may also be associated with congenital anomalies such as urinary obstruction, fetal growth restriction, postterm pregnancy, and placental problems related to maternal-fetal interactions. (Baxter JA, 2013) (Modena, 2014)

Hydramnios or polyhydramnios is defined as an amniotic fluid index greater than 24 cm – 25 cm equivalent to a volume greater than the 95th or 97.5th percentile.(G. G. N. L. K. Cunningham, 2016)

Hydramnios occurs in about 1% of all pregnancies. Mild hydramnios is defined as sacs measuring 8 to 11 cm vertically, present in 80% of cases with fluid overload. (Weber & Merz, 2015) Moderate hydramnios is defined as sacs containing only small parts and measuring 12 cm -15

cm deep, found in 15%. (Laughlin & Knuppel, 2013) And only 5% developed severe hydramnios, which is defined as the presence of a free-floating fetus in a fluid sac measuring 16 cm or more.(Fox, 2014) Although 2/3 of cases are idiopathic, another 1/3 occur in fetal anomalies, maternal diabetes, or multiple gestation. (Cunningham FG, Leveno KJ, Bloom SL, Spong C, Dashe JS, Hoffman BL, 2014) Amniotic fluid volume is an important predictor for assessing fetal well-being that continues past the 40th week of gestation, where amniotic fluid has decreased gradually since 37 weeks of gestation.(F. Cunningham et al., 2015) The amount of amniotic fluid can also predict how the fetus tolerates labor.(Modena AB, 2014) Amniotic fluid has a function to allow the fetus to move freely and the development of the skeletal muscle system.(Gilbert, 2016) It helps the development of the digestive tract, as a fluid and food for the fetus, provides pressure so as to prevent lung fluid loss, is important for lung development, protects the fetus from



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trauma, prevents compression of the umbilical cord, keeps temperature of the fetus, as a bacteriostatic to prevent infection, and in the process of labor evens out the pressure during contractions.(Lorzadeh Nahid, Kazemirad S, Lorzadeh Mina, 2010)

Maternal hydration and maternal osmolarity affect the amount of amniotic fluid and also affect fetal urine production and its reabsorption as gestation approaches term.(Al-Salami KS, 2017)

There was a 30% increase in AFI in women who consumed 2 liters of water, 2 to 5 hours before the repeat ultrasound, compared with women who did not receive oral hydration(Becker et al., 2011). The study recommends that women with known oligohydramnios be considered for maternal hydration before re-measurement of AFI 2 to 6 hours later.(Leeman L, 2015)

Maternal hydration with intravenous hypotonic solutions in oligohydramnios women also had an increase in amniotic fluid volume (up 2.3 cm, 95% CI 1.36-3.24).(Hofmeyr GJ, 2014)

Significant increase in mean umbilical artery velocity after maternal hydration and the theory that hydration works to increase ICA or AFI by substantially improving placental blood flow or water transfer across the placenta. (Killpatrick SJ, Safford K, Pomeroy T, 2011)

In some research reviews it is concluded that indomethacin therapy can interfere with the production of lung fluid or increase its absorption, reducing fetal urine production.(Chamberlain, 2015) The dose used by most investigators ranges from 1.5 to 3 mg/kg/day.(Merz, 2015) And from several studies reported that women who were given indomethacin will experience a decrease in amniotic fluid volume.(Norwitz ER, Shorge OJ, 2014)(Killpatrick SJ., 2017) This journal reports the results of the Amniotic Fluid Index detection measurement of 30 patients with and without complaints at the Babelan I Health Center Bekasi. Hopely this will be able to be a standard operational procedure and if abnormalities are found in the early detection of the



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Amniotic Fluid Index, pregnant women in the Babelan 1 Health Center. Because this ultrasound examination is recommended to see the volume of the Amniotic Fluid Index in each trimester of pregnancy to detect the normality value. If an abnormality of this value is found, the patient can immediately get a referral for further treatment. So the rate of fetal defects and maternal and fetal mortality can be suppressed. If this exam can be treated early it may cause the rate of fetal birth defects, premature rupture of membranes, premature birth, and maternal and fetal death can be reduced.

### MATERIALS AND METHOD

The method used in this research is descriptive qualitative research method with a comparative study method, namely by conducting observations and interviews in the field then this research will describe and explain with scientific explanations. This study aims to describe the actual situation (objective) in the community to

get accurate results from an object under study.

Purposive random sampling by taking data randomly for a month from September to October 2018 at the Babelan Health Center, Bekasi with 10 samples of pregnant women at the first trimester, 10 pregnant women at second trimester and 10 pregnant women at third trimester with and without complaint. The pregnant women were examined by AFI ultrasound using the Single Pocket Technique in first trimester and Four Quadrant Method Technique for the patients at second and third trimesters. The patient's general condition is good and his family has no history of diseases that interfere with his health.

Data analysis was carried out in this study, namely by scanning transabdominal AFI Obstetric Ultrasound with the single pocket technique in the first trimester pregnant women and the four quadrant technique in the second and third trimester pregnant women to obtain the Amniotic Fluid Index value. Then observe and



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record the AFI value of all research sample data on the prepared sheet. Next Classify and record normal and abnormal AFI values. Then the data and examination results that have been obtained will be strengthened by the results of interviews from obstetricians, midwives, sonographers, and patients. Finally, all data will be distributed based on the abnormalities found and then analyzed in a narrative and descriptive manner.

### RESULTS

<sup>nd</sup>

The number of samples collected by the author is 30 samples, consisted of 10 samples in the first trimester, 10 samples in the second trimester, and 10 samples in the third trimester. All of them were new patients or had never previously performed an ultrasound examination of pregnancy at the Babelan I Health Center Bekasi or elsewhere.

This study uses an Ultrasonography with specifications: 2D USG, Brand General Electric (GE), Type LOGIQ V5, No. Series 214028, Voltage 100-240 Volts,

Frequency 50-60 Hz, 600 VA, No. BSQWU-3HSA5 series.

There is no special preparation for this examination, the patient is only asked to follow the directions of the sonographer. Examination Procedure The patient comes to the radiology unit with a request letter from the sending doctor or midwife, then the officer registers to clarify the examination to be carried out and completes patient data, inputs data in the form of name, date of birth, last menstrual period (LMP) and selects the appropriate probe. will be used. Patients were asked to wait in the waiting room for radiology examinations. Then the patient entered the examination room for an AFI ultrasound examination.

The examination technique performed on a single pocket is by tracing the uterus starting from the symphysis pubis to the uterine fundus, observing the deepest amniotic fluid area and measuring it and then recording the results.



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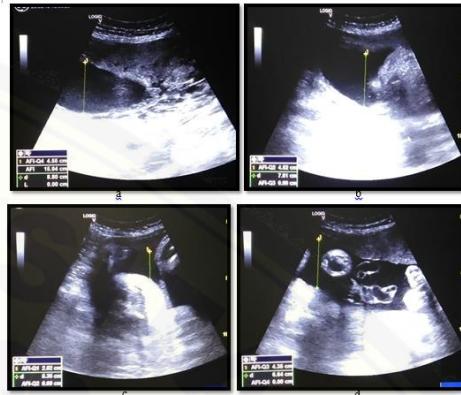
This picture above describe the normal value of AFI with the single pocket technique is in the range of 2 cm – 8 cm.



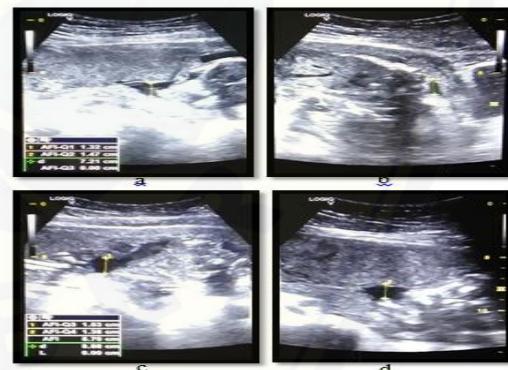
This picture above describe the abnormal value of AFI with the single pocket technique where the range of it is  $<2$  cm which is indicated as oligohydramnios. and  $>8$  as polyhydramnios.

Then, in the four quadrant method, the examination technique used is to divide the abdominal area into four parts and each area is measured in the deepest amniotic fluid plane, the results are recorded and

then added up. The total value of the four quadrants is then recorded.



Here is the picture of normal value of AFI with the four quadrant method. The range of 5 cm – 25 cm. where the range of it is  $<5$  cm which is indicated as oligohydramnios. and  $>25$  as polyhydramnios.



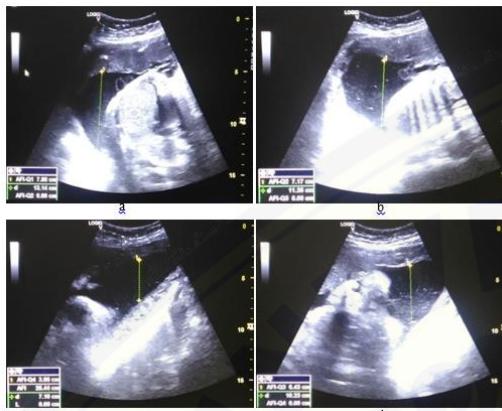
This picture above describe the abnormal value of AFI with the four pocket technique method. Where the range of it is



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<5 cm which is indicated as oligohydramnios.



Then picture above describe the abnormal value >25 which is indicated as polyhydramnios.

Where <5 cm is indicated as oligohydramnios and >25 as polyhydramnios.

The results are presented in the following table :

TRIMESTER	Normal	RESULT					Total
		Alert to Olygo	Olygo	Alert to Poly	Poly		
1	3	6	1	0	0		10
2	6	2	1	1	0		10
3	7	3	0	0	0		10
Total	16	11	2	1	0		30

From the table of the Amniotic Fluid Index detection, 3 samples of normal first trimester, 1 sample of oligohydramnios, 0

samples of polyhydramnios, 6 samples of oligohydramnios, and 0 samples of polyhydramnios were obtained.

6 samples of normal second trimester, 1 sample of oligohydramnios, 0 samples of polyhydramnios, 2 samples of oligohydramnios, and 1 sample of polyhydramnios.

The normal third trimester consisted of 7 samples, 0 samples of oligohydramnios, 0 samples of polyhydramnios, 3 samples of oligohydramnios, and 0 samples of polyhydramnios.

### DISCUSSION

From the research on Amniotic Fluid Index Detection with Ultrasonographic Examination at the Babelan I Health Center Bekasi, it can be concluded that ultrasound examination for the Amniotic Fluid Index needs to be carried out in the I, II and III trimesters because it can detect abnormalities or abnormalities. The weakness of this research are only uses 30 samples, does not use quantitative research methods and does not use data processing applications. However, the efforts of this



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study to find a standard operating procedure to be established through a proof that the measurement of the amniotic fluid index is very necessary, also can't be underestimated. The Early detection of amniotic value means faster of the treatment, so the rate of fetal defects and maternal and fetal mortality can be reduced. The position and volume of amniotic fluid in each pregnant woman is vary. So the Amniotic Fluid Index should be measured clearly and detail in order to able to produce accurate information.

### CONCLUSION

Standard Operating Procedures (SOP) of Amniotic Fluid Index for each ultrasound patient in every trimesters are important.

It caused by, if amniotic volume not detected, it could risk the safety of the mother and fetus, using the single pocket method in the first trimester and the four quadrant method in the second and third trimesters as AFI measurement techniques in order to obtain accurate and detailed AFI values, and for research on amniotic

fluid. The future research is expected to have more samples, longer research time, and using application data analyze so the better and more accurate research results are obtained.

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### PROBLEM IN THE SCREENING PROCESS OF MAGNETIC RESONANCE IMAGING (MRI) EXAMINATION

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#### ABSTRACT

MRI is a non-invasive, radiation-free method of presenting images of organs from various slices without disturbing the patient's body, and it can provide diagnostic information with a high level of accuracy. **Background:** Although the MRI examination does not use a radiation hazard as in the CT-Scan examination, nuclear medicine, and conventional radiology. The MRI room might become a dangerous place if the radiographer or other medical staff neglects to perform MRI examinations. **Method:** library research, critically examines or reviews the knowledge, ideas, or findings contained in the body of academic-oriented literature, and formulate theoretical and methodological contributions to a particular topic. **Result:** Patients' lack of education and awareness regarding the examination and the surroundings of the MRI room with high magnetic field can lead to a variety of issues, including accidents. **Conclusion:** The use of ferromagnetic implants or foreign objects such as pacemakers is one of the most significant possible dangers for someone undergoing an MRI test. The safety of the patients is a top priority.

*Keywords:* MRI, accident, pacemaker



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### INTRODUCTION

Magnetic Resonance Imaging (MRI) is a diagnostic radiology scanner that produces cross-sectional images of the body using magnetic fields and radio wave energy<sup>[1]</sup>. Currently, MRI is developing rapidly because apart from being able to provide diagnostic information with a high level of accuracy, it is non-invasive, there is no radiation hazard and presents images of organs from various slices without manipulating the patient's body<sup>[2]</sup>.

Although there are no radiation hazards such as examinations using radiation on CT scans, nuclear medicine, or conventional radiology. The MRI room can be a dangerous place if precautions are not taken. This is because the magnetic strength in MRI is extraordinary compared to the strength of the Earth's magnetic field. So that metal objects can become dangerous projectiles if they enter the MRI room<sup>[3]</sup>.

In general, MRI is a very safe examination. However, the MRI room in radiology is a particular place where safety precautions must be taken due to the ferromagnetic nature of the very strong magnetic field<sup>[4]</sup>. Unlike X-ray examination in general, MRI requires special equipment such as a separate room that isolates the area from radio waves using a Faraday cage, a strong magnetic field, and radio frequency equipment such as transmitters, receiver coils and amplifiers<sup>[5]</sup>.

One of the biggest potential risks for someone to undergo an MRI examination is related to the use of ferromagnetic implants or foreign bodies. There are serious risks associated with the use of ferromagnetic implants or foreign objects to magnetic fields, so screening is necessary prior to the examination procedure to identify unsafe items that may be attached or implanted in the patient<sup>[6]</sup>.

Because the information provided by the patient is less accurate, MRI screening is not always able to detect the presence of a



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potentially dangerous implanted object in the patient's body. Communication between the patient, the care provider, and the medical record is an important link in the safety of MRI. Information regarding allergies related to the use of contrast media or medical devices or implants in the patient's body must be submitted before the MRI examination is carried out<sup>[3]</sup>. Therefore, a radiology officer who is specially trained in MRI safety should perform a detailed screening of both the patient in question and the patient's family. Currently, the ethical basis for medical practice is getting a lot of attention. This is because there are many cases of accidents during medical practice that cause losses and even death. In MRI, accidents can occur due to negligence either by the patient, the patient's family, or even from the MRI officer himself. All patients and personnel who will access the MRI room must be thoroughly screened to prevent dangerous objects from entering the scanning room<sup>[7]</sup>. This must be done to maintain safety and avoid accidents that

can be detrimental. The negligence of the MRI officer in providing an explanation or screening regarding the procedure and preparation for the MRI examination can cause various problems and even accidents and harm many parties. Thus, the focus of writing this paper is related to the importance of explaining and screening about the MRI procedure and environment both for patients, patients' families as well as service provider personnel to avoid the risk of accidents.

### METHODS

The type of research used is *library research*, namely a series of studies relating to library data collection methods or research whose research objects are explored through various library information. The research literature or review of the literature (*literature review*) is the research that critically examine or review the knowledge, ideas, or findings contained in the body of academic-oriented literature, and to formulate



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theoretical and methodological contributions to a particular topic.

### Case

Cases caused by negligence in conducting screening in the first study include:

1. The case of an unconscious patient injured during a brain MRI examination due to a projectile coming from a sandbag behind the patient's body and not confirmed by the MRI officer<sup>[8]</sup>.
2. In India, a 32-year-old man reportedly died after being sucked into an MRI machine at a hospital. This incident occurred when the man intended to bring in oxygen cylinders to his brother who was going to undergo an MRI examination, this was due to the negligence of the MRI officer when conveying information about the MRI room area<sup>(15)</sup>.
3. An accident that killed a child during an MRI examination. This happened when the pediatric patient had decreased oxygen saturation and the anesthesiologist asked a nurse who was not an MRI staff to bring an oxygen tube

into the MRI room. When the oxygen cylinder is brought into the MRI room, the magnetic field strength of the MRI attracts the tube so that it hits and kills the pediatric patient<sup>[9]</sup>.

### RESULT

The MRI room can be a very dangerous place if strict precautions are not taken. Metallic objects can be dangerous when they enter the MRI room. In general, accidents are always defined as events that cannot be forgotten. The magnetic field used in MRI is so powerful that it can affect any metal object in the vicinity. The potential risks in the MRI environment are not only for the patient, but also for the MRI attendant present, accompanying family members, and even other healthcare workers<sup>[2]</sup>.

### MRI Safety Screening

In addressing safety concerns in MRI, emphasis should be placed on prevention. Preventive measures need to be implemented to prevent accidents from



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occurring. Concerns about the safety of MRI are increasing, this is due to the increasing number of accidents in recent years [10]. Most of the accidents in MRI are due to failure to follow safety guidelines, use of inappropriate or outdated information related to the safety aspects of biomedical implants and devices and human error by both MRI staff and patients and families. There is a need for a comprehensive safety program to prevent errors from occurring, namely a safety protocol by MRI officers in the form of screening to ensure that the patient is safe from ferromagnetic objects and the family understands the procedure in the MRI environment [4]. Screening can be done by giving informed consent both orally and in writing, and for patients with pacemakers a pacemaker function pretest is performed first<sup>[11][12]</sup>.

### Occupational Health and Safety Efforts in the MRI Room<sup>[13]</sup>

To seek safety and health in the MRI room, it is necessary to take the following steps:

- a. Restricting access to all persons who are not trained and understand the safety of MRI or are screened by staff who are trained on the safety of MRI have already entered the door of the MRI scanner room.
- b. Ensure that these restricted areas are controlled by and under the direct supervision of staff trained in MRI safety
- c. Posting a sign at the entrance to the MRI scanner room indicating a potentially hazardous magnetic field in the room. The information board must also indicate that the magnet is always on except in cases where the MRI system, by design, can have its magnetic field routinely switched on and off by the operator.

The service provider must also verify and ensure that the officer performing the MRI examination has received education that includes training on safe MRI practices in the MRI environment<sup>[13][2]</sup>, so that they can pay attention to, among others:

1. Patient screening criteria addressing ferromagnetic items, electrically conductive items, medical implants and



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devices, and risk of Systemic Nephrogenic Fibrosis or NFS.

2. Proper placement of patient and equipment activities to avoid thermal injury.

3. Specified equipment and supplies are acceptable for use in environmental MRI (MR Safe or MR Conditional).

MRI safety response procedures for patients requiring emergency medical care or emergency care.

4. MRI system emergency shutdown procedures, such as MRI system cooling and cryogen safety procedures.

5. Patient hearing protection.

6. Management of patients with claustrophobia, anxiety, or emotional distress.

Safety training is an important component of ensuring a safe MRI area. MRI officers are those who regularly work in an MRI environment and have carried out the necessary training to enter and work in an MRI environment<sup>[7]</sup>.

### Things to Pay Attention to in Safety and Health at MRI

During the MRI examination, it should be noted that ferromagnetic devices (such as wheelchairs, oxygen cylinders, etc.) are not allowed to be brought into the MRI room. So to maintain safety, patients are required to wear examination clothes and leave ferromagnetic objects such as watches, keys, jewelry, hair clips and others<sup>[1]</sup>.

### Actions to take in the event of an accident

If an accident occurs during an MRI examination, there are several things that need to be done, including;

1. If there is an emergency situation in the patient, immediately stop the examination by pressing the ABORT button, the patient is immediately removed from the MRI plane by pulling the examination table and immediately providing assistance and if further actions require medical devices that are ferromagnetic, they must be carried out outside the examination room.



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2. In the event of a blackout (Quenching), namely the nature of the strong magnetic field in Gentry (part of the plane MRI) suddenly, the action that needs to be done is open doors wide width so that the air exchange and patients leave the examination room. This is necessary because Quenching causes helium to evaporate, so the MRI examination room is polluted with helium gas.

### DISCUSSION 2<sup>nd</sup>

Before carrying out an MRI examination on a patient, the officer must ensure that the patient and his family really understand the procedure and the area of the MRI room. In addition, MRI officers are also required to ensure that the patient's condition is free from the use of medical devices containing metal or ferromagnetic materials [1]. This can be done by screening by giving informed consent both orally and in writing, and for patients with pacemakers a pacemaker function pretest is performed [11].

The thing that needs to be considered in patients who will undergo an MRI examination is the presence of metal or electronic objects that are in the body or around the patient. Some of the cases above are accidents that occur due to negligence on the part of the MRI officer. Where MRI officers do not perform detailed screening, so ferromagnetic objects can enter the MRI room and injure or even kill someone [14][8]. Although the protocol and requirements for MRI examination are quite complex, MRI is one of the best and safest imaging methods. MRI does not use ionizing radiation such as x-rays or CT scans, so there is no radiation effect on the patient [3]. Therefore, it takes care and thoroughness of officers and radiologists to avoid the risks that may arise. Patient safety is a priority.

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### Lung low dose CT scan (LLD-CT) as a screening test in patients who will be hospitalized during pandemic ; a clinical benefits and medical ethics literature review

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#### ABSTRACT

**Background:** Patient who will be hospitalized are assumed to be free from Covid-19. We reviewed from clinical and ethical a screening strategy LLD-CT scan for patients who will be hospitalized during of the pandemic. **Methods:** Conduct a review related to procedures, techniques, and clinical benefits of lung low dose CT examination and the justification and ethics of its application in the context of screening for Covid 19 in patients who will be hospitalized in hospitals. Collection of various literature related to lung low dose CT scan examinations to obtain conclusions from a clinical and medical ethics perspective regarding the COVID-19 screening strategy. **Results:** The results of review of the various literatures collected show that a LLD-CT scan can be used as a COVID-19 screening strategy in patients who will be hospitalized as well as screening strategies for lung cancer patients. The results of the clinical review provide information that the examinations carried out resulted in very low radiation doses, all of which were below 3 mGy of CTDI with high image quality and accurate for COVID-19 clinical information. The examination procedure is carried out by obtaining consent from the patient or the patient's family by signing the informed consent. **Conclusion:** In the clinically literature review, we concluded that the LLD-CT examination as a COVID-19 screening in patients who will be hospitalized can be applied by paying attention to ensures the examination is carried out at a low dose (CTDI less than 3 mGy). and the results of images to enforce the Covid-19 diagnostic (GGO pattern is clearly detected). In the review of legal medical ethics, the LLD-CT examination does not conflict with medical law where the examination is carried out based on the consent of the patient / patient's family and not solely for business interests and seeking profit.

Keyword : COVID-19; Lung low dose; Computed tomography; LLD-CT



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### INTRODUCTION

The outbreak of Coronavirus Disease 19 (COVID-19) was first reported in Wuhan, China, in December 2019. Shortly after, the disease was extended as a pandemic. Globally, as of 7:19pm CET, 11 November 2021, there have been 251,266,207 confirmed cases of COVID-19, including 5,070,244 deaths, reported to WHO. As of 10 November 2021[1]. In Indonesia, from 3 January 2020 to 11 November 2021, there have been 4,249,758 confirmed cases of COVID-19 with 143,608 deaths, reported to WHO. As of 8 November 2021[2].

Based on the previous guidelines, COVID-19-induced-pneumonia diagnosis should be verified by reverse transcription polymerase chain reaction (RT-PCR) as benchmark[3].

Chest/Lung CT scan was suggested to be a satisfactory tool for detecting COVID-19 pneumonia based on reports from China, showing a sensitivity of up to 97%[4].

Low-dose CT scan is approved for screening lung cancer with adequate quality[5].

A lung low dose CT (LLD-CT) screening is an examination of one's lungs, which has much lower radiation dose than conventional Lung CT Scan. With LLD-CT scan screening, small

lesion can be detected as the scan obtains hundreds of detail images of the lung.

A recent study by Tofighi et al. has discussed the application of low-dose CT in COVID-19 pneumonia and stated that low-dose and ultralow-dose CT have a comparable efficacy in the detection of ground glass and consolidative opacities. They have suggested comparison of low-dose and conventional protocol in early stages of the disease, because in intermediate and advanced stages, the low-dose CT protocol will provide adequate image quality and diagnostic accuracy[5].

Key goals for the health care system in response to the COVID-19 outbreak are to reduce morbidity and mortality, minimize disease transmission, protect health care personnel, and preserve health care system functioning[6].

One of the efforts to overcome the spread of COVID-19 from hospitalized patients and to ensure that all patients are safe and free of COVID-19, several hospitals have developed a COVID-19 screening strategy for all patients who will be hospitalized by conducting LLD-CT scan.

But this raises the question for us, does this strategy have any significant clinical use? And can it be justified in terms of medical ethics?



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### MATERIALS AND METHODS

This study is observational and analytical. Observations were made on 3 literatures related to the Chest CT scan examination technique (known as the Lung Low Dose CT scan technique) used in cases of COVID-19, both as a screening effort and as a diagnostic effort to ensure the patient is positive for Covid or not. And some other literature we use to complete the information related to the LLD-CT technique which is usually used in screening cases for lung cancer patients.

The analysis is to review the clinical benefits and medical ethics through some of the literature that has been collected and discuss the LLD-CT examination, especially in relation to the lung low dose CT technique that can be used as a Covid 19 screening test. The analysis also discusses its relationship with the results of the information clinical and radiation dose obtained by the patient after the LLD-CT examination. From here the author will conclude whether the LLD-CT scan examination in patients who will be hospitalized has a strong reason to be used as a COVID-19 screening in these patients.

### RESULTS

Chest CT is a conventional, noninvasive imaging modality with high accuracy and

speed. On the basis of available data published in recent literature, almost all patients with COVID-19 had characteristic CT features in the disease process (8,10–13), such as different degrees of ground-glass opacities with and/or without crazy-paving sign, multifocal organizing pneumonia, and architectural distortion in a peripheral distribution. In addition, about 60% of patients (34 of 57) had typical CT features consistent with COVID-19 before (or parallel to) the initial positive RT-PCR results, and almost all patients (56 of 57) had initial positive chest CT scans before or within 6 days of the initial positive RT-PCR results.[4]

This indicates that Chest CT scan can be very useful in the early detection of suspected cases.

Motlagh et al.[13] in their study, provided evidence that Lung low dose CT scans can provide excellent information on the description of pneumonia due to COVID-19. 92.6% had abnormal findings on CT scan at baseline and 81.6% had CT findings typical of COVID-19 viral pneumonia defined as positive.

Regarding the radiation dose, in his study, the CTDI value was much lower than using standard examination techniques. The CTDIvol average value in the study was 1.77 mGy.[13]



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A recent study by Dangis et al. [10] demonstrated a specificity of 93.6% for detection of COVID-19 with low-dose chest CT, markedly higher than results gathered in a recent meta-analysis by Kim et al. (7), which stated a pooled specificity of 35% (range 25% - 56%) from the studies with repeated PCR. Dangis et al. [10] claimed that their high accuracy was due to the repeat of RT-PCR test in the two following days.

Lung low dose CT scan (LLD-CT), which is usually used as a lung cancer screening test, turned out to be a good tool for detecting COVID-19 pneumonia. A recent meta-analysis has demonstrated a pooled sensitivity of 94%; however, the positive predictive value of CT scan was questioned outside China where there is a low prevalence of disease[7].

Low-dose CT scan is approved for screening lung cancer with adequate quality[9]. Encouraging data from a recent article demonstrated no breaks in double-strand-DNA with low-dose chest CT, as against standard-dose[10], particularly suggesting that the low-dose protocol is safer. A recent study has demonstrated high accuracy

of low-dose chest CT in detection of COVID-19[11].

### CT Scan Protocol

At this study we get the information that all patients underwent low-dose chest CT by using a SOMATOM Definition AS 64-slice, 0.6-mm detector scanner (Siemens Healthineers, Forchheim, Germany). Used the vendor supplied software (Care Dose 4D; Siemens Healthineers) to calculate size-specific radiation dose estimates for a low-dose chest CT protocol adapted from the protocol used for lung cancer screening. Reference values in a so-called average patient were set to 100 kVp and 20 mAs with a pitch of 1.2 and 0.5-second gantry rotation time. A relatively high pitch was used to limit motion artifacts in dyspneic patients with COVID-19.[10]

Effective radiation dose was calculated by multiplying the dose length product by 0.014 mSv/mGy.cm as the constant k-value for thoracic imaging. Images were reconstructed at 1-mm slice thickness and 0.7-mm increment with a standard lung-tissue kernel (I50f medium sharp) and at 3-mm slice thickness and 3-mm increment with a standard soft-tissue kernel (I31f medium smooth) using sinogram-affirmed iterative reconstruction strength of 3. All reconstructions were performed with a field of view of 450 mm and a matrix size of 512 x 512 pixels.[10]



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### CT Image Analysis

All LLD-CT scan images were scored as suggestive for or inconsistent with COVID-19 infection based on the presence of findings as presented by Ng et al and Shi et al (11,12). In summary, CT findings suggestive of COVID-19 infection were multiple ground-glass opacities (GGO), bilateral / multifocal involvement, peripheral distribution, and, at a later stage, crazy paving, consolidation, and reversed halo sign. CT findings inconsistent with COVID-19 infection were tree-in-bud opacities, entrilobular/parabronchi vascular distribution, cavitation, and pleural effusion.[10]

### DISCUSSION

Accuracy and Reproducibility of LLD-CT scan for COVID-19 Diagnosis when compared with RT-PCR, the LLD-CT scan demonstrated excellent (for sensitivity, specificity, positive predictive value, negative predictive value, and accuracy for the diagnosis of COVID-19.

However, all of them are aimed at helping and trying to find alternative tests that are more fast and still accurate for diagnostic purposes, ensuring that the patient is truly positive or not (in confirmed patients, patients with symptoms or suspected patients). However, it is not carried out on

patients who are actually declared healthy and have no symptoms of COVID-19 as discussed by us.

So that raises the question is it justifiable if this examination can be applied as screening to patients who will be hospitalized? The ACR recommends that CT should not be used to screen for or as a first-line test to diagnose COVID-19 and

CT should be used sparingly and reserved for hospitalized, symptomatic patients with specific clinical indications for CT. Appropriate infection control procedures should be followed before scanning subsequent patients.[6]

For this reason, it is necessary to have a re-study that is carried out only in this case with samples and data directly from the real site.

Regarding the radiation dose obtained by the patient when performing an LLD-CT scan, the existing literature gives a low value with sub millisievert effective radiation dose (0.56 mSv + 0.25).[10]

This can be done by paying attention to the use of protocols with parameters that are specifically set for LLD-CT scan examinations, not like Lung or Chest CT Scan examinations in general. The use of special features to reduce radiation dose is also used (eg CARE Dose4D).



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In terms of medical ethics, this examination must obtain the consent of the patient before the examination is carried out. This is considering the radiation reception and additional costs to be borne by the patient. Because before the pandemic, patients who will be hospitalized do not need this screening examination.

An open and clear verbal explanation to the patient or his family is very necessary to ensure that the patient understands and understands what will be done to himself or his family. This is not done in the literature above, because the goals and purposes are different.

### CONCLUSION

The use of LLD - CT for COVID-19 detection or screening, our opinion is from our review, all of literatures demonstrate the feasibility of using lung low-dose CT to achieve an important reduction in radiation dose on a population level during this pandemic. Chest CT has high sensitivity for the diagnosis of COVID-19. From data and analysis suggest that chest CT should be considered for COVID-19 screening, comprehensive evaluation, and follow-up, especially in epidemic areas with high pretest probability for disease.

Based on the literature above, we conclude

that the LLD-CT scan examination for patients who will be hospitalized, clinically by considering

the accuracy, sensitivity and specificity given can be allowed. However, quality control and supervision of radiation protection must still be required. (Must be low dose). And in terms of medical ethics, the approval of the examination approved by the patient or the patient's family must be carried out first.

If these two things can be done, the lung low dose CT examination for Covid-19 screening for patients who will be hospitalized may be carried out.

This study still has some shortcomings and weaknesses because it only reviews from the existing literatures. And the absence of statistical data on the results of the examination and statistics on the radiation dose obtained by the patients who underwent the examination.

Hopefully in the future, more detailed and thorough research and observation can be carried out at another time.

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### LOW DOSE THORAX CT EXAMINATION IN COVID-19 PATIENTS

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### ABSTRACT

**Background:** The COVID-19 virus causes an acute respiratory illness called pneumonia and can be detected effectively using CT scan. Because the examination can be repeated several times, a thorax CT low-dose examination is one of the alternative examinations used for screening and evaluation of COVID-19 patients. **Methods:** This research is categorized as field research. Conducted by direct observation to obtain information related to screening and evaluation of the examination of COVID-19 patients. **Results:** Based on the observations in March-June 2021 at the Bogor City Hospital, for screening COVID-19 patients was carried out using a CT Scan Thorax. And for evaluation, a low dose CT thorax examination was also carried out. **Conclusion:** CT examination to screening and evaluate COVID-19 is recommended using a low-dose Thorax CT Scan because more sensitive to diagnose pneumonia and it's to reduce radiation dose patient received.

Keyword : Thorax CT; Low Dose; COVID-19



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## INTRODUCTION

*Coronavirus disease 2019 (Covid-19)* is an infectious disease caused by Severe Acute Respiratory Syndrome Coronarius 2 (SARS-CoV-2). This disease has been identified since March 2020 and has become a health problem in the world, including in Indonesia. This disease was identified in the midst of many cases of respiratory disease in the city of Wuhan, China's Hubel province, and initially the disease was reported to the World Health Organization (WHO) on December 31, 2019. Then on January 30, 2020, WHO declared COVID-19 a global health emergency. Less than a month, this disease has spread in various provinces in China, Thailand, Japan and South Korea. On March 11, 2020, WHO declared COVID-19 a global pandemic [1], [2], [3].

During the COVID-19 pandemic, radiological examination, particularly the Computed Tomography Scan of the Thorax, plays an important role in the diagnosis and treatment of COVID-19 and general patients. Another study found that CT scans of the thorax have a sensitivity of 97% for identifying COVID-19, which is higher than RT-PCR. [4]. CT scans have a higher sensitivity than RT-PCR, making them an efficient and effective diagnostic technique for suspect COVID-19 patients in locations where the virus has spread widely [5].

The detection of viral RNA in swab samples through reverse-transcription

polymerase chain reaction (RT-PCR), which is a time-consuming approach with low sensitivity, is used to diagnose COVID19 infection [6]. The gold standard for detecting Covid19 is RT-PCR, but it has two drawbacks: it takes time to confirm patients and it is expensive [7]. As a result, medical image processing can help to solve this difficulty by confirming the presence of positive covid19 patients. The most commonly utilized images in medical image processing are chest X-rays and computed tomography (CT) scans [8]. The use of chest computed tomography (CT) in the diagnosis and management of viral pneumonia epidemics such as the severe acute respiratory syndrome (SARS-CoV) and the Middle East respiratory syndrome has been proven [9], [10].

The majority of cases have been reported. Multifocal ground-glass opacities affecting both lungs, with peripheral distribution, more usually involving posterior segments, are among the COVID-19 CT findings. Bronchovascular thickening is a common feature of the disease. Crazy paving with air space consolidation dominates the CT pattern as the disease advances, and is related with traction bronchiectasis in more severe individuals [11], [12], [13].

A 16-64 multi-slice CT scanner was used to obtain all CT images. All patient received non-enhanced CT scans while supine and during end-inspiration. Scanning was performed at a tube voltage of 100-120 Kvp, with a current modulation of 50-100 milliampere-seconds, an aspiral



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pitch factor of 0.8-1.5, and a slice thickness of 1-3mm [14]. The decision to consider CT scan findings as positive for COVID-19 was based on the diagnostic criteria of the Radiology Society of North America (RSNA) [15].

The purpose of this study is to provide an overview of the procedures in the CT Scan Thorax examination of COVID-19 patients.

### MATERIALS AND METHODS

This research belongs to the category of field research. Conducted by direct observation in the field to obtain information related to screening and evaluation of the examination of COVID-19 patients at the RIR (Radiodiagnostic, Imaging, and Interventional Radiology) Section of the Bogor City Hospital. It was observed in March-June 2021 and category of qualitative research which intends to understand the implementation of screening and evaluation activities for COVID-19 patient by describing their implementation.

### RESULTS

Based on the observations at the RIR RSUD Bogor, the examination to screening COVID-19 patients and their evaluation was carried out using a low-dose Thorax CT Scan. Low-dose chest CT shows great accuracy in the diagnosis of COVID-19 pneumonia [16].

### DISCUSSION

The COVID-19 virus causes an acute respiratory illness called pneumonia. The characteristic symptoms of pneumonia caused by Coronavirus are fever, fatigue, dry cough and dyspnea/shortness of breath [6]. Various ways of medical diagnosis of COVID-19 can be done to detect cases of COVID-19. This method of medical diagnosis of COVID-19 includes clinical characteristics and radiological diagnosis. The radiologist's diagnosis involves a computed tomography (CT) scan and a chest X-ray (x-ray) if a CT scan is not available. Symptoms of COVID-19 can be detected effectively using CT scan images with a pneumonia-like appearance. Based on a CT scan, radiologists can detect pneumonia (COVID-19) and evaluate the patient's stage of recovery or deterioration.

And based on in-depth studies, a chest CT scan is generally recommended for the detection of patients infected with COVID-19. CT Scan as a marker to detect pulmonary abnormalities in COVID-19 cases, can be used from the start when patients with COVID-19 indications come to the hospital. This method will also be beneficial for the health team on duty so that they can carry out proper self-protection from the start. The findings on a chest CT scan are generally clearer than on a chest X-ray. Findings that can be found on both examinations are findings of ground glass opacity (GO) and/or bilateral consolidation, both focal and multifocal, especially with distribution in



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the periphery or posterior/ lower lobe of the lung [17] [18].

Based on the observations, the choice of the examination protocol for CT Scan Thorax with COVID-19 cases, namely the protocol chosen is Low Dose CT. In the protocol there are differences in the selection of exposure factors so that the radiation dose used is also low, namely with a small mA, but provides optimal picture results. In patients infected with COVID-19, the study demonstrated the feasibility of an ultra-low dose, fast chest CT acquisition with spectral shaping at 100 kVp (100Sn kV) and dual-source acquisition with ultra-long pitch (Turbo Flash, Siemens Healthineers) with good diagnostic reliability and the potential for reduced radiation dose and motion artifacts [19].

The Low-Dose CT protocol at 50 mAs can produce the same screening results as the Standard-Dose CT (140 mAs) protocol, favoring the use of Low-Dose Thorax CT as a routine protocol [20]. The difference in the CT Number or HU (Hounsfields Unit) range is high between organs in the lung cavity such as air having a HU between -800 to -1000 and bone having a HU between +300 to +1500, then a high mA is not required to display the difference. On the other hand, a high mA is needed to show the anatomy of an organ that has a low CT number difference, for example the brain. Thorax CT Scan examination for suspected Covid-19 patients is more of a screening (initial

diagnosis) and in Covid-19 positive patients, the CT scan of the thorax can be repeated several times.

### CONCLUSION

As an alternative examination to screening COVID-19 patients and evaluate them, it can be done using a CT Scan Thorax because the CT scan of the thorax is more sensitive in diagnosing pneumonia. And then because the examination can be carried out several times, it is recommended that the examination be carried out using a low dose protocol to minimize the radiation dose received by the patient. The strength of this research is the focus on CT Scan Thorax examination in screening and evaluating COVID-19. However, this study also has limitations, namely it is only carried out at the RIR Installation of the Bogor Hospital, for further development it can be carried out on the RIR installation of other hospitals so that an overview of the procedures of the entire hospital can be obtained.

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### PLAIN ABDOMEN IMAGE QUALITY ON CASE OF HYDRONEPHROSIS

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#### ABSTRACT

**Introduction:** Preparation of the IVP radiographic examination patient aims in to minimize air and fecal images that can interfere with the doctor in assessing the radiograph. Preparation of the patients between outpatients and inpatients at Prof. Dr. Margono Soekardjo Purwokerto differs in the presence or absence of lavement. This study aims to determine the quality of the plain abdomen image in patients with and without lavement. **Method:** This type of research is a descriptive study. Research subjects are plain abdomen image of the IVP radiographic examination patient on case of hydronephrosis. The exclusion criteria for this study were patients aged  $\leq$  50 years. The assessment uses a questionnaire determined by the researcher.

**Result:** A sample of 6 patients Inpatient Installation and 6 patients Outpatient Installation. Inpatients had a lower total score for visualization of the right psoas line and bone system, but gave the same score for the left psoas line, visualization of lots of air and feces for the distal colon and urinary tract area. Inpatient installations have a higher total score for the renal outline and visualization of lots of air and feces for the proximal colon. **Conclusion:** There is no difference in visualization of lots of air and feces for the distal colon in patients with and without lavement, but Inpatient installations have a higher total score for the proximal colon. This maybe due to the patient eats and talks a lot at night before the examination.

Keywords : Plain Abdomen; Lavement; Hydronephrosis

#### INTRODUCTION

Intravenous Pyelography (IVP) examination is a radiological examination of the urinary tract (kidneys, ureters and bladder) using contrast media. The location of the urinary tract is close to and overlapping with the digestive tract so that in order to obtain a good image of the urinary tract, the digestive tract must be

clean of feces and air. Patient preparation aims to minimize the appearance of air and feces that can interfere with the doctor in assessing the anatomy and pathology on the radiograph. One type of patient preparation is lavement. Lavement aims to stimulate colonic peristalsis so that you can defecate so that the colon is clean of feces. Intra-venous pyelography (IVP) examination requires plain radiographs



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(scout radiographs) prior to injection of contrast media for investigation of the urinary tract. The aim is to determine the patient's preparation.

The results showed no improvement in the quality of radiographs in KUB and Intra-venous pyelography patients after patient preparation, except in patients who are constipated. If in patient preparation, the patient only consumes soft foods, low in fiber and low in fat and increases fluid consumption, then the administration of laxatives is only as a complement. In some circumstances, such as the patient's old age, the patient has been hospitalized for a long time and chronic constipation, this laxative is absolutely given.

The results showed that there was no statistically significant difference plain abdomen image between patients with and without patient preparation, but there are still many hospitals do it on IVP examinations patients. During "patient preparation, the patient consumes a soft, low fiber and low fat diet and drinks lots of water so that the stool produced is soft. In addition, the patient was given laxatives and lavement. Laxatives and lavement should be given if the patient is constipated.

Preparation of Intra-venous pyelography patients between outpatients and inpatients at Prof. Dr. Margono Soekardjo Purwokerto Hospital differs in the presence or absence of lavement in the morning before the examination and assistance by health workers for inpatients. This study aims to determine the of the

plain abdomen image in patients with and without lavement.

### METHOD

This type of research is descriptive research. Research subjects are plain abdomen image of the IVP radiographic examination patient on case of hydronephrosis. The population of this study was plain radiographs of patients who had plain abdominal radiographs taken at Prof. Dr. Margono Soekardjo Purwokerto Hospital in January – September 2017. The sample of this study was the population that met the inclusion and exclusion criteria of the study. The inclusion criteria of this study were BNO IVP examination patients who still had medical record data. The exclusion criteria for this study were BNO IVP examination patients with age 50 years. From the results of data collection obtained 6 patients with lavement and 6 patients without lavement.

Plain radiographs will be assessed by 1 radiology specialist using a questionnaire according to the criteria for plain radiographs according to The European Commission Guideline For Evaluation of Radiographic Images and the assessment criteria determined by the researcher.

The criteria include visualization of the entire urinary tract area from the upper pole of the kidney to the bladder base, reproduction of the renal outline, visualization of the psoas line, visualization of the bone system. Each object is assessed with the criteria of invisible (score 1), visible (score 2) and



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very clear (score 3). In addition, the visualization of lots of air and feces for the proximal and distal colon also assessed with the criteria of visible and interferes with the diagnosis (score 1), visible but does not interfere with the diagnosis (score 2) and invisible (score 3).

The data obtained from the documentation study will be described based on the characteristics of the respondents to determine the distribution of the data. Then the data from the interpretation of the radiographs will be processed descriptively. The total score of the assessment on the radiograph indicates the quality of the radiograph.

### RESULT AND DISCUSSION

Data collection was carried out for patients from January to September with the number of patients undergoing BNO IVP examination as many as 181 patients. From 181 patients with BNO IVP examination, it is known that the age of the patients is between 11 – 82 years. Patients older than 50 years were 92. From 181 patients with BNO IVP examination, there were 12 patients who met the inclusion and exclusion criteria. One hundred and sixty-nine patients who did not meet the inclusion criteria and exclusion criteria were caused by patients aged <50 and at the same time not having an indication of hydronephrosis.



A. outpatient      B. Inpatient      O

Of the 12 patients with BNO IVP examination who met the inclusion criteria and exclusion criteria, it was known that the age of the patients was between 50 – 79 years. The older a person is, the higher the possibility of hypertension and increased blood cholesterol levels. Hypertension can cause calcification of the kidneys which can then become stones. High cholesterol levels in the blood can cause aggregation of calcium oxalate and calcium phosphate crystals, making it easier for stones to form.

Of the 12 BNO IVP examination patients who met the inclusion criteria and exclusion criteria, it was found that 9 patients were female and 3 patients were male. There are more men with urolithiasis than women, because calcium levels in the urine are lower in women than in men and citrate levels are higher in women's urine than in men. Calcium in the urine can trigger the formation of stones in the urinary tract, while the citrate level is an inhibitor of the formation of stones in the urine. The hormone estrogen can also prevent the aggregation of calcium salts, while the hormone testosterone causes an



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increase in endogenous oxalan by the liver which further facilitates crystallization.

No	Assessment Criteria (Outpatients)	Number of radiographs		
		Score 1	Score 2	Score 3
1.	Visualization of the entire urinary tract area	1	4	1
2.	Reproduction of the right renal outline	2	3	1
3.	Reproduction of the left renal outline	2	2	2
4.	Visualization of the right psoas line	1	1	4
5.	Visualization of the left psoas line	2	0	4
6.	Visualization of the bone system	0	0	6

No	Assessment Criteria (Inpatients)	Number of radiographs		
		Score 1	Score 2	Score 3
1.	Visualization of the entire urinary tract area	1	4	1
2.	Reproduction of the right renal outline	1	4	1
3.	Reproduction of the left renal outline	1	3	2
4.	Visualization of the right psoas line	0	4	2
5.	Visualization of the left psoas line	0	4	2
6.	Visualization of the bone system	0	2	4

The renal outline appears on plain abdominal radiographs because it is composed of fat that encloses the kidneys so that the contours of the kidneys can be seen. The kidneys are located in the epigastric and gastric quadrants in the abdominal area. Inpatient installations have a higher total score for renal outline reproduction compared to inpatient installations for either the right or left kidney. The renal outline may be obscured by superposition of images of air or bowel in the transverse colon and air in the small intestine.

The psoas muscle is a muscle on the right and left of the vertebrae in the posterior part of the abdominal cavity. The appearance of the psoas line muscle can be disturbed if there is a lot of air in the small intestine and air and feces in the large intestine. The Inpatient Installation has a lower total score for the right psoas line Visualization than the Outpatient Installation, but gives the same score for the left side.

The bony system is an arrangement of bones that helps form the upper, lower and lower abdominal cavities. Inpatient installations have a lower total score for bone system visualization than outpatient installations.

In general, radiographs from outpatients and inpatients can clearly show the organs which include, the entire urinary tract area from the upper pole of the kidney to the bladder base, the renal outline, the psoas line and the bony system.

No	Assessment Criteria (Outpatients)	Number of radiographs		
		Score 1	Score 2	Score 3
1.	Visualization of lots of air for the proximal colon	4	2	0
2.	Visualization of lots of air for the distal colon	1	5	0
3.	Visualization of lots of feces for the proximal colon	4	2	0
4.	Visualization of lots of feces for the distal colon	1	5	0



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No	Assessment Criteria (Inpatients)	Number of radiographs		
		Score 1	Score 2	Score 3
1.	Visualization of lots of air for the proximal colon	2	3	1
2.	Visualization of lots of air for the distal colon	3	1	2
3.	Visualization of lots of feces for the proximal colon	2	3	1
4.	Visualization of lots of feces for the distal colon	2	3	1

The inpatient unit has a higher total score for visualization of air and feces than the outpatient unit for the proximal colon, while the distal colon has the same score. In the distal colonic area, more radiographs from inpatient installations that show air and feces images that can interfere with diagnosis than outpatient installations. This can be due to the time span of the lavement action with the examination being too long so that the feces in the proximal colon are already in the distal colon during the examination. Lavement action serves to expel feces in the distal area of the colon including the descending colon, sigmoid colon and rectum.

This study is a basic study to determine the impact of lavement on plain abdomen image quality, but the data used is past data so it is difficult to control the patient's preparation

### CONCLUSION AND SUGESTION

Most of the BNO IVP patients were 50 years old, which was 50.82%. At least patients aged <30 years, namely 14.91%. Male patients were 60.77% while female

was 39.23%. Most of the BNO IVP examination patients came from outpatient installations, which amounted to 86.74%. Meanwhile, the Inpatient Installation is 13.25%. In general, radiographs from outpatients and inpatients can clearly show the organs which include, the entire urinary tract area from the upper pole of the kidney to the bladder base, the renal outline, the psoas line and the bony system. The inpatient unit has a higher total score for visualization of air and feces than the outpatient unit for the proximal colon area, while the distal colon area has the same score.

This type of research is descriptive research. Further research is needed that uses statistical analysis and increases the number of samples and radiologists.

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### DUAL-ENERGY SUBTRACTION TECHNIQUE FOR DETECTION COVID-19 ON CHEST RADIOGRAPH

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### ABSTRACT

**Background:** COVID-19 is an infectious disease declared as a pandemic by WHO. The gold standard diagnosis of COVID-19 is using Real-Time Polymerase Chain Reaction (RT-PCR). One of the supports for handling COVID-19 is radiological examination in the form of a chest radiograph. Chest radiography plays an important role in the initial screening. If the epidemic is sophisticated, it requires special expertise in a technique, namely dual-energy subtraction, which is expected to strengthen the diagnosis in the nodulical evaluation of Covid-19.

**Methods:** this article uses descriptive research with a literature review method. **Results:** Based on the results of research conducted from several reference journals, it was found that the dual-energy subtraction technique has been shown to detect lung abnormalities including consolidation and Ground Glass Opacities (GGO) which are often observed in COVID-19 patients. **Conclusion:** the dual-energy subtraction technique provides the ability to select from two clinically relevant materials, namely soft tissue and bone. The difference in bone and soft tissue energy used to remove one tissue or another, is determined by the difference in the energy spectrum used to obtain independent images.

Keyword : Chest radiography; COVID-19; Dual-Energy Subtraction



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### INTRODUCTION

COVID-19 is an infectious disease caused by severe acute respiratory syndrome SARS n.CoV2. This disease has been declared a pandemic by the World Health Organization (WHO). Currently the gold standard for diagnosis of COVID-19 is the detection of viral nucleic acids using Real-Time Polymerase Chain Reaction (RT-PCR)<sup>(1)</sup>. However, rapid and precise testing tools and affordable costs are a consideration and very important for the wider community, especially in developing countries. Based on WHO guidelines in technical handling of Coronavirus (COVID-19), radiological examination is one of the recommended supports in assisting the diagnosis of COVID-19. One of the recommended radiological imaging modalities is chest radiography<sup>(2)</sup>.

Chest radiography as an alternative method in handling Covid-19 plays an important role in the initial diagnosis or screening process as a consideration is the action taken in the form of non-invasive measures through lung imaging because it refers to the symptoms caused, namely shortness of breath as a result of acute pneumonia. In addition, chest radiography does not require expensive

equipment and setup costs and does not require large resources when applied to screening a large population when compared to CT-Scan imaging techniques<sup>(3)</sup>. With the relatively rapid increase in the Covid-19 epidemic, expertise in radiology is needed, namely with a special technique in the form of a dual-energy subtraction technique. The dual-energy subtraction technique is expected to strengthen the diagnosis in evaluating nodules that are not visible or typical characteristics of COVID-19 on conventional chest images.

Dual-energy subtraction is an application development technique using a conventional chest radiography system combined with digital imaging receptors. Dual-energy subtraction imaging can be used to produce images of two independent tissue types, the most common being bone and soft tissue conditions. The dual-energy technique distinguishes bone from soft tissue by using the energy dependence obtained from X-ray attenuation in soft tissue and in bone. These techniques include algorithms, usually coupled with methodological innovations that use some aspect of imaging physics to



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improve camouflage, and/or image subtraction strategies.<sup>(4)</sup>

Two types of dual-energy subtraction systems are available: single-exposure systems and dual-exposure systems<sup>(5)</sup>. These systems are based on different types of detectors. The first method, a single-exposure technique based on a CR phosphor plate, was developed in the late 1980s. The CR phosphor plate produces low and high energy images by showing a sandwich of two CR plates with a copper filter in between. The first plate records a standard chest image on a spectral energy beam typical of conventional chest radiographs. The second plate recorded a higher average spectral energy beam due to the beam hardening that occurred in the intervention copper filter<sup>(4)</sup>. One weight subtraction is used to produce a selective bone image, while a different weight subtraction is used to produce a soft tissue selective image<sup>(5)</sup>.

Therefore, in this article, we will discuss the importance of establishing a diagnosis in COVID-19 cases, especially using the dual-energy subtraction technique from several library sources.

### MATERIALS AND METHOD

This chapter discusses the strategy in finding journals used in the literature review, namely descriptive research with

the literature review method. The relevant thing that the author uses in obtaining a journal about dual-energy subtraction in the process of diagnosing COVID-19. The author took all the research designs used in identifying the dual-energy subtraction technique.

### RESULTS

#### *Pathology Detection with Dual-energy Subtraction*

The dual-energy technique has been used clinically for several years, and there are data in the literature showing that dual-energy imaging is statistically effective in detecting pulmonary nodules and calcification patterns (Fig. 1)<sup>(4)</sup>

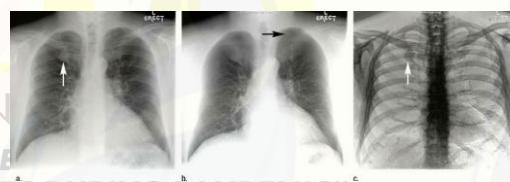


Figure 1 Dual-energy subtraction radiography in a healthy middle-aged man  
(Source: rsna.org)

The image (a) conventional chest radiograph (PA) shows a possible pulmonary nodule (arrow) over the right upper lobe. In the image (b) the bone subtraction image shows a small soft tissue nodule (arrow) at the apex of the left lung, not visible in the image (a) there is no visible nodule in the right upper lobe. (c) Soft tissue subtraction image confirms that



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the visible nodule is calcified at the first costochondral junction (arrow).

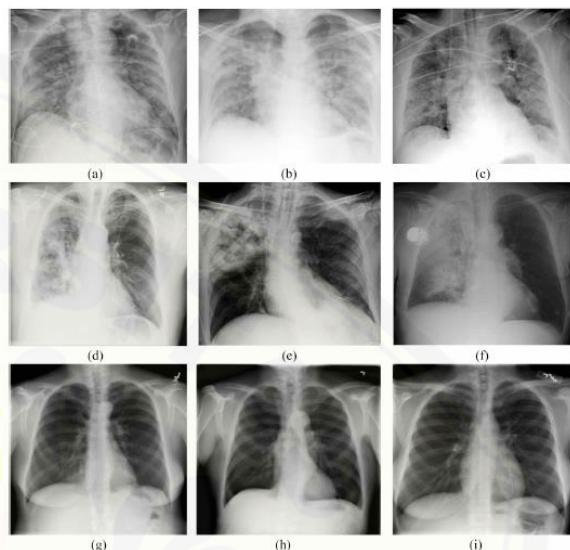
A recent study in which a dual-exposure flat panel detector system was used demonstrated the clinical effectiveness of dual-energy subtraction for detecting thoracic abnormalities in cases of calcified and noncalcified lung nodules. For 37 calcified thoracic lesions, the sensitivity of the radiologist increased significantly from 36% to 66%, while the specificity remained constant at 73%.<sup>(6)</sup>

### Visual Characteristics of COVID-19 on Chest X-ray

Chest radiography is one of the non-invasive clinical adjuncts that plays an important role in the initial investigation of different lung disorders. Chest radiography can act as an alternative screening modality to detect COVID-19 or to validate associated diagnoses, where chest radiographic images are interpreted by radiologists to look for infectious lesions associated with COVID-19. Previous studies revealed that infected patients exhibit different visual characteristics on chest radiographs, as shown in figure 2. These characteristics usually include multi-focal, bilateral Ground-Glass Opacities (GGO) and reticular (reticulonodular) opacities in non-ICU patients, while solid lung consolidation in ICU patients.<sup>(7)</sup>

Figure 2. (a – c) Radiographic image of infected with COVID-19, (d – f) radiographic image of thorax infected with

pneumonia (h-i) Image of normal thorax radiograph (Source:



Elsevier.Ltd 2020)

### How does Dual-energy Subtraction Imaging support the diagnosis of COVID-19?

A number of studies have been reported in the scientific literature regarding the diagnostic benefits of dual-energy imaging, particularly for chest radiography. For example, the sensitivity of detecting COVID-19 in the lung is increased because the nodules are often difficult to visualize on standard chest radiographs, and become more conspicuous when the overlying rib structures are subtracted or vice versa. Dual-energy imaging also allows a degree of quantification for certain material properties which can help increase specificity.



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Dual-energy subtraction imaging is widely recognized for classifying pulmonary nodules for diseases such as lung cancer, pneumonia, and tuberculosis.

Initial studies have demonstrated an increase in the area under the curve for detecting pneumonia from 0.84 to 0.88 using the first technique (single-exposure). Thus, the use of dual-energy X-rays in diagnosing COVID-19 can be used to detect disease manifestations in the lungs which can contribute to increasing the accuracy of diagnosis.<sup>(8)</sup>

Currently, the recommended modality for imaging COVID-19 positive patients is chest radiography. However, because of the structure of the rib cage that covers the thorax, the diagnostic utility for detecting and following up subtle-looking lung disease is poor. Indeed, preliminary data suggest that standard chest radiographs have limited sensitivity in COVID-19 patients (33%-69%). Dual-energy chest radiographs (DE-CXR) have been shown to detect lung abnormalities including consolidation and ground glass opacities which are frequently observed in COVID-19 patients. This has been the first step towards a safe and effective method of detecting and monitoring COVID-19 lung disease in directing therapy and determining outcomes in patients with COVID-19.

Dual-energy imaging can be manipulated with different grayscale presentations like any other digital image. The next few sets

of images show various composite images, only soft tissue and only bone from the PA thorax projection. Many images contain soft tissue and calcified lung lesions, and there are examples of energy sensitive elements that project specific signals.

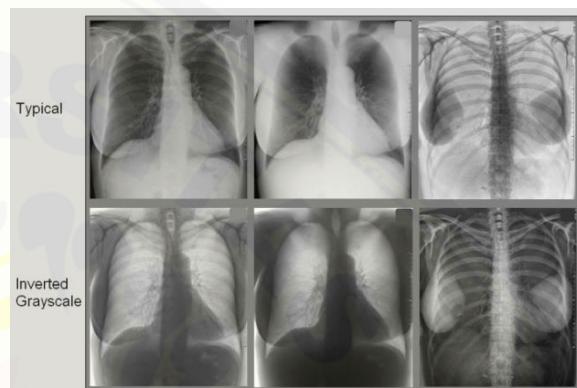


Figure 3. Chest radiography image with gray scale image processing (Source: UPSTADE Medical University, 2020)

The image above is an example of an image showing grayscale manipulation. What is interesting about this image is the presence of silicone in this patient's breast and a soft tissue lesion in the left upper quadrant of the lung.

## DISCUSSION

In this article, we have discussed the basic principles of imaging using a dual-energy subtraction technique which is formed based on two types of systems, namely single-exposure (flat phosphor CR) and dual-exposure (flat panel detector). This technique has described its ability to improve the radiologist's diagnosis by



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using soft tissue subtraction and bone subtraction methods.

Based on the use of this technology in improving diagnosis, especially COVID-19, the advantages of this technique are that it allows better visualization of various entities, including nodules, bone lesions, vascular disease, pleural disease, mediastinal and hilar masses, tracheal and airway abnormalities., complex thoracic disease, and may improve the visualization of foreign bodies (including breast implants, surgical clips, catheters and catheter fragments, and vascular stents).

In addition to its advantages, there are also limitations of this dual-energy technique, namely the presence of misregistration artifacts that occur in the dual-energy subtraction image obtained by the dual-exposure technique. As previously mentioned, a 200 millisecond delay between two exposures can cause artifacts in image subtraction due to slight offsets in body structure alignment caused by different types of motion. These artifacts are seen as black or white stripes along the diaphragm, cardiac silhouette, arches of the aorta, bowel, and pulmonary arteries, as well as along indwelling devices such as pacemaker cables. These artifact lines can be seen on one or both of the extraction images but are usually most conspicuous on bone selective images.

In addition, dual-energy radiography can improve diagnostic information and radiographic sensitivity in a variety of situations by eliminating anatomic shadows that may obscure soft tissue lesions.

In the post-processing process on the CR, you can find features that resemble the results of dual-energy subtraction (soft tissue subtraction) images extracted from standard chest radiography images into negative images shown on the image console located in the "image-processing" sub menu with the option "invert image" (figure 4). This feature can also be used to manipulate the grayscale level as desired by adjusting the range of values on the available parameters. With this feature, of course, it can make it easier for users, both technologists or radiologists to analyze chest radiographic images with suspected COVID-19.

### CONCLUSION

Dual-energy subtraction imaging provides selective imaging capabilities of two clinically relevant materials, namely soft tissue and bone. The difference in bone versus soft tissue energy used to remove one tissue or another, is determined by the difference in the energy spectrum used to obtain independent images. The elimination of structured anatomy (noise) is the main benefit of this technique.

There are two types of dual-energy subtraction systems: single-exposure systems and dual-exposure systems. These



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systems are based on different types of detectors. The first method, using a single-exposure technique, is based on a CR phosphor plate. The second method uses a flat panel detector.

The recommended modality for imaging COVID-19 positive patients is chest radiography. Dual-energy chest radiographs (DE-CXR) have been shown to detect lung abnormalities including consolidation and ground glass opacities which are frequently observed in COVID-19 patients.

Furthermore, the next researcher can conduct research with other modalities such as DR, or CT-Scan.

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### **Chewing of Royal Gala Apples on Plaque Formation and pH Saliva in Grade VI Students of SDIT Assunnah Cirebon**

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#### **ABSTRACT**

**Background:** Plaque and pH saliva are factors that can cause dental caries. The royal gala apple contains antibacterial properties that inhibit plaque formation and have a slightly sour taste that stimulate salivary flow. The purpose of this study was to determine effect of chewing royal gala apples on plaque formation and pH saliva in grade VI SDIT Assunnah Cirebon **Methods:** The method used in the research was Quasi experimental with one group pretests posttest design. Sample as many as 33 students, taken using purposive sampling. The samples were instructed to chew the Royal Gala Apple 100 gr for 5 minutes. Plaque was measured by PHP index and pH saliva is measured with universal indicator paper. **Results:** Data analyzed using the Wilcoxon test. The results showed that was obtained PHP plaque index and pH saliva before and after chewing apple royal gala p-value: 0.000 (sig < 0.05).

**Conclusion:** There is an effect of chewing effect royal gala apple on plaque formation and pH saliva in grade VI students SDIT Assunnah Cirebon.

Keywords: royal gala apple; plaque; saliva

#### **INTRODUCTION**

The prevalence of caries according to RISKESDAS in 2018 reached 45.3% in Indonesia and 45.7% in West Java province. The World Health Organization (WHO) in 2012 stated that the prevalence of caries in school-age children was 60%-90% [1]. Caries is a problem that needs

special attention, especially in elementary school-aged children [2].

Elementary school-age children need special attention, because at that age children are not yet able to maintain oral health independently. They have a penchant for consuming foods that are cariogenic [3]. Cariogenic foods that are sweet and sticky can cause food to remain



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in the mouth. The remaining food settles and ferments into acid, causing plaque on the teeth which can cause damage to the teeth and increase the risk of caries [4]. Efforts to prevent tooth decay is to eat fiber-rich foods and water such as fruits.

Consuming fruits such as bananas, papayas, mangoes, pineapples, strawberries, and apples can support human life so that the body remains healthy[5]. Apples are one of the fruits that are quite popular in Indonesia, because apples really help a healthy and natural diet program. Apples have antioxidants that are very beneficial for the body to fight free radicals. It is a phytochemical antioxidants such as catechin, epicatechin, phloridzin, quercetin, ellagic acid, chlorogenic acid, and tannins [5].

Tannins in apples role is to cleanse and refresh the mouth, so it can be useful to prevent tooth decay and gum disease [6]. Catechins play a role in inhibiting plaque formation by inhibiting glycosylation formation reactions, inhibiting the attachment of bacteria *Streptococcus mutans* to tooth surfaces and denaturing bacterial cell proteins so that bacteria *Streptococcus mutans* die [7]. *Streptococcus mutans* is a bacterium that grows and reproduces in plaque [8].

Plaque is a soft deposit that is firmly attached to the surface of the teeth, consisting of microorganisms that multiply

in an intracellular matrix if a person neglects dental and oral hygiene, therefore other efforts are needed to reduce dental plaque other than by eating fibrous fruit such as apples, namely by brushing teeth using toothpaste is more effective in reducing dental plaque [9]. Plaque formation cannot be avoided and is strongly influenced by several factors such as the anatomical shape of the teeth, the position of the teeth, the type of food consumed and saliva [8].

Saliva is an exocrine secretory fluid in the mouth that is in contact with the mucosa and teeth, originating from three pairs of major salivary glands, namely the parotid gland, submandibular gland, sublingual gland and small (minor) glands scattered under the oral epithelium. Most saliva is produced during eating in response to stimulation due to the influence of taste and chewing of food [10].

Apples contains fiber and water which are beneficial for dental and oral health. Chewing rough, fibrous, watery foods such as fruits can stimulate salivary flow so that it can affect the degree of salivary acidity (salivary pH). This is in line with research conducted by Huda, et al., (2015) that Fuji apples can clean plaque naturally and affect changes in salivary pH. There was a change in the average plaque score of the research subjects from 2.75 to 1.06 and there was a



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change in the average degree of salivary acidity from 6.85 to 7.73. These conditions can inhibit the occurrence of caries due to a decrease in plaque scores and changes in salivary pH from acid to alkaline[11].

The normal limit for salivary pH is between 6.7 – 7.2, if the pH of saliva is between 4.5 – 5.5 it will facilitate the growth of acidogenic bacteria such as *Streptococcus mutans* and *Lactobacillus* [12]. As a result of decreasing salivary pH, it can cause tooth demineralization, namely the dissolution of calcium and phosphate from enamel which causes enamel damage, resulting in dental caries [8].

### MATERIALS AND METHOD

This method research uses a quasi-experimental design with one group pretest posttest design for the sixth-grade students of SDIT Assunnah Cirebon with a total sample of 33 people. Sampling was carried out using the Slovin and the sampling technique in this study was purposive sampling with samples that had met the inclusion criteria (willing and had filled out informed consent, did not have tartar, had a maximum of only two dental caries, teeth were not crowded and chewed use both sides). Data were collected by examining the plaque index using the PHP (Patient Hygiene Performance Index) by Podshadley and Haley [8] and measuring

salivary pH using universal indicator paper.

Sampling of respondents's saliva used the spitting method to measure salivary pH and plaque index to be recorded as results pretest. Respondents were then given 100 grams of royal gala apples in semicircular pieces and chewed using both sides of the jaw alternately for 5 minutes. Respondents were instructed to rest for 5 minutes to prepare the oral cavity before spitting. Respondents were instructed to spit into a plastic container every 1 minute for 5 minutes, then the salivary pH was measured using universal indicator paper and the PHP plaque index to be recorded as results posttest.

Data analysis in this study used the Wilcoxon test, previously the Kolmogorov-Smirnov normality test was carried out to determine whether the data distribution was normal or not in the SPSS application.

### RESULTS

**Table 1.** Distribution of Frequency Based on Age

Age (years)	Total	Percentage (%)
<b>11</b>	23	69.7
<b>12</b>	10	30.3
<b>Total</b>	33	100

Table 1 show the results of the study based on age can be seen in table 1 above. It shows that of the 33 respondents, the most respondents were 11 years old as many as 23 people (69.7%).



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**Table 2.** Frequency Distribution of Plaque Index (PHP) Before and After Chewing Royal Gala Apples

Criteria	Before		After	
	N	%	N	%
<b>Very Good</b>	0	0	0	0
<b>Good</b>	0	0	19	57.6
<b>Moderate</b>	20	60.6	13	39.4
<b>Poor</b>	13	39.4	1	3
<b>Total</b>	33	100	33	100

Table 2 shows the index measurement PHP before and after chewing the royal gala apple, it can be seen that the index results PHP did not change in the very good criteria but increased in the good criteria by (57.6%) from the previous none to 19 people, moderate criteria decreased by 21.2% from 20 people (60.6%) to 13 people (39.4%) and poor criteria decreased by 36.4% from 13 people (39.4%) to 1 person (3%).

**Table 3.** Frequency Distribution of Saliva Acidity Degrees (pH of Saliva) Before and After Chewing Royal Gala Apples

Criteria for pH Saliva	Before		After	
	N	%	N	%
<b>Acid</b>	22	66.7	0	0
<b>Neutral</b>	11	33.3	25	75.8
<b>Base</b>	0	0	8	24.2
<b>Total</b>	33	100	33	100

Table 3 shows the measurement of the degree of salivary acidity before and after chewing the royal gala apple. It looks like

there is a change from the acid criteria from 22 people (66.7%) to none with acid criteria, neutral criteria from 11 people (33.3%) to 25 people (75.8%) and base criteria that previously did not exist to 8 people (24.2%).

**Table 4.** Normality Test Results Effect of Chewing Royal Gala Apples on Plaque Index in Grade VI Students of SDIT Assunnah Cirebon

	Kolmogorov-Smirnov (Sig)	Kolmogorov-Smirnov (Sig)	
<b>Plaque Index PHP (Pretest )</b>	0.003	pH Saliva (Pretest)	0.000
<b>Plaque Index PHP (Posttest )</b>	0.000	Plaque Index PHP (Posttest)	0.000

Table 4 shows the results of tests of normality in plaque index PHP and the degree of acidity of saliva before and after chewing royal gala apples obtained p-value < 0.005 means that the data is not normally distributed.



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**Table 5.** Results of Wilcoxon test Plaque Index PHP and pH of Saliva Before and After Chewing Royal Gala Apples

Test Results Statistic	Plaque Index PHP before and after chewing Royal Gala Apples	pH of Saliva before and after chewing Royal Gala Apples
Z	5.568	5.477
Asym-sig	0.000	0.000

Table 5 shows that the results of statistical tests using the Wilcoxon test obtained p-value: 0.000 because p-value <0.05, it can be concluded that there is a significant effect between the results of the PHP index examination on plaque formation and the degree of salivary acidity in class VI SDIT Assunnah Cirebon

## DISCUSSION

After the research, there was a change in the plaque index in class VI SDIT Assunnah Cirebon before and after being given the treatment of chewing the royal gala apple. It can be seen from the Wilcoxon test results obtained p-value: 0.000 which can be concluded that there is a significant effect between the results of the PHP index examination on plaque formation in class VI SDIT Assunnah Cirebon. The research that has been done is also in accordance with the research conducted by Koagouw *et al.*, (2016), the average plaque index before chewing the

royal gala apple was 2.00 and after chewing the royal gala apple it became 1.22 with an average difference of 0.78 [13]. Another study conducted by Pratiwi and Prasetyowati (2020) that chewing anna apples can reduce plaque index. The average before chewing anna apples was 2.2 and after chewing anna apples it became 1.4 with an average difference of 0.8.

This significant decrease is because apples can inhibit plaque formation because apples contain flavonoids which are phenolic compounds that function as antibacterials by forming complex compounds against extracellular proteins that disrupt the integrity of membranes and cell walls. Flavonoids can also inhibit energy metabolism by inhibiting the use of oxygen by bacteria. The flavonoids found in apples are catechins and tannins. Royal gala apples contain 12.04 g of catechins and 22.84 mg of tannins [14].

Catechins function to inhibit the action of the bacterial enzyme *Streptococcus mutans*, namely the glucosyltransferase (GTFs) enzyme which synthesizes glucose and sucrose. This glucose plays an important role in the process of attachment of bacteria to the tooth pellicle. The inhibition of the work of this enzyme, the process of attachment of bacteria to the dental pellicle will be inhibited, thus preventing the initial



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colonization process in the formation of dental plaque. The inhibition of this initial colonization, then the next process, namely secondary colonization which is characterized by the occurrence of co-aggregation of other bacteria to the bacteria in the initial colonization and the process of maturation of dental plaque will also be inhibited, so that the formation of dental plaque as a whole will be inhibited [13].

The mechanism of action of tannins as antibacterial is related to the ability of tannins to inactivate microbial cell adhesins found on cell surfaces, enzymes bound to cell membranes and cell wall polypeptides. Tannins have a target on cell wall polypeptides that will cause damage to the cell wall, because tannins are phenolic compounds. Phenol compounds easily form protein complexes through hydrogen bonds. Phenol compounds bind to the H atom of the protein so that the protein is denatured [15].

Damage to the bacterial cell wall will cause damage to the cell membrane, namely the loss of the permeability of the cell membrane. As a result, the entry and exit of substances such as water, nutrients, enzymes are not selected. If the enzyme is out of the cell, there will be inhibition of cell metabolism and will further inhibit the formation of ATP which is needed for cell growth and reproduction. Bacteria are also

unable to carry out their life activities so that their growth is inhibited or even dies [15].

Chewing royal gala apples can also affect the change in the degree of acidity of the saliva of class VI students of SDIT Assunnah Cirebon. It can be seen from the Wilcoxon test results obtained p-value: 0.000 which can be concluded that there is a significant effect between the results of the examination of the degree of salivary acidity in grade VI students of SDIT Assunnah Cirebon. Research that has been carried out is in line with research conducted by Huda *et al.*, (2015) chewing Fuji apples there is a change in the average pH of saliva from 6.85 to 7.73. These conditions can inhibit the occurrence of caries due to changes in the degree of acidity of saliva from acid to alkaline [11].

Royal gala apples have a sweet and slightly sour taste and contain 2.3 grams of fiber and 85.76 grams of water. Foods that contain fiber and water will increase the intensity of mastication in the mouth [16]. Chewing in the oral cavity occurs because of the interaction between the teeth, TMJ (Temporomandibular Joint), lips, cheeks, palate, tongue, muscles and salivary secretions in the masticatory process [17]

Chewing is an activity that consists of the opening of the mandible, the closing of the mandible, and the stage of contacting the teeth with food and the



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opposing teeth using the muscles of the lips, tongue, cheeks and throat. The main muscles directly involved in mastication are the masseter, temporalis, lateral pterygoid and medial pterygoid muscles. The presence of foods that contain fiber and water will provide a stimulus to the masticatory muscles mentioned above to contract [17].

Salivary secretion can be increased through stimulated and unstimulated reflexes. A stimulated salivary reflex occurs when chemoreceptors and receptors in the oral cavity respond to the presence of food [18]. Receptors that are activated when chewing food are gustatory receptors and mechanoreceptors. There are four tastes that trigger salivary secretion through gustatory receptors, namely sour, salty, sweet and bitter tastes. Sour and salty tastes are strong stimuli in triggering salivary secretion. Mechanoreceptors in the periodontal ligament and gingival mucosa are activated through tooth movement during mastication [10].

These receptors when activated will carry impulses to afferent nerve fibers which will be forwarded to the salivary center in the medulla oblongata. Impulses will be transmitted through the parasympathetic nerves to the salivary center from the superior salivatory nucleus and inferior salivatory nucleus in the medulla oblongata. The superior salivatory

nucleus will transmit impulses to the submandibular gland and sublingual gland, while the inferior salivatory nucleus will transmit impulses to the parotid gland so that the amount of saliva increases [19].

The parotid glands secrete almost entirely of the serous type, while the submandibular and sublingual glands secrete both mucus and serous. Serous secretions contain ptyalin which is an enzyme for digesting carbohydrates and mucous secretions contain mucin which functions as lubrication and protection of mucosal surfaces [20].

Stimulated salivary secretion will produce watery saliva, large volume and rich in enzymes. Stimulated salivary secretion can also increase the concentration of bicarbonate ions, where when there is an increase in bicarbonate ions, it causes the buffering capacity of saliva and the degree of salivary acidity to increase [18].

Bicarbonate ion is an effective defense against acid production and cariogenic bacteria which will maintain the buffer system in the oral cavity. If the buffer system can be maintained, the acidity of the saliva can be maintained, so that if the acidity of the saliva decreases, it can be inhibited by bicarbonate ions (buffers) [21]. The buffer system can maintain the acidity of saliva between 5.7 – 6.2, while when the acidity of the saliva



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is stimulated it can reach a pH value of 8 [22].

The normal limit for the acidity of saliva is between 6.7 – 7.2, if the acidity of saliva is <5.5 or reaches a critical pH, it will facilitate the growth of acidogenic bacteria such as *Streptococcus mutans* and *Lactobacillus*. These bacteria are found in plaque attached to teeth and in the metabolism of cariogenic food residues, especially those from fermentable carbohydrates, such as sucrose, glucose, fructose and maltose [8].

These sugars have small molecules so that they easily diffuse into the plaque and are quickly broken down by bacteria into acids. These acids will be retained by plaque and result in a decrease in the acidity of saliva <5.5, even bacteria *Streptococcus mutans* and *Lactobacillus* can produce acid up to pH 4.5 [8].

The decrease in the acidity of saliva that occurs continuously in a certain time can result in demineralization of the teeth. Demineralization is the loss of mineral ions from tooth enamel. The main content of tooth enamel is hydroxyapatite ( $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ ). A number of mineral ions can be lost from hydroxyapatite which causes damage to the enamel resulting in caries [8].

This salivary buffer system has an important role, namely its ability to withstand the decrease in the acidity of

saliva. When the acidity of the saliva is above 5.5, the buffer action will occur in the process of remineralization, namely the return of mineral ions into the hydroxyapatite structure. Ions lost in the demineralization process can be returned if the acidity of the saliva is neutralized and there are ions  $\text{Ca}^{2+}$  and  $\text{PO}_4^{3-}$  are sufficient [8].

## CONCLUSIONS

The results of the analysis using the Wilcoxon test obtained p-value < 0.05, which means that there is an effect of chewing the royal gala apple on plaque formation and the degree of salivary acidity in class VI SDIT Assunnah Cirebon.

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### The Effect Of Counseling Using The Singing Method On Knowledge About How To Maintain Oral Hygiene In Hilma Kindergarten Surabaya

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#### ABSTRACT

**Background:** Preschool students in TK Hilma Surabaya consumed sweet food and drinks but didn't have good oral health maintenance, this could cause caries. Knowledge is the base of behaviour, so knowledge is needed in order to maintain oral and dental health. Singing could help increase the knowledge. **Methods:** This was true experimental study with *pre-test and post-test control group design*. The data analysis groups using the Man Whitney test. The sample was divided into control and intervention group which consisted of 30 students each. Questionnaire was used as data collection method. Analysis was done using *Mann Whitney test*. **Results and Conclusion:** Knowledge after using singing method on how to oral health maintenance in the intervention and control groups was obtained p value: 0,000 <0,05 so it can be concluded that there is an effect of counseling using the singing method on knowledge about how to maintain oral hygiene in Tk Hilma Surabaya.

Keywords: Health promotion; singing methods; knowledge of maintenance oral and dental health

#### INTRODUCTION

Dental caries makes children experience loss of chewing power. Dental caries occurs due to the process of demineralization of tooth enamel which causes damage to enamel and dentin, with tooth cavities. In damaged teeth and not treated immediately can cause Loss of teeth that interferes with the masticatory process. One of the functions of the baby

teeth is to develop the child's speech function. The condition of the child's teeth and mouth that hurts or hurts causing the child to be embarrassed to open his mouth causing the child to have difficulty speaking. In addition, the condition of aching or sore teeth affects the child's appetite, so that the appetite is reduced and weight loss. This condition can interfere with the nutritional status of children. In



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addition, learning activities children are disturbed and affect the quality of children's sleep (3).

The results of the Basic Health Research or Riskesdas (2018) state that 93% of early childhood, namely in the age range of 5-6 years, experience cavities or caries. It means only Seven percent of children in Indonesia are free from dental caries problems. Meanwhile, for the correct brushing behavior, the results of Riskesdas (2018) show that only 2.8% of children aged > 3 years of the Indonesian population have brushed their teeth twice a day, namely in the morning and at night correctly. This shows that education about brushing teeth should start early because it will become a habit until adulthood. Based on a preliminary study at the Hilma Kindergarten, Surabaya, most of the children were affected by caries and the def-t index (decay) was 9, while the WHO target for 2010 for children aged 5-6 years had a caries-free proportion of 90% or at least 2 teeth affected by caries (1).

Early childhood is a critical period in the growth, intelligence and physical development of children, including the growth of their teeth. The period of growth and development of early childhood requires optimal health conditions because it is an early period that requires good nutrition. The problem that often occurs in early childhood is behavior in consuming

sweet foods or drinks, but not accompanied by teeth cleaning behavior that causes dental caries (4).

Early childhood likes to eat sweet and sticky foods, this will lead to behavior that will continue and become a habit so it will be difficult to let go of the habit. Knowledge is the main basis in forming children's attitudes and actions (4).

Efforts to provide knowledge about how to maintain dental and oral hygiene should be introduced to children and carried out from an early age about the right time and method of brushing teeth through counseling. Basically, the provision of knowledge is intended so that children are willing and care so that it creates a sense of responsibility for maintaining dental and oral health (6).

Counseling with the singing method plays an important role in increasing children's knowledge because through singing children can directly say word for word, know the meaning of the contents of the song, and develop their power. thought so that it is easier for children to remember and express what they feel (7).

This is supported by research conducted by Kurniasari (2015), the average score of children's knowledge before and after being given an intervention with the singing method increased from 34,87 (poor category) to 65,92 (enough category). Based on this



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background, the researcher views that the singing method has an important role in children's knowledge, the researcher wants to know the effect of singing Counseling Using the Singing Method on Knowledge of How to Maintain Dental and Oral Hygiene at Hilma Kindergarten Surabaya.

### MATERIALS AND METHOD

This type of research is true experimental research (pretest-posttest control group design). The sample of this study was 30 students of TK Hilma Surabaya as the intervention group and 30 TK Hapsari Surabaya as the control group . The sampling technique used is simple random sampling, namely by lottery.

### RESULTS

#### 1. Characteristics of Research Subjects

**Tabel 1.** Characteristics of Research Subjects

Characteristic Variable		N	%
Age	5 years	33	55
	6 years	27	45
Gender	Male	28	46,7
	Female	32	53,3

Based on the characteristics presented in table 1 to describe the distribution of respondents, that the majority sample was 5 years old, which

was 55%, while the proportion of sex indicated that the majority were women, which was 53,3%.

#### 2. Knowledge in The Intervention Group

The result knowledge before and after in the intervention group is presented in table 2 below:

No	Group	N	Mean ± Std.	P Value
<i>Deviation</i>				
1	Pre-Intervensi	30	4,83±1,44	0,000
2	Post Intervensi	30	8,83±1,05	

The results of the analysis that mean of knowledge before in the intervention group was 4.83 while after in the intervention group it was 8.83. The results of the analysis obtained P Value = 0.000 so that the P Value <0.05 indicates knowledge before and after the intervention group there is a significant difference.

#### 3. Knowledge in Control Group

The result knowledge before and after in the control group is presented in table 3 below:



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No	Group	N	Mean ± Std.Deviation	P Value
1	Pre Kontrol	30	4,83±2,02	0,000
2	Post Kontrol	30	5,46±2,11	1

The results of the analysis that mean of knowledge before is 4.83 while after in the control group it is 5.46. The results of the analysis obtained P Value 0.000 so that the P Value <0.05 which indicates knowledge before and after in the control group there is a significant difference.

#### 4. Knowledge in The Intervention Group And Control Group

The result knowledge after in the intervention and control groups is presented in table 4 below:

No	Group	N	Mean ± Std. Deviation	P Value
1	Post Intervensi	30	8,83,±1,44	0,000
2	Post Control	30	5,46±2,11	

The results of knowledge after the two groups, namely the intervention and

control groups using the *Man Whitney test* was 8.83 while the control group was 5.46. Then the Man Whitney test results obtained P Value = 0.000 so that the P Value <0.05 then H1 is accepted and H0 is rejected, meaning that there is an effect of counseling using the singing method on knowledge about how to maintain dental and oral hygiene in Hilma Kindergarten Surabaya

#### DISCUSSION

Based on the results of statistical analysis of knowledge about how to maintain dental and oral hygiene counseling with the singing method in the intervention group there was a significant increase in knowledge as indicated by the mean after treatment in the intervention group of 8.83 while the control group was 5.46 and the results of the analysis obtained p value 0.000 so that the p value <0.05 which indicates a significant difference. In both groups, it is known that the intervention group is more dominant in increasing knowledge than the control group. There was an increase in knowledge in the intervention group using the singing method on how to maintain dental and oral hygiene because children were willing to accept the counseling process carried out by the extension worker. in the intervention group this method is a newly applied method. Previously, the intervention group had



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received counseling, but used the lecture method. Counseling with the indirect singing method has provided a pleasant experience for children. The singing method performed with movement will affect the development of the child's body language thereby increasing kinesthetic intelligence which is characterized by the ability to control body and limb movements. In addition, the lyrics and music which contain sentences of invitation and attract children's attention to learn to focus and listen to the material presented so that counseling with the singing method on how to maintain dental and oral hygiene in the intervention group increased. This is in accordance with research conducted by Kurniasari (2015) that the knowledge of children before and after being given an intervention with the singing method has increased. The learning method by singing is able to improve the way children socialize with extension workers who previously considered researchers as new and not easy to open. After being given counseling, they were willing and accepted and even responded to the instructor who delivered the material. This attitude of acceptance and response made it easier for researchers to provide material using the singing method. so that counseling with the singing method can be a learning tool that attracts interest in learning and increases

knowledge about how to maintain dental and oral hygiene in preschool-aged children at Hilma Kindergarten Surabaya.

### CONCLUSION

Based on the results of research on knowledge of oral health maintenance, it can be concluded that the intervention group was significantly higher than the control group. so that there is a relationship between the singing method and increasing knowledge about dental and oral care

### ACKNOWLEDGEMENT

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*"LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC"*



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### The Relationship of Smoking Habits with Gingival Status

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#### ABSTRACT

Smoking habits not only cause systemic effects on the body, but can also cause pathological conditions in the oral cavity, one of which is gingivitis. Heat and the accumulation of cigarette burning products can influence the gingival inflammatory response. The purpose of this study was to determine the relationship between smoking habits based on the number of cigarettes, type of cigarette and duration of smoking with gingival status. This type of research is literature study with a qualitative descriptive approach. The data collected from this research comes from text books, journals, scientific articles, and also literature related to the research conducted such as journal, books of scientific papers, thesis, text book and scientific article. Most of the subjects had a smoking habit of less than 10 years and smokers who smoked kretek types tended to have more calculus and the amount of nicotine and tar in the kretek cigarette content was also very high and if the more cigarettes were consumed, the gingival status was also will be bad. Research results from journals that were obtained and analyzed explained that there was a relationship between smoking habits and gingival status based on smoking duration, type of cigarette and number of cigarettes.

**Keywords:** smoking habit, gingival status

#### INTRODUCTION

Smoking has long been a part of people's lives, both for adults and adolescents. Cigarettes are one of the major threats to the health of the world's people. About three million people in the world die from smoking. (Sumerti, 2016)

The data of the tobacco epidemic kills more than five million people every year, if this continues it is projected to be

10 million deaths by 2020, with 70% of deaths occurring in developing countries. Indonesia is the seventh largest tobacco producer in the world and the third largest number of smokers in the world. Smokers come from different social classes, statuses and age groups, even by some people it has become a necessity of life that cannot be abandoned. The prevalence of smokers in the province of Bali is 44% with an average number of smokers who smoked nine cigarettes per day, and the highest



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number was found in Denpasar city of 10 cigarettes per day. (Sumerti, 2016)

Teeth and soft tissues of the oral cavity are the parts that are damaged by smoking. Dental caries disease, dental hygiene, periodontal disease, tooth loss, slow healing process, pre-cancerous lesions and oral cancer are cases found in smokers. The oral cavity is the first contact point or place for smoke from burning cigarettes, so it is easy to be exposed to the effects of cigarettes because it is the main absorption place for substances from cigarette burning. (Sumerti, 2016)

Smoking habits cause changes in vascularization and salivary secretion due to heat generated by cigarette smoke. Changes in vascularization due to smoking cause dilatation of capillary blood vessels and infiltration of inflammatory agents so that gingival enlargement can occur. This condition is followed by an increase in the number of lymphocytes and macrophages. The tar contained in cigarettes can settle on the teeth and cause the surface of the teeth to become rough, making it easy for plaque and bacteria to adhere. (Zuhda Febrina Ramadhani, 2014)

Basic Health Research Riskesdas (2018), describes the prevalence of smoking in the Indonesian population nationally, the percentage of the population aged 10 years and over who smokes every day is 28.8%. The highest percentages were found in the provinces of West Java and Gorontalo at 32%, followed by Lampung, Bengkulu and Banten at 31.8%. While the lowest percentage was found in the Provinces of South

Kalimantan, DIY and Bali, 23.5%.(Prabowo, Rosida and Ahmad, 2020)

### MATERIALS AND METHOD

The type of research used is literature/literature study and this research uses a qualitative descriptive approach such as journal, books of scientific papers, thesis, text book and scientific article.

### RESULTS

Smoking behavior seen from various points of view is considered very detrimental, both for oneself and for others around them. Although everyone knows about the dangers posed by smoking, it never subsides and seems to be a behavior that is still tolerable by society. At first, smoking behavior mostly occurs when individuals are teenagers. Smoking habits continue until he enters adulthood, even into old age and people usually smoke to overcome emotional problems. Then the phenomenon of society emerged, most of which already knew the negative impact of smoking behavior, but continued to insist on rationalizing and justifying the act of smoking.

While the gingiva is one part of the soft tissue of the mouth. The gingiva serves as a supporting structure for the hard tissues of the teeth. Changes in heat and accumulation of products resulting from cigarette combustion can affect the gingival inflammatory response. (Katarina D. Manibuy, 2015)



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According to Annisa Ghea Faruchy, Irha Komara, Indra Mustika Setia Pribadi (2018), entitled Prevalence of Gingival Hyperpigmentation in Smoking Patients at the RSGM Periodontal Clinic. Conducted an analytical survey research with a cross sectional design involving 33 samples in the periodontics clinic of the Dental and Oral Hospital and willing to be respondents.

This study shows data on smoking habits of the research subjects. In this study, the number of cigarettes with the highest frequency of research subjects was 1-10 cigarettes per day, namely 22 people, and the second highest frequency was 11-20 cigarettes per day as many as 20 people. In this study more than 11 subjects were found with the number of cigarettes consumed as much as 1-10 cigarettes per day, this can happen because patients who come to the Periodontics clinic of RSGM FKG Unpad are undergoing treatment so that they reduce the number of cigarettes consumed per day. The results also showed that of the 49 study subjects, most had smoked for more than 10 years. This is because cigarettes have permanently addictive properties so that smoking is one that is very difficult to get rid of. The content in cigarettes, namely nicotine, is toxic and can cause psychological dependence.

Gingival hyperpigmentation in smokers increases with the duration of smoking and the number of cigarettes consumed. This is because the longer you smoke, the higher the melanin content in the tissue, so the greater the possibility of

melanosis of the oral cavity. Research in West Kawangkoan states that the prevalence of gingival hyperpigmentation is most commonly found in smokers who have smoked for more than 10 years, namely 44.8%. In a study conducted on farmers in Tutuyan village, it was found that the incidence of gingival hyperpigmentation was most commonly found in smokers with smoking durations of more than 10 years as much as 80%.

And based on the results of the study, it was found that gingival hyperpigmentation based on the type of cigarette consumed with the highest frequency was in subjects who consumed kretek cigarettes with gingival hyperpigmentation values, this was caused because kretek cigarettes were consumed more and contained more levels of nicotine, carbon monoxide, tar, and other components other toxic substances that are higher than conventional cigarettes, such as white cigarettes.

According to Intan Liana , Anwar Arbi (2019). With the title The Relationship between Smoking Habits and Periodontal Disease in People Age 15 and Over in Siren Village, Bandar Baru District, Pidie Jaya in 2018. Conducted an observational study with a cross sectional approach and involved 154 samples using the Slovin formula with purposive sampling technique with inclusion criteria. Held from 12 to 19 August 2018, to support this research, research instruments were used, namely observation and examination.



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Based on additional interviews, it can be seen that smokers who have a smoking habit within a period of > 10 years have the highest frequency of 37.7%. And as for the reasons why people smoke, the first is the influence of parents, personality factors. People try to smoke for reasons of curiosity or want to escape from illness or boredom, and also the influence of advertising, seeing advertisements in mass media or electronic media depicting smoking is a symbol of masculinity or glamor.

Several studies cited by Herman, et al concluded that smoking is a risk factor for the high prevalence of periodontal disease and is often associated with chronic periodontitis, 40% of cases of periodontitis treatment are caused by smoking. According to Putri (2011), smoking is a major risk factor for the increasing prevalence of periodontal tissue damage.

The oral cavity is very easily exposed to the adverse effects of smoking. Hot smoke that blows continuously into the oral cavity is a stimulus that causes changes in blood flow and reduces salivary secretions. As a result, the oral cavity becomes dry and more anaerobic in plaque.

A smoker has a risk of developing periodontitis two to seven times greater than a person who does not smoke. The heat generated from cigarette smoke will increase the destruction of the periodontal attachment and the accumulation of plaque resulting in the formation of calculus.

Based on the results of the study and discussion, the researchers concluded that there is a significant relationship between smoking habits and periodontal disease. The researcher's opinion on the results of this study is that 37.7% have a smoking habit > 10 years and 24.7% have a smoking habit for 1-2 years and that is a long time that can lead to the emergence of periodontal disease, where the oral cavity is very easily exposed to effects. harmful effects of cigarette smoke. Hot smoke that blows continuously into the oral cavity can cause the oral cavity to become dry and plaque to appear on the teeth so that it has an impact on the emergence of periodontal disease.

According to Poetry Oktanauli, Pinka Taher, Nabilla Putri Andini (2017), entitled Distribution of the Frequency of Gingival Changes in Smokers. Conducted descriptive research with a cross sectional approach in room 402 of R.A Soepartin Building, Faculty of Dentistry, Prof. University. DR. Moestopo (Beragama) in March 2017, with a total of 30 subjects who met the inclusion criteria. Based on data analysis and discussion of research results, it can be seen that in FKG UPDM(B) students who smoke, there are changes in the gingiva. Changes that occur can be in the form of gingivitis or gingival pigmentation.

Katarina D. Manibuy, Damajanty H. C. Pangemanan, Krista V. Siagian (2015), entitled The Relationship between Smoking Habits and Gingival Status in Adolescents Aged 15-19 Years. Conducted descriptive analytical research on



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adolescents aged 15-19 years with a cross sectional approach in Tumiting District in August-September 2015 with a population of 5076 people and obtained a sample of 99 people using random sampling technique. Data on the distribution of smoking habits based on length of smoking showed that the most respondents were those who smoked cigarettes for >2 years and included in the heavy smoking habit (39.4%), followed by respondents who smoked cigarettes for <1 year and included in the light smoking habits (37.4%). This is supported by research conducted by Miranti which explains that generally respondents start smoking at a young age so that it is difficult for them to quit smoking and the nicotine in cigarettes can make a person addicted to smoking. This can be caused by exposure to cigarette smoke on the oral mucosa so that the longer a person smokes, the greater the possibility of gingival disease. Smoking is associated with dose-related periodontal disease. If the number of years exposed to smoked tobacco increases every day, the risk of periodontitis is higher. Chewing tobacco is associated with gingival recession and periodontal destruction at the sites of teeth in direct contact with tobacco. Tobacco use has also been shown to affect periodontal treatment outcomes and increase disease recurrence (Ronderos, 2004; Tumilisar, 2011). Research from Kinane (2009) suggested that having consumed cigarettes for more than 10 years had a large attachment loss and formed pockets > 6 mm. The length of time consuming cigarettes has a very large

impact on the health status of the periodontal tissue. Periodontal tissue health status will gradually change from moderate to poor as the duration of smoking increases. Poor periodontal health status will be difficult to treat if it is still accompanied by cigarette consumption, so smoking cessation must be done.

Data on the distribution of smoking habits based on the number of cigarettes showed that the majority of respondents were inflammatory. Research conducted by Jan Bergstrom and Hans Preber stated that the gingival inflammatory reaction in smokers is less pronounced than in non-smokers.

Based on the results of the research conducted, it is stated that there is a relationship between smoking habits based on length of smoking with gingival status and there is no relationship between smoking habits based on the number of cigarettes and gingival status in adolescents aged 15-19 years who have smoking habits based on the length of smoking and the number of cigarettes smoked per day.

According to Priska M. Poana, Ni Wayan Mariati, P. S. Anindita (2015), with the title Overview of Gingival Status in Smokers in Buku Village, Belang District, Southeast Minahasa Regency. Conducting descriptive research and the population in this study are all male communities aged 30-54 years living in Buku Village, Belang District, Southeast Minahasa Regency who smoke and work as fishermen. The research sample amounted to 72 people with purposive sampling method. And as



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for the results obtained. Based on the length of smoking, most of the study subjects had a mild inflammatory gingival status with a duration of smoking >10 years by 25%. Most of the research subjects had a mild inflammatory gingival status with a duration of smoking >10 years by 25%.

### CONCLUSION

Based on the articles and journals that have been collected and analyzed, the results show that there is a significant relationship between smoking habits and gingival status, and the relationship between the two variables is also based on three factors, namely:

1. There is a relationship based on the length of smoking, most of the subjects have a smoking habit of more than 10 years and the longer the exposure to cigarette smoke on the oral mucosa, the greater the possibility that it can cause inflammation of the gingiva.
2. There is a relationship based on the type of cigarette, the type of cigarette, namely kretek cigarettes consumed also affects the gingival status because kretek smokers tend to have more calculus and the amount of nicotine and tar in kretek cigarettes is also very high compared to white cigarettes so that it will worsen the gingival status..
3. There is a relationship based on the number of cigarettes, the more cigarettes consumed, the worse the gingival status will be. Nicotine in high concentrations will have a direct negative impact on gingival status.

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### The Effect Of Toothbrush Bristles On Decreasing Plaque Index In Elementary School Children

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#### ABSTRACT

Dental and oral hygiene is one of the criteria for a healthy mouth, the gums are not dark in color or look red and firm and do not hurt. Oral hygiene is indicated by the presence of a number of oral bacteria found in saliva, on the tongue, on the tooth surface and on the gingival neck. Teeth are an integral part of our body. When tooth decay occurs, it can affect the health of other body parts, so it will interfere with daily activities. One of the factors that can damage your teeth is the wrong way to brush your teeth. Toothbrushes are divided into 3 types based on the softness and hardness of the bristles, namely soft ("soft"), medium ("medium"), hard ("hard") with different effectiveness in removing plaque. The purpose of this study was to analyze the effect of brushing teeth based on the type of toothbrush bristles on plaque scores in elementary school children. From the results of research conducted by Ninda Azria on students of SDN 104234 Medan Sinembah Kec. Tanjung Morawa, Deli Serdang Regency. The type of research used is analytic research with Quasi Experiment method, using Friedman test and Wilcoxon test. The average value of using soft bristles before brushing teeth is 5.05 and after brushing teeth is 2.30, those using medium bristles before brushing their teeth are 4.85 and after brushing their teeth are 1.95. The data raised in this study came from text books, journals, scientific articles and also literature related to the research conducted.

The conclusion from this study was that  $p < 0.05$  or 0.000 then  $H_0$  was rejected, which means that the three bristles of the toothbrush both have an effect on decreasing plaque index.

Keywords: Plaque, Toothbrush, Dental and Oral Hygiene

#### INTRODUCTION

According to the World Health Organization (1964), health is a state of

physical, mental and social well-being which is a unity and not merely the absence of disease or disability. Dental and



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oral health affects the health of the body because the oral cavity is an integral part of the body. Dental and oral hygiene is one of the criteria for a healthy mouth, clean, no gaps between the teeth, the gums look red and tight and do not hurt. Oral hygiene is indicated by the presence of a number of oral bacteria found in saliva, on the tongue, on the surface of the teeth and on the gingival neck. Teeth are an integral part of our body. Tooth decay can affect the health of other body parts, so it will interfere with daily activities. One of the factors that can damage your teeth is the wrong way to brush your teeth. Apart from brushing your teeth the wrong way, things that can be a factor that can damage your teeth are bad habits that can happen<sup>1</sup>. Maintenance of dental and oral hygiene is one of the efforts to improve health. Therefore, oral health plays a very important role in supporting one's health. Brushing your teeth is one way to remove plaque. The effectiveness of brushing your teeth depends on several things, including the method of brushing your teeth, the

duration of brushing your teeth, the shape of your toothbrush, and the frequency of brushing your teeth. Currently, there are many toothbrushes available with various sizes, shapes, textures, and designs with varying degrees of roughness of the bristles. The hardness of the bristles is mainly determined by the diameter and length of the bristles. The larger the diameter and the shorter the bristles, the greater the stiffness and the different cleaning effects. Currently, there are many toothbrushes on the market with various brands and various variations in shapes, sizes and degrees of hardness of the bristles. In general, each brand of toothbrush is divided into three types based on the softness and hardness of the bristles, namely soft, medium, hard. However, their effectiveness in removing plaque varies. Children aged 9-12 years have not realized the effectiveness of each type of toothbrush. However, in general, children are recommended to use a soft-bristled toothbrush and a medium-bristled toothbrush<sup>4</sup>. Currently, there are many



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toothbrushes on the market with various brands and various variations in shapes, sizes and degrees of hardness of the bristles. In general, each brand of toothbrush is divided into three types based on the softness and hardness of the bristles, namely soft, medium, hard. However, their effectiveness in removing plaque varies. Children aged 9-12 years have not realized the effectiveness of each type of toothbrush. However, in general, children are recommended to use a soft-bristled toothbrush and a medium-bristled toothbrush<sup>4</sup>. Currently, there are many toothbrushes on the market with various brands and various variations in "shapes, sizes and degrees of hardness of the bristles. In general, each brand of toothbrush is divided into three types based on the softness and hardness of the bristles, namely soft, medium, hard. However, their effectiveness in removing plaque varies. Children aged 9-12 years have not realized the effectiveness of each type of toothbrush. However, in general, children are recommended to use a soft-

bristled toothbrush and a medium-bristled toothbrush<sup>4</sup>. However, their effectiveness in removing plaque varies. Children aged 9-12 years have not realized the effectiveness of each type of toothbrush. However, in general, children are recommended to use a soft-bristled toothbrush and a medium-bristled toothbrush<sup>4</sup>. However, their effectiveness in removing plaque varies. Children aged 9-12 years have not realized the effectiveness of each type of toothbrush. However, in general, children are recommended to use a soft-bristled toothbrush and a medium-bristled toothbrush<sup>4</sup>.

### MATERIALS AND METHOD

The type of research used is a literature study. Where literature study is one technique to find theoretical references that are relevant to the case to the problems found. The purpose of this study was to determine the difference between the types of toothbrush bristles and the decrease in plaque index. The data raised in this study comes from text books,



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journals, scientific articles and also literature related to the research carried out

### RESULTS

From the results of research conducted by Ninda Azria on students of SDN 104234 Medan Sinembah Kec. Tanjung Morawa, Deli Serdang Regency. The type of research used is analytic research with Quasi Experiment method, using Friedman Test and Wilcoxon Test. The average value of using soft bristles before brushing their teeth is 5.05 and after brushing their teeth is 2.30, those using medium bristles before brushing their teeth are 4.85 and after brushing their teeth are 1.95, and those using bristles are hard brush before brushing the teeth by 5.05 and after brushing the teeth by 1.80. From research conducted on students the average value of using soft bristles before brushing their teeth is 5.05 and after brushing their teeth is 2.30, those using medium bristles before brushing their teeth is 4, 85 and after brushing their teeth by 1.95, and using hard bristles before brushing their teeth by 5.05 and after brushing their teeth by 1.80.

From the results of the Friedman test, it was found that  $p < 0.05$  or  $0.000 < 0.05$  then  $H_0$  was rejected, which means that these three toothbrush bristles have the same effect on decreasing plaque scores. Toothbrush is one of the mechanical tools that are considered the most effective for cleaning plaque. The difference in brushing teeth mainly depends on the shape of the toothbrush, the method, frequency and duration of brushing. There are many types of toothbrush bristles, namely Soft, Medium and Hard bristles. Dentists recommend using toothbrush bristles that have soft and medium bristles. A toothbrush with soft and medium bristles is recommended so as not to injure the gums and damage the enamel tissue.

### DISCUSSION

Dental and oral hygiene is a condition or condition of the teeth being free from plaque and calculus, both of which are always formed on the teeth and extend to the entire surface of the teeth, this is because the oral cavity is wet, moist and dark, which causes germs to breed.



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Maintenance of dental and oral hygiene is important for health, one way to maintain dental and oral hygiene is by brushing teeth, choosing the type of toothbrush needs to be considered related to its use in cleaning teeth and mouth measuring a person's oral hygiene is measured by an index<sup>1</sup>. Index is a number that indicates the clinical condition obtained at the time of examination by measuring the area of the tooth surface covered by plaque or calculus. The best times to brush your teeth are after eating and before going to bed. Brushing your teeth after eating aims to remove food debris that sticks to the surface or between the teeth and gums. Meanwhile, brushing your teeth before going to bed is useful for preventing the proliferation of bacteria in the mouth because when you are sleeping, saliva is not produced which functions to clean your teeth and mouth naturally. For that, make sure your teeth are really clean before going to bed. When you wake up in the morning, your teeth are still relatively clean, so you can brush your teeth after

breakfast. The American Dental Association (ADA) modified the statement by stating that patients should brush their teeth regularly, at least 2 times a day, in the morning after breakfast and at night before bed. The results showed that if the plaque was completely removed every day, it would not have any effect on the oral cavity. Because few people can completely remove plaque and debris, it is necessary to emphasize cleaning of the sulcus as a control of periodontal disease and to use more frequent fluoride-containing pastes to control caries.

### CONCLUSION

From the results of research conducted by the three researchers, it can be concluded that all types of toothbrush bristles have an effect on reducing plaque index. However, soft and medium-bristled toothbrushes are recommended because they are more optimal and do not injure the gums, nor do they damage the enamel and can clean teeth. However, more attention should be paid to the method or method, frequency



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and duration of brushing teeth using a soft and medium toothbrush.

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### The Affectivity Of Counseling Method By Pop Up Book Media Compare With Booklet Media Toward Change Of Knowledge About Cariogenic Food To Students At Elementary School

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#### ABSTRACT

**Background:** Caries is dental and oral disease that is most suffered by Indonesian people. One of the causes is the consumption of excessive cariogenic. The age of elementary school children has habit to consume higher cariogenic food, so it causes an increase caries index. Overindulgence in cariogenic food is due to poor public knowledge of dental health. The success of counseling is influenced by the presence of media or educational aids. The purpose of this research was to analyze the affectivity of counseling method by *Pop Up Book* media compare with *Booklet* media toward change of knowledge about cariogenic food to students at elementary school. **Method:** of This research was a quasi experiment with pre-test post-test design. The sampling technique used the total purposive sampling method. The variables in this study are the extension media and the level of knowledge of elementary school students. **The Results:** of this research showed before and after counseling with *Pop Up Book* media there was no change with an average value of 1.95 with a P-value of 0.059>0.005. and the average score before counseling was 3.5, after being counseled at 4.1 with a p-value of 0.004 <0.005. In the group of students who were given counseling with the *Booklet* media. **Conclusion:** *Booklet* media is more effective than *Pop Up Book* media in changing knowledge of elementary students. Health workers in providing dental health education should use *Pop Up Book* media and *Booklet* media to improve knowledge of elementary school students.

**Keywords:** Knowledge; Booklets; Pop-Up Books



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### INTRODUCTION

Development Health held by giving priority to efforts to improve health, prevent disease by not neglecting efforts to heal and restore health, including for elementary school age children in order to achieve optimal health status, (Ministry of Health RI, 2000: 23) The results of Riskesdas (Basic Health Research) 2007 show The prevalence of dental caries in Indonesia is still high. Dental caries is caused by two main factors, namely: bacteria in the mouth and high sugar content in food. (Ramayanti and Purnakarya, 2013).

School age is a time to lay a solid foundation for the realization of quality human beings and health are important factors that determine the quality of human resources. One of the efforts that can be done knowledge Dental health in school children is to do counseling, Health counseling is an effort to convey health messages with the hope of individuals, communities, groups for about increase maintenance can gain knowledge about better health so that behavior changes can occur (Realdikha, 2016). Counseling can be done using media tools, the media is something that is used to stimulate the mind, will and attention of students to encourage learning activities. Pop Up Book is a book that has moving parts and provides a more

interesting visualization of the story, starting from the display of images that can move when the page is opened (Nausyad, 2016). MediaBooklet Media is a medium that serves to convey messages or information. Booklet is one of the print media to convey material in the form of interesting summaries and images (Fauziah, 2017). Based on the results of interviews with 10 grade 1 students at SD Santo Antonius 1 and SD Santo Antonius 02 Semarang city 9 out of 10 students tend to like sweet foods, and have a habit of consuming sweet foods every day, and there are dental caries in these 10 students. Based on the initial data, the researcher is interested in conducting research on the effectiveness of extension with the mediaPop Up Book compared to media Booklet to change knowledge about cariogenic food in Semarang City Elementary School.

### MATERIALS AND METHOD

This type of research is a quasi-experimental research type (quasi-experimental), because the researcher only gives treatment to one group (experimental group) and another group as a comparison. This study used a pretest post-test group design. The variables used in this study are the independent variables (mediaPop Up Book and mediaBooklet) and the



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dependent variable (knowledge of elementary school students). The sampling technique used which is Purposiv Sampling. The population in this study were students of class 1 as many as 20 students. This research was conducted at SD Santo Antonius 1 and Santo Antonius 02, Semarang City. The time of this research was carried out in June to July. The data collection technique used in this research is a questionnaire.

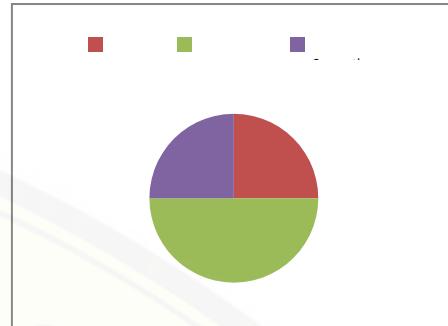
### RESULTS AND DISCUSSION

The material used in this study is material about cariogenic food where the material about cariogenic food itself is presented in the form of media in the form of Pop Up Book media and Booklet media. Data were obtained from the distribution of 20 items of the initial questionnaire, and the final questionnaire and 10 items of pre-test, post-test with the following results:

#### 1. Univariate Analysis

Analysis univariate Each variable from the results of the study was carried out using a frequency distribution list in the form of a diagram. The research results are as follows:

a. Measurement of knowledge using Booklet media for students of SD Santo Antonius 01 Graph 4.1. prior knowledge students given counseling with using media booklet



Based on picture 4.1 it is known that most of the respondents have knowledge of cariogenic food with using media booklets in the bad category (50%) as much as 10 respondents

b. Knowledge after given counseling using the media Booklet about cariogenic food, to the students of SD Santo Antonius 1



Figure 4.2. Student Knowledge Graph

After being given Counseling with using media Booklet St. Anthony's Elementary School 1



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Based on Figure 4.2, it is known that most of the respondents have knowledge about food cariogenic with using media Booklet in good category (75%) as much as 15. b. Measurement of student knowledge using mediaPop Up Book to students of SD Santo Antonius 02

a) Students' knowledge before counseling with the media PopUp Book about cariogenic food in SD Santo Antonius 02 students.



Figure 4.3. Graph of student knowledge before being given counseling with the mediaPop Up Book about cariogenic foods.

Based on Figure 4.3, it is known that most of the respondents have knowledge about food cariogenic with using media Pop Up Book in the Medium category (55%) as many as 11.

b) Knowledge Student

before and after with media Pop Up Book cariogenic food for students of SD Santo Antonius 2

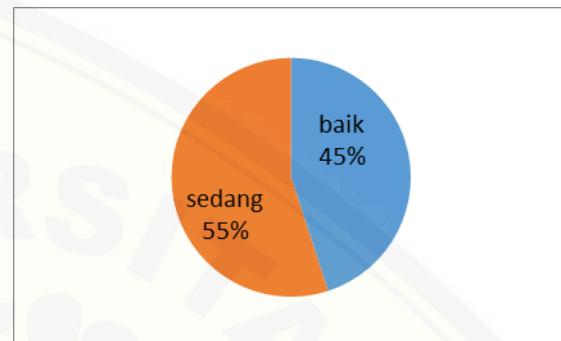


Figure 4.4 Graph of student knowledge After being given counseling with the media Pop Up Book about cariogenic foods.

Based on Figure 4.4, it is known that part respondent have knowledge about food cariogenic with using media Pop Up Book in the medium category (55%) as many as 11.

### 2. Bivariate Analysis

Analysis bivariate carried out to identify whether there is an influence between independent variable with dependent variable, using test Wilcoxon and test Man-Whitney.

#### A. Test results wilcoxon before



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and after given counseling with media Booklet about food cariogenics in SD Santo Antonius 1 students

Table 4.1 Test Results Wilcoxon Before and after being given counseling with booklet media about cariogenic foods.

Based on table 4.1, it can be seen that from 20 respondents had an average score before being given

counseling of 3.5, and the average score – the average after being given counseling is 4.1 with a p-value value  $0.004 < 0.005$ . It can be concluded that the media Booklet effective in changing elementary students' knowledge

Table 4.2 Test Results Wilcoxon Before

Pengetahuan	Mean	SD	P-Value
Sebelum	3,5	0,725	0,000
Sesudah	4,1	0,444	

and after being given counseling with the media Pop Up Book about cariogenic food at SD Santo Antonius 02

know	Mean	SD	P-Value
Sebelum	1,95	0,686	0,059
Sesudah	1,95	0,510	

Based on the table 4.2 can be know that the average value before and after being given counseling with the media Pop Up Book there was no change with an average value of 1.95 with a p-value value  $0.059 > 0.005$ . It can be concluded that the media Pop Up Book effective in changing the knowledge of elementary school students 1. Test Mann Whitney U-Test Statistic test mann difference whitney u-test for compare difference knowledge level cariogenics between SD Santo Antonius 1 students and the media Booklet and Santo . Elementary School students Anthony 2 with media Pop Up Book Table 4.3 Test Results Mann Whitney U-Test knowledge about cariogenic food using media Booklet and Media Pop Up Book based on table 4.3 shows



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statistical test results obtained value Sigor value p-value  $0.001 < 0.005$  where is media Booklet more effective in changing students' knowledge of cariogenic foods

The results of the research conducted on

know	P-value
Media Booklet	
Media Pop Up Book	0,001

students of SD Santo Antonius 1 showed a change in knowledge about cariogenic foods before and after counseling is carried out with using media Booklet from the bad category of 50% to the good category of 70%. In contrast to the results of research on students who were given counseling with the mediaPop Up Book where it doesn't happen significant changes before and after being given counselin

This extension is caused by environmental factors and the difference in the level of student cooperation when counseling is carried out at the two different elementary

schools. Agustin (2014) research results on dental caries knowledge respondent from using media Booklet showing there is change knowledge less category into sufficient category, compared with respondent's knowledge with using audio-visual media. caused by environmental factors, where the environment itself is very influential on the process of entering knowledge into the individual, this happens because of the reciprocal interaction of the environment and the process of entering knowledge. The more conducive the environment, the better the process of entering knowledge Bagaray, et al (2016) showed that booklet media were effective in crease knowledge education dental and oral health, this is supported by the opinion of Notoadmodjo in Bagaray, et al

( 2016 ) that the media Booklet has advantages because the media booklet covers many people and is practical in its use because it can be used anywhere. Booklet also contains text accompanied by pictures so as to create a sense of beauty



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and in accordance with the characteristics of children who generally like pictures. Media is a tool support for channeling information from planned sources, so as to create interactive learning so that students can provide feedback in learning. (Arsyad, 2016).

This is not in line with the research conducted by Kasiyati (2018) which said that media Pop Up Book effective in increasing the ability to recognize body parts, This is because there is no discussion of the comparison between media Pop Up Book with media Booklet so it can be concluded that the media Booklet more effective in change the knowledge of elementary school students.

### CONCLUSION

Based on the results of research and discussion on the effectiveness of counseling methods using Pop Up Book media compared to Booklet media on changes in knowledge about cariogenic foods in Semarang City Elementary School students, it can be concluded that

Booklet media is more effective compared with Pop Up Book media in changing elementary students' knowledge about cariogenic foods.

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### The Effect Of Traditional Arabica And Robusta Coffee Types On Saliva pH In Department Students Dental Nursing Ministry Of Health Polytechnic Semarang 2020

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#### ABSTRACT

Dental caries is caused by several types of acid-producing bacteria that can damage due to carbohydrate fermentation reactions. **Background:** The main objective of this study was to determine the effect of traditional arabica and robusta coffee types on salivary pH. **Methods:** This study uses a descriptive analytic design with a cross sectional method. The number of samples was 51 students of the Department of Dental Nursing who were determined based on what was available to drink coffee. The instruments used are traditional arabica and robusta coffee, glasses and pH strips. **Results:** The results of the Wilcoxon test showed a significant value of p Value = 0.000 ( $p < 0.05$ ) which indicated the influence before and after treatment with Arabica and Robusta coffee on salivary pH. **Conclusion:** The results of statistical tests showed no significant differences, but in the results there were changes, Arabica coffee experienced an increase in p Value (0.033) and Robusta experienced a decrease in p Value (0.004).

Keyword: Coffee, Salivary pH  
written in 10pt, maximum of 5 keywords separated by semicolon (;

#### INTRODUCTION

Based on the 2018 Basic Health Research, Indonesian people who have dental and

oral health problems are 57.6% of the total 267 million Indonesian population. From this percentage, the most common dental



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and oral disease is dental caries. The survey in Central Java Province is a province with a high number of patients with dental and oral problems at 25.4%, only 31.0% of the population received treatment and treatment from the medical team.

Dental caries is a disease of dental tissue characterized by tissue damage, starting from the tooth surface (niches, fissures, and proximal internal areas) extending towards the pulp (Brauer). Dental caries can be experienced by everyone and can occur on the surface of the teeth or more, and can extend to the deeper parts of the teeth, due to various reasons, including carbohydrates, microorganisms and saliva, as well as the surface and shape of the teeth. In addition to these 4 factors, there are also other supporting factors, namely *Saliva pH* (Tarigan, 2016).

Dental caries is caused by several types of acid-producing bacteria that can be destructive due to carbohydrate fermentation reactions including sucrose, fructose, and glucose.

The habit of drinking coffee can reduce the *pH of saliva* because of the sucrose content in coffee, which is where the synthesis of extra sucrose cells is faster

than other sugars, so it is converted into acid more quickly by microorganisms in the oral cavity (Mariko, 2014). Coffee contains simple carbohydrates in high concentrations, namely sucrose and monosaccharides so that it can cause a decrease in *salivary pH*, sucrose is a disaccharide group while monosaccharides are the main carbohydrate group consisting of glucose/dextrose, fructose, and galactose, (Andriany, 2012)

This research was conducted on students of the Department of Dental Nursing Poltekkes Kemenkes Semarang. The results of this study can be used as a reference source and for further research on the viscosity and buffering capacity of saliva. The main objective of this study was to determine the effect of traditional arabica and robusta coffee types on *salivary pH* in students of the Department of Dental Nursing, Poltekkes, Ministry of Health, Semarang.

### MATERIALS AND METHOD

This type of research is a descriptive analytic design with a *cross sectional* method. Sampling in this study was carried out with the accentidental sampling technique, namely the



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determination of the sample based on what is available for drinking coffee. (Notoatmodjo, 2012).

After meeting the criteria as a respondent, they must fill out and sign an informed consent to avoid unwanted things. This research was measured using a pH strip and then the instrument used was traditional arabica and robusta coffee, glass. Then the coffee is brewed without added sweetener, with a concentration of 1:15 or 10 grams of coffee with 150 ml of water at a temperature of 95 °C

### RESULTS

Research on the effect of traditional Arabica and Robusta coffee types on salivary pH in Dental Nursing Department Students at the Health Polytechnic of the Ministry of Health Semarang with 51 respondents who were divided into 2 groups. *The salivary pH of the sample* was measured before and after treatment. Each sample was treated with 150 ml of Arabica coffee for 25 samples, and 150 ml of Robusta coffee for 26 samples to determine the effect on saliva pH after drinking Arabica and Robusta coffee. Previous research conducted by Herry Imran et al (2016) on the effect of coffee consumption on decreasing salivary pH in

adulthood. The results of this study indicate that there is a significant effect between coffee consumption and a decrease in salivary pH. There is an average salivary pH between coffee consumption of 5.7 and non-coffee consumption of 6.5.

Another study was also conducted by Cut Soraya et al (2013) about the effect of Robusta coffee and Arabica coffee on changes in salivary pH (*In Vitro*). The results of this study indicate that there is an effect of Robusta coffee and Arabica coffee on changes in salivary pH due to the acid content of the coffee. The acid contained in it can dissolve the minerals in the hard tissue of the teeth, so that acidic drinks are considered a factor causing damage to the hard tissues of the teeth

### DISCUSSION

in the group with Arabica coffee treatment the pH was neutral, then after treatment with Arabica coffee, the pH increased. Increasing the pH of each individual is possible due to chemical stimulation (tasting). The same statement by amerongens that the velocity of salivary



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flow can be increased by chemical stimulation (tasting) in the presence of the bitter taste of chlorogenic acid. The high content of chlorogenic acid can cause a bitter taste that is antimicrobial so that it can inhibit caries-causing bacteria and cause an increase in *salivary pH*.

In the group with Robusta coffee treatment, the *pH of saliva* can be reduced to acid, because the content in the coffee solution consists of simple carbohydrates in high concentrations, namely sucrose and monosaccharides so that it can cause a decrease in *salivary pH*. So that consuming coffee can have a direct effect on decreasing the *pH of saliva* to become acidic. The results of the *man-whitney* statistical test obtained a significance value of 0.000 ( $p < 0.05$ ). It can be concluded that there is an effect between the two groups treated with Arabica and Robusta coffee on *salivary pH*.

### CONCLUSION

The results of statistical tests showed no significant differences, but in the results there were changes, Arabica coffee experienced an increase in *p Value* (0.033) and Robusta experienced a decrease in *p Value* (0.004). In the average value there is no significant

change in *salivary pH* between treatments with Arabica coffee and Robusta coffee, There is an effect of traditional Arabica and Robusta coffee types on *salivary pH* in Dental Nursing Department Students, Health Polytechnic of the Ministry of Health, Semarang. This is evidenced by the value of *p Value*  $<0.05$ .

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**"LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC"**



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### The Relationship Of The Level Of Knowledge Of Pregnant Women With Dental And Oral Health Behavior In The Mangasa Health Center In Makassar City

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#### ABSTRACT

**Background:** pregnant women is one of the groups that are vulnerable to diseases of the teeth and mouth. Some studies suggest that the level of knowledge and attitudes of pregnant women can affect the health of the teeth and mouth. the **research** aims to determine the relationship between the level of knowledge of pregnant women and the behavior of the teeth and Dental Health at the health center mangasa in the sub-District Rappocini, Makassar. the **method** of collecting this data was obtained from questionnaires (primary) by taking respondents as many as 40 respondents by using the technique of sampling is observational. Analysis of the data used in this research is the Chi-Square using SPSS 24.0. **Conclusion** there was a significant Relationship between the knowledge of pregnant women with behavioral health of the teeth and mouth at the health center Mangasa.

**Keywords:** knowledge, behavior, dental and oral health, pregnant woman

**"LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC"**

#### INTRODUCTION

Pregnant women is one of the groups that are vulnerable to diseases of the teeth and mouth. Some studies suggest that the level of knowledge, attitude, and behavior of pregnant women can affect the health of the teeth and mouth.<sup>1</sup>

Pregnancy is a period which is typical when a woman is pregnant embryo and develop into a fetus in her uterus for

approximately nine months. During pregnancy, both women and her fetus face a variety of health risks. The existence of equilibrium in the female sex hormone and the factors a local irritant can affect the health of the oral cavity. If the health of the oral cavity is problematic, it can give a negative impact on pregnancy and fetal development.<sup>2</sup>



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During pregnancy there is a change in the oral cavity associated with hormonal changes, dietary changes, behavioral changes, and a variety of complaints such as cravings, nausea, and vomiting.<sup>3</sup>

Health is one of the preferred in human life, including the health of the teeth and mouth. Physical health that can not be separated from one and other. Oral and dental health is interrupted it could be a sign or could even be a factor in the emergence of other health disorders. Good oral hygiene can be realized through knowledge and good behavior and correct to the maintenance of the health of the teeth and mouth. Knowledge is the factors that shape a person's behavior. Lack of knowledge will shape the behavior and attitudes that are mistaken for the maintenance of the health of the teeth and mouth.<sup>4</sup>

Oral health is an integral component of general health. It has also become clear that the factors that cause and the risk of diseases of the mouth are often the same as that involved in common diseases. Overall

health, well-being, education and development of children, families and communities can be influenced by oral health.<sup>5</sup>

Diseases of the teeth and the mouth is one of the diseases that many people complained in Indonesia. The perception and behavior of the people of Indonesia to the health of the teeth and the mouth was still bad. It is seen from the magnitude of the numbers of caries of the teeth and mouth in Indonesia tends to increase. Things that greatly affect the things that are the factors of education and the economy of the community, the effect on knowledge, attitude and behavior of a healthy lifestyle of the community, particularly regarding the health of the teeth and mouth.<sup>6</sup>

### METHOD

This study uses a type of observational study is research that explains "the Relationship between the Level of Knowledge of Pregnant Women With Behavioral Health of the Teeth And Mouth by using Cross sectional approach". The sampling technique using purposive



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sampling, a Total of 40 pregnant women were included in this study. Data processing using SPSS software with chi-square test.

### RESULTS

Based on the results of Research conducted in the areas of health Mangasa Makassar city obtained the result that the level of knowledge both tend to have good behavior in caring for the health of your teeth and mouth during pregnancy (22.5%), while respondents who have less knowledge of the level of the dominant behavior less well in caring for the health of your teeth and mouth during pregnancy (77.5%).

The results of this study are in line with research conducted by Murni (2017), which is carried out on pregnant women in health center Narmada seen that the respondents level of knowledge both tend to have good behavior in caring for the health of your teeth and mouth during pregnancy (22.2%), while respondents who have a level of knowledge that are less well automatically have behavior that

is less good in taking care of oral and dental health during pregnancy (64.0%).

Respondents level of knowledge better have a tendency of his behavior better and respondents level of knowledge is less likely to behave in a less is better and the results of the statistical analysis the chi-square test showed there was a significant correlation level between the knowledge associated with the behavior of pregnant women in taking care of oral and dental health during pregnancy where the obtained value of  $P = 0.000 (\alpha=0.05)$ .

According to the researchers, knowledge is something that is acquired through the five senses then it is processed by the brain so as to form the action. while the behavior is the result of an event or events experienced by a person in interacting with the environment are intangible knowledge.

From the results of this study can be aware of things that affect the knowledge of mothers pregnant low and his conduct is not good, in the care of the teeth and oral health during pregnancy, as seen in table



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4.1 shows that the level of education of pregnant women in areas of health Mangasa Makassar city, most are high school graduates (40%), based on this course of education to be one of the factors also which gives the relationship because when the level of education a person has the higher, it is increasingly understood and understand how to maintain the cleanliness of the oral cavity.

From the research results (table 4.2) is also known that the average pregnant women in areas of health Mangasa Makassar city not work (87.5%) so it is no wonder if their knowledge is less because of the work affect the process of accessing the information needed against an object.

Furthermore, in table 4.3 is known that the age of the pregnant women in areas of health Mangasa Makassar city most is 57.5% of reproductive Age healthy (20-35thn). This is certainly influential because of the increasing age can make changes to aspects of psychological and psychiatric.

Not only that in table 4.5 also be aware that most pregnant women in areas of health Mangasa Makassar city new experience first pregnancy (45.0%). So according to the researchers, the experience is very effect of knowledge because when more and more experience someone about something, then it will be growing also the knowledge of a person would be it.

In this case Knowledge and behavior are two things that can not be separated and there are several factors that affect this such as education, employment, experience, and age.

### DISCUSSION

Knowledge is a variety of symptoms encountered and acquired human through the observation of sense. Knowledge arises when a person uses their minds to recognize objects or specific events that have never been seen or felt before. For example when someone tasting a new cuisine known to him, he will get knowledge about the shape, taste, and aroma of the dishes.



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Knowledge is information that has been combined with the understanding and the potential to act upon; that is necessarily inherent in a person's mind. In general, the knowledge has predictive capabilities against something as a result of the introduction of a pattern. When the information and the data simply enabled to inform or even cause confusion, then knowledge-enabled to direct the action. This is called the potential to act upon.

Behavior is the result rather than the experiences of all kinds as well as the interaction of humans with their environment which manifested itself in the form of knowledge, attitude and action. Behavior is a response/reaction of an individual to the stimulus that comes from outside and from within herself.

The relationship of knowledge with the behavior of the respondents that the level of knowledge both tend to have good behavior in caring for the health of your teeth and mouth during pregnancy. While respondents who have less knowledge of the level of the dominant behave less well

in caring for the health of your teeth and mouth during pregnancy. Or with other words respondents level of knowledge better have a tendency behavior is good and the respondents level of knowledge is less likely to behave less well in caring for the health of your teeth and mouth.

### CONCLUSION

Of the 40 respondents mostly : 31 pregnant women (77,5%) have a level of lack of knowledge about oral health care during pregnancy, and the behavior of the respondent or the pregnant woman in the dental and oral health care during pregnancy most or 77.5% have behaviors that are less good.

There was a significant relationship between knowledge with the behavior of the respondent or the pregnant woman in the dental and oral health care during pregnancy where the statistical test results obtained P value = 0.000 ( $\alpha=0.05$ ).

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### Cheating Cucumber Against Plaque Index Effectiveness

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### ABSTRACT

Dental plaque is a sticky, soft coating that adheres to the tooth's surface. Plaque forms when carbohydrates (sugar and starch)-containing meals, such as milk, soft drinks, raisins, cakes, candies, and so on, are left on the teeth. Plaque can be removed by brushing your teeth, but it can also be removed by additional maintenance, such as eating crunchy fruits and vegetables to naturally clean teeth. Because there will be a shift in fibers when chewing, food particles adhering to the tooth surface will be released, and mastication will increase salivary secretion, aqueous fibrous fruit can result in teeth cleaning (self-cleaning action). The goal of this study is to see how effective it is. The literature review strategy was adopted in this investigation. The literature study method is a set of tasks that includes gathering data from libraries, reading and recording research materials, and organizing research materials generated from textbooks, journals, scientific papers, and literature reviews that contain the topics being examined. Cucumber chewing has an impact on plaque index reduction, according to research findings from many references and publications. This is due to cucumbers' high water and fiber content. Cucumbers contain enough water to stimulate the salivary glands to continue producing saliva, so they play an important function in oral and dental health. Cucumbers are effective at cleaning teeth due to their ability to lower plaque index.

Keyword : Dental Plaque; Cucumber

### INTRODUCTION

Poor dental and oral hygiene is the starting point for dental and oral disease. Dental and oral hygiene must be improved to prevent the occurrence of dental and oral diseases, namely by preventing and eradicating plaque accumulation. Because plaque contains pathogenic bacteria that

cling to the tooth and gingival (gum) surfaces, plaque is the primary cause of caries and periodontal disease. Plaque forms when carbohydrates (sugars and starches) are left on the teeth, such as milk, soft drinks, raisins, cakes, candies, and so on. Many attempts have been made to keep dental and oral health in good shape.



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Mechanical, chemical, and mechanical and chemical alteration procedures are the three options. Cleaning teeth and the mouth has traditionally relied on mechanical methods, such as brushing<sup>(2)</sup>. In addition, there are various ways to encourage natural teeth cleaning, one of which is to eat crunchy fruits and vegetables. Juicy fibrous fruit can have a self-cleaning effect because the fibers change during chewing, allowing food material that has accumulated on the tooth surface to be released<sup>(1,3)</sup>.

Crunchy fruits and vegetables can effectively remove stains without causing damage to tooth enamel, acting as natural toothbrushes and teeth whiteners. The acid solution in the fluids generated by these fruits and vegetables is sufficient to prevent cavities. Some stains on the teeth can be removed with the acid solution. Apples, yams, guavas, carrots, and cucumbers are some examples of crunchy fruits and vegetables that are beneficial for teeth. Cucumbers are recognized for having a high fiber and water content, which makes them ideal for dental hygiene. Cucumbers also assist clean teeth by removing deposits that lead to the creation of the acid that causes cavities, known as plaque. Dental plaque is a soft coating that is firmly bonded to the surface of the teeth and is made up of microorganisms that multiply in an intercellular matrix if dental and oral hygiene are neglected<sup>(1)</sup>.

Cucumbers are relatively easy to come by in everyday life and are enjoyed by people from all walks of life. Cucumbers are not

only easy to come by, but they are also inexpensive. Vegetables with a high fiber content and a high water content are very beneficial for maintaining dental and oral hygiene, especially when it comes to removing soft deposits, such as dental plaque.

### MATERIALS AND METHOD

The research method employed in this study was a literature review. The literature study approach entails a sequence of tasks such as gathering library information, reading and taking notes, and maintaining research materials. Textbooks, journals, research publications, and literature reviews presenting the concepts under inquiry are used to collect data.

### RESULTS AND DISCUSSION

Plaque forms when carbohydrates (sugars and starches) are left on the teeth, such as milk, soft drinks, raisins, cakes, and candies. Dental plaque is created in the mouth cavity through a series of sequential processes that start with salivary chemicals and carbohydrates from food debris. Plaque development, bacterial colonization, and plaque maturation are the three stages that plaque goes through. When papillae, food debris, and bacteria come together to form plaque, plaque is formed<sup>(2,5)</sup>.

Plaque removal can be accomplished in two ways: chemical and mechanical. Eating crunchy fruits and vegetables to naturally clean the teeth is one of the mechanical approaches of plaque reduction. Cucumber is one of the veggies



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that may be used to clean teeth. Cucumber is recognized for its high fiber and water content, which makes it a good choice for mouth hygiene. Cucumbers can also clean teeth by eliminating plaque, which is a deposit that contributes to the production of acids that cause cavities. Cucumbers include a lot of fiber, which is great for eliminating plaque. Cucumber fibers that have been chewed have mechanical qualities that aid to create a brush-like effect that can clean the teeth<sup>(1,4)</sup>.

A study conducted by Widya Rahma Talitha et al in 2019 involved a sample of 33 participants and was conducted at the Male Dormitory of the Dental Nursing Department of the Ministry of Health's Health Polytechnic, Tasikmalaya. The descriptive method was used in this research. After chewing 32 times on the left and right jaws for 2 minutes, the person will undergo a final plaque examination to assess the treatment's effectiveness. The descriptive method was used in this research. The findings of this study revealed that chewing cucumber had an effect on lowering plaque index, with average criteria reached before chewing cucumber and after chewing cucumber<sup>(1)</sup>. Maintaining dental and oral hygiene can be accomplished in a variety of ways, one of which is by diligently consuming fruits and vegetables with sufficient water and fiber content, which will help people with very concentrated and little saliva levels, thereby reducing the risk of cavities or caries when compared to people with very low salivary content. Because saliva is a natural self-cleaning agent that plays a

critical part in dental and oral hygiene, persons who have more concentrated and less saliva will have food stick to the surface of their teeth more easily. Foods that are fibrous and watery, such as papaya, apples, and pears, should be chewed<sup>(1)</sup>.

Fibrous and watery foods increase the intensity of mastication, according to McDonald and Avery. The masticatory process stimulates saliva production, encourages salivary secretion, and performs physiological self-cleaning in the oral cavity, helping to rinse the teeth and dissolve sugar components from meal residue trapped in pits and fissures. It has the potential to impact a person's oral and dental hygiene<sup>(2)</sup>.

In line with the study described above, RR Ratnasari et al. conducted a study in 2016 on 45 students from SMA Trihasil Natar Lampung who were given three treatments: watermelon on the first day, cucumber vegetables on the second day, and biscuits on the third day, all while chewing with both sides of the jaw. The plaque index decreased after chewing watermelon and cucumbers, and eating biscuits was not helpful for dental hygiene since biscuits were either flour-based or soft and stuck easily to the tooth surface, speeding up plaque production. Cucumbers were found to be somewhat more helpful than watermelons in lowering plaque index in this investigation. The plaque index of Trihasil Natar High School students dropped after chewing watermelon and cucumber vegetables, according to the findings of this study.



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This decrease occurred because the masticatory muscles moved during the mastication process, and this movement stimulated salivary production in the oral cavity, allowing for natural self-cleaning of the mouth. Self-cleaning refers to the natural cleansing of the teeth against food residues in the oral cavity. The results of this study also revealed variations in plaque index reduction before and after chewing watermelon or cucumber, indicating that both are equally effective at lowering plaque numbers<sup>(2)</sup>.

Cucumber, which is a solid food, contains 0.5 grams of fiber. Cucumber chewing necessitates extra muscle activity to break down the food, which biologically stimulates the human tongue to grind and destroy the food before it enters the digestive track. This muscle effort will increase saliva production, which will aid in the teeth's natural self-cleaning process. The fiber in the cucumber helps to increase the amount of saliva produced. Physiologically, the fiber cleans teeth by brushing away food residue that has stuck to the surface, allowing food debris to be lifted and teeth to be cleansed<sup>(2)</sup>.

### CONCLUSION

It may be concluded, based on the search results collected from several literatures, that chewing cucumber is efficient in lowering plaque index.

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### The Difference Between Counseling With Media Kuargi Cards (Dental Quartet) And Crossword Puzzles On The Knowledge Of Dental And Oral Health Care Of Elementary School Children

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#### ABSTRACT

**Background:** Knowledge about oral health in Indonesia is still lacking. A problem that is often found in Indonesia related to teeth and mouth is the lack of knowledge and how people act in maintaining oral health. To increase knowledge about maintaining oral health can be done with the initial steps of counseling conducted in schools with interesting media. Kuargi Cards and Crosswords are one of the interesting counseling media by playing. This study aims to determine the differences between counseling with media cards and crossword puzzles on the maintenance of dental and oral health in elementary school children. **Methods:** The type of research used is Quasi Experimental Research with One Group Pretest-Posttest design. The population in this study amounted to 40, samples were taken using total sampling techniques. Data analysis was carried out with univariate and bivariate analysis, the Mann Whitney test to find out the differences between the cuargi card media and the crossword puzzle. **Results:** Statistical test Mann Whitney results show that there is a difference in counseling with the media of Kuargi cards and crossword puzzles in fifth grade students. **Conclusion:** Kuartet cards and crossword puzzles are interesting game media so that they can be used as an option to be applied to elementary school students in counseling, especially about dental and oral health maintenance, with the hope that in the future it can increase students knowledge.

Keyword : Counseling; Kuargi Cards; Crosswords; Oral and Dental Health Care

#### INTRODUCTION

Dental health education in schools is the first step in preventing dental problems,

one of the health education efforts is through counseling efforts to increase knowledge and attitudes in maintaining dental health. Success in dental health



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education efforts to school children cannot be separated from the method of education and the importance of the role of the media (Arsyad, 2013). The current dental health education media still uses a conventional approach and tends to be less attractive to children, even though the existing counseling media already applies the modeling principle, but the selection of media used is felt to be less evocative, monotonous, and unattractive to children and to be easy to forget (Hariyani et al, 2003). Health education with educational games is more fun than counseling with the lecture method (Baranowski et al, 2013). Educational games are all forms of games that can provide children's knowledge and abilities (Suyadi, 2009). A quartet card is a kind of educational game consisting of several number of picture cards on which there is a written description that explains the picture. Usually, the title of the image is written at the top of the card and the text is enlarged or thickened. While the picture writing, written two or four lines vertically in the middle between the title and the picture. Writing that describes the image is usually written in colored ink (Arifin, 2012). While crossword puzzles are educational games in the form of a series of squares or equilateral squares. The boxes are numbered indicating the number of the answer numbers. The box must be filled with letters that form a word which is the answer to the questions that have been provided (Wasito et al, 2016). Based on the results of an initial survey conducted by researchers at an elementary school in

the Banyumanik area, with the results of interviews with 20 fifth grade students regarding dental and oral health maintenance that only 2 students knew about proper dental and oral health maintenance. Meanwhile, 18 students did not know about the maintenance of oral health.

### MATERIALS AND METHOD

This type of research uses a quasi-experimental design research method, using a two group pretest-posttest design, where in this study a pretest (initial observation) is carried out before treatment. Posttest (final observation) in the form of examination after treatment. The sample in this study used a total sampling technique. From 40 students will be divided into 2 groups.

### RESULTS

Wilcoxon Test Results Before And After Counseling Using Kuargi Cards Media

Counseling	Mean	Sd	Sig.
Before	6,85	3,91	0,000
After	14,15	0,81	

Based on the results of research that has been conducted on fifth grade students of Srondol Kulon 02 Elementary School, it shows that the results of prior knowledge were given counseling using kuargi card media as many as 13 people (65%) in the medium category and 7 people (35%) in the poor category. After counseling with the media of kuargi cards, there was a



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change in the knowledge category, namely as many as 20 people (100%) in the good category.

**Wilcoxon Test Results Before And After Counseling Using Crossword Puzzle Media**

Counseling	Mean	Sd	Sig.
Before	7,35	3,61	
After	13,60	0,82	

While the results of research before counseling with crossword puzzle media were 15 people (75%) in the medium category and 5 people (25%) in the bad category. After counseling using crossword puzzles, there was a change in the category of dental and oral health knowledge, namely 19 people (95%) in good category and 1 person (5%) with moderate criteria.

Variabel	Mean Before	Mean After	Difference	Sig.
Kartu Kuargi	6,85	14,15	7,3	0,045
Teka-teki Silang	7,35	13,60	6,25	

And the results of data processing with the Wilcoxon test, quargi card media and crossword puzzles were both effective in increasing oral and dental health knowledge as evidenced by the p-value 0.000 (<0.05).

## DISCUSSION

The results of the Mann Whitney test processing showed that there was a significant difference in counseling with the media of quartz cards and crossword puzzles as evidenced by a p-value of 0.045 (<0.05), where the difference in the

average knowledge before and after counseling with the media of quartz cards was 7.3 and the difference between the average before and after counseling with the media crossword 6.25. From the average difference, there is a difference between the media of quartz cards and crossword puzzles. The results of this study indicate that there are differences in counseling using the media of quarry card games and crossword puzzles. This is in accordance with previous research conducted by Ilvana (2016), namely the differences in outbound game counseling methods, monopoly and lecture methods in increasing dental health knowledge and student's mouth. According to research on the results of students' low knowledge about knowledge of dental and oral health maintenance, the contents of the counseling previously conveyed were not fully captured by children. This is because the media used in the previous counseling did not attract the attention of children, so that students' knowledge was low. Researchers saw the results of changes in knowledge for the better after being given counseling with the media of quartz cards to overcome the low knowledge of students about maintaining dental and oral health. According to Notoadmodjo (2014) knowledge can be obtained from experience and the learning process. The success of the learning process to increase one's knowledge is influenced by several factors, one of which is the media used

## CONCLUSION



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Quartz cards and crossword puzzles can be used as an alternative to increase the knowledge of elementary school children, especially in the field of oral health

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## Knowledge Relationship With Community Behaviour Towards Effort Cleaning Tartar

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### ABSTRACT

**Background :** Knowledge or cognitive is a very important domain in shaping one's actions from experience and research. Behavior that is based on knowledge will be more attached than behavior that is not based on knowledge. **Objective:** The purpose of this study was to determine whether there is a relationship between knowledge and community behavior towards tartar cleaning efforts. **Methods:** This study uses a literature study research method or literature. The data used come from textbooks, journals, scientific articles, literature reviews containing the concepts studied. The relationship between knowledge and community behavior towards efforts to clean tartar, then there is a relationship, namely with the level of community knowledge possessed to change behavior towards efforts to clean tartar which can cause damage to teeth and cause a sense of smell if there is no effort to repair it. **Results:** The results of the study based on the results of the literature study, it can be concluded that there is a relationship between knowledge and community behavior towards efforts to clean tartar.

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Keyword : Knowledge, behavior, tartar.



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### INTRODUCTION

Definition healthy according to World Health Organization (WHO) is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. So by analogy mental health is not just free from distractions but rather to feeling healthy, prosperous and happy (well being), there is harmony between thoughts, feelings, behavior, can feel happiness in most of their lives and are able to overcome the challenges of everyday life.

Health is the result of the interaction of various factors, both internal factors (from within humans) and external factors (from outside humans). Internal factors consist of physical and psychological factors. External factors consist of various factors, including social, community culture, physical environment, politics, economy, education. Oral hygiene is very important, some dental and oral problems can occur due to lack of dental and oral hygiene. Awareness of maintaining oral health is very necessary and is the most appropriate preventive medicine for dental and oral problems. It is better to prevent than to treat (Hidayat and Tandiari, 2016).

According to the Health Law No. 36 of 2009 article 93, dental and oral health is a service carried out to maintain and improve the health status of the community, in the form of improving dental and oral health, disease prevention, treatment of dental diseases, and restoration of dental health by the government, local government, and/or the community which is carried out in an integrated, integrated and sustainable manner. Based research basic health (RISKESDAS) In 2018, 57.6% of the population who experienced dental and oral disease included swollen gums as much as 14% and easy bleeding gums as much as 13.9%. scaling or cleaning tartar as much as 1.4%.

Oral hygiene has an important role in the field of dental health, because poor oral hygiene can lead to various diseases, both local and systemic. Measurement of dental and oral hygiene is an attempt to determine the state of a person's dental and oral hygiene. Generally, an index is used to measure dental and oral hygiene. The index is a number that shows the clinical condition obtained at the time of the examination, by measuring the area of the tooth surface covered by plaque or calculus. Clinically, the level of oral hygiene was assessed by using the Oral Hygiene Index Simplified (OHI-S) criteria. This criterion is assessed based on the state



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of soft deposits or debris and tartar or calculus. (Basuni et al. 2014)

Calculus is a collection of calcified plaque that adheres tightly to the surface of the teeth and other solid objects in the mouth, so that the teeth become rough and feel thick. Calculus is formed by the deposition of food residue with saliva and germs, so there is a calcification process which over time becomes hard. Calculus that continues to be left in the mouth can cause irritation, inflammation of the gums and damage to the tissue that supports the teeth, and can cause teeth to become loose and fall off on their own. (Hasan et al. 2021)

Teeth are a part of the body human whose function is no less important with other body parts. In terms of keep your teeth and mouth clean people are negligent and don't even care dental and oral hygiene. As a result, teeth become dirty and unsanitary. Initial problem which often arise as a result of negligence is there is a lot of tartar on his teeth.(Arini. 2012)

Knowledge is influenced by formal education factors. Knowledge is very closely related to education, where it is hoped that with higher education, the person will have more extensive knowledge (Alvionika, 2019).

The expected behavior of the people of Healthy Indonesia 2010 is which character proactive for maintain and increase health, prevent risk happening disease as well as actively participate in the public health movement (Depkes RI, 1999).

The purpose of this study was to find out whether there was a relationship between knowledge and community behavior towards tartar cleaning efforts.

### MATERIALS AND METHOD

Type study which used is a literature study. The literature study method is a series of activities related to the methods of collecting library data, reading and taking notes, and processing research materials.

Literature study is an activity that is required in research, especially academic research whose main purpose is to develop theoretical aspects as well as aspects of practical benefits. Literature studies are carried out by each researcher with the main objective of finding the basis for obtaining and build base theory, framework of thought, and determine provisional conjectures or also known as



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research hypotheses. So that researchers can classify, allocate, organize, and using a variety of libraries in their field.

### DISCUSSION

Based on the formulation of the problem, namely how the relationship between knowledge and behavior towards tartar cleaning efforts. The government has carried out various activities to improve the degree of dental and oral health, one of which is carrying out preventive dental health services, including cleaning tartar whose implementation is entrusted to the Puskesmas.

Putri Alvionika BR Ginting (2019) conducted a study with the title "Description of knowledge about cleaning tartar on Oral Hygiene in class VII and VIII students of SMPN Satu Atap 2 Payung, Payung District, Karo Regency". The type of research used is descriptive research, which aims to get an overview of knowledge of tartar cleaning on Oral Hygiene by involving as many as 37 people as samples from the total population. Based on the results of research conducted on 37 people, it is known that the majority who showed good category were 35 people (95%), while the score of dental and oral hygiene (OHI-S) was mostly 29 people (78%).

In this study, the data obtained showed that as many as 27 people (73%) did not know how to clean tartar and only 4 people (27%) knew how to clean tartar. From this study also obtained data there are 16 people (43%) who do not know about tartar cleaning, as many as 2 people

(5.4%) do not know what causes tartar, and as many as 8 people (22%) do not know how many times they have tartar. visit the dentist/dentist clinic.

Data also obtained that as many as 8 people (22%) do not know which foods are good for dental health. According to Djoerban (2012), dental and oral health is very important to maintain overall health. Oral health is maintained well, will improve the ability to speak (phonetics), chew (mastication), beauty (aesthetics). One way to prevent dental health problems is to regulate your diet by consuming more fibrous foods such as vegetables and fruits. It was also obtained that 3 people (8%) did not understand that the right time to brush their teeth was in the morning after breakfast and at night before going to bed. 1 person (3%) did not know that dirty teeth can cause bad breath.

Based on the results of the research and discussion, the researchers concluded, the results of the data obtained from the description of knowledge about tartar cleaning the majority of knowledge was Good as many as 35 people (95% and the level of oral hygiene) was the majority moderate as many as 29 people (78%). not always followed by action.

Nunuk Setyawati, (2018) conducted a study entitled "The Relationship Between Knowledge Level and Dental and Oral Health Behavior of Pregnant Women at Dlingo II Health Center in 2017". This research uses analytic observational method with quantitative research design with cross sectional approach. The sample used in this study were 45 pregnant



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women. Sampling in this study was done by simple random sampling technique.

The results showed that the level of knowledge of pregnant women about dental and oral health was a good majority, namely 38 respondents or (84.4%) and lack of knowledge as many as 7 respondents or (15.6%). The results showed that the dental and oral health behavior of pregnant women was good as many as 30 respondents or (66.7%) and less behavior as many as 15 respondents or (33.3%). Based on the results of the study, it was found that the majority of respondents had good knowledge and had good behavior as many as 24 people (53.3%). This is because pregnant women have done an integrated ANC (Ante Natal Care), one of which is a dental examination and has been given counseling on dental and oral health. With the knowledge about good oral and dental health, pregnant women will behave well too, but in dental examinations, it is found that there are many dental and oral health problems for pregnant women at the Dlingo II Health Center, Bantul. This shows that dental and oral health problems existed before pregnant women. Therefore, knowledge about dental and oral health should be given from an early age so that during pregnancy there are no problems regarding dental and oral health that have an impact on the pregnancy.

The results of the research using Kendall Tau's analysis can be seen that the p value is smaller than 0.05 ( $0.000 < 0.05$ ) so that the hypothesis can be stated as accepted. Thus, it can be concluded that

there is a relationship between the level of knowledge and the dental and oral health behavior of pregnant women at the Dlingo II Health Center Bantul in 2017.

The relationship between knowledge and practice of patients on efforts to clean tartar is better in respondents who have less knowledge 40.0%, compared to those who have good knowledge of 29.1%. The description of the level of knowledge of pregnant women about dental and oral health is a good majority, namely 38 respondents or 84.4%, which is less, as many as 7 respondents or 13.6%. The description of the level of behavior regarding dental and oral health in pregnant women is good, as many as 30 respondents or 66.7% and less than 15 respondents or 33.3%. The relationship between knowledge and oral health behavior in pregnant women is the majority of respondents who have good knowledge and have good behavior, namely as many as 24 respondents or 53.3%. In this study, the correlation value of Kendall Tau was 0.607 with a significance level (p-value) of 0.000. The results of the statistical test showed P value  $<0.05$  so it can be concluded that there is a relationship between the level of knowledge and the dental and oral health behavior of pregnant women.

Ni Wayan Arini (2012) conducted a study entitled "The relationship between knowledge and patient behavior on efforts to clean tartar at the BPG Puskesmas II East Denpasar Denpasar City". This study used a survey design with a cross-sectional approach, namely the subject was only



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observed once and measurements were made on the subject variables at the time of examination. This research method uses a quantitative approach, using a questionnaire instrument as a data collection tool.

The population of this study were patients who visited the Dental Medicine Center of East Denpasar Health Center II, Denpasar City, totaling 344 people and meeting the inclusion criteria, namely patients ranging in age from 20-40 years with different levels of education ranging from elementary, junior high, high school and college levels and domiciled in the working area of Puskesmas II East Denpasar and willing to be researched.

Data collection is done by giving questions to respondents in the form of a list of questions with available answers. The list of questions was asked orally to the respondents by interview.

The questionnaire was filled in by the interviewer based on the oral answers from the respondents. All data were processed with the help of a computer and the data obtained were presented descriptively.

The relationship between knowledge and patient behavior on efforts to clean tartar was analyzed by using the chi square statistical test with a 95% confidence level. The results of the analysis showed that there was no relationship between knowledge and practice on efforts to clean tartar.

This study suggests that community behavior is closely related to the level of public knowledge about dental

and oral health. Lack of knowledge about dental health and ignorance of the dangers of dental disease caused by low levels of education will cause people not to take advantage of existing dental health services. So that it will contribute to the poor dental health status of the community.

Education is closely related to one's knowledge, the higher a person's level of education, the higher the level of knowledge. The older one gets, the more one's grasping power and mindset develop so that the knowledge gained will be better. The existence of new information through mass media such as radio, television, gadgets and others about something will provide a new basis for the formation of a certain attitude direction.

The results of statistical tests conducted between the relationship between knowledge and community behavior towards tartar cleaning efforts showed that there was a significant relationship. Factors that influence knowledge and community behavior towards tartar cleaning efforts are the community environment that has limited knowledge, the level of education in the community, the lack of facilities and infrastructure to reach health service centers and the absence of a dental health program (UKG) or dental health business in the community. (UKGM).

In addition to knowledge, the environment also has an influence on people who will gain experience that will affect a person's way of thinking to change his behavior for the better, especially in



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terms of cleaning tartar. Education or knowledge about how and efforts to clean tartar given to the community will affect their behavior towards their tartar cleaning efforts, because they will understand the impact of tartar on their teeth. The way to prevent the formation of tartar is to minimize the possibility of tartar formation by diligently brushing teeth at least twice a day correctly with the right technique, namely brushing all parts of the teeth and checking with the dentist every six months.

Knowledge is a very important domain for the formation of one's actions. From research experience, it turns out that behavior based on knowledge will be more lasting than behavior that is not based on knowledge. So if it is associated with the title of the thesis, namely the relationship between knowledge and community behavior towards efforts to clean tartar, then there is a relationship, namely with the level of community knowledge possessed to change behavior towards efforts to clean tartar which can cause damage to teeth and cause a sense of smell if not there is an attempt to fix it.

## CONCLUSION

Based on the results of the literature study, it can be concluded that there is a relationship between knowledge and community behavior towards efforts to clean tartar. This is based on the results of research that has been carried out by researchers taken from several literatures, journals and theses as well as the results of other studies related to the underlying theories.

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### The Effect of Dental Health Care Services on Dental and Oral Health Status Elementary School Students in the Work Area of the Kajen I Health Center

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#### ABSTRACT

**Background :** Student's oral and dental health needs more attention because they are on the age of permanent teeth growth transition which only grows once. Therefore, there should be an effort to maintain dental and oral health to avoid oral health problems. One efforts to maintain children's dental health should be carried out through School Dental Health Service with the aim of improving student's oral health status. **Methods :** This research used an analytical survey with a cross sectional study design. The sample in this research is 24 student who taken from two elementary schools which were included in the School Dental Health Service assisted by the Kajen I Health Center with a purposive sampling. The data analysis of this research was performed using univariate and bivariate analysis with simple linear regression test to determine the effect of School Dental Health Service implementation on dental health status which was assessed from the student's OHI-S and DMF-T scores. **Result :** The result of this research showed that there was no effect of the activity of implementing School Dental Health Service on dental health status of student at primary school assisted by Kajen I Health Center with -value for OHI-S = 0.143 ( $p > 0.05$ ) and -value for DMF-T = 0.081 ( $p > 0.05$ ). **Conclusion :** This shows that the implementation of UKGS does not affect to the dental health status of students in this research location, but it might be caused by other variables which not examined.

**Keyword :** School dental health service; OHI-S; DMF-

#### INTRODUCTION

Elementary school-age children are a group that is vulnerable to dental and oral diseases. Children's oral and dental health needs to be given more attention because at that age there is a transition in the growth of permanent teeth which only grow once in a lifetime. Therefore, efforts should be made to maintain dental and oral health from an early age so as to avoid

dental and oral health problems. Dental and oral health problems are influenced by various factors such as environment, heredity, behavior and health services.

The School Dental Health Service program implemented by the collaboration of the Puskesmas and elementary schools is the spearhead that affects the improvement of dental and oral health which is carried out in the form of dental



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health education activities and dental and oral health checks that are planned, directed, continuously and evaluated to determine the level of success of the School Dental Health Service (SDHS) program. which aims to achieve optimal dental and oral health in elementary school age children (Darwita, 2006).

However, there are still many complaints regarding dental and oral health problems in elementary school age children, the occurrence of dental and oral health problems can be caused by the implementation and implementation of the SDHS program not being optimal at the school. This happened in several elementary schools in Pekalongan district. Based on the health profile of Pekalongan Regency in 2018 only 40% of primary students have received SDHS treatment, in other words, UKGS services have not met the government's target (Pekalongan Health Office, 2019). The SDHS service is expected to be an effort to realize the target for DMF-T numbers aged 12 years 1 in 2030. Meanwhile, the proportion of

dental health problems in the Central Java region according to the age characteristics of children aged 12 years has a number of damaged or perforated dental health problems of 34. ,

Based on a preliminary study that has been carried out by the author at the elementary school principal in Tanjungsari Village, the implementation of the SDHS Puskesmas Kajen 1 at SD Muhammadiyah Tanjungsari is only carried out a day, once a year in the form of counseling, mass tooth brushing and examinations. Meanwhile, the government targets counseling to be carried out once per quarter of 80% of elementary schools and joint toothbrushing activities are carried out every day in schools in 50% of elementary schools.

Based on these data, there is a gap in the implementation of SDHS with the government's implementation target. It is feared that it can affect the health of children's teeth and mouth. In addition, during the Covid-19 pandemic, which requires students to study at home, it can



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cause SDHS activities to be hampered and the lack of dental health education that is usually obtained in the school environment. Meanwhile, the quality of the success of the SDHS program is seen from the dental health status of the elementary school students, including the OHI-S and DMF-T numbers of elementary school children.

So that to achieve the government's target, it is necessary to monitor the quality of the SDHS program services that have been implemented on the health status of elementary school children to determine the effect of SDHS service quality on the dental and oral health status of students.

Based on these problems, "it is necessary to monitor the implementation of SDHS and its effect on the dental and oral health status of elementary school students in the working area of the Kajen I Health Center, by recording the dental and oral health status of students with OHI-S and DMF-T indexes at Muhammadiyah Tanjungsari elementary school and Muhammadiyah Tanjungkulon elementary school which aims to determine the effect

of SDHS services on the dental and oral health status of students.

### MATERIAL AND METHODS

The type of research used in this study is an analytical survey research with a cross sectional study design. The population in this study is the total number of students from two elementary schools who are willing to be research subjects and have SDHS under the guidance of the Kajen I Health Center, which are 283 students. Sampling with purposive sampling technique where sampling is based on the characteristics determined by the researcher (Notoatmodjo, 2012). In this study, the sample criteria were fifth grade students from elementary school who were allowed to conduct research and respondent students had obtained permission from their parents to become research respondents during the Covid-19 pandemic. So that there are 12 respondents from Muhammadiyah Tanjungsari elementary school and 12 respondents from Muhammadiyah Tanjungkulon



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elementary school. So the total respondents in this study were 24 respondents. The data from this study were analyzed using statistical analysis of the SPSS computer application which began with univariate analysis related to the frequency distribution of each variable in this study, then presented in tabular form. Before the bivariate test is carried out, it is necessary to carry out several statistical tests to fulfill the requirements for the simple linear regression bivariate test, namely the normality test using Shapiro Wilk, linearity test, and heteroscedasticity test using Glejser. Furthermore, the researchers conducted a bivariate test with a simple linear regression test to determine whether there was an influence between the two variables. The data from this study were analyzed using statistical analysis of the SPSS computer application which began with univariate analysis related to the frequency distribution of each variable in this study, then presented in tabular form. Before conducting the bivariate test, it is necessary to perform several statistical

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the requirements for a simple linear regression bivariate test, namely the normality test using Shapiro Wilk, linearity test, and heteroscedasticity test using Glejser. Furthermore, the researchers conducted a bivariate test with a simple linear regression test to determine whether there was an influence between the two variables. It is necessary to perform several statistical tests to fulfill the requirements for a simple linear regression bivariate test, namely the normality test using Shapiro Wilk, linearity test, and heteroscedasticity test using Glejser. Furthermore, the researchers conducted a bivariate test with a simple linear regression test to determine whether there was an influence between the two variables.

### RESULTS

Based on the results of interviews with the sports teacher as the party in charge of implementing SDHS at the elementary school, Muhammadiyah Tanjungsari and Muhammadiyah Tanjungkulon elementary school have provided SDHS services to

students and coordinated with the Kajen I Health Center. However, in practice there has been a decline in the quality of SDHS services from the 2018 academic year. to the 2019 school year with details of the activities carried out, namely student dental health checks, coaching teachers and minor doctors, mass toothbrushing, referrals and providing follow-up care to students in need. Data was obtained from the Kajen I Health Center related to the activity status of SDHS services at Muhammadiyah Tanjungsari and Muhammadiyah Tanjungkulon elementary school, both of which are SDHS stage II with an average coverage of SDHS activities per 2019 is 55, 73% (sufficiently active SDHS at Muhammadiyah Tanjungsari elementary school and 37.8% coverage (less active SDHS. This shows that the two primary schools assisted by the Puskesmas have different active statuses in providing UKGS services.

Table 1. OHI-S Status of Class V.  
students  
at the Research Site

f	%
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<b>Muh Tanjungsari Elementary School</b>	<b>Amount</b>	<b>12</b>	<b>100</b>
Well	4	33%	
Currently	6	50%	
Bad	2	17%	
<b>Amount</b>	<b>12</b>	<b>100</b>	
		<b>%</b>	
<b>Muh Tanjungkulon Elementary School</b>	<b>Amount</b>	<b>12</b>	<b>100</b>
Well	1	8.3%	
Currently	7	58.3	
Bad	4	%	
		33.4	
		%	
<b>Amount</b>	<b>12</b>	<b>100</b>	
		<b>%</b>	

The results of table 1 show that at SD Muhammadiyah Tanjungsari, most of the students have a level of dental hygiene with moderate criteria as much as 50%. While at SD Muhammadiyah Tanjungkulon, most of the students have a level of dental hygiene with moderate criteria as much as 58.3%.

Table 2. DMF-T Status of Class V Students in Research Locations

	<b>f</b>	<b>%</b>
<b>Muh. Tanjungsari Elementary School</b>		
Very low	5	41.6
Low	4	%
Currently	2	33.3
high	1	%
Very high	-	16.6
		%
		8.3%
		-

<b>Amount</b>	<b>12</b>	<b>100</b>
		<b>%</b>
<b>Muh Tanjungkulon Elementary School</b>		
Very low	1	8.3%
Low	4	33.3
Currently	4	%
high	3	33.3
Very high	-	%
		25%
		-
<b>Amount</b>	<b>12</b>	<b>100</b>
		<b>%</b>

The results of table 2 show that at SD Muhammadiyah Tanjungsari, most of the students have a caries incidence rate with very low criteria of 41.6%. While at SD Muhammadiyah Tanjungkulon, most of the students have a dental caries incidence rate with moderate criteria as much as 33.3%.

- Normality test

Table 3. Results of the Shapiro Wilk Test for UKGS Services for OHI-S and DMF-T Elementary School Students in the Work Area of the Kajen I Health Center

UKGS	OHI-S		OHI-S	
	Sig.	Note:	Sig.	Note:
Less	0.3	Norma	0.5	Norma
Active	4	1	5	1
Active	0.7	Norma	0.3	Norma
Enough	8	1	7	1



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The results of table 3 show that the results of the Shapiro Wilk normality test have a significant value more than the alpha value ( $\alpha = 0.05$ ) both from the OHI-S and DMF-T variables for elementary school students with fairly active or less active UKGS. So it can be said that the two variables are normally distributed.

- Linearity Test

Table 4. Results of the UKGS Service Linearity Test for OHI-S and DMF-T in SD Research Locations

	Deviation from Linearity	Sig.
OHI-S	0.55	
DMF-T	0.69	

Based on the results of the Linearity test in table 4 between the UKGS service variables and OHI-S, the Deviation from Linearity Sig value is obtained. is 0.55 greater than 0.05. So, it can be concluded that there is a significant linear relationship between UKGS service variables and OHI-S. Meanwhile, between UKGS implementation variables and DMF-T, the Deviation from Linearity Sig value is obtained. is  $0.67 > 0.05$ . So, it can be concluded that there is a significant linear

relationship between UKGS service variables and DMF-T.

- Heteroscedasticity Test

Table 5. Results of OHI-S and DMF-T Heteroscedasticity Tests with UKGS Services at Research Locations

	Sig.	Note:
OHI-S	0.77	There are no symptoms of heteroscedasticity
DMF-T	0.62	There are no symptoms of heteroscedasticity

The results of table 5 show the results of the heteroscedasticity test with the glejser test. It is known that the significant value for the OHI-S and DMF-T variables is more than the alpha value ( $\alpha = 0.05$ ). So it is said that there is no symptom of heteroscedasticity in the regression model. So that it meets the requirements to be able to do a regression test.

- Simple Linear Regression Test

Table 6. Simple Linear Regression Test Results between UKGS Services for OHI-S and DMF-T Students in Research Locations

	Sig.	Information
OHI-S	0.14	No influence
DMF-T	0.08	No influence

Based on table 6, it is known that the results of the regression test between the



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UKGS service variables on the students' OHI-S scores are  $0.14 > 0.05$  and the students' DMF-T scores are  $0.08 > 0.05$ . So it can be said that there is no effect between the UKGS services that have been carried out at SD Muhammadiyah Tanjungsari and SD Muhammadiyah Tanjungkulon on the DMF-T and OHI-S scores of elementary school students and UKGS assisted in the working area of the Kajen I Health Center.

### DISCUSSION

According to the UKGS implementation guidelines (Ministry of Health RI, 2014), UKGS in phase II has the characteristics that the SD and MI are already accessible to limited dental health facilities with activities carried out, namely (1) coaching UKS teachers and minor doctors, (2) dental health education by teacher to students at least once per month, (3) daily tooth brushing activities, (4) emergency treatment, (5) dental and oral health screening of students followed by follow-up care with parental approval, (6) surface

protection, (7) referral. Meanwhile, in the implementation of UKGS in primary schools, the research location has problems, namely the UKGS activities have not been implemented in accordance with the target by analyzing the results of observations from three informants, namely 2 UKGS guidance teachers and 1 dental nurse at the Kajen I Health Center, information related to the obstacles that caused the decline in UKGS services from Puskesmas to SD and from SD to students in the 2019/2020 school year. The puskesmas acknowledged that the implementation of UKGS under normal conditions or before the pandemic was not optimal. However, this has actually decreased during the pandemic.

According to Taftazani (2015), the cause of the less than optimal implementation of UKGS in SD under the guidance of the puskesmas needs to be analyzed based on the factors causing the problem, namely the aspects of human resources (man), budget (money), methods (methods), environment (market), facilities and infrastructure (material and machine).



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According to Alamsyah (2011), the man element, namely manpower or human resources in management, is an important main component to achieve the goals that have been set. The human element in the implementation of UKGS is human resources who influence the implementation of UKGS, including dental health workers and UKGS teachers. According to Rayanti (2017), the role of dental health workers in implementing UKGS is to manage UKGS services such as planning, implementing activities consisting of promotive, preventive and simple curative. In addition, dental nurses also play a role in monitoring and evaluating UKGS implementation. However,

In addition to health workers, the human element in the implementation of UKGS is the UKGS supervisor teacher. According to Veiga (2015) in Nugraheni (2018), teachers have a role in taking health promotion actions in an effort to improve the health status of students by training in dental and oral health maintenance. In

addition, the teacher also has a role to motivate students to keep their teeth and mouth healthy. Therefore, it is necessary to increase the knowledge and attitudes of teachers so that they can motivate students by promoting dental and oral health. Meanwhile, in the implementation at the research location, the role of UKGS mentoring teachers was still lacking, judging from the implementation of dental health promotion carried out at the elementary school, it was not yet on target and not enough to motivate students to carry out further treatment.

In addition to the implementing staff, factors that affect the implementation of a program can also be seen from the money factor. According to Alamsyah, (2011), to carry out an activity or activity, funds or money are needed, which must be used and reported in such a way. In the implementation of UKGS, the source of funds for the implementation of UKGS activities should be obtained from the government and other sources such as health funds, insurance systems and self-



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financing from the community in the region (Depkes RI, 2014). Meanwhile, in elementary schools in the research locations, the need for implementing UKGS has not yet made a clear budget plan. The School Operational Assistance (BOS) funds obtained were not budgeted for UKGS activities. Meanwhile, at SD Muhammadiyah Tanjungsari, the needs for UKGS activities are obtained from the health fund dues from parents or guardians of students. Thus, there should be budgeting for UKGS activities in each elementary school to support the continuity of UKGS activities, because if there are no adequate funds, it will affect the availability of facilities and infrastructure elements (materials and machines). Then, the implementation of UKGS is also influenced by elements of the method or method of implementation, where in the implementation of UKGS phase II in elementary schools the research location has not fully complied with the guidelines for implementing UKGS due to the absence of specific activity plans

related to UKGS. So it is necessary to plan UKGS activities in the primary school where the research is located. because if there are no adequate funds, it will affect the availability of elements of facilities and infrastructure (materials and machines). Then, the implementation of UKGS is also influenced by elements of the method or method of implementation, where in the implementation of UKGS phase II in elementary schools the research location has not fully complied with the guidelines for implementing UKGS due to the absence of specific activity plans related to UKGS. So it is necessary to plan UKGS activities in the primary school where the research is located. because if there are no adequate funds, it will affect the availability of elements of facilities and infrastructure (materials and machines). Then, the implementation of UKGS is also influenced by elements of the method or method of implementation, where in the implementation of UKGS phase II in elementary schools the research location has not fully complied with the guidelines



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for implementing UKGS due to the absence of specific activity plans related to UKGS. So it is necessary to plan UKGS activities in the primary school where the research is located.

Thus, the implementation of UKGS at SD Muhammadiyah Tanjungsari and SD Muhammadiyah Tan Jungkulon, which are fostered SDs from the Kajen I Health Center, is said to be not optimal with the possibility that there are obstacles in UKGS management that might affect the dental health status of students. This is in accordance with the research by Ngatemi (2013), which states that there is a relationship between UKGS management and the dental and oral health status of elementary school students in grades V and VI. So that there is a need for monitoring and evaluation from the authorities or those responsible for the implementation of UKGS in the SD.

In addition, the Covid-19 pandemic has had a considerable impact. This was acknowledged by the school and puskesmas Kajen I that the implementation

of UKGS before the pandemic was still not optimal, coupled with the pandemic situation which required social distancing and physical distancing, so that all activities could not be carried out face-to-face with gatherings of people. Therefore, there needs to be an effort to solve the problem of the UKGS service bottleneck. Therefore, it is necessary to have an agreement between the policy makers and the implementer or person in charge regarding the planning of activities and the budget. This is in accordance with Lestari's research (2016), that UKGS management needs to be monitored and evaluated to find out developments and obstacles that occur in the implementation of UKGS, so that they can immediately find solutions to achieve UKGS goals, namely improving the dental and oral health status of elementary school students.

As for the adjustment of the UKGS implementation during the pandemic, it must be immediately decided and formulated in relation to the UKGS implementation guidelines during the



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pandemic by the local Health Service. This refers to a scientific article by Saptiwi (2021), that the implementation of UKGS needs special attention from leaders in the sector regarding guidelines for implementing UKGS during a pandemic and supporting facilities for online activities. Thus, the delay in the implementation of the UKGS SD at the research location during the pandemic was due to the absence of guidelines for implementing UKGS during the pandemic and the uncontrolled UKGS management which affected the dental and oral health status of students which was not controlled. In addition, based on the results of the regression analysis of the UKGS service for OHI-S and for DMF-T, it was found that the variables that affected the OHI-S and DMF-T scores of students at the research location were obtained from variables not examined in this study. This may be due to other factors such as the behavior of the child, the student's environment at the research site, and heredity.

According to HL Blum in Adliyana (2014), health service factors are not the most influential on a person's health status, but behavioral factors are the most influential, followed by environmental factors. In other words, it can be concluded that UKGS is not the only aspect that may influence the improvement of the dental health status of students at SD Muhammadiyah Tanjungsari and SD Muhammadiyah Tanjungkulon. So it is necessary to do further research related to the factors that affect the dental and oral health status of students at the research site.

## CONCLUSION

In elementary schools with fairly active UKGS, most of the students have a dental hygiene level with moderate criteria of 50%. While in elementary schools with less active UKGS, most of the students had a level of dental hygiene with moderate criteria as much as 58.3%.

- In elementary schools with fairly active UKGS, most of the students had a caries incidence rate with very low criteria of 41.6%. While in elementary schools



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with less active UKGS, most of the students had a dental caries incidence rate with moderate criteria as much as 33.3%.

- There is no effect of UKGS implementation activity on the dental and oral health status of students at the primary school assisted by Puskesmas Kajen I with -value on OHI-S = 0.143 ( $p > 0.05$ ) and -value on DMF-T = 0.081 ( $p > 0.05$ ).

### SUGGESTION

- For the Health Office, it is hoped that they can add UKGS implementing medical personnel at the Kajen I Health Center to be able to provide UKGS services in accordance with the number of SD assisted by the Puskesmas. So that it can provide equitable dental health services. For the Puskesmas, it is hoped that UKGS activities in the target SD will not only be screened.
- It is better to give promotive actions to teachers so that teachers are independent and there is cooperation to improve students' dental and oral health, as well as preventive actions for students.

- For the Health Office and Puskesmas, it is hoped that they can immediately find a way out related to the delay in UKGS service activities during the pandemic by formulating guidelines for implementing UKGS during the Covid-19 Pandemic.
- For schools, it is hoped that they can play an active role again in providing UKGS services and seek to reallocate funds related to UKGS needs, establish good cooperation and communication with puskesmas regarding the implementation of UKGS during the pandemic.

### ACKNOWLEDGEMENT

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### Effect Of Giving Sorbitol And Xylitol Gums To pH Saliva On Kretek Smokers (Study Literature)

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#### ABSTRACT

**Background:** Sorbitol and xylitol is a types of alcohol sugar that can't be fermented and broken down by bacteria in the oral cavity. Chewing gum that containing sorbitol and xylitol can stimulate saliva in increasing salivary secretion, so that the pH saliva will increase and can control plaque. pH saliva in kretek smokers tends to be more acidic than white smokers, because kretek cigarette will produce more nicotine, tar, and carbon monoxide (CO). The purpose of this research is to examine the theory and research on the effect of giving chewing gum that containing sorbitol and xylitol on pH saliva in kretek smokers. **Methods:** The research data type is secondary data by analyzing existing data sources and the approach uses a study literature. The data analysis is using a qualitative data by processing data from the literature that has been obtained. **Results:** Based on the results of the literature analysis that has been done on several researchers who have conducted research, the research results are obtained that consuming food containing sorbitol or xylitol in the form of candy, gum, toothpaste, or syrup can giving affect the characteristics of saliva, which includes an increase in pH saliva, an increase salivary volume, accelerate salivary flow, and can suppress the colony of Streptococcus Mutans. The conclusion from the research based on study literature showed that there is an effect of giving a chewing gum that containing sorbitol and xylitol on pH saliva in kretek smokers. **Conclusion:** For further researchers the results in this study can be used as a reference source for future research and for further research it is better multiply influence variables, not only sorbitol and xylitol but other types of sugar alcohols.

Keyword : Sorbitol, Xylitol, pH Saliva.



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### INTRODUCTION

Data World Health Organization (WHO, 2019), shows that Indonesia is the first ranks with the largest number of smokers in Southeast Asia. The Tobacco Control Atlas ASEAN Region 4th Edition, stated that Indonesia was ranked first as the largest smokers in ASEAN, with a percentage of 36.3% of the total population of ASEAN countries (Lian and Dorotheo, 2018). Indonesia has data from research on the health of the Indonesian population, one of which is the habits of consuming cigarettes.

Based on the results of the Basic Health Research (RISKESDAS) in 2018, Indonesians aged 10 years who consumed cigarettes amounted to 24.3% and in Central Java by 23.2%. Indonesia's population is 67.8% still consume kretek cigarettes and 61% of the population in Central Java Province consume kretek cigarettes (Kemenkes RI, 2018).

Caused are the occurrence of heart and blood vessel disease, stroke, chronic obstructive pulmonary disease, lung cancer, and can cause pathological conditions in the oral cavity, even tobacco can cause death (Kemenkes RI, 2012). More than 7 million deaths annually are caused by tobacco consumption (Kemenkes RI, 2018). Pathological conditions in the oral cavity caused by smoking include periodontal disease, caries, tooth loss, gingival recession, precancerous lesions, oral cancer, and implant failure (Kusuma, 2011).

This condition can occur because when you smoke, the first exposed to cigarette smoke, this is saliva, smoke produced by cigarettes will cause functional and structural changes in saliva (Rad *et al.*, 2010). Plaque accumulation will increase as a result of smoking habits, where plaque is a place for bacteria to attach to polysaccharides which can cause high acid production, thus causing pH saliva will down (Priyambodo and Nurindah, 2018).

pH saliva on kretek smokers will be more acidic than white smokers, because kretek cigarettes will produce more nicotine, tar and carbon monoxide (CO) (Tobacco Free Center, 2009). This has been proven by research conducted by (Larasati, 2016) in Jakarta, by obtaining the results of pH saliva kretek smokers are more acidic than non kretek smokers and non smokers. Likewise with research conducted by (Pasaribu, 2018) in North Sumatra, that the average pH saliva on kretek smokers were lower than white smokers with an average pH saliva 6.16. Based on the description above, it is necessary for the group of kretek smokers to take preventive measures to reduce the pH saliva with plaque control. One way to control plaque is by mechanical control by doing chewing activities (Mukti, 2014). Chewing is an activity to mechanically smooth food using teeth (Mulyanto, 2015). Chewing activities can stimulate the release

saliva with more volume. Saliva contains antibacterial substances, glycoproteins, calcium and fluoride which useful in



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protecting teeth and will provide self cleansing (Cahyati, 2013).

One of the foodstuffs that can control plaque by increasing pH saliva that is consuming sugar alcohol (Priyambodo and Nurindah, 2018). Sugar alcohol consists of sorbitol, erythritol, xylitol, mannitol, lactitol and maltitol. Bacteria in the oral cavity will not metabolize any type of sugar alcohol. When consuming sugar alcohol, bacteria will not produce acid, so pH saliva does not go down (Praja, 2015).

Xylitol is a type of sugar alcohol that does not cause pH in the oral cavity to decrease, because xylitol cannot be broken down by bacteria. Therefore, xylitol is considered good for consumption because it cannot cause caries (Indrati and Gardjito, 2013). Most plaque bacteria cannot convert xylitol into acid, but it is possible that bacteria in the oral cavity can adapt and begin to ferment xylitol (Schuurs, 2013).

According to (Sariningsih, 2012) sorbitol considered to prevent the formation of acid in the oral cavity. When a person consumes carbohydrates, the acidid in the oral cavity can be neutralized by chewing gum containing sorbitol. According to (Schuurs, 2013), bacteria in the oral cavity are very slow in converting gum containing sorbitol into an acidic state, even consuming gum containing sorbitol can help remineralize teeth. However, the effect of sorbitol on dental safety or anti-caries is still debated.

Based on a preliminary study conducted in Jumo Subdistrict, Temanggung Regency, based on data as much as 78% of the people in Jumo District, Temanggung Regency have a smoking habit. Chewing gum products containing sorbitol and xylitol are easy to find in Jumo District, Temanggung Regency because there are still several minimarkets that sell these products.

Based on the above background, researchers are interested in conducting further research on the effect of giving chewing gum containing sorbitol and xylitol on salivary pH in kretek smokers in Jumo District, Temanggung Regency.

### RESEARCH METHODS

The type of data used in this study is secondary data by analyzing existing data sources and aiming to conclude about the effect of giving chewing gums that containing sorbitol and xylitol to pH saliva in kretek smokers based on a literature review. This type of approach in this research uses a literature review approach by which the author collects data and information which then makes a comparison with existing research. Sources of data obtained by researchers through journals.

Analysis of the data used in this study is qualitative data analysis by analyzing the literature that has been obtained and then synthesized and criticized and made conclusions.



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### RESULTS AND DISCUSSION

In this study, the literature used is in the form of a research journal similar to this research and has been published, so that the results of research that has been carried out on the literature can be accounted for.

#### A. Chewing Gum Containing Sorbitol and Chewing Gum Containing Xylitol.

##### 1. Sorbitol and xylitol on dental plaque index.

Research conducted by (Elina and Wahyuni, 2017) on the effect of chewing gum containing sucrose and gum containing xylitol to dental plaque index conducted on students aged 10-12 years which amounted to showing treatment sucrose gums, before treatment the most plaque criteria were in the moderate category as many as 23 people (57.5%) and in the good category as many as 17 people (42.5%). The treatment of chewing sucrose gum in the first experiment in the moderate category decreased to 22 people (55%) and after the second experiment in the medium category it also decreased to 21 people (52.5%). While in the experiment chewing gum containing xylitol, before treatment the most plaque criteria were in the moderate category as many as 22 people (55%) after chewing gum containing xylitol on the first trial, the most plaque criteria were in the good category as many as 31 people (77.5%) and after the second experiment, the good criteria increased to 34 people (85%).

The results of the bivariate analysis conducted by (Elina and Wahyuni, 2017) showed the average plaque index between chewing sucrose gum and chewing xylitol gum there is a difference. The average dental plaque index after chewing gum sucrose in the first intervention was 1.3278 and the second was 1.2337, while the average dental plaque index after chewing gum xylitol on the first intervention is 1.0155 and the second is 0.8565. Based on the research that has been done, it can be concluded that chewing gum containing xylitol more effective in suppresses the formation of dental plaque compared to chewing gum containing sucrose. Based on the literature, plaque is a collection of bacteria in the form of a sticky layer. Plaque can convert carbohydrates and sugars consumed into acids that are high enough that can damage teeth (Rahmadhan, 2010). This situation will result in the condition of the oral cavity becoming acidic and automatically pH saliva will decrease (Marasabessy, 2013). Based on this theory, it can be concluded that the plaque index can affect the pH of saliva.

##### 2. Sorbitol and xylitol against bacteria Streptococcus Mutans.

Research conducted by (Monica, Susiana and Widura, 2018) which discusses the effect of xylitol gum on Streptococcus Mutans bacteria in users of fixed orthodontic appliances. This study was conducted by 14 people who were then divided into 2 groups, this is the group chewing xylitol gum as many as 7



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people and groups chewing non-xylitol gum as many as 7 people.

The results of the study in the xylitol chewing gum group and non-xylitol gum group experienced a decrease in Streptococcus Mutans bacteria, but the xylitol chewing gum group experienced a higher decrease of 47.12%, while the non-xylitol chewing gum group decreased by 8.12%.

From the results of this study, it can be concluded that consuming xylitol gum can reduce the number of Streptococcus Mutans bacteria colonies in users of fixed orthodontic appliances. Sorbitol and xylitol to flow rate saliva.

### 3. Sorbitol and xylitol to flow rate saliva.

Research conducted by (Savita, Sungkar and Chismirina, 2017) about flow rate ratio saliva before and after chewing gum non-xylitol and xylitol in children aged 10-12 years (study of 57 Banda Aceh State Elementary School students), stated that the flow rate saliva before done treatment as big as 0.7647 ml/minute, after treatment chewing gum non xylitol increased to 0.9941 ml/minute, and after chewing gum xylitol increased to 1.3765 ml/minute.

The results of the bivariate test obtained p value <0.05 so that there was a significant average difference between before and after chewing gum non-xylitol and chewing gum xylitol.

Based on the results of research conducted by (Savita, Sungkar and Chismirina, 2017), it can be concluded that there are differences in flow rates

saliva before and after chewing gum non xylitol and chewing gum xylitol. In addition, the flow rate saliva after chewing gum xylitol higher than chewing gum non xylitol.

Based on the literature, the flow rate saliva is one of the factors that affect the increase in secretion saliva. Flow rate saliva will experience enhancement when existence stimulation like tasting. Stimulation psychology, as well as result of dental treatment. If flow saliva decreased, the frequency of dental caries will increase. However, if flow saliva increased, will result in concentration sodium, calcium, chloride, bicarbonate, and protein increases, the metabolic products produced by bacteria and bacterial toxic substances will undergo dissolution so that the oral cavity environment will be in balance (Rukmo, 2017). If secretion saliva experiencing stimulation, then bicarbonate ion will experience an increase and flow rate saliva will also increase so that pH saliva will automatically increase (Rukmo, 2017).

### 4. Sorbitol and xylitol against xerostomia.

Research conducted by (Prasetya and Istioningsih, 2018) on chewing gum xylitol for xerostomia in patients with chronic kidney disease, showed that the mean of xerostomia before treatment of 14.20 and the average xerostomia after treatment it gradually decreased. In the first treatment by 12.47, in the second treatment by 11.07, and in the third treatment by 9.20.



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The results of the bivariate test that have been carried out have obtained a value of  $<0.05$ , so it can be concluded that there is a difference in the value of xerostomia before treatment and after treatment three times. Based on these data, it can be concluded that there is a relationship between chewing gum containing xylitol with xerostomia.

Based on the literature, xerostomia happen when speed secretion saliva experience until less than 0.1 ml/minute. Secretion speed saliva normal in adults, it is 1-2 ml/minute. In someone who has a shortage of production saliva which is not so severe will experience the speed of secretion saliva which ranged from 0.7 ml/min to 0.1 ml/min (Kidd and Bechal, 2012). If secretion saliva experience decrease then pH saliva will also experience a decline (Yuanita, 2019). So that it can be taken conclusion, that xerostomia can affect drop pH saliva.

### A. pH Saliva

#### 1. pH saliva with intervention giving xylitol.

Based on research conducted by (Nabila, 2019) which discusses the effect of chewing gum containing xylitol to pH saliva and plaque index in Semarang State Special School A (Blind) students year 2019, showing that there is enhancement pH saliva and decreased dental plaque index after chewing gum containing xylitol. Of the 11 students who have criteria saliva pH normal before treatment as many as 2 students (18.2%) and after

treatment students who had pH saliva normal to 8 students (72.7%), while the criteria for moderate dental plaque index before treatment were 3 students (27.3%) and after treatment students who had moderate dental plaque index were 8 students (72.7%).

#### 2. pH saliva with giving intervention sorbitol.

Research conducted by (Rizky, 2015) on the difference in salivary pH before and after brushing teeth with toothpaste containing sorbitol in 2014 FKG Universitas syiah students, showed that the average salivary pH before treatment was 6.97 and the average salivary pH after treatment. Treatment has increased to 7.14. The results of the bivariate test that have been carried out show p value  $<0.05$ , so that there is a significant increase in the average salivary pH between the salivary pH before and after the treatment of brushing teeth using toothpaste containing sorbitol. From the data obtained, it can be concluded that brushing teeth using toothpaste containing sorbitol can increase salivary pH.

#### B. The relations between of chewing gum containing sorbitol and xylitol to pH saliva on kretek smokers.

Smoking can affect of pH saliva. This is because when people smoke, the first exposed to cigarette smoke is saliva. Produced smoke by smoking will cause functional and structural changes in saliva (Rad *et al.*, 2010). Plaque accumulation will increase as a result of



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smoking habits, causing pH saliva become down (Priyambodo and Nurindah, 2018).

pH saliva may decrease because the carbohidrat to high consumed by someone will metabolized by bacteria in the oral cavity so that it will produce an acidic condition of the oral cavity. In addition, secretion saliva also effect on stabilization pH saliva. When secretion saliva increases, then pH saliva will also experience enhancement (Marasabessy, 2013).

One of method for increase secretion saliva is by stimulating saliva with activities chew, because chewing can increase volume saliva so that pH saliva will experience an increase. In addition, consuming foods that cannot be metabolized by bacteria in the oral cavity can affect pH saliva so that there is no decline (Praja, 2015). Food ingredients that cannot be metabolized by bacteria in the oral cavity are sorbitol and xylitol (Praja, 2015). This can happen because at sorbitol and xylitol there are two additional hydrogen atoms, so that the glucosyl transferase enzyme in the streptococcus mutans experience difficulty in breaks down the sugar alcohol chains into lactic acid, acetic acid, and formic acid, so that sorbitol and xylitol will not cause pH saliva become acidic (Soesilo, Santoso and Dyatri, 2005).

In line with research conducted by (Elina and Wahyuni, 2017), (Monica, Susiana and Widura, 2018), (Savita,

Sungkar and Chismirina, 2017), (Prasetya and Istioningsih, 2018), (Nabila, 2019) and (Rizky, 2015) which states that consuming foods containing sorbitol non xylitol in the form of candy, chewing gum, toothpaste, or syrup can affect characteristics saliva, which includes an increase in pH saliva, volume increase saliva, speed up the flow saliva, and can suppress the colony Streptococcus mutans.

Based on the results of these studies, it can be concluded that chewing gum containing sorbitol and xylitol could influence pH saliva in kretek smokers.

### CONCLUSION

From the results of literature studies and analyzes that have been carried out in journals related to the effect of giving chewing gum containing sorbitol and xylitol to pH saliva, then the following conclusions can be drawn:

1. Based on the analysis conducted by the researcher, it was found that there was an effect of giving sugar alcohol type sorbitol and xylitol to pH saliva in kretek smokers.
2. The results of saliva pH in respondents who were given sorbitol based on the analysis that had been carried out showed that it had increased.
3. The results of saliva pH in respondents who were given xylitol based on the analysis that had been carried out showed that it had increased.

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### VIDEO SIGN LANGUAGE IMPROVING TOOTH BRUSHING SKILLS IN CHILDREN WITH DEAF

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#### ABSTRACT

**Background:** The percentage of daily teeth brushing in Indonesia reaches 94.7% and the correct tooth brushing time is only 2.8%. Deaf children have poor dental and oral hygiene status. Counseling using sign language videos is considered appropriate for deaf children who focus on the senses of vision. The purpose of this study was to determine the relationship of knowledge through counseling using sign language videos with the level of tooth brushing skills in deaf children in SLB-B Beringin Bhakti, Cirebon Regency. **Methods:** The research method used is Descriptive Analytics with cross sectional research design. The sample of this study used purposive sampling of 22 deaf children. Data collection techniques using interview check sheets and observation check sheets. Data analysis using frequency distribution and chisquare test. **Results:** The results showed the effectiveness of counseling using sign language videos that as many as 12 students obtained good criteria with a percentage of 54.5%. The results of the deaf child's tooth brushing skill level showed the results of 11 students gaining good skills by a percentage of 50%. The results of the chi-square test for counseling relationships using sign language videos with a level of teeth brushing skills were obtained at 0.038 (<0.05). **Conclusion:** The conclusion of this study is that there is a relationship between knowledge after counseling using sign language video with the skill level of brushing teeth in deaf children in SLB-B Beringin Bhakti, Cirebon Regency.

Keywords : sign language videos; teeth brushing skills; deaf children



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### INTRODUCTION

The *Global Burden of Disease Study* in 2016, dental and oral health problems, especially dental caries, were a disease experienced by almost half of the world's population of around 3.58 billion people. Based on the Basic Health Research (Riskesdas) in 2018 about 45.3%, the largest proportion of dental problems in Indonesia is tooth decay / cavities and pain, one of the causes of tooth decay is the lack of awareness of brushing teeth. The percentage of brushing teeth every day in Indonesia reaches 94.7% and the correct brushing time is only 2.8%, as well as on the island of Java, the largest percentage of data brushing teeth is in DKI Jakarta, followed by West Java reaching 96.8% and brushing teeth properly is only 2.8%. The lowest percentage of brushing teeth properly in cities/districts in the West Java regions such as in Cirebon Regency is only 0, the percentage 89% and the percentage of brushing teeth every day reached 94.48%. Brushing your teeth is one of the efforts to keep your teeth and mouth healthy. Dental and oral health is an inseparable part of overall body health. Dental and oral health care as a whole begins with dental and oral hygiene for each individual, including children with special needs (Motto, 2017).

Children with special needs often experience difficulty in cleaning the oral cavity due to low motor and cognitive abilities. This causes dental hygiene and his mouth is lower than normal children.

Children with special needs are children

who experience an abnormality or disorder that is different from normal children in general, including physical, mental, intellectual, sensory abilities, communication skills, behavior or social during the process of growth and development (Putri, 2015). One of the physical abnormalities is abnormalities in the sense of hearing / deafness (Atmaja, 2018). Research conducted by Ningsih in 2016 showed that more than half of 73.5% of deaf children had dental and oral hygiene status in the poor category, and only 20.6% had moderate dental and oral hygiene. Research conducted by Qomariyah et al., in 2020 showed that deaf children in SDLB Negeri Wiradesa had OHI-S in the bad category, as many as 20 respondents (41.7%) of the total 48 respondents and with an average of 2.5 which is included in the moderate category. Hearing limitations in deaf children result in a lack of information, including information on dental and oral health. Lack of information on how to maintain oral health in deaf children will form a wrong behavior so that it can affect dental and oral hygiene (Ningsih, 2016), one method that can be used to improve dental and oral hygiene is through counseling.

Extension is a communication process, namely the delivery of messages from the extension worker to the extension participant. Counseling given to deaf children must be different from normal children, because deaf children communicate using sign language that focuses on the sense of sight and gestures



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(Atmaja, 2018). Extension using video media is a method that can stimulate the senses of sight and hearing during the counseling process (Kuswareni et al., 2016). Video media can display the speaker's facial expressions and lip movements, so that the deaf can interpret the content of the video through reading speech (Riznika et al., 2017). Research conducted by Riznika et al., in 2017 in their journal that there was a decrease in the average initial plaque index score of 41.35% and the average plaque index final score of 20, 37% showed a significant difference between plaque index scores before and after counseling with video media and study models in the deaf treatment group. Research conducted by Latuconsina et al., in 2019 in his journal brushing teeth skills before the audiovisual and simulation methods were carried out with a good category of 12.5%, after the audiovisual and simulation methods were carried out the good category was 96.5% this indicates an increase in skills brushing teeth after the audiovisual and simulation methods were carried out, in this case in line with research conducted by Damafitra in 2015 in his thesis showing the results of research on the effectiveness level using video and sign language methodsshowed a value of 14.05 while the effectiveness level of the lecture method showed a value of 7.65. Researchers conducted a pre-study showing the results of how to brush teethin deaf children with the results that 33% had sufficient criteria and 67% had less criteria.

## MATERIALS AND METHOD

### Research design

The research design carried out is descriptive analytical with a cross sectional approach, namely connecting risk factors (independent) with effect factors (dependent) and observing or measuring variables at the same time (Riyanto, 2017). This research was carried out at SLB-B Beringin Bhakti, Cirebon Regency on the third week of March 2021, respondents were given counseling on how to brush their teeth using sign language video media then respondents were instructed to brush their teeth according to the material that had been delivered while the researcher would fill out an observation checklist.

### Data analysis

This study aims to determine the relationship of knowledge through counseling using sign language videos with the level of tooth brushing skills in deaf children at SLB-B Beringin Bhakti, Cirebon Regency, which was obtained from the results of the observation checklist sheet and interview checklist sheet. After the data was collected, it was categorized with an ordinal scale, namely: good: 76%-100%, adequate: 56%-75% and less: <56%, then analyzed by computer through the help of SPSS version 16 program using Chi Square.



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### RESULTS

Research about The relationship of knowledge through counseling using sign language videos with the level of tooth

brushing skills in deaf children at SLB-B Beringin Bhakti Cirebon Regency based on education can be seen in the table below:

**Table 1.** Frequency Distribution based on Respondents Education Level

No	Level of education	Frequency (n)	Percentage (%)
1	SDLB	7 students	31.8
2	SMPLB	12 students	54.5
3	high school	3 students	13.6
	Amount	22 students	100

Table 1 above shows that most of the respondents came from the SMPLB education level as many as 12 students (54.5%).

**Table 2.** Frequency Distribution by Gender of Respondents

No	Gender	Frequency(n)	Percentage(%)
1	Man	6 students	27.3
2	Woman	16 students	72.7
	Amount	22 students	100

Table 2 above shows that the gender of the respondents is mostly female as many as 16 students (72.7%).

**Table 3.** The distribution of knowledge frequency through the extension of sign language video media is based on the total score obtained

Criteria	Total Score	Frequency(n)	Percentage (%)
Well	8-10	12 students	54.5
Enough	6-7	5 students	22.7
Not enough	1-5	5 students	22.7
	Amount	22 students	100

Table 3 shows that the results The distribution of knowledge frequency through the extension of sign language video media is based on the total score obtained from the Beringin Bhakti SLB-B

children through the interview checklist, the highest frequency was obtained by 12 students belonging to good criteria and the total score was 8-10 with a percentage of 54.5 %.

**Table 4.** Frequency distribution of the level of brushing skills based on the total score



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obtained.

Criteria	Total Score	Frequency (n)	Percent age (%)
Good Skill	8-10	11 students	50
Enough Skills	6-7	10 students	45.5
Less Skill	1-5	1 student	4.5
Amount		22 students	100

Table 4 shows that the frequency distribution of the level of brushing skills based on the total score obtained from the children of SLB-B Beringin Bhakti through the observation checklist. The

highest frequency was obtained by 11 students belonging to good criteria and the total score was 8-10 with a percentage of 50.0%.

**Table 5.** Result of Correlation Analysis between Independent and Bound Variables.

	Teeth Brushing Skill Level				Total	p-value
		Good Skill	Enough Skills	Less Skill		
Sign Language Extension	Well Enough	9	3	0	12	0.038
Video Media	Enough	2	3	0	5	
Total	Not enough	0	4	1	5	

Remarks: \*significance at 5%

Table 5 shows that sign language video media counseling has a significant

relationship with the level of tooth brushing skills, which is 0.038 ( $p < \alpha = 0.05$ ).

### DISCUSSION

The research sample based on the level of education shown in Table 1 shows the distribution based on the highest level of education, namely at the SMPLB level, this is obtained from the inclusion and exclusion criteria that the majority of students who understand sign language and students are cooperative, as well as each level of education have varying levels of knowledge so that handling can be more

optimal. In line with Herijulianti who stated that the methods, tools, materials or materials delivered were in accordance with the needs of the target and or supported health program.

The research sample based on gender is shown in table 2 showing the distribution based on gender, mostly female students, this is obtained from school data that the majority of students



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are female.

### Sign language video media counseling

The distribution of the frequency of sign language video media counseling based on the total score shown in table 3 shows the most results, namely 12 students (54.5%) with scores obtained between 8-10 and included in the good criteria. Extension using sign language video media was assessed as one of the learning media that is suitable for deaf people because children with hearing impairment only focus on the level of focus through the sense of sight and sign language as a means of daily communication. This

agrees with the research conducted by Damafitra in 2015 that the effectiveness

### Teeth brushing skill level

Data on the frequency distribution of the level of brushing skills based on the total score shown in table 4 shows the most results, namely 11 students (50.0%) with scores obtained between 8-10 and included in good criteria. The frequency distribution data showed a positive response to the brushing skills of deaf children after showing sign language videos. Brushing teeth is an action to get rid of dirt that is attached to the surface of the teeth properly and correctly is a factor that is quite important to maintain healthy teeth and mouth. Hygiene maintenance of dental and oral health is also influenced by factors using tools, methods of brushing teeth, as well as the right frequency and time according to Rianti as quoted by

level showed a value of 14.05 for video media and sign language as the treatment group and for the lecture method as the control group showed a value of 7.65.

Media serves to clarify the material at the time of counseling in order to increase the ability to accept student knowledge. Each extension media has a different intensity when it is received by the counseling target, so it greatly affects the level of respondents' acceptance of the content of the extension material delivered. Extension can work optimally if it is carried out with methods, media, material messages and extension workers who can work in harmony so that it can be said to be effective according to Notoatmojo quoted by (Damafitra, 2015).

(Hardianti 2017).

### The relationship between counseling using sign language videos and the level of tooth brushing skills.

The results of the Chisquare test showed that  $p = 0.038$  ( $p < 0.05$ ) or there was a relationship between knowledge through counseling using sign language videos and the level of brushing skills. This research has never found a similar study, but it has similarities with previous research conducted by Damafitra in 2015, with the results of research that video and sign language counseling methods are more effective in increasing oral and dental health knowledge in children with hearing impairment, showing a value of 14, 05 in the treatment group and 7.65 in the control group. The average value of the treatment group is greater than the average value of



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the control group, which means that the treatment group is more effective.

Video media and sign language are audio-visual technologies that have become special needs at this time. The extension method using video is a medium that has sound (audio) and image (visual) elements that have better capabilities. Audio visual technology is used to convey material using mechanical and electronic machines. Teaching through sight and hearing does not entirely depend on understanding the same words or symbols (Arsyad, 2010), so it is good for children who have limitations in the sense of hearing such as hearing impairment because some of the characteristics of the deaf still have residual functions. hearing and have advantages in terms of motor movement (Efendi 2006).

The condition of oral hygiene of deaf children is still categorized as moderate to poor, this is supported by research conducted by Vivi et al in 2015 in their journal results that the OHI-S category of deaf children is dominated by the moderate category, which is 63.9% with a result of

1.86. The cause of the condition of the oral hygiene of deaf children is still categorized as moderate to poor, namely the procedure for brushing teeth that is still not right. The ability to brush the teeth of deaf children is still lacking compared to normal children in general, hearing limitations are an obstacle in receiving the information they get, so sign language video media is Deafness. Thesis Jember. University of Jember.

considered appropriate as a media for counseling for deaf children who only rely on the sense of sight.

### CONCLUSION

1. The results of the effectiveness of counseling using sign language videos at SLB-B Beringin Bhakti, Cirebon Regency in this study, most of the students were in the good category.
2. The results of the level of tooth brushing skills of deaf children at SLB-B Beringin Bhakti, Cirebon Regency in this study, half of the students from the total sample were included in good skills.
3. The results of the Chisquare statistical test stated that there was a relationship between knowledge through counseling using sign language video media with the level of tooth brushing skills in deaf children at SLB-B Beringin Bhakti, Cirebon Regency.

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### THE EFFECTIVENESS OF STARFRUIT (*AVERRHOA BLIMBI L.*) EXTRACT IN INHIBITING STAPHYLOCOCCUS AUREUS BACTERIA

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#### ABSTRACT

**Background:** Belimbing wuluh (*Averrhoa bilimbi* L.) can be used to treat canker sores, stomach pain, mumps, rheumatism, coughs, bleeding gums, toothaches, healthy digestive function, removing stains on fabrics, overcoming fishy odors, being a cosmetic ingredient and improving the shine of goods. Belimbing wuluh contains active substances including flavonoids, tannins, and saponins which have antibacterial properties. *Staphylococcus aureus* is a commensal bacteria that can turn into a pathogen if there is a decrease in the body's immunity which can lead to systemic infection and bacteremia of the oral mucosa. *Staphylococcus aureus* infection is characterized by necrosis, inflammation and abscesses.

**Methods:** In this study, the Literature Study method was used. **Results:** Starfruit (*Averrhoa bilimbi* L.) is one of the many types of plants that are often used as traditional medicine. *Staphylococcus aureus* are bacteria that initially commensal can turn into pathogens if there is a decrease in body immunity which can lead to systemic infections and bacteremia of the oral mucosa. *Staphylococcus aureus* infection is characterized by necrosis, inflammation and abscesses. **Conclusion:** Based on the results of a search of several literatures that have been carried out by the author, it can be concluded that the extract of the star fruit (*Averrhoa bilimbi* L.) has an inhibitory effect on the bacterium *Staphylococcus aureus*. In addition, the antibacterial content of star fruit (*Averrhoa bilimbi* L.).

**Keywords:** Starfruit, *staphylococcus aureus*



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### INTRODUCTION

According to WHO (World Health Organization) traditional medicine or herbal medicine is the use of medicine to reduce and cure someone from disease by using parts of plants, such as seeds, flowers, leaves, fruit, flowers, stems, and roots which are then processed into plants. herbal medicine. WHO provides recommendations for using traditional medicine in maintaining health in the community. This shows that WHO supports the "back to nature" movement, namely increasing selectivity in the use of traditional medicines or herbal medicines (Effendi, 2013).

One of the plants that is often used by the community as traditional medicine is the starfruit (*Averrhoa bilimbi* L.). In Indonesia, belimbing wuluh is better known by the general public by the name starfruit acid. This plant is a tropical plant that is easy to obtain, and is not a seasonal plant (Nakhil et al, 2019). Strafruit (*Averrhoa blimbi* L.) is one of the many plants that are often used as traditional

medicine. Almost all parts of this plant can be used as traditional medicine, namely stems, leaves, flowers, and fruit. Wuluh starfruit or sour starfruit can also be called a plant with a million benefits. Starfruit (*Averrhoa bilimbi* L.) is often used to treat canker sores, mumps, coughs, bleeding gums, toothaches, stomachaches, healthy digestive function, and overcoming fishy odors. Starfruit contains active substances including flavonoids, tannins, and saponins that function as antibacterial (Nakhil et al, 2019).

Starfruit is a plant that contains flavonoid compounds. The mechanism of action of flavonoids as antibacterial in starfruit is by inhibiting the function of cell membranes so as to form complex compounds that can damage bacterial cell membranes. Flavonoids also inhibit cell membrane function by interfering with cell membrane permeability and inhibiting enzyme binding in bacteria. Flavonoids can inhibit energy metabolism by using oxygen by bacteria (Rijayanti, 2014).

Tannins are chemical substances found in



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plants, including starfruit (*Averrhoa blimbi* L.) which has the ability to inhibit the synthesis of cell walls of gram-positive or negative bacteria. Tannins as antibacterial occur through several mechanisms, namely inhibiting antibacterial enzymes and inhibiting bacterial growth by reacting with cell membranes. Tannins can also inactivate genetic enzymes in bacteria (Saputra and Anggraini, 2016)

Saponins work as antibacterial by causing leakage of proteins and enzymes in cells. The mechanism of saponins is by lowering the tension on the surface of the bacterial cell wall. This compound also has anti-inflammatory properties. Saponin compounds are found in several plants, one of which is star fruit. The type of saponins found in star fruit is a type of triterpene, this type of tannin also functions as a cough medicine. The level of saponins in star fruit wuluh is 3.582 mg (Romadanu et al, 2014).

*Staphylococcus aureus* is a spherical bacterium with a diameter of 0.8-1 microns, clusters resembling grapes, but is

often found in fours or fours, forming chains (3-4 cells), has Gram positive, non motile, no spores, colonies with golden yellow color, some strains are paste-shaped, can survive in media with 15% NaCl concentration, and form cocci. *Staphylococcus aureus* which is initially commensal can turn into a pathogen if there is a decrease in the body's immunity which can lead to systemic infection and bacteremia of the oral mucosa. *Staphylococcus aureus* infection is characterized by necrosis, inflammation and abscesses (Pertiwi et al, 2016).

### MATERIALS AND METHOD

In this study, the Literature Study method was used. Literature study is a technique of finding relevant references with pre-existing data collection methods for the problems found.

The source of data used in this study is secondary data, namely supporting data or pre-existing data sourced from journals, articles, books, and other references.

### RESULTS

Starfruit (*Averrhoa blimbi* L.) is one of



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the many types of plants that are often used as traditional medicine. Almost all parts of this plant can be used as traditional medicine, namely stems, leaves, flowers, and fruit. Starfruit can be used to treat canker sores, stomach pain, mumps, coughs, bleeding gums, toothache, improve digestion, remove stains on cloth, and reduce fishy odors. Starfruit contains active substances including flavonoids, tannins, and saponins that function as antibacterial (Nakhil et al, 2019).

*Staphylococcus aureus* are bacteria that initially commensal can turn into pathogens if there is a decrease in body immunity which can lead to systemic infections and bacteremia of the oral mucosa. *Staphylococcus aureus* infection is characterized by necrosis, inflammation and abscesses (Pertiwi et al, 2016).

### DISCUSSION

According to research conducted by Maryam, St., Juniasti, S., and Kosman, R. In 2015, with the title of testing the antibacterial activity of the ethanol extract of Watampone. In this study, waste

starfruit samples were taken from the city of Watampone and the extract was made by macerating with 96% ethanol until the fruit was completely submerged. The results showed that at a concentration of 0.4% produced an inhibition zone of 7 mm, a concentration of 0.8% produced an inhibition zone of 9 mm, and a concentration of 1.6% produced an inhibition zone of 13 mm against *Staphylococcus aureus*. The ethanol extract of star fruit (*Averrhoa blimbi* L.) at the lowest concentration of 0.4% was able to inhibit *Staphylococcus aureus* bacteria (Maryam et al, 2015).

According to research conducted by Nakhil, U., Sikumbang, IM, Putri, NH, and Lutfiyati, H. In 2019, with the title starfruit extract gel (*averrhoa blimbi* L.) for recurrent aphthous stomatitis. This research is an experimental laboratory research conducted by identifying and determining the star fruit wuluh, then extracted using 70% ethanol by maceration and then evaporation over a water bath to obtain a thick extract. The results showed



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that the average zone of inhibition was, for a concentration of 40% it produced an inhibition zone of 1.77 mm, a concentration of 45% produced an inhibition zone of 1.93 mm, and a concentration of 50% produced an inhibition zone of 2.67 mm (Nakhil et al, 2019).

According to research conducted by Mokhtar, S. I, and Aziz, NAA in 2016, with the title antimicrobial properties of *averrhoa blimbi* extract at various stages of maturity. In this study, starfruit extract was differentiated based on the level of maturity, namely young, half-ripe, and ripe which was used to see the antibacterial effectiveness using the disc diffusion method. Extraction was done by cutting the fruit into two parts and weighing it and then blending it with 100 ml of water. The results showed, for disc diffusion of *staphylococcus aureus* bacteria on young fruit, it produced an inhibition zone of 9.3 mm, on half-ripe fruit produces an inhibition zone of 12.3 mm, and on ripe fruit produces an

inhibition zone of 10 mm. The conclusion of this study is that starfruit extract (*Averrhoa blimbi* L.) has inhibitory activity against *Staphylococcus aureus* bacteria, this is due to the presence of oxalic acid which is a strong source of antioxidants and antimicrobials (Mokhtar and Aziz, 2016).

According to research conducted by Sulistyani, WI, Sulwana, M., Dwi F., Rahmawati E., Cahyaningtyas N., and Mahardika CN In 2017, with the title the influence of starfruit juice (*averrhoa blimbi* L.) against the inhibition of *staphylococcus aureus* bacteria. This research was conducted at the Chemistry Laboratory. The results showed that for a concentration of 20% produced an inhibition zone of 9.41 mm, a concentration of 40% produced an inhibition zone of 12.11 mm, a concentration of 60% produced an inhibition zone of 14.30 mm, a concentration of 80% produced an inhibition zone of 14.73 mm, and for a concentration of 100% produces an



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inhibition zone of 16.45 mm. The conclusion of this study is that there is an effect of starfruit juice (*Averrhoa blimbi* L.) in inhibiting the growth of *staphylococcus aureus* bacteria (Sulistyani et al, 2017).

According to research conducted by RahmiatiA., Darmawati S., and Mukaromah AH in 2017, with the title of inhibition of ethanol extract of star fruit (*Averrhoa blimbi* L.) against the growth of *Staphylococcus aureus* and *Staphylococcus epidermidis* bacteria in vitro. The results of this study indicate that at a concentration of 10% produces an inhibition zone diameter of 21.6 mm, a concentration of 20% produces an inhibition zone diameter of 27.0 mm, a concentration of 30% produces an inhibition zone diameter of 31.3 mm, and a concentration of 40% produces an inhibition zone diameter 31.3 mm. the diameter of the inhibition zone was 34.0 mm. The conclusion of this study is that the ethanol extract of star fruit wuluh can inhibit the growth of *staphylococcus*

*aureus* bacteria (Rahmawati et al, 2017)

Starfruit extract (*Averrhoa blimbi* L.) has an inhibitory power against *staphylococcus aureus* bacteria and the antibacterial content found in starfruit (*Averrhoa blimbi* L.) such as flavonoids, tannins, and saponins can inhibit study is that the ethanol extract of star fruit wuluh can inhibit the growth of *staphylococcus aureus* bacteria (Rahmawati et al, 2017)

### CONCLUSION

Starfruit extract (*Averrhoa blimbi* L.) has an inhibitory power against *staphylococcus aureus* bacteria and the antibacterial content found in starfruit (*Averrhoa blimbi* L.) such as flavonoids, tannins, and saponins can inhibit *staphylococcus aureus* bacteria.

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### EFFECT OF SNACK PATTERNS ON DENTAL CARIES IN ELEMENTARY SCHOOL

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#### ABSTRACT

**Background:** Cavity is a classic problem that has existed since long time ago which is one of the causes of tooth ache. Caries is a disease that involves enamel, dentin and cementum. Caries caused by microorganism action on fermented carbohydrate. The prevalence of active caries in Indonesia and in some countries is still high. **Methods:** The type of research used is a literature study. This study aims to determine the effect of eating patterns on dental caries. The data raised in this research comes from text books, journals, scientific articles, and also literature related to the research conducted. **Results:** Caries can occur among all ages, including children. Factors that cause caries regarding to the attitude and the nature of children who like to eat snacks and sweet foods that can cause dental caries. **Conclusion:** Based on the results of several literature searches that have been carried out, it can be concluded that snack patterns greatly affect the occurrence of dental caries. The results of dental caries status in elementary school children are categorized as quite high.

Keyword : *caries, children, snacks.*



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### INTRODUCTION

Cavities are a classic problem that has been around for a long time which is one of the causes of someone feeling toothache. Caries is a disease that attacks the hard tissues of the teeth, namely enamel, dentin and cementum, which is caused by the activity of a microorganism in a fermentable carbohydrate. The prevalence of active caries in the population of Indonesia and in several countries in the world is quite high. Caries can be experienced by all ages, including children.

The prevalence of dental and oral problems in Indonesia is still very large. Based on the 2018 Basic Health Research (Risikesdas), as many as 57.6 percent of Indonesians have dental and oral problems. Worse, the number of children experiencing dental problems according to the 2018 Risikesdas reaches 93 percent. Meanwhile, according to the 2018 Basic Health Research (Risikesdas), as many as 65 percent of South Sulawesi people experience dental and oral health

problems.

Snacks are a type of food and drink that are very well known and common in the community, especially school-age children. Snacks containing nutrients, packaged and processed safely have a special attraction for the community. However, snacks often have a role in causing dental and oral diseases, especially in children under 12 years. Children like snacks because they generally contain sugar which is sweet. This situation causes children's dental hygiene to be worse than adults, plus children are less likely to keep their teeth and mouth clean in terms of cleaning their teeth.

Generally, school students are at risk for dental caries. The habit of consuming foods or drinks that are cariogenic (sweet, sticky, and attractively shaped) are foods that are often consumed by elementary school age children. (Prasetya, 2008; Talibo, Mulyadi and Bataha, 2016). The negative impact caused by frequent consumption of these foods or beverages is dental and oral health, especially dental



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caries because they have a tendency to stick to the tooth surface. At a certain time, it will reduce the pH of the mouth to a critical level, causing demineralization of the enamel so that it forms into dental caries. (Soesilo, Santoso, and Diyatri, 2005).

In school-age children, generally they like sweet foods, such as candy, chocolate, cakes, sugar, etc. where these foods are included in carbohydrates in the form of flour or liquid that is sticky and easily crushed in the mouth. It is easier to develop caries than other physical forms.

(Maulani, 2007, in Maulidta, 2010).

### MATERIALS AND METHOD

Methods of research used is a literature study. This study aims to determine the effect of eating patterns on dental caries. The data in this research comes from text books, journals, scientific articles, and also literature related to the research conducted.

### RESULTS

The results of the review journal that has been carried out can be stated that the pattern of eating is very influential on the

occurrence of dental caries. Adequate nutrition alone is not enough to support optimal dental and oral health. Food in the oral cavity as the initial stage of digestion, has had a local effect. What needs attention is not only the nutrition, but also how to consume it, the type of food and when to give it, because all of these things will affect the health of your teeth and mouth.

### DISCUSSION

In terms of dental and oral health, nutritional adequacy alone is not enough to support optimal dental and oral health. Food in the oral cavity as the initial stage of digestion, has had a local effect. What needs attention is not only the nutrition, but also how to consume it, the type of food and when to give it, because all of this will affect the health of your teeth and mouth.

Dental and oral diseases can be divided into two, namely dental diseases that attack hard tissue or teeth and soft tissue or mouth and gums. Diseases that attack hard tissue are called dental caries or



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better known as cavities. From the two dental diseases, the actions and prescriptions given will also vary according to the dental and oral diseases experienced by the patient.

Dental caries is the most common disease. This disease occurs due to demineralization of tooth surface tissue by organic acids derived from foods containing sugar. Things that support the occurrence of dental caries: Sensitive teeth, namely teeth that contain little fluoride or have holes, indentations or grooves that hold plaque; Bacteria, the mouth contains a large number of bacteria but only certain types of bacteria cause tooth decay.

The caries process through the enamel-dentin can cause localized white discoloration (acute caries) or brown to black. These changes sometimes make it difficult to detect dental caries. To make it easier to detect dental caries disease, GV Black has grouped or classified it based on location, rate of development, and hard tissue affected.

Dental caries is a disease that is often experienced by most children due to the lack of consumption of fibrous fruits and vegetables. In addition, the habit of consuming sweet and sticky foods is the biggest factor influencing caries.

The group that is prone to cavities is children. Children are susceptible to cavities because of the nature and attitude of these children who do not know about the importance of maintaining the condition of their teeth.

Journals have been in the review to get the result of the relationship between the type of street food with caries status. This is because most students like to eat cariogenic snacks between meals so that the remnants of attached food are not cleaned, this can also trigger dental caries due to the presence of dental caries. When their mouths stop their activities until lunch time, at that time the food residue that sticks to the surface of the teeth will cause demineralization of the dental caries tissue by bacteria caused by the high pH of the plaque so that caries occurs.



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Snacks that inhibit caries such as whole milk, cheese, nuts, and xylitol gum. The more respondents consume this snack, the DMF-T the lower, this may be due to the content and properties *self-cleansing*. Whole milk contains calcium, phosphorus, and casein which can help the remineralization process. Cheese contains calcium so that it can increase the concentration of calcium in plaque and can stimulate salivary secretion so that it has a cleansing action. While nuts contain phosphate so that it can inhibit caries and xylitol gum can stimulate salivary secretion so that it has affect *self-cleansing*.

### CONCLUSION

Based on the results of several literature searches that have been carried out, it can be concluded that snack patterns greatly affect occurrence of dental caries. The results of dental caries status in school children base is categorized as high enough.

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### Analysis of Stimulated Saliva Before and After Consuming Fresh Milk and Soy Milk at Students of 4<sup>th</sup> Godong Elementary School (Study Literature)

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#### ABSTRACT

Saliva plays an important role, among others, in the formation of dental plaque, saliva is also an excellent medium for the life of certain microorganisms associated with caries and calculus. **Background:** Maintaining the balance of saliva in the mouth can be done by chemical stimulation in the form of stimulation of tasting using natural ingredients such as cow's milk and soy milk. The study aims to analysis of stimulated saliva before and after consuming fresh milk and soy milk. **Methods:** used is Literature Study. In this literature study using data and information from 28 journals and 12 books.

The results of the literature review show that there was a decrease in salivary pH after consuming cow's milk and a decrease in salivary pH after consuming soy milk. **Result:** Cow's milk is more significant in lowering salivary pH than soy milk. Based on these results it can be concluded that there are differences in stimulated saliva before and after consuming fresh cow's milk and soy milk.

**Keywords:** Stimulated Saliva; Fresh Cow's Milk;Soy Milk



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### INTRODUCTION

Oral and dental health is a healthy state of the hard and soft tissues of the teeth and their associated elements in the oral cavity, which enables individuals to eat, talk and interact socially without dysfunction, esthetic disturbances, and discomfort due to disease, occlusal deviation and loss of teeth so that they can live productively socially and economically (Kemenkes RI, 2006). Dental and oral health is often the umpteenth priority for some people. It is evident from the data from the Ministry of Health mentioned in the 2018 Basic Health Research (RISKESDAS), noting that the number of dental and oral health jumped sharply compared to 2013, from 25.9% to 57.6%. Where the prevalence of dental caries in the group of children aged 5-9 years is 54% and the prevalence of dental caries in the group of children aged 10-14 years is 41.4%.

Dental and oral diseases greatly affect the health status, the process of growth and

development, and even the future of children. Children become vulnerable to malnutrition because pain in the teeth and mouth reduces their appetite. Children's learning ability will also decrease so that it will affect learning achievement (Zatnika, 2009). Dental caries is a multifactorial process that occurs through the interaction between teeth and saliva as a host, bacteria in the oral cavity, and easily fermentable food. Among these various factors, saliva is one of the factors that has a major influence on the severity of dental caries.

Saliva is a complex oral fluid, consisting of a mixture of secretions from the major and minor salivary glands in the oral mucosa. Saliva has several functions, including protecting the tissues in the oral cavity by means of mechanical cleaning to reduce the accumulation of plaque on the surface of the teeth, lubricating the elements of the teeth, buffering effect, assisting taste and digestive functions, and assisting tissue repair. The protective function of saliva is strongly influenced by changes related to



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composition and viscosity, ionic composition and salivary proteins and salivary pH. Saliva plays an important role, among others, in the formation of dental plaque, saliva is also an excellent medium for the life of certain microorganisms associated with caries and tartar. The degree of acidity of saliva under normal conditions is pH 6.3-7.0, if the pH of saliva is below 5.5 it will be very dangerous for tooth enamel (Hurlbutt et al., 2010). When the salivary pH decreases to a critical pH, the demineralization of the teeth will increase, while the increase in salivary pH to exceed the normal limit can cause an alkaline atmosphere and increase the formation of tartar (Amerongen, 1991).

According to Amerongen, salivary gland secretion can be stimulated through mechanical and chemical stimulation. Mechanical stimulation in activities in the oral cavity includes speaking, chewing and gargling. While chemical stimulation is in the form of impressions of sour, sweet, salty, bitter and spicy tastes (Mardiati and Prasko, 2017).

Milk is an ideal nutrient in the growing period. Milk is a nutrient that is very popular with children, teenagers and even adults (Still U et al, 2010). Cow's milk contains several calories, protein, water, fat, carbohydrates and so on. Several studies have stated that cow's milk has benefits for remineralization, preventing the attachment of bacteria to teeth, and inhibiting bacterial biofilms on teeth. Soy milk has protein and amino acid levels that are almost the same as cow's milk and does not contain cholesterol, but the mineral content, especially calcium, in soy milk is less than cow's milk.

### MATERIALS AND METHOD

The research method used is a case study method (case study). This study is intended to describe the results of research and try to find a comprehensive picture of a situation.

### RESULTS

Reasoning Discussion Results:

#### 1. Supporting sources

According to the results of Susiani Tarigan's (2019) research conducted on



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75 samples, the results showed that the mean value of salivary pH after rinsing with cow's milk was  $1.0752 + 0.41247$  while the mean value of salivary pH after rinsing with soy milk was  $0.5632 + 0.66572$ . The results also showed that there was a significant effect on decreasing salivary pH between cow's milk and soy milk ( $p = 0.000$ )  $p < 0.05$ .

**Conclusion:** Based on the results of the study, it can be concluded that gargling cow's milk and pure soy milk can reduce salivary pH. The decrease in salivary pH was more significant after gargling with cow's milk rather than gargling with soy milk. Thus it is proven that the decrease in salivary pH is more significant after gargling cow's milk than soy milk. In Hestia Warti et al's research (2016) which was conducted on 22 samples, the average salivary pH after consuming packaged liquid cow's milk at the 5th minute was 7.01, the 10th minute was 7.07 and the 30th minute was 7.10. . These results indicate that there is no significant

change in salivary pH at 5 minutes, 10 minutes and 30 minutes after consuming packaged liquid cow's milk. The average salivary pH after consuming packaged liquid soy milk at the 5th minute was 6.93, the 10th minute was 6.96 and the 30th minute was 7.24. These results indicate that the average salivary pH at 30 minutes has returned to normal values before stimulation.

From the research results of Iriana T. Selaruli, Saliva is a complex oral fluid, consisting of a mixture of salivary gland secretions major and minor found in the oral mucosa with a salivary pH ranging from 5.6 to 7.0. Several factors that cause changes in salivary pH include the average salivary flow rate, oral microorganisms, salivary buffer capacity, and frequently consumed foods and beverages; one of them is milk. Milk contains many food substances such as carbohydrates, proteins, minerals, and vitamins. The type of research is experimental with



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pretest-posttest study design. There are a total of 38 research respondents. Each respondent consumed 250 ml of pure cow's milk or powdered cow's milk. Salivary pH measurement was carried out at 5 minutes after consuming pure cow's milk or powdered cow's milk. The Mann-Whitney test showed that there was a difference in salivary pH after consuming whole cow's milk and powdered cow's milk ( $P=0.000$ ). The highest decrease in salivary pH was found in respondents who drank powdered cow's milk.

In a study by Dashper SG, Saion BN, Stacey MA, and Manton DJ (2012) showed that in vitro acid production by Streptococcus mutans was measured in soy drinks and milk at a constant pH of 6.5 or 5.5, as the pH decreased over a 10 minute period. The results showed that the average acid production produced by mutant Streptococcus in cow's milk was 5-6 times lower than soy milk. Soy milk has the potential to produce higher acidity than cow's milk.

In the research of Hj. Edeh Roletta Haroen, 2015 showed that stimulated salivary flow velocity was the salivary flow velocity that showed the highest value. In addition, the effect of tasting contributes to increasing the velocity of salivary flow. So it is understandable if the flow rate of stimulated saliva is higher than the flow rate of saliva without stimulation. Stimulation of chewing paraffin wax increases salivary pH and

in this study reached 7.22. The flow rate of saliva stimulated by paraffin wax mastication showed an increase, so it is understandable that the pH of stimulated saliva also increased.

In Hervina's research (2018), it was stated that mechanical and chemical stimulation increased salivary bicarbonate levels more than mechanical stimulation alone. Increased levels of salivary bicarbonate can increase the defense of the oral cavity and teeth against acid exposure by bacteria so as to prevent tooth



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demineralization and increase the defense system against caries.

In Tecky Indriana's research (2011), a study was conducted to determine the difference in salivary flow rate and pH between stimulated and unstimulated saliva. The results of unstimulated saliva pH (6.16), chemically stimulated pH (7.63) and mechanically stimulated saliva pH (8.62).

In the study of Disa Ratna N, et al (2015) conducted to determine differences in saliva flow without stimulation in subjects with high and low caries risk. The subjects in this study were children aged 11-12 years at SDN Cikawari, Bandung Regency, totaling 343 children. The results of the comparison test using the independent sample t-test in Table 2 show the mean value in the high caries risk group of 0.302 with a standard deviation of 0.200 and the mean value in the low caries risk group of 0.512 with a standard deviation of 0.270. P-value is  $0.015 < 0.05$  which indicates that there is a

statistically significant difference between saliva flow in the high and low caries risk groups.

### 2. Source does not support

Based on unsupported sources, it can be analyzed that consuming soy milk is higher in lowering salivary pH than cow's milk. According to Muhammad Firjatullah Immas (2015), the results of the study found that there was a difference after drinking cow's milk and soy milk in students of SDN Sendangmulyo 03 Semarang. The average condition of Hsaliva before drinking cow's milk was pH 7.19, after drinking cow's milk the pH of Saliva remained at 7.19. Meanwhile, the average condition of the salivary pH before drinking soy milk was pH 7.2, after drinking soy milk the pH decreased 7.19 so that a difference of 0.03 was obtained. So drinking pure soy milk lowers the pH of saliva than pure cow's milk. It is recommended to drink low-acid milk, one of which is cow's milk.



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### DISCUSSION

1. The effect of stimulated saliva before and after consuming cow's milk and soy milk.
2. There is a change in stimulated saliva before and after consuming cow's milk and soy milk.
3. There are differences in stimulated saliva before and after consuming fresh cow's milk and soy milk.

### CONCLUSION

1. Consuming fresh cow's milk is more significant in lowering salivary pH compared to soy milk.
2. It is recommended to rinse your mouth or consume water after drinking cow's milk or soy milk to avoid the risk of cavities.
3. For further researchers, the results of this literature study are expected to be additional knowledge, especially about stimulated saliva before and after consuming fresh cow's milk and soy milk.

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### The Effectiveness Of Xylitol And Non-Xylitol Chewing Gum On Reducing Plaque Index In Fifth Grade Students At Simomulyo I Elementary School, Surabaya

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#### ABSTRACT

Plaque plays an important role in the occurrence of tooth decay because bacteria will metabolize the leftover food residue. Poor dental cleaning can cause plaque to stick together. Plaque index in fifth grade students of SDN Simomulyo I Surabaya is in the medium category. Objective: To determine the effectiveness of chewing xylitol and non-xylitol gum to reduce plaque index. Methods: this type of research is pre-experimental with pre-test and post-test designs. The target of this study was 110th grade students of SDN Simomulyo I Surabaya. Plaque index after chewing xylitol and non-xylitol gum was obtained through observation. The data analysis technique used the independent T-test. The results obtained mean  $\pm$  Std. deviation index of plaque after chewing xylitol gum ( $1.67 \pm 0.38$ ) and Mean $\pm$ Std.deviation of plaque index after chewing non-xylitol gum ( $1.83 \pm 0.37$ ) with p value ( $0.037 < 0.05$ ). Conclusion : Xylitol gum is more effective than non xylitol gum in reducing plaque index.

**Keywords :** Xylitol Chewing Gum, Non Xylitol Chewing Gum, Plaque Index



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### INTRODUCTION

Dental and oral health is part of the health of the body that can affect the overall health of the body. Teeth are parts of the body that function to chew, speak and maintain the shape of the face, so it is important to maintain healthy teeth so that they can last a long time in the oral cavity. The biggest problem faced by the Indonesian population as well as other developing countries in the field of dental and oral health is dental caries (Jamil, 2011 in Tulangow, 2013).

Dental and oral problems in Indonesia are 45.3%, 21 provinces are above the national prevalence rate and 14 provinces are below the national prevalence rate. The highest dental and oral problem is Central Sulawesi province with a caries prevalence of 60.4% and the lowest is the Riau Islands province with a caries prevalence of 37.7, for East Java province with a caries prevalence of 42.4% (Rikesdas, 2018).

Caries is a disease of the hard tissues of the teeth, namely enamel, dentin, and cementum, in the form of decaying areas

on the teeth

Caries occurs as a result of the process of gradually dissolving the mineral surface of the tooth and continues to develop into the interior of the tooth. This process occurs because of the activity of microorganisms in carbohydrates that can be leavened. This process is characterized by mineralization of hard tissue and followed by damage to organic substances, so that further bacterial invasion can occur into the interior of the tooth, namely the dentin layer and can reach the pulp (Kumala, 2006 cit. Widyati, 2014).

Caries is generally caused by dental plaque, which is still a major problem in the field of oral health. Dental plaque is a soft deposit that adheres to the surface of the teeth, consisting of microorganisms that multiply in the intercellular matrix if a person neglects the hygiene of his teeth and mouth. Plaque plays an important role in the occurrence of dental caries because these bacteria will metabolize the leftover food and the bacteria contained in plaque contain bacteria that form on the tooth



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surface and are the main cause of caries periodontal disease (Putri et al., 2015; Lusiani et al., 2017; Nurasaki et al., 2017). Efforts to control dental plaque can be achieved in two ways, namely mechanically and chemically. The mechanical way is to use a toothbrush and toothpaste and the chemical way is to use chemicals that are anti-plaque (Eline, 2017).

One of the chemicals that have been studied and proven effective in inhibiting plaque formation is xylitol. Xylitol was first discovered by Herman Emil Fischer, a German chemist in 1891. Xylitol was first discovered in birch plants in Finland. Xylitol can also be found in a variety of other plants, such as plums, strawberries, cauliflower, corn, raspberries and spinach. Xylitol can help reduce the occurrence of caries, because xylitol can affect the activity of bacteria in dental plaque. In the field of dentistry, xylitol has been widely applied in various products such as chewing gum (Sumantri et al., 2013; Fatikarini, 2014).

(dental cavities) and Chewing gum is one of the snacks that adults and especially children like. Chewing gum can reduce dental plaque, this is because chewing gum that is tightly attached can clean food debris on the tooth surface and can increase the production of saliva which can clean the oral cavity well, thereby reducing the risk of dental plaque formation. The ability of chewing gum in reducing dental plaque comes from the chewing mechanism and non-carbohydrate sugar substitutes used as sweeteners (Eline et al., 2017; Savita et al., 2017).

Chewing xylitol gum can also increase the rate of saliva production, which in turn will improve the quality of saliva with the content of the gum. Xylitol gum can help the remineralization process of teeth, reduce the amount of plaque (reduce the number of S. Mutans colonies and increase plaque pH and saliva buffer capacity. Giving xylitol gum three to four per day at least five minutes after eating. Effects of chewing xylitol gum on teeth depends on on the frequency of mastication, duration



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and dose (Novita., 2015; Rosdian et al., 2017) stated that there was a meaningful difference between the salivary flow rate before and after chewing non-xylitol and xylitol gum. The conclusion of this study is that the salivary flow rate after chewing xylitol gum is higher than that of non-xylitol gum. Eline et al (2017) stated that there was a difference between chewing gum containing sucrose and gum containing xylitol. The conclusion of this study is that chewing gum containing xylitol lowers plaque index more than chewing gum containing sucrose. The results of the initial examination conducted at SDN Simomulyo I which is located on Jl. Simo Tambaan No.56 Sukomanunggal District, Surabaya City on May 4, 2019, using the PHP measuring index assessment, it was found that from the number of 20 students examined, the average plaque index was 3.28. This is a major problem because plaque is the beginning of dental and oral disease. Thus, the problem of this research, namely, the

2013).

plaque index in the students of SDN Simomulyo I Surabaya is in the medium category.

### MATERIALS AND METHOD

The type of research used by the researcher is analytic pre-experimental type with the design used is pre-test and post-test design. The research population for this study was the fifth grade students of SDN Simomulyo I Surabaya, totaling 152 students. Sampling of this research using Simple Random Sampling. The sample size according to Tama Yamane and Slovin is 110 students and is divided into 2 groups. The group that was given the treatment of chewing xylitol gum was 55 students. And the group that was given the treatment of chewing non-xylitol gum was 55 students. This research was conducted at SDN Simomulyo I Surabaya. Data collection method is to collect data on dental plaque index assessment using PHP. The data obtained from the results of the study were analyzed using an independent T-test.



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### RESULTS

#### 1. Characteristics of Research Subjects

This research was conducted on fifth grade students of SDN Simomulyo I

Surabaya located on Jl. Simo Tambaan School No. 56, Simomulyo Baru, Sukamanunggal District, Surabaya City East Java Province totaling 110 students.

The characteristics are presented in Tables 1 and 2 to describe the distribution of respondents, that the dominance of 12 years of age is 56.4% while gender shows that female dominance is 60.0%.

**Table 1** Age Characteristics of Class V SDN Simomulyo I Surabaya in 2019

Age (Years)	N	%
11	48	43,6
12	62	56,4
<b>Total</b>	<b>110</b>	<b>100</b>

**Table 2** Gender Characteristics of Class V SDN Simomulyo I Surabaya in 2019

Gender	"LEGAL AND ETHICAL ASPECTS OF HEALTH SERVICES DURING PANDEMIC"	%
Man	44	40,0
Woman	66	60,0
<b>Total</b>	<b>100</b>	<b>100</b>

**Table 3** Plaque Index Before and After Chewing Xylitol Gum in Class V Students at SDN Simomulyo I Surabaya in 2019

No	Treatment Group	N	Mean± Std. Deviation	P
1.	Before Chewing Xylitol Gum	55	3,80±0, 69	
2	After	55	1,67±0,	



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### *Chewing Xylitol Gum*

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Based on table 5.2. The results of this study showed that the mean value of Plaque Index before chewing xylitol gum was 3.80 while the mean value after

chewing xylitol gum was 1.67. The results of the analysis obtained  $p$  value = 0.000 which indicates a decrease in plaque index after chewing xylitol gum.

**Tabel 4** Indeks Plak Sebelum dan Sesudah Mengunyah Permen karet *Non Xylitol* pada Siswa Kelas V SDN Simomulyo I Surabaya Tahun 2019

No	Kelompok Perlakuan	N	Mean ± Std. Deviation	P
1.	Before Chewig <i>Non Xylitol</i> gum	55	3,50±0, 77	0,000
2	After Chewing <i>Non Xylitol</i> gum	55	1,83±0, 37	

Based on table 5.2. The results of this study obtained the mean value of Plaque Index before chewing xylitol gum was 3.50 while the mean value after chewing

non-xylitol gum was 1.83. The results of the analysis obtained  $p$  value = 0.000 which indicates a decrease in plaque index after chewing non-xylitol gum

**Tabel 5** Perbedaan Efektifitas Mengunyah Permen Karet *Xylitol* dan *Non Xylitol* Pada Siswa Kelas V SDN Simomulyo I Surabaya Tahun 2019

	Mean ± Std. Deviation	Sig.(2-tailed)
After Chewing <i>Xylitol</i> Gum	1,67±0,38	0.037
After Chewing <i>Non Xylitol</i>	1,83±0,37	



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*gum*

If the data obtained in normal distribution then use the Independent T-test test and if the data obtained in the distribution is not normal then use the Mann-Whitney test. Where in table 5.5 the results of the data obtained after chewing xylitol and non-xylitol gum are normally distributed so that the Independent T-test is used. The results of the Independent T-test obtained P Value = 0.037 while the sig value has been set <0.05 from the data P value is 0.037 <0.05 then H1 is accepted and H0 is rejected, meaning that there are differences in the effectiveness of chewing gum xylitol and non-xylitol in decrease in plaque index.

### DISCUSSION

Based on data analysis showed that there was a difference in the effectiveness of chewing gum xylitol and non-xylitol on plaque index in fifth grade students of SDN Simomulyo I Surabaya. The results showed that the xylitol chewing gum group was more effective than the non-xylitol chewing gum group in reducing plaque index. This is because the content

of xylitol is able to affect the growth and attachment of bacteria on the tooth surface, so that it can inhibit plaque accumulation. The decrease in plaque index can be caused by friction or obstructed by chewed food, one of which is chewing xylitol gum which can cause a reflex of the chewing process. Xylitol gum can cause a stimulus mechanism and can increase saliva secretion. Increasing saliva secretion can maintain oral health, chewing movements will produce secretions that contain anti-bacterial agents. Saliva can remove food debris, neutralize the acidic substances present from food residue trapped in between the pits and fissures of the tooth surface and (Angwarmase et al., 2017; Haida et al., 2014; Rodian et al., 2013). The sugar content of sucrose in chewing gum can damage teeth, while sugar-free gum, such as gum containing xylitol, is good for maintaining healthy teeth and mouth. Chewing xylitol gum can also increase the rate of saliva production, which in turn will improve the quality of saliva with the content of the gum.



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Chewing xylitol gum can help the process of remineralizing teeth, reducing the colonies and increasing plaque pH and saliva buffering capacity). Consuming xylitol gum 5 times/day (Haida et al., 2014; Novita., 2016; Sumantri et al., 2013; Zuliani et al., 2019; Andayani et al., 2016). In this study, there was a difference in the effectiveness of chewing gum containing xylitol and non-xylitol in reducing dental plaque index. The results showed that the xylitol chewing gum group was more effective than the non-xylitol chewing gum group in reducing plaque index. This is supported by the theory that the effect of chewing gum on salivary flow velocity. The study concluded that there was an increase in salivary flow velocity due to masticatory stimulation (Priyambodo et al., 2018). Chewing gum can reduce dental plaque, this is because chewing gum that is tightly glued can clean food debris on the tooth surface and can increase the production of saliva which can clean the oral cavity well, thereby reducing the risk of plaque formation (Eline et al. , 2017).

amount of plaque (reducing the number of *S.mutans*)

Xylitol as a sugar substitute is often used as food products such as chewing gum (Fatikarini, 2014). Xylitol gum can inhibit bacterial growth and help reduce the amount of plaque (Angwarmase et al., 2017).

### CONCLUSION

Based on the results of research on the effectiveness of chewing xylitol and non-xylitol gum in helping to reduce plaque index in students at SDN Simomulyo I Surabaya, it can be concluded that: There is a decrease in plaque index before and after chewing xylitol gum for fifth grade students at SDN Simomulyo I Surabaya. There was a decrease in plaque index before and after chewing non-xylitol gum on the fifth grade students of SDN Simomulyo I Surabaya. There is an effectiveness of chewing xylitol and non-xylitol gum to reduce plaque index. Chewing xylitol gum is more effective than non-xylitol gum. It is recommended



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to consume xylitol gum as an alternative to

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### THE EFFECTIVENESS OF CHEWING SUGARCANE (*Saccharum officinarum*) ON PLAQUE INDEX

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#### ABSTRACT

Sugarcane is a type of grass plants that contains a lot of water and fiber, because fiber and water are very useful for dental and oral hygiene. because the sugar cane content is water and fiber, where the fiber contains cellulose pentosan and lignin which functions to clean teeth and mouth. The purpose of this study was to determine the effectiveness of chewing sugar cane (*Saccharum officinarum*) on the plaque index by linking theories from the results of literature review and from the results of previous findings that have been carried out by several previous researchers. This research uses a qualitative descriptive approach and the type of research used is literature study. Data collection methods used are derived from secondary data sources such as journal, books of scientific papers, text book and scientific article. The results showed that several researchers had conducted research on the effectiveness of chewing sugar cane on the plaque index and all of these researchers showed that there was a decrease in plaque index before and after chewing sugar cane. From the results of this literature study, it can be concluded that chewing sugarcane can reduce plaque index

Keyword : Chewing sugarcane, Dental and oral hygiene



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### INTRODUCTION

According to Siswanto (2010) in Siregar (2018), health is a condition where everything goes normally and works according to its function and as it should. Health is the most important part of human life, both physically and spiritually, this can be achieved if our bodies are healthy. Health that needs to be considered in addition to general body health is dental and oral health because dental and oral health can affect overall body health (Siregar, 2018). The percentage<sup>nd</sup> of the population who have dental and oral problems according to Riskesdas in 2018 of 57.6% of the Indonesian population who admit to having dental and oral health problems only 10.2% have received services from medical personnel (Riskesdas, 2018).

Most of the causes of dental and oral health problems are plaque. Plaque is a sticky layer that is a collection of bacteria. This plaque will convert carbohydrates or sugars from food into acids strong enough to damage teeth. Plaque is also a cause of

inflammation of the gums and deeper periodontal tissues. If the inflammatory process continues, the periodontal tissue will be damaged over time so that it will lose its function as a support for the teeth. Teeth will be loose and over time can fall out of place. This plaque is our main focus in maintaining dental and oral hygiene and health. Although plaque has a soft consistency that is easy to clean by brushing your teeth properly and flossing using dental floss, plaque will continue to take shape after cleaning (Rahmadhan, 2010)

According to Firdaus et al (2008) and Ehizele et al (2009) in Haida et al (2014) a decrease in plaque index could occur because consuming fibrous and solid foods resulted in an increase in the intensity and duration of mastication. Chewing movements will stimulate the secretion of saliva which contains antibacterial agents (Haida et al, 2014). According to Tarigan (2012) in Haida et al (2014) Sugarcane (*Saccharum officinarum*) is a type of grass group plant that contains a lot of water and



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fiber, when the sugar cane is cut it will show fibers and sweet liquid. The fiber contained in sugarcane plants contains cellulose, pentosan and lignin which are very useful for dental and oral hygiene. The mechanical properties of chewed sugarcane fibers help to create a brush-like effect (crushing) that can clean the surface of the teeth (Haida et al, 2014).

From the results of research conducted by Siregar, 2017 stated that based on examinations carried out on all samples, it was found that students who had a bad plaque index before chewing sugarcane were 20 students, a moderate plaque index was 8 students and a good plaque index was 2 students. Meanwhile, after chewing sugarcane, there were no bad plaque index criteria, 22 students moderate plaque index criteria, 8 good plaque index criteria so it can be concluded that there was a decrease in plaque index before and after chewing sugarcane (Siregar, 2017). There are also research results from Nugroho, 2017 conducted on fifth grade students at SDN 3 Paliman Timur. Stating that by

consuming 2 pieces of sugarcane can clean the teeth and mouth with a decrease in OHI-S from a moderate criterion of 2.5 to a good criterion of 0,9 (Nugroho, 2017)

Based on the above background, the authors want to examine the effect of sugarcane chewing on plaque index.

### MATERIALS AND METHOD

This study uses a qualitative descriptive approach. The type of research used is a literature study. The literature study method is a series of activities related to the methods of collecting library data, reading and taking notes, and managing research materials. The data collection method used is based on secondary data sources. Secondary data is generally in the form of historical evidence, records or reports that have been compiled in published archives. such as journal, books of scientific papers, text book and scientific. The data collection technique used is literature which consists of collecting data and library materials that are coherent with the object of the discussion in question. Then the data in the



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library is collected and processed by editing, organizing and Research findings. Data analysis in literature review is research that is an in-depth discussion of the content of written or printed information in journals, scientific books, textbooks and scientific works.

### RESULTS

Mastication or chewing is a complex process resulting from the cooperation between the function of nerves, muscles and teeth. The food is cut using the front (anterior) teeth and then ground using the back (posterior) teeth (Salim, 2017). According to Guyton and Hall explained that the optimal mastication is 20-35 times (Purnomo, 2019) there is also another study conducted by Talitha et al, 2019. Consuming fibrous foods, such as fruits, that have strong teeth cleansing capacity, is a key role in reducing dental and oral problems. Fruits are a good source of natural fiber as well as a good supply of vitamins (Yusro, Prasetyowati and Hadi, 2021). Biting and grinding food between the upper and lower teeth is known as

chewing. Soft food is moved onto the hard palate against the teeth by moving the tongue and cheeks. Meal is broken into little pieces and combined with saliva in the mouth to generate a bolus of food that is swallowed (Yusiana and Prawesti, 2017). Plaque can be eliminated in one of three ways: mechanically, chemically, or naturally. Brushing your teeth is a mechanical method, while mouthwash is a chemical method, and chewing fresh, fibrous, and juicy fruit is a natural method that can assist clean the oral cavity and boost saliva secretion, which is beneficial for tooth protection. When fibrous fruit enters the oral cavity and is chewed, saliva secretion occurs, which is a mechanical activity that can suppress bacterial colonization on the tooth surface, prevent plaque formation, prevent mineralization, and dissolve plaque. previously formed, Nugroho, 2017 on students, namely students' assumptions about the sweet taste contained in sugarcane juice can damage teeth, this is because students' knowledge of the benefits of sugarcane is still low.



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Sugarcane has sap and fiber, this is when we chew sugarcane stalks, the sap that has a sweet taste will stick to the surface of the teeth. But at the same time there is also fiber found in sugarcane stalks which can act as a natural cleanser for the oral cavity. After conducting counseling to students about the benefits of sugarcane before doing research, students want to chew sugarcane without worrying that their teeth will be damaged.

Based on several studies that support the theory, it proves that chewing sugarcane can reduce plaque index. In addition, sugarcane is also referred to as a natural ingredient to reduce plaque index because sugarcane grows familiar in our environment, making it easier for us to find and consume it.

resulting in a reduction in the dental plaque index (Koagouw, Mintjelungan and Pangemanan, 2016).

According to Novan (2014) in Penda, Kaligis and Juliatri (2015), fibrous meals have a crunchy texture and include fiber that can help clean out food particles stuck

between the teeth, making chewing fibrous foods like apples a natural toothbrush. Chewing apples necessitates a high enough bite pressure to increase the intensity of mastication and promote saliva production. The production of saliva, aided by the water content of apples, is capable of cleaning food residues that attach to the teeth's surface (Penda, Kaligis and Juliatri, 2015).

Meanwhile, according to Hermawati (2010) in Siregar (2018) the mechanical nature of chewing food provides numerous health benefits, particularly for maintaining good dental health. Chewing sugar cane, because of its firm texture, is one technique to clean teeth. It stimulates the tongue to destroy food in the mouth, allowing it to clean the leftovers of food on the teeth. (Siregar, 2018).

Sugarcane plants are a form of grass group plant that includes a lot of water and fiber, according to a study published in the journal Nugroho (2017) by Tarigan (2012). Fiber and water are highly important for dental and oral hygiene. The



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chewed sugarcane fiber's mechanical qualities aid to provide a brush-like effect that cleans the teeth's surface. According to Tarigan (1989) in Nugroho (2017), diet has a significant impact on teeth and mouth health, particularly foods that clean teeth and reduce tooth decay, such as apples, guava, yam, and sugar cane (Nugroho, 2017). Sugarcane and jicama, both fibrous and watery foods, have a taste that can promote salivary secretion via engaging chemical reactions in the oral cavity. This chemical response can develop as a result of the flavor influence on the food that has been consumed. The average debris index of 44 children aged 8-9 years at Adabiah Elementary School, Padang City decreased after chewing sugarcane. The decrease was seen from the average debris index before and after treatment, from 1.163 to 0.640. The results of the paired t-test average of the debris index of the sugarcane chewing group pretest and posttest showed a p value = 0.001 which means that there was a significant difference in the decrease in the debris

index before and after chewing sugarcane. (Adriantoni, Ramayanti and Nofika, 2019). There are also research results from Nugroho, 2017, which were conducted on 49 fifth grade students at SDN3 Paliman Timur, Paliman District, Cirebon Regency. The number of students who had good oral health before chewing sugarcane was two, with a total oral health value of two, while those who had moderate oral health were 38, with such a total oral health value of 84.37, and those who had poor oral health were eight, with a total score of 35.5. Then the students were instructed to chew 2 pieces of sugarcane weighing 5 grams. The treatment for chewing uses two sides of mastication that are carried out alternately. At the time after chewing sugarcane, the number of students who had good oral health were 40 people with a total score of 26.4, who had moderate plaque as many as 9 students with a total score of 17.7 and who had a bad oral health 0 with a total score of 0. Based on the findings of the study, it can be stated that the degree of dental and oral hygiene before and after chewing sugarcane has changed, with the average



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This value decreasing from 2.5 with mediocre criteria to 0.9 with good criteria. Sugarcane juice is healthy due to its high mineral content, and it is particularly useful in curing tooth decay and foul breath. Teeth require a variety of minerals to build tooth structure and enhance particular enzymes that can help prevent foul breath. It can improve dental health and whiten teeth even if taken on a daily basis (Nugroho, 2017).

Based on research conducted by Sony, 2018 Before chewing sugarcane, the percentage of debris index of 58 students with poor criteria (70.7%) while after chewing sugarcane went to a better direction to moderate criteria (74.2), and debris index On average, before chewing sugarcane, the criteria was bad (1.95), after chewing sugarcane, the average debris index became a moderate criterion (0.93). Chewing was done with the same treatment on all subjects by chewing sugar cane weighing 50 grams divided into 4 parts, one subject got 4 parts, each part of sugar cane, chewed for 30 seconds.

Chewing sugarcane can keep teeth clean because sugarcane contains a lot of water as much as 90.2% and is rich in fiber. Based on this, the researchers stated that mechanically, chewing sugarcane in the right way can reduce the debris index and decrease after cane chewing (Sony, 2018). The benefits of sugarcane for teeth are the mechanical properties of the chewed sugarcane fiber which helps to create a brush-like effect that can clean the surface of the teeth. This is because the content in sugarcane fiber contains cellulose, pentosan and lignin which are very useful for cleaning teeth and mouth. There is also research conducted by Pratjojo and Kusumastuti, 2014 in their journal Nugroho, 2017 which states that in sugarcane sweet liquid there are Saccharant compounds and Vitamin B2 (riboflavin) which apparently function as anti-diabetics, so diabetics can consume sugarcane. Sugarcane contains natural sugars that have a low glycemic index, compared to other refined sugars. So it can be consumed for diabetic patients for



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people who do not have type 2 diabetes (blood sugar levels exceed normal), this is because type 2 diabetes is caused by lifestyle, it can be overcome by changing lifestyle such as not consuming foods that have high sugar levels . Sugarcane juice can actually lower and control blood sugar levels, if consumed in moderation. But it is forbidden to consume sugar. Although sugar is the result of purification from sugar cane (Nugroho, 2017).

Based on research conducted by Nuraini (2017) states that sugarcane can strengthen teeth and gums (Nuraini, 2017). Similarly, stated by Hatta (2016) stated that sugarcane added with lime and salt is used to give strength to the teeth and gums, sugarcane is also very beneficial for the body, especially it can be used as a healing agent for diabetics, used as a sweetener because of its low sugar content. Because sugarcane is alkaline so it can help fight breast and prostate cancer, it is used as an ingredient to cure sore throats and prevent colds and can keep our bodies healthy, Consuming sugarcane juice regularly can

keep our body's metabolism from lack of fluids because many activities have been done so that can avoid stroke, consuming sugarcane helps in the treatment of jaundice because it gives strength to the liver which becomes weak during jaundice, sugar cane can also help the kidneys to carry out their functions properly. There are also benefits of chewing food which has many benefits for the body, especially in maintaining good oral health (Hatta, 2016).

Based on the results of research conducted by Siregar, 2018 related to the effectiveness of sugarcane chewing on the plaque index where he proved that the research conducted on 30 students, there were some students before chewing sugarcane had a good plaque index of 2 people, 22 people and bad 0 At the time after chewing sugarcane, which had a plaque index of 8 people, moderate plaque index was 22 people and bad was none or 0. It can be seen that the average plaque index before chewing sugarcane was 1.9. Plaque index after chewing sugarcane



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decreased to 0.9. Based on the results of the study, sugarcane fruit can reduce plaque index (Siregar, 2018).

### DISCUSSION

According to the author, the facts and theories are in accordance with what is in the field, only the limitations of researchers are the lack of journals, books and scientific papers and limited materials. There is also a study conducted by Nugroho, 2017 on students, namely students' assumptions about the sweet taste contained in sugarcane juice can damage teeth, this is because students' knowledge of the benefits of sugarcane is still low. Sugarcane has sap and fiber, this is when we chew sugarcane stalks, the sap that has a sweet taste will stick to the surface of the teeth. But at the same time there is also fiber found in sugarcane stalks which can act as a natural cleanser for the oral cavity. After conducting counseling to students about the benefits of sugarcane before

doing research, students want to chew sugarcane without worrying that their teeth will be damaged.

Based on several studies that support the theory, it proves that chewing sugarcane can reduce plaque index. In addition, sugarcane is also referred to as a natural ingredient to reduce plaque index because sugarcane grows familiar in our environment, making it easier for us to find and consume it.

### CONCLUSION

From the results of research on the effectiveness of chewing sugarcane (*Saccharum officinarum*) on plaque index, the conclusions are: There is an effect of chewing sugarcane on the decrease in plaque index and there is a difference in the average plaque index before and after chewing sugarcane.

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### COMPARISON OF BITTER SOLUTION AND PURPLE SWEET POTATO SOLUTION AS IDENTIFICATION INGREDIENTS PLAQUE INDEX

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#### ABSTRACT

Plaque can be identified using disclosing solution, but this substance contains chemicals so that natural plaque dyes are needed for plaque examination, such as beetroot which contains betacyanin and purple sweet potato which contains anthocyanins. The purpose of this study was to determine the ratio of beetroot solution and purple sweet potato solution to identify plaque index. This study uses a qualitative descriptive approach and the type of research used is library research such as journal, books of scientific papers, text book and scientific article to compare the use of beetroot and purple sweet potato as a substitute for chemica-based dental dyes. The results showed that the beetroot solution was more effective in indetifying dental plaque than the purple sweet potato solution, this was because the beetroot solution contained higher betacyanins while the purple sweet potato solution contained lower anthocyanins. Based on the average value of plaque index from several sources of the highest plaque index, namely beetroot solution.

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**Keywords:** disclosing solution, plaque, beets, purple sweet potato, betacyanin,anthocyanin.



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### PRELIMINARY

Organization (WHO), health is a state Health is one of the elements in national development that is useful for improving and developing human resources. A healthy community will realize optimal health degrees. According to the World Healthof complete physical, mental and social well-being and is not limited to being free from disease or infirmity. According to Health Law no. 36 of 2009 Article 93 paragraphs 1 and 2, namely dental and oral health services are carried out to maintain and improve the health status of thecommunity which can be carried out by preventive measures, treatment of dental diseases and restoration of dental health carried out by the local government and can also be carriedout through dental health services. individuals, schools and communities. Based on the results of the Basic Health Research (RISKESDAS) in 2018, the proportion of damaged/cavities in the province of North Sumatra was 43.1%. The national prevalence of the DMF-T

Index is 4.6%. The DMF-T index was higher in women compared to men. (RISKESDAS) 2018.

Dental plaque is a local andmajor cause of dental and oral diseases such as caries (dental cavities), calculus (tartar), gingivitis (inflammation of the gums), periodontitis (inflammation of the tissues that support teeth), and so on. Dental plaque is a clear layer, consisting of mucus (acquired pellicle) and a collection of bacteria that covers the surface of the teeth (Ghofur, 2012).

Dental plaque consists mostly of water and various kinds of microorganisms that proliferate in an intercellular matrix consisting of extracellular polysaccharides and salivary proteins. Approximately 80% of the plaque weight is water, while the number of microorganisms is ±250 million per mg wet weight (Putri et al,) in (Fatmasari et al, 2017). Some ingredients can cause allergies and taste unpleasant for some people, such as iodine, there are also fuhsin and mercurochrome whose color is difficult to remove, and erythrosine which



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is carcinogenic, so it is necessary to look for other alternative ingredients that are better known by the public and effective. The weaknesses of chemical disclosing are the basis for the development of natural disclosing materials (Mega Nok, 2019).

Plaque dyes available in the market vary, based on color, some are red, green, blue or yellow, while based on preparations there are in the form of solutions, tablets, lozenges, and wafers. Indonesia is a country that is rich in natural resources and many plants have been used by people in their daily life, one of which is colored plants which have various pigments as natural food coloring. These natural pigments are chlorophyll, beta-carotene, anthocyanins, betalains, and others. Various studies have proven that food coloring agents, especially those from plants, are effectively used as plaque coloring agents (Pardosi, 2019).

According to Ekoningtyas in (Siregar, 2019) purple sweet potato material can be used as an identification of the presence of plaque on

the tooth surface. The purple color of sweet potatoes is caused by the presence of anthocyanin pigments that are spread from the skin to the flesh of the tuber.

The high anthocyanin content in purple sweet potato has high stability compared to anthocyanins from other sources. That is why this plant is a healthier choice and in accordance with alternative natural dyes (Siswoyo) in (Ekoningtyas 2015). that they can color plaque (Pardosi, 2019).

The purpose of this study was to determine the ratio of beetroot solution and purple sweet potato solution for plaque examination.

### METHOD

Type of research used is Literature Review research, in this case the data collection method used is derived from secondary data sources. The secondary data used: Journals, Books, Scientific Writing, Thesis, Textbooks, Scientific Articles

One source of food coloring that has not been widely used is beetroot. The red color in beets comes from Betacyanin pigments give a concentrated color and are expected



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to be absorbed by glycoproteins so

### RESULTS

Based on all the findings from several journals and researchers linking all journals, it is stated as follows:

Based on research from the Department of Dental Nursing, Poltekkes, Ministry of Health, Semarang, which was conducted by Fatmasari, et al (2014). The title is the effectiveness of beetroot (*beta vulgaris*) as a disclosing solution (plaque identification material). The method used in this research is quasi-experimental research. In the sample group before the treatment was instructed to eat the biscuits given by the researcher, after being instructed to eat the biscuits, the researcher applied the disclosing solution and beet juice to each group. Then the researchers calculated the plaque index on each respondent. After the teeth are smeared with beet juice, the results obtained an average plaque index value of 3.755. Similarly, in the sample group after smeared with disclosing solution, the average value was 2.661. So there is a

difference in plaque index between beetroot and disclosing solution is 1.094. Based on the results of the independent t-test statistical test, a significant number was  $0.000 < 0.05$ , so there was a difference after applying beetroot juice and disclosing solution to the plaque index number. From the results of this study, it can be seen that beetroot is more effectively used to replace disclosing solution to see plaque.

Based on research from the Department of Dental Nursing, Poltekkes, Ministry of Health, Semarang, which was conducted by Ekoningtyas, et al (2015). From the data conducted by researchers, it can be seen that the 15 respondents who were examined were dripped with purple sweet potato solution, the average plaque index value was 2.221, and after being dripped with red dragon fruit solution, the average plaque index value was 2.875. For the difference value, the score of 0.654 is the difference between seeing plaque using purple sweet potato and seeing plaque using red-fleshed dragon fruit. Based on the results of research with purple sweet



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potato and dragon fruit with independent t-test results on the difference in the ability to use a solution of purple sweet potato and dragon fruit with red flesh as a plaque identification material, it showed  $F= 0.034$  with sig 0. 13 means that there is a difference in the ability to use a solution of purple sweet potato with red flesh dragon fruit as a plaque identification material ( $p < 0.05$ ). After experimenting with purple sweet potato and red-fleshed dragon fruit, the difference was 0.654, the difference was due to anthocyanin dyes in sweet potatoes.

Purple sweet potato has low stability. Based on these results, it can be seen that red dragon fruit is more effective than purple sweet potato. Based on research from the Department of Dental Nursing, Poltekkes, Ministry of Health, Semarang, which was conducted by Fatmasari, et al (2017). The title is a solution of purple sweet potato and beetroot as an identification material for the presence of dental plaque. This type of research uses a quantitative descriptive design. The

research design is a quasi-experimental research design with Posttest Only Design. The data analysis used in this research is descriptive quantitative. Samples were beetroot juice was 1.43 and the average plaque after application of purple sweet potato juice was 1.13.

Based on research from the Department of Dental Nursing, Poltekkes, Ministry of Health, Tasikmalaya, conducted by Mega, et al (2019). With the title of the effectiveness of beetroot solution and red dragon fruit solution as identification of dental plaque. This study uses the Posttest Only Control Group Design, which is a design that allows researchers to measure the effect of treatment (intervention) by comparing the experimental group with the control group. Before being given the solution, the research sample was instructed to consume 6 grams of biscuits and then waited for 15 minutes to produce new plaque and homogenize the treatment. After 15 minutes, Drop the solution under the tongue as much as 1 ml using a dropper then instruct the sample to



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spread the solution over the entire surface of the teeth using the tongue. Based on the results of the study analyzed using the Mann-Whitney statistical test and obtained a p-value of 0.033 (<0.05) which means that there are differences in the effectiveness of the beetroot solution and the red dragon fruit solution as an identification material for dental plaque, the beetroot solution is more effective than the fruit solution. Red Dragon. The results of observational research using Mann-Whitney color and time show Ho is accepted with a p-value for color  $0.369 > 0.05$  ) which means that there are differences in the effectiveness of the beetroot solution and the red dragon fruit solution as an identification material for dental plaque, the beetroot solution is more effective than the red dragon fruit solution. The results of observational research using Mann-Whitney color and time show that Ho is accepted with a p-value for color  $0.369 > 0.05$  ) which means that there are differences in the effectiveness of the beetroot solution and the purple sweet potato solution.

the red dragon fruit solution as an identification material for dental plaque, the beetroot solution is more effective than the red dragon fruit solution. The results of observational research using Mann-Whitney color and time show that Ho is accepted with a p-value for color  $0.369 > 0.05$  and time  $0.050$  so there can be no difference from color and time. The p-value for the taste is  $< 0.05$  so that there are differences and in terms of the taste of the beetroot solution and the red dragon fruit solution where the red dragon fruit solution is preferable to the beetroot solution. However, based on the results of the plaque index examination, it can be seen that the beetroot solution is more effective than the red dragon fruit solution can be more easily attached to plaque.

Compared to purple sweet potato solution, the color stability of anthocyanins in purple sweet potato during fruit juice processing is damaged by oxygen. The anthocyanin color instability in purple sweet



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### DISCUSSION

Beetroot is a fruit that contains betacyanin which when mixed with acid will turn a purplish red color. Betacyanin pigment content has a high concentration of about 70-90%. The beetroot solution will be stable at a pH of 4-8 which will then produce a red or pink color.

While the solution of purple sweet potato is a fruit that contains anthocyanins. The anthocyanin pigment in purple sweet potato has low stability under certain conditions. Anthocyanin stability is influenced by several factors including pH, temperature, light and oxygen. Temperature can shift the balance of anthocyanins to tend to form colorless, namely carbinol and alkon bases.

the purple sweet potato solution color to slightly stick to the plaque. For future development, both natural dyes to identify plaque index can be used instead of chemical disclosing solutions.

potato solution as a plaque index identification material. Beetroot solution is more effective in identifying dental plaque index than purple sweet potato solution, this is because beetroot solution contains higher betacyanin while purple sweet potato solution contains lower anthocyanin. Based on the average value of plaque index from several sources of the highest plaque index, namely beetroot solution.

### CONCLUSION

In the discussion there are potato caused

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### The Relationship of Betelling Habits and Periodontal Status

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#### ABSTRACT

Periodontal disease is a dental and oral health problem that has a high prevalence in all age groups. Periodontal disease includes gingiva, alveolar bone, periodontal ligament and cementum. Periodontitis is caused by bad habits, such as whiting. **Objective:** To find out the knowledge and habits of betel chewing with the health status of periodontal tissue. **Method:** The research design used in the preparation of this thesis is a study with a literature study design conducted by examining theories, the internet, research reports and journals relating to issues. **Results:** The bad effect of betel chewing is the content of lime used when whiting can cause alkaline in the oral cavity and cause accumulation of calculus, while the effects of arecoline in areca nuts can cause periodontal tissue disease. **Conclusion:** The habit of betel chewing can cause damage to periodontal tissue caused by a mixture of lime and areca nut. Everyone who has the habit of chewing betel must have experienced severe periodontal disease.

Keywords: habit of chewing betel; periodontal tissue



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### INTRODUCTION

Dental and oral health is very important for the health of every individual. Problematic or unhealthy dental and oral health can interfere with speech, mastication, and aesthetic functions that can have an impact on a person's activities. Based on the *Federation Dentaire Internationale* (FDI) about 90% of the world's population is at risk of developing dental and oral diseases, ranging from dental caries, periodontal disease to oral cancer. The latest data from the WHO *Oral Health Media Center* 2012 shows that as many as 60% -90% of school-age children and even adults around the world have dental and oral health problems.<sup>1</sup>

Knowledge is very closely related to education, where it is hoped that with higher education, the person will have more extensive knowledge. Dental health efforts need to be reviewed from environmental aspects, knowledge, education, public awareness and handling of dental health including prevention and treatment. The government's efforts in

building health certainly need people who can provide explanations about dental health and existing regulations in the health sector, especially dental health.<sup>2</sup>

Periodontal tissue is a tissue that supports and supports teeth consisting of the gingiva, periodontal ligament, cementum and alveolar bone. If the periodontal tissue is unhealthy, it can cause periodontal disease. Periodontal disease is the second most common disease after dental caries which is experienced by many people and is experienced by almost 90% of people in Indonesia.<sup>1</sup>

The gingiva is the soft tissue that surrounds the root of the tooth and is attached to the alveolar bone. Inflammation or inflammation of the gingiva is known as gingivitis. In Indonesia, gingivitis ranks second, reaching 96.58%. Gingivitis is a periodontal disease caused by the interaction of microorganisms in plaque and inflammatory cells in the tissue. Other causes that support the occurrence of gingivitis are *overhanging*, food debris, poor tooth arrangement, traumatic



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occlusion, and bad habits. Bad habits carried out by the community are closely related to the occurrence of gingival disorders which are influenced by community behavioral factors. People's behavior is often influenced by culture or habits that apply in the community itself. One of the cultural factors encountered in society is the habit of chewing betel.<sup>1</sup>

The mechanism for the formation of periodontal disease is the first time the formation of plaque resulting in the release of plaque bacterial products (enzymes, acidic conditions) and causes the attached epithelium to detach and migrate apical. Gingivitis is an inflammatory process in the periodontium

that is limited to the gingiva and is reversible. Periodontitis is a bacterial infection that occurs in the periodontal tissues including the gingiva, periodontal ligament, bone and cementum. This results in an interaction between the plaque biofilm that accumulates on the tooth surface and the host characterized by loss of connective tissue, alveolar bone resorption

and formation of periodontal pockets.<sup>3</sup>

The positive effect of betel nut is that it can inhibit the occurrence of dental caries, while the negative effect is the destruction of periodontal tissue, causing stein on the teeth, causing mucosal lesions, poor oral hygiene, and can cause atrophy of the tongue mucosa.<sup>4</sup>

The results of the 2018 Basic Health Research (RISKESDAS) report stated that there were 57.6% of dental and oral health problems including gingival caused by habits related to teeth and mouth. Despite advances in knowledge about periodontal disease, the prevalence of periodontitis, especially in Indonesia, is still relatively high. RISKESDAS 2018 data shows the percentage of periodontitis cases in Indonesia is 74.1% (RISKESDAS 2018). Meanwhile, the results of Riskesdas in 2013 showed that 25.9% of the Indonesian population had dental and oral problems in the last 12 months, of which 31.1% received care and treatment from dental medical personnel, while the other 68.9% did not receive treatment. . as many as 14



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provinces have a prevalence of dental and oral problems above the national figure. That is, the rate of occurrence of periodontal disease has increased until 2018. The purpose of this study was to determine the knowledge and habits of betel chewing with the health status of periodontal tissues.

### METHODS

The type of research used is research *Literature Review* which is conducted by examining theories, sources from the internet, research reports and journals related to problems, especially theories about knowledge and habits of betel chewing with periodontal tissue status.

### RESULTS

Habit of chewing betel nut has several adverse effects that are very detrimental because the use of lime in the betel concoction causes an alkaline atmosphere in the mouth, so that calculus buildup can occur. Silicates contained in tobacco leaves and chewing for a long time will gradually erode the elements of the teeth to the gingiva.<sup>5</sup>

The positive effect of betel nut on the teeth is that it inhibits the caries formation process, while the negative effect of chewing on the teeth and gingiva can cause stein, besides that it can cause periodontal disease and on the oral mucosa it can cause lesions on the oral mucosa, poor oral hygiene, and can cause atrophy of the tongue mucosa.<sup>6</sup>

Other effects of chewing betel on the oral mucosa such as chewer's mucous, submucus fibrosis, praleukoplakia, leukoplakia, and oral lichen planus. Lesions due to chewing on the oral mucosa correspond to the place where the betel is placed in the mouth. These lesions may be characterized by discoloration, wrinkled mucosa, and mucosal thickening.<sup>8</sup> Chewing areca nut is a predisposing factor that plays the most role in the process of the occurrence of *oral submucos fibrosis*.<sup>7</sup> The habit of chewing betel nut with a long duration and frequency causes chronic irritation that triggers a chronic inflammatory response. The



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inflammatory response is in the form of activation of T cells and macrophages in the area of irritation as well as an increase in cytokines (IL-6 and IF-alpha) and an increase in growth factor (TGF-beta). This will activate the procollagen gene thereby increasing the amount of *soluble* and collagen *insoluble*. The conversion of collagen *soluble* to *insoluble* facilitated by the increase in oxygen activity *lysyl* stimulated by *Cooper* and the action of flavonoids such as *catechins* and *tannins* contained in areca nut. The inflammatory process also activates the TIMP (genetic *issue inhibitor of matrix metalloproteinase*) and PAI (*plasminogen activator*) which inhibit the activation of collagenase and the conversion of procollagen into collagen, causing a decrease in collagen degradation. An increase in the amount of collagen in the form *insoluble* causes *oral submucosal fibrosis*.<sup>9</sup>

### DISCUSSION

Chewing betel nut can damage the periodontal tissue can be explained as a

material that can trigger hypersalivation. This increase in calcium deposits is a factor that can trigger hypersalivation. This increase in calcium deposits can then trigger damage to the gingiva and periodontal membrane due to the habit of chewing betel nut.<sup>10</sup>

Areca nut seeds used for betel nut contain compounds *phenolic*. The content *phenolic* is relatively high. When the process of chewing betel nut seeds in the mouth, reactive oxygen or commonly known as free radicals will form compounds *phenolic*. A mixture of betel nut and whiting will produce a condition *alkaline PH*. This will more quickly stimulate the formation of reactive oxygen. This oxygen can cause DNA or genetic damage to epithelial cells in the oral cavity.<sup>11</sup>

People who have the habit of chewing betel will experience plaque buildup and changes in tooth color. These changes are caused by the oxidation of *polyphenols* from areca nut.<sup>12</sup>

The effects of arecoline (the main alkaloid



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found in betel nut) are able to inhibit cell attachment, cell spread and cell migration and reduce cell growth and collagen resistance. The results of these findings indicate that people who have the habit of chewing betel nut have experienced severe periodontitis, while people who do not have the habit of chewing betel often think that stopping the habit of chewing betel can be beneficial for maintaining oral health.<sup>10</sup>

On the other hand, betel nut using tobacco can also cause oral cancer and other cancers, because during the drying process of tobacco in the sun and enzymatic processes in the mouth, it can form carcinogenic compounds such as polynuclear aromatic hydrocarbons (benzo(a) pyrene), Aromaticamines (2-naphthylamine), 4-aminobiphenyl), Tobacco specific N nitrosamines.<sup>15</sup>

Women are identical with betel. For them, chewing betel is a habit, in contrast to men who have replaced the habit of chewing betel with smoking. Betelling women are not despised in contrast to smoking

women.<sup>13</sup>

The mechanism for the formation of periodontal disease is the formation of plaque for the first time, resulting in the release of plaque bacterial products (enzymes, acidic conditions) and causing the attached epithelium to detach and migrate apical.<sup>14</sup>

The use of whiting can cause periodontal disease.<sup>11</sup> Lime actually have health benefits for periodontal tissue, but the product of chitin used in chewing betel lime powder form can destroy periodontal tissues mechanically by means of calculus formation which will megakibatkan periodontal tissue inflammation and unsteadiness on the teeth.<sup>16</sup>

The combination of lime and arecanut used when betel nut can cause damage to the oral mucosa such as the appearance of lesions on the buccal mucosa of betel nut.<sup>11</sup> Based on the results of the research above, the authors assume that the habit of chewing betel nut is a bad habit because it can damage the periodontal tissue by the formation of calculus which causes



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periodontitis. These habits have more negative effects than positive effects that affect the health status of periodontal tissues. The main ingredients that damage the periodontal tissue are a mixture of areca nut which causes plaque buildup, and lime which changes the pH of the mouth to become alkaline so that calculus formation occurs.

### CONCLUSION

Chewing betel nut has a very detrimental effect on the use of lime and areca nut. The use of whiting can cause periodontal disease. The lime in the betel concoction can cause an alkaline atmosphere in the oral cavity, causing a buildup of calculus which can damage the periodontal tissue and cause tooth mobility. While areca nut

has the ability to remove cell attachments that affect the health of periodontal tissues. The combination of lime and areca nut results in a primary response to relative oxygen formation and may result in oxidative damage to DNA in the buccal mucosa of betel nut. The habit of chewing betel nut can cause stein on the teeth, cause lesions on the oral mucosa, poororal hygiene and cause a burning tongue. Other effects of chewing betel on the oral mucosa such as chewer's mucous, submucus fibrosis, praleukoplakia, leukoplakia, and oral lichen planus. Lesions due to chewing on the oralmucosa correspond to the place where the betel is placed in the mouth.

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### DETERGENT CONTENT IN CHILDREN'S TOOTHPASTE

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### ABSTRACT

Everyone needs to maintain oral health by means of brush your teeth properly. Toothpaste is a cleaning tool that helps remove food residue. Toothpaste is made from various ingredients, one of which is surfactant (SLS) which can form foam from toothpaste. Excessive use of SLS can cause irritation. **Background:** therefore, this literature study aims to determine the detergent content in children's toothpaste. **Methods:** this study uses a qualitative descriptive approach and the type of research used is a literature study. Sources of research data are journals, scientific works, and related literature studies. **Results:** show that several researchers have conducted research on the side effects of detergent in toothpaste. Detergent toothpaste can cause harmful side effects when swallowed and used for a long time with levels exceeding 1-2%. **Conclusion:** The detergent content in children's toothpaste is between 0.04-0.35%.

**Keywords:** Children's toothpaste, Sodium Lauryl Sulfate.



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### INTRODUCTION

Teeth are mechanical digestive organs found in the mouth. With teeth, we can bite, cut, chew, and grind the food we eat. Teeth have a hard structure that makes it easier to carry out their functions. Every person or individual needs to maintain dental and oral health by brushing their teeth properly to prevent dental caries. Most of the Indonesian population brushes their teeth every day 94.7% and for South Sulawesi 90%. The correct habit of brushing the teeth of the Indonesian population is only 2.8% and for the area it is South Sulawesi 8.8% (1). Toothpaste is a cleaning tool that helps remove food debris from around the teeth and gums. Toothpaste usually contains fluoride, which helps strengthen and protect teeth from decay, and toothbrushes allow fluoride to touch the surface of tooth enamel. Using toothpaste makes your mouth feel fresh and clean. Toothpaste is not only used by adults but also children. Parents need to choose a toothpaste that is

specially made for baby teeth. It contains lower fluoride than adult toothpaste to avoid tooth discoloration (fluorosis). Toothpaste is available in many attractive flavors and colors. This is very useful for encouraging children who are lazy to brush their teeth. It is important to make sure the child understands that toothpaste should not be swallowed, because ingesting too much fluoride can cause fluorosis, which is a discoloration of the developing permanent teeth (2).

Toothpaste is made from a variety of ingredients with different functions and several additives. One of the constituent ingredients is surfactant (SLS) which is a material that can form foam from toothpaste. Excessive use of SLS can cause irritation of the oral cavity, severe ulceration, decreased salivary solubility and changes in taste sensitivity (3). Harry's Cosmeticology states that the surfactant (SLS) content in toothpaste is around 1%-2% (4). Based on the description of the background of the



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problem that has been stated previously, the formulation of the problem in this study is how much is the detergent content in children's toothpaste?

### RESEARCH METHOD

This study uses a qualitative descriptive approach, where this approach describes the object of research based on existing facts or as they are. The type of research used is the study of literature or library research, namely collecting data or scientific writings aimed at the object of research or collecting data that is library in nature.



### Data Sources The data

Taken and used in this study are secondary data sources or indirectly. The secondary data sources used are journals, scientific papers, and also literature related to the research conducted.

### Data collection techniques

This research includes library research. Therefore, the technique used in collecting data on library materials is coherent with the object of the discussion in question. The data in the literature is collected and

processed by: Editing, Organizing, Research findings Data analysis Data analysis in this literature literature is content analysis, namely research that is in-depth discussion of the issue of written or printed information in journals, scientific papers, theses, and also literature related to research conducted. The stages of content analysis taken by the author are the following steps: Determining the problem, Compiling a theoretical framework, Data analysis, Data interpretation.

### RESULTS

Toothpaste is an auxiliary material used to clean teeth from food residue, remove plaque and bad breath and beautify the aesthetic appearance of teeth (3). Toothpaste is also used by children. Each toothpaste consists of important ingredients such as abrasives, polishing agents, humectants, anti-plaque agents, fluoride, teeth whiteners, water, flavoring agents, sweeteners, binders, and ingredients. foam (detergent). Detergent toothpaste is toothpaste that contains detergent. The detergent used in the market



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is Sodium Lauryl Sulphate (SLS) (5).

Excessive use of SLS can cause irritation of the oral cavity, severe ulceration, decreased salivary solubility and changes in taste sensitivity (3). Harry's Cosmethiclogy (in Maharani & Hersoelistyorini, 2009) states that the limit for the use of surfactant levels (SLS) contained in toothpaste is around 1%-2% (4). The amount of detergent used in each toothpaste varies with the range between 1.5-5% of the total weight of the toothpaste (6).

Based on research conducted by Agita Difa Yustika (2016) using a quasi-experimental method on 35 subjects showed that toothpaste containing detergent (SLS) has an effect on increasing salivary pH through its antibacterial and antimicrobial properties, so that through these properties SLS can minimize the bacteria that cause bacteria. acidic conditions that cause the pH of saliva to decrease. While non-detergent toothpaste is lower in increasing salivary pH (5).

Based on research conducted by Ronald

Hartono (2013) using the quase experimental method on 49 subjects showed that detergent toothpaste can affect plaque growth compared to non-detergent toothpaste by 0.05. And detergent toothpaste has been shown to inhibit salivary secretion compared to non-detergent toothpaste users due to the presence of SLS in toothpaste which causes dry mouth (7).

Based on research conducted by Eoudia B. Wawo, PM Wowor and Krist V. Siagian (2016) using the experimental Quase method on 42 subjects showed thatthe use of detergent toothpaste (SLS) can affect the flow rate of saliva so that saliva becomes slow. The slow salivary flow rate causes the self-cleansing effect to be less so that the risk of periodontal disease becomes high (8).

Based on research conducted by Anis Nadhia Bt Roslan, Jenny Sunariani and Anis Irmawati (2009) using clinical experimental methods showed that there was a decrease in sweet taste sensitivity before and after brushing teeth. Decreased



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sensitivity to sweetness due to the use of SLS is a temporary taste disturbance that can occur every day after brushing your teeth. Disturbance is temporary because protein renaturation occurs by eliminating the cause of

denaturation. Long-term use of SLS can cause permanent taste disturbances and cause harmful side effects such as irritation of the oral cavity, irritation of the eyes, dryness and severe ulceration which is also harmful to other organs of the body such as the liver and heart (3).

Likewise, research conducted by Effortkti Ifarum, Anis Irmawati and Jenny Sunariani (2009) using the experimental Quase method on 12 subjects showed that there was a change in sensitivity to sour taste before and after brushing teeth. This change is only temporary which is about 20 seconds. The effect of SLS on changes in taste sensitivity does not last long because denaturation due to the use of SLS does not involve the breakdown of the primary structure of the protein so that renaturation is possible by eliminating the

cause of the denaturation. However, if SLS is ingested, it will cause quite dangerous effects for the body. SLS can cause degenerative effects on absorption, metabolism and excretion functions. SLS which is a surfactant can penetrate and settle in cells in the brain, heart and liver (9).

Based on research conducted by Endang Tri wahyuni Maharani and Wikanastri Hersoelistyorini (2009) using the titrimetric analysis method on 9 samples of children's toothpaste, the amount of detergent levels in children's toothpaste on the market is sample A = 0.15%, sample B = 0.06%, sample C = 0.04%, sample D = 0.05%, sample E = 0.13%, sample F = 0.30%, sample G = 0.35%, sample H = 0, 17%, and sample I = 0.28%.

From these results, it can be seen that the detergent levels in 9 samples of children's toothpaste were between 0.04%-0.35%. This level is in accordance with Harry's Cosmethiclogy which states that the surfactant (SLS) content in toothpaste is around 1%-2%. Another function of



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synthetic detergent is as a foaming agent in toothpaste, the level should not be high because it can cause inflammation of the gums (4).

### DISCUSSION

Based on the description of the discussion from the literature review and review above, the researcher assumes and concludes that detergent toothpaste has an effect on increasing salivary pH, plaque growth, inhibiting salivary secretion, slowing salivary speed and changes in taste sensitivity. In 9 samples of children's toothpaste, the detergent content (SLS) was between 0.04-0.35%. Detergent toothpaste can also cause harmful side effects when swallowed and used for a long time with detergent levels exceeding 1-2% according to Harry's Cosmethiclogy (4).

### CONCLUSION

Based on the results and the purpose of this study, namely to determine the content of detergent in children's toothpaste, the researchers drew the following conclusions:

1. Detergent toothpaste was more influential in increasing salivary pH than non-detergent toothpaste.
2. Detergent toothpaste is able to affect plaque growth and inhibit saliva secretion compared to non-detergent toothpaste.
3. Toothpaste detergent has an effect on the speed of saliva so that saliva becomes slower and decreases taste sensitivity. 0,4% The level of detergent in 9 samples of children's toothpaste was between %-0.35%. This level is in accordance with Harry's Cosmethiclogy which states that the surfactant (SLS) content in toothpaste is around 1%-2%.

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### The Influence Of Parental Roles On The Debris Index Score Of Inclusive Students At SDN Pakis VIII Surabaya In 2020

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#### ABSTRACT

Dental and oral health is part of overall health. Parents have a very big role in debris index score children's. The problem in this study is the low role of parents in brushing their children's teeth which affects the debris index score of the inclusive students of SDN Pakis VIII Surabaya. **Purpose:** This study was to determine the effect of the role of parents on the debris index score of the inclusive students of SDN Pakis VIII Surabaya. **Methods:** This type of research is a analytic cross-sectional namely data concerning independent variables (parental roles) and dependent variables (*debris index score*) which will be carried out at the same time. study with 60 students (dependent variable) and 60 students' parents (independent variable) as respondents. The data collection method used was the examination of the debris index score and interviews with parents of students. Data analysis technique using test Spearman Somers'd Gamma. **Results:** This study is a significant influence between the role of parents in assisting and motivating children to maintain dental and oral hygiene. There is a very strong influence of the role of parents on the debris index score of the inclusion students of SDN Pakis VIII Surabaya.

Keyword : Parental Role, Debris Index



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### INTRODUCTION

Education is an educational service system that requires children with special needs to study in nearby schools in class, usually with friends his age. Inclusive education is education that unites PLB services with education or the placement of all ALB (exceptional children) in ordinary schools. In the concept of special education, inclusive education is defined as combining the implementation of special education and regular education in a unified education system (Baharun and Awwaliyah, 2018).

Tulangow et al., (2015), stated that dental and oral hygiene and periodontal disease were the biggest problems experienced by children with disabilities. Children with special needs have lower levels of oral health and hygiene than normal children. Children with special needs cannot carry out activities of daily life normally so they need help from other people around them. Riskesdas data (2018) shows that the proportion of the population in Indonesia who has dental and oral problems is 57.6%,

only 10.2% have received services from medical personnel. And the results of Riskesdas (2018) show that only 2.8% of the Indonesian population aged 3 years and over who already have the behavior of brushing their teeth twice a day, morning and night. At the age of 12 years, the DMFT was 1.89, while WHO expected the target *Decay, Missing, Filled-Teeth (DMF-T)* for children aged 12 years 1.

The level of oral hygiene has a very important role in maintaining and maintaining healthy teeth and teeth. periodontal tissue, so that the role of dental and oral hygiene in an effort to improve optimal health status is very important, because dental and oral disease is a disease with a widespread prevalence of national health problems. One of the efforts to improve dental and oral hygiene is to provide dental health education to the community (Suryani, 2017).

According to Notoatmodjo (2010) in (Widayati and Hidayati, 2017), Health efforts are every activity to maintain and improve health carried out by the



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government and the community. Health efforts in terms of brushing teeth are carried out by people with limitations or *disabilities*. People with disabilities do not escape the government's target to get health services, especially dental and oral health.

Children with special needs have weaknesses and limitations in taking care of themselves, including in terms of brushing their teeth. To reduce the number of bad criteria in OHI-S students with special needs, parents need to play a role in self-care for children with special needs, including brushing teeth. Assistance in brushing teeth is not enough just once, but must be accompanied continuously for children. The purpose of continuous assistance in brushing teeth is to train children with special needs to be willing and accustomed to brushing their teeth.

### MATERIALS AND METHOD

Type of research used is an analytic *cross-sectional*, namely data concerning independent variables (parental roles) and

dependent variables (*debris index score*) which will be carried out at the same time. The collection method in this study used interviews and dental examinations. The targets of this study were 60 (parents) and 60 (students) SDN Pakis VIII Surabaya. The technique of collecting data was by interviewing the parents, the results of the interviews were written down in the interview guide, after which the index teeth were examined using *disclosing*. Data analysis for the role of parents was carried out by univariate analysis to test one variable using a frequency distribution with ordinal data scale. Analysis for *debris index score* of inclusion students with univariate analysis to test one variable by using a frequency distribution with ordinal data scale to see the criteria of good, bad, moderate on the results of the examination *debris index*. To analyze the data on the influence of the parent's role on the *debris index score* of inclusive students, bivariate analysis was used to examine two variables using a frequency distribution,



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which was tested using *Spearman* *Somers'd* *Gamma* ordinal data scale.

### RESULTS

**Table 1** Distribution of the interview frequency on the role of parents of inclusive students at SDN Pakis VIII Surabaya in 2020.

No	Category Parental Role	Percentage Value	Frequency	Percentage
1	No Role	0% - 50%	56	93%
2	Less Role	51% - 75%	4	7%
3	Role	75% 100%	- 0	0%
<b>TOTAL</b>			<b>60</b>	<b>100%</b>

Based on the table above, the data obtained from the assessment results for the category of parental roles is 0% or almost all respondents in the category do not play a role.

Table 2. Distribution of respondents about the activities of the role of parents in assisting their children brushing their teeth two times a day secararutin VIII SDN Pakis Surabaya in 2020.

NO	Statement		Option	
			Yes	No
			$\Sigma\%$	$\Sigma\%$
1	Contribute to assist children in brushing their teeth regularly every morning after breakfast and at night before bed		9 15%	51 85%
	Total		9 15%	51 85%
	Average		9 15%	51 85%

From the table above, it can be seen that the role of parents in accompanying their children to brush their teeth regularly 2 times a day with the answer yes on average 15% category no role .

**Table 3** Distribution of respondents about the activities of the parent role in helping their children while brushing your teeth VIII SDN Pakis Surabaya in 2020.

Numb	Statement	Options	
		Yes	No
		$\Sigma\%$	$\Sigma\%$



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1	Contribute to help bring a toothbrush and toothpaste as the child will be brushing your teeth	27	45%	33	55%
2	Parents know how to brush their teeth properly and correctly	5	9%	55	91%
3	Helping children brush their teeth on the back facing the lips with a downward motion and vice versa	4	7%	56	93%
4	Helping brush teeth on the side facing the cheek with circular motion	5	9%	55	91%
5	Helping children brush their teeth on the side facing the tongue with a downward upward motion/ prying	9	15%	51	85%
6	Helping children brush their teeth on the chewing side in a back and forth motion	40	67%	20	33%
7	Helping children brush their teeth on the palate with a prying motion	3	5%	57	95%



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8	When children brush their teeth incorrectly, parents help justify the correct way to brush their teeth	26	44%	34	56%
	Total	11	201%	36	599%
		9		1	
	Average	15	25%	45	75%

From the table above, it can be seen that the activities of parents in helping their children when brushing their teeth with an average of 25% the answer is yes the category does not play a role.

**Table 4** Distribution of answers about the parents to motivate their children to maintain healthy teeth VIII SDN Pakis Surabaya in 2020.

NO	Statement	Options			
		Yes		No	
		Σ%	Σ%	Σ%	Σ%
1	Giving reward to the child when the child would want to brushing and dental hygiene and mouth	0	0%	60	100 %
2	Give praise to children when they want to brush their teeth and want to keep their teeth and mouth clean	52	13%	8	87%
	Total	52	13%	68	187%
	Average	26	6.5%	34	93.5%

From the table above it can be seen that answers to questions about parents motivate children to maintain dental health with an average of 6.5% in the category of no role.



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**Table 5** Distribution of respondents activity parental role in the examination of children's teeth SDN Pakis VIII Surabaya 2020

NO	Statement	Option	
		Yes	No
		$\Sigma\%$	$\Sigma\%$
1	Checking your child's teeth every 6 months in poly gear	12	20% 48 80%
	Total	12	20% 48 80 %
	Average	12	20% 48 80%

From the table above, it can be seen that dental examinations are in the 20% the activities of parents' roles in children's category of no role.

**Table 6** Distribution of the frequency of *debris index scores* on the inclusion students of SDN Pakis VIII Surabaya in 2020.

Numb	Debris Assessment	Assessme nt	Frequen cy	Percentage
<b>Category</b>				
1	Good	0.1 - 0.6	3	5%
2	Medium	0.7 - 1.8	3	5%
3	Poor	1.9 - 3.0	54	90%
	Total		60	100%

From the table above, it can be seen that which has a moderate category of 5% and 90% have a debris index with poor criteria, a good category of 5%

**Table 7** Normality Results of Kolmogorov Smirnov Data

VARIABLE	N	Mean $\pm$ SD	Sig
Category Parental Role	60	$2.93 \pm 0.252$	0.000
Category Debris Index	60	$2.85 \pm 0.481$	0.000

Based on the table above, the Sig value is means that the data is not normally 0.000 when compared to = 0.05, the Sig distributed. value is smaller than (Sig ) ie 0.000 0.05

**Table 8** Results Correlation *Spearman's*



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VARIABLE	N	correlation value(r)	Sig	$\alpha$	Conclusion
Role of Parents Against Debris Index Score	60	0.823	0.000	0.05	correlation value (r) Very strong and refused Ha Ho accepted

Based on table 8 shows that parents role of the *debris index the score* has a value *correlation(r)* of 0.823 with a very strong correlation level, and sig 0.000 which means (Sig ) which is 0.000 0.05, which means that the research hypothesis is accepted, namely that there is an influence of the role of parents on the *debris index score* of the inclusion students of SDN Pakis VIII Surabaya.

## DISCUSSION

Based on the results of data analysis, it is known that there is a significant influence between the role of parents in assisting, assisting and motivating children to maintain dental and oral hygiene. There is a very strong influence of the role of parents on the debris index score of the

inclusion students of SDN Pakis VIII Surabaya. The greater the role of parents, the better the debris score for the inclusion students of SDN Pakis VIII Surabaya.

This is in line with research from (Aprilianti et al., 2016), with the title "The relationship between parenting patterns and the level of independence personal hygiene in mentally retarded children at SLBN Palangka Raya" which shows a significant relationship between parenting patterns and the level of independence personal hygiene in mentally retarded children at SLBN Palangka Raya.

The results of the research above are in line with research (Juliana, 2019), with the title "The influence of parenting patterns on the independence personal hygiene of children with special needs in SLB-G / AB Hellen Keller Indonesia for the 2018/2019



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academic year" which shows a significant and positive influence on independence *personal hygiene* of children with special needs SLB-G/AB Hellen Keller Indonesia. Parents have a very important role in taking care of their children's teeth, with the roles played by parents include providing examples of dental care, motivating dental care, and bringing children to dental health services if their children have a toothache, either through the home, school or UKGS. The role of parents is also very necessary for children with special needs (Isnanto and Rahayu, 2014).

Brushing teeth is a fine motor activity that can be applied to children so that the role of parents or educators is still very large in determining success in maintaining children's dental health (Riyanti, 2009) cit (Sari et al., 2012).

According to L.Green (1980) in (Notoatmodjo, 2012), the role of parents is included in *reinforcing factors* that influence the formation of inclusive children's behavior. Including the role of

parents in maintaining their child's dental hygiene has an effect on the *debris index score*. The role of parents in maintaining their children's oral and dental hygiene affects their children's knowledge and attitudes so that it can affect the children's *debris index score* (inclusive students).

### CONCLUSION

Parents do not play a role in helping, assisting, motivating in maintaining dental and oral hygiene, and the condition of the debris index of the inclusion students of SDN Pakis VIII Surabaya on average is poor. In this study, there was a significant influence between the role of parents on the *debris index score* of the inclusive students of SDN Pakis VIII Surabaya.

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### FACTORS INHIBITING MOTIVATION FOR DENTAL AND ORAL HEALTH EXAMINATIONS FOR ADOLESCENTS IN PARIAMAN CITY, WEST SUMATRA

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#### ABSTRACT

Checking dental health is something that needs to be done early, so that problems that occur can be detected more quickly. There are still many bad public perceptions of having their teeth checked, causing dental health problems to increase. It is necessary to study its relation to factors that have contributed to the motivation to have a dental check-up. The purpose of this study was to analyze the motivational inhibiting factors for dental health examinations in adolescents in Pariaman City, West Sumatra.

This research is a correlation analytic study with a cross sectional approach. The sample in this study amounted to 150 samples with a total sampling technique. The instrument used is a questionnaire. Analysis was carried out by univariate analysis (frequency distribution) and bivariate analysis using chi-square test.

The results of the study show predisposition (knowledge, attitude and socio-economic), enabling (facilities and infrastructure) and reinforcing (attitude and behavior of community leaders) affect the motivation of respondents in dental examination with p-value <0.05. Judging from the Prevalence Ratio (PR), obtained a PR value of 4.247 (95% CI: 2.146-8.405) for predisposing factors, 27.832 (95% CI: 9.967-77.715) for enabling factors and 15.984 (95% CI: 2.033-125.637) for the reinforcing factor. The higher the predisposition, enabling and reinforcing possessed, the higher the motivation of adolescents in dental examinations, on the contrary, the lower the predisposition, enabling and reinforcing they have, the more inhibiting factors in adolescents' motivation in dental and oral health checks.

**Keywords:** Predisposing, enabling, reinforcing, dental and oral health



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## INTRODUCTION

Dental and oral health is part of body health that cannot be separated from one another because if dental and oral health is disturbed it will affect other organs of the body. Oral and dental health is something that is often overlooked by many people, while the oral cavity is the entry point for bacteria and germs that cause dental and oral health problems.(WHO, 2012).

According to data from the Indonesian Basic Health Research (Risikesdas, 2018)Dental health problems in Indonesia in the last 12 months are relatively high, as many as 45.3% of the Indonesian population have dental problems in the form of damaged or cavities or sick teeth. The prevalence rate for age 15-24 years with problems with damaged, perforated or diseased teeth is 41.4%.

The frequency of the population who never went to dental medical personnel in Indonesia reached 95.5%. Meanwhile, the proportion of treatment for dental problems in the province of West Sumatra, to specialist dentists was only 2.2%, to dentists 12.5%, to dental nurses 2.3%, and self-medication reached 37.0%. The low value of the population who has never seen medical personnel shows the low level of public awareness in caring for and maintaining their teeth(Riskeksdas, 2018).

Motivation is the basic impulse from within the individual to try to make changes in behavior for the better to meet their needs. Motivation is caused by internal factors that come from the person's own personality and external factors which are forces that come from outside the individual pushing to carry out activities(Lendrawati, 2013). According to Mulyasa (2003:112) in(Susanti, 2015) Motivation is a driving or pulling force that can cause behavior towards a certain goal.

The need for dental health services is influenced by poor perceptions of the status of dental and oral health. Dental health care should be designed to prevent dental health problems and help maintain health by providing motivation to clean teeth properly and correctly(Lendrawati, 2013).

Based on A similar study conducted by Dini Vitaningsih (2020) entitled "The Correlation of Knowledge Levels About Dental Health to Motivation to Perform Dental Examinations on Students in the Health Polytechnic Dormitory of the Ministry of Health Semarang" that there is a relationship between the level of knowledge about dental health with motivation to perform dental examinations on female students at the Health Polytechnic Dormitory of the Ministry of Health Semarang. Because the study only used the knowledge variable, the researcher wanted to conduct further research with different variables, namely attitudes and actions to perform dental examinations.From the results of the description above, researchers are interested in researching more about the factors that inhibit the motivation of dental and oral health examinations in adolescents in Pariaman City, West Sumatra. This study aims to



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analyze the factors inhibiting motivation for dental and oral health examinations in adolescents in Pariaman City, West Sumatra.

### MATERIALS AND METHOD

Study this is carried out in Pariaman City, West Sumatra. The population in this study were 150 teenagers of SMAN 2 VII Koto Sungai Sarik, Pariaman City, West Sumatra. The sampling technique used was total sampling, sampling where the number of samples was the same as the population, so that the sample in this study amounted to 150 teenagers. Data collection was carried out with a questionnaire instrument. After the research data was collected, the researcher carried out data processing which included editing, coding, data entry, processing, data analysis and data presentation. Data analysis was performed by univariate analysis (frequency distribution) and bivariate analysis using chi-square test.

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### RESULTS AND DISCUSSION

Research about Factors inhibiting motivation for dental and oral health examinations in adolescents in Pariaman City, West Sumatra has been carried out from March 2021 to May 2021. The samples used were 150 samples which were taken using the total sampling technique. Data were collected using a questionnaire instrument which was then filled out by the research subjects. The

results of this study are displayed in the form of a frequency distribution table.

- Characteristics of research respondents

**Table 1.** Distribution of Research Respondents Characteristics

Characteristics of Respondents	Amount	Percentage
<b>Gender</b>		
Man	64	43
Woman	86	57
Total	150	100
<b>Age</b>		
16 years	56	37
17 years	65	43
18 years	29	20
Total	150	100

Based on table 1, it is known that most of the respondents in this study were female, namely 86 (57%), and most were aged 17 years, namely 65 (43%). All respondents are students of SMAN 2 VII Koto Sungai Sarik, Pariaman City, West Sumatra who are classified as teenagers.

- Univariate analysis

Table 2. Univariate Analysis Results of Each Variable

Variable	Amount	Percentage
<b>Predisposing factors</b>		
Tall	77	51
Low	73	49
Total	150	100
<b>Enabling factors</b>		



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Tall	96	64
Low	54	36
Total	150	100
<b>Reinforcing factor</b>		
Tall	136	91
Low	14	9
Total	150	100
<b>Motivation</b>		
Tall	76	51
Low	74	49
Total	150	100

Table 2 shows that most of the respondents have a predisposition (knowledge, attitude and socioeconomic) in the high category, namely 77 (51%) respondents. 96 (64%) respondents with high category enabling (facilities and infrastructure). In terms of reinforcing (attitudes and behavior of community leaders) is also in the high category, namely 136 (91%) respondents. Most of the respondents with high motivation were 76 (51%), but there were still 74 (49%) respondents with low motivation in having their teeth and mouth checked.

### 3. Bivariate analysis

Table 3 Results of Bivariate Analysis

Variable	Motivation		median	Minimum	Maximum
	Tall	Low			
	f	%	f	%	
<b>Predisposing factors</b>					
Tall	52	35	25	17	6
Low	24	16	49	33	
Total	76	51	74	49	
<b>Enabling factors</b>					
Tall	71	47	25	17	3
Low	5	3	49	0	
Total	76	51	74	49	

<b>Reinforcing factor</b>	<b>Tall</b>	75	50	61	41	2	1
	<b>Low</b>	1	1	13	9		
	<b>Total</b>	76	51	74	49		

Based on table 3, the results of bivariate analysis obtained p-value <0.05, it can be interpreted that predisposition (knowledge, attitude and socioeconomic), enabling (facilities and infrastructure) and reinforcing (attitude and behavior of community leaders) affect the motivation of respondents in dental examinations. and mouth. The higher the predisposition, enabling and reinforcing possessed, the higher the motivation of adolescents in dental examinations, and conversely the lower the predisposition, enabling and reinforcing they have, the more inhibiting factors in adolescents' motivation in dental and oral health checks.

### Factors inhibiting motivation for dental and oral health examinations in adolescents in Pariaman City, West Sumatra.

#### Predisposing factors

*Predisposing factor* is a factor that facilitates and underlies the occurrence of a behavior (Harahap, 2016). In this study, predisposing factors were examined based on several aspects including knowledge, attitudes and socio-economics. The results of the study show predisposition (knowledge, attitude and socio-economic) affects the motivation of respondents in dental and oral examination where the p-value is 0.000 <0.05. The Prevalence Ratio (PR) value is 4.247 (95% CI: 2.146-8.405) which can be concluded that the higher the



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predisposition possessed, the higher the motivation of adolescents in dental examinations, and conversely the lower the predisposition they have, the higher the motivational inhibiting factor. adolescents in dental and oral health checks.

Several studies state that motivation is influenced by various predisposing factors including: knowledge, attitudes, beliefs, values, behavior and socio-economics that underlie behavior change. Rahayu et al (2014) in their research stated that knowledge has a positive contribution to individual motivation in maintaining/checking dental and oral health. Knowledge or cognitive is a very important domain for the formation of one's behavior. Knowledge of dental health will underlie attitudes that affect a person's behavior/motivation in maintaining dental and oral hygiene.

Attitudes contribute to individual motivation for dental and oral health checks. Attitude is a tendency that has not been accompanied by real action on the maintenance of dental and oral hygiene. Attitude is an evaluative predisposition that largely determines how individuals act, but attitudes and actual actions are often very different. This is because real action is not only determined by attitude alone, but by various other external factors. However, the more positive the individual in responding to dental and oral health will be the driving factor in the individual taking a certain action. A negative attitude can be an obstacle for individuals to take certain actions (Senjaya and Yasa, 2019).

Sekarini et al (2020) in their research stated that socio-economic influences on individual motivation to take advantage of health services. People with high socioeconomic status tend to use health services more than people with low socioeconomic status.

Some of these studies are in line with research that has been done where it can be concluded that the higher the predisposition possessed, the higher the motivation of adolescents in dental examinations, and conversely the lower the predisposition they have, the more inhibiting factors in the motivation of adolescents in dental and oral health checks. Sumendap et al (2020) state that motivation is never separated from three elements, namely needs, drives and goals. The need comes because of something that is not fulfilled, while the drive is a guide to fulfill the need, and the goal itself is the end result of a motivation. Motivation arises in the form of an internal drive that directs someone to something. Motivation can also be influenced from outside such as a supportive environment,

### **Enabling factors**

*Enabling factors* is often a condition of the environment, facilitating the carrying out of an action by an individual or an organization. It also includes conditions that act as obstacles to the action, such as the absence of transportation facilities that hinder a person's participation in the health program. In this study, enabling factors were investigated based on aspects of facilities and infrastructure. The results of the study showed enabling (facilities and



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infrastructure) affect the motivation of respondents in dental and oral examination where the p-value is  $0.000 <0.05$ . The value of Prevalence Ratio (PR) was 27,832 (95% CI: 9,967-77,715) which can be concluded that the higher the enabling, the higher the motivation of adolescents in dental examination, and conversely, the lower the enabling, it will be a factor inhibiting motivation. adolescents in dental and oral health checks.

In line with several studies, Rakhmawati et al (2020) stated that behavior is determined by the presence or absence of health facilities and infrastructure as a supporting factor. The limitations of information media will affect individuals in behaving. The living environment also influences dental and oral health behavior. An environment with limited facilities and infrastructure can be an obstacle, which in the end affects individuals in carrying out dental and oral health maintenance.

Enabling factors or enabling behavior are facilities, facilities, or infrastructure that support or facilitate the behavior of a person or community. In order for the community to have healthy behavior or high motivation, it must be accessible (affordable) facilities and infrastructure or health service facilities. Lack of motivation about dental and oral health can inhibit positive behavior in maintaining dental and oral health. So that to increase community motivation, adequate facilities and infrastructure are needed (Sumanti et al, 2013).

The biggest obstacle is felt in realizing behavior healthy life of the community,

namely the supporting factor is the enabling factor. From existing studies, it is revealed that although public awareness and knowledge is high about health, the practice of health or healthy living behavior of the community is still low. Supporting factors or facilities and infrastructure contribute to supporting the community to behave in a healthy life. Although the awareness and knowledge of people or the community about health is already high, if it is not supported by facilities, it will be difficult to realize this behavior. The enabling factor for the availability of facilities and infrastructure is the dominant factor influencing the community in healthy living behavior. If health facilities and infrastructure are available, the community will adopt a healthy lifestyle, and vice versa. if health facilities and infrastructure are not available then public health behavior is also bad. Clean living behavior can become a good habit if adequate facilities and infrastructure are available (Wati and Ridlo, 2020).

### Reinforcing factor

*Reinforcing factors* that is reinforcing factors for the occurrence of certain behaviors. It is a factor that reinforces a behavior by continuously rewarding the behavior and contributing to its repetition. Reinforcing factors are consequences of actions that determine whether the perpetrator receives positive feedback and will receive social support. In this study, reinforcing factors were investigated based on aspects of attitudes and behavior of community leaders. The results of the



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study show reinforcing (attitudes and behavior of community leaders) affects the motivation of respondents in dental and oral examinations where the p-value is  $0.001 < 0.05$ . The Prevalence Ratio (PR) value is 15,984 (95% CI: 2,033-125,637) which can be concluded that the higher the reinforcing possessed, the higher the motivation of adolescents in dental examinations, and conversely the lower the reinforcing possessed, the more motivational inhibiting factors. adolescents in dental and oral health checks.

*in line*With several studies that have been carried out, Aji and Devy (2006) in their research mention that reference groups are very important in regulating and directing individual behavior. Information sources are one of the reference groups that influence a person's behavior. The higher and the more reference groups, the easier it will be for individuals to obtain information, so that they can increase individual motivation in carrying out certain behaviors. The fewer reference groups it will be able to inhibit individuals in performing a certain behavior.

The reference group has a positive and significant effect on individual motivation either partially or simultaneously. The existence of a reference group will increase the confidence and motivation of individuals in performing a certain behavior. The higher the influence of the reference group, the higher the individual's motivation in taking an action, in this case checking the health of teeth and mouth (Tjahja and Ghani, 2010).

Iswanto et al (2020) mention that the support of community leaders has a good impact on individual motivation in taking an action. Good motivation will encourage individuals to behave well in relation to health, bad motivation tends to behave badly, especially in maintaining health (Afrianti and Rahmiati, 2021).

## CONCLUSION

The results of the study can be concluded the higher the predisposition, enabling and reinforcing possessed, the higher the motivation of adolescents in dental examinations, and conversely the lower the predisposition, enabling and reinforcing they have, the more inhibiting factors in adolescents' motivation in dental and oral health checks. It is recommended for all people to be more pay attention to its relation to dental and oral health. Increase knowledge and attitudes in relation to dental and oral health checks, and continue to pay attention to other factors that can also influence the motivation for dental and oral health checks

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education at the Department of Dental Therapist, Poltekkes, Ministry of Health, Semarang. Indonesia.

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### STATUS OF DENTAL AND MOUTH HEALTH (OHI-S) IN CHILDREN AUTISM AND DEAF

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#### ABSTRACT

Health that needs to be considered in addition to general body health is dental health and mouth, because the health of the teeth and mouth can affect the overall health of the body overall. Children with special needs vary, one of which is autism. Autism is a developmental disorder that affects several aspects of how Children see the world and learn from their experiences. Children with autism disorder usually less able to feel social contact. They tend to be aloof and avoid contact with other people. Deafness is a condition where a child cannot hearing due to loss of ability to hear from mild to encompassing deaf and hard of hearing. Children who are deaf from birth can't be sure can't use good speaking ability. This study aims to determine the status of oral hygiene in children with autism and deafness. The type of research used is a study Literature In this case the data collection used is derived from sources secondary data. The secondary data used are: Journals, Books, Writings Scientific, Thesis, Texbook and Scientific Articles. The results of data collection show the status dental and oral hygiene of children with autism are in the moderate category, while deafness is in the poor category. Recommended for children with autism and deaf people to always keep their teeth and mouth clean to reduce disease teeth and mouth.

**Keywords:** OHI-S Children with special needs, autistic children, deaf children.



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### INTRODUCTION

Health is a state of health both physically, mentally, spiritually and socially that enables everyone to live socially and economically productive lives. Health is the most important part of human life, physically and spiritually healthy (Notoatmodjo, 2012). Health that needs to be considered in addition to general body health is dental and oral health, because dental and oral health can affect overall body health (Malik 2008)

Viewed from the point of view of the need for health services, especially dental and oral health, the group of children with special needs more needy than children in general. Children with special needs, due to various limitations that exist on them, such as being unable to clean their own oral cavity, thereby increasing the risk factor for damage to the teeth and surrounding soft tissues.

The process of child development requires the fulfillment of good and adequate food needs. Dental and oral health is important in an effort to get adequate food intake

considering that in the oral cavity there is a masticatory apparatus. Children with special needs, especially those with motor neuron disorders, are at risk of malnutrition and poor oral health. Based on data from the National Census Bureau of Statistics (BPS) in 2007 the number of people with disabilities in Indonesia was 0.7% of the total population of 211,428,572 or 1,480,000 people. Some of these 24.45% or 361,860 of them are children aged 0-18 years and 21.42% or 317,016 children are school age children (5-18 years). Around 66,610 school-age children with disabilities (14.4%) of all children with disabilities) are enrolled in Special Schools (Kemenkes, 2010).

Environmental factors, population distribution and student behavior towards dental and oral hygiene are factors that influence the improvement of dental and oral health efforts. The indicator of the degree of dental and oral hygiene in Indonesia has the status of the degree of dental and oral hygiene with an average Oral Hygiene Index Simplified (OHI\_S)



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<1,2,4 The indicator of dental and oral hygiene (OHI-S) is obtained from adding up the index debris number and calculus index. The OHI-S index is the state of dental and oral hygiene of the respondents assessed from the presence of food debris (debris) and calculus (tartar) on the tooth surface. 9 children (29.03), 18 children (58.07) and poor 4 children (12.90) by taking the type of disability in 4 children with physical disabilities, 17 people with mental retardation, and 10 people with hearing impairment.

Children with special needs are children who have mental, physical and emotional limitations that are different from normal children. Children with special needs experience problems in developing, both physically and mentally and require specific services. In contrast to children in general, they experience barriers to learning and development, both permanent and temporary, caused by environmental, factors internal factors, or a combination of both.

Children with special needs vary, one of which is autism. Autism is a developmental disorder that affects several aspects of how children see the world and learn from their experiences. Children with autistic disorder are usually less able to feel social contact. They tend to be aloof and avoid contact with other people.

Autism is one of the symptoms as a result of a neurological disorder that would cause brain function does not work normally thus affecting growth and development, communication skills and social interaction skills someone

Although the main causes of autism are still continue to study, some factors that until now was considered the cause of autism are genetic factors, impaired brain cell growth in the fetus, digestive disorders, heavy metal poisoning, and auto-immune disorders. In addition, cases of autism also often appear in children who have pre-natal problems, such as premature, postmaturity, antenatal bleeding in the first-second trimester, children born to mothers who are more



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than 35 years old, pregnant women who experience mental disorders, metabolic disorders such as obesity, diabetes and hypertension, and many are also experienced by children with a history of non-spontaneous labor (Pmudiarja, 2013).

Efforts to reduce the birth rate with autism risk are very important. It is necessary to provide information to parents, especially pregnant women and the public about the causes of autism by checking pregnancy regularly, so that the incidence of autism can be suppressed.

Deafness is a condition where children cannot hear because they lose the ability to hear from mild to severe including deafness and hard of hearing. Children who are deaf since birth can certainly not use their speaking skills well (Mamesah, 2015).

The limitations that deaf children have in hearing, result in cognitive information processing disorders, namely limitations in receiving, storing, and re-disclosing information as an understanding, being able to explore and add information about

something (especially about oral health). So that one way that can only be used is to use and maximize the function of the sense of sight to read.

In deaf children, the process of understanding in reading will be delayed. The process of understanding that is received through pictures and writing will take more time because it must be expressed concretely through motion or direct demonstration and in language that is easily understood by them. Because basically, a deaf child can only receive information as knowledge that is conveyed concretely in everyday life.

For normal people, they may not have problems in caring for and cleaning their teeth and mouth, but for people with physical and mental disabilities such as people with autism and hearing impairment, it will be very difficult for them to work on and take care of their oral health, this can affect their dental health and mouths of children with special needs.



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### METHOD

The type of research used is a research, *literature review* in this case the data collection method used is derived from secondary data sources. The secondary data used are Journals, Books, Scientific Writing, Thesis, Textbooks, Scientific Articles.

### Results

Research from Sam Ratulangi University Manado conducted by Monica M Senkay et al. This type of research is a total sample method based on inclusion criteria. The sample used was 51 children, which were carried out in two special schools for autistic children in Manado city, namely the Association Growing Children Autism (AGCA) Center Manado and Special School for Autistic Children Permata Hati Manado. The test results showed that the average OHI-S index in autistic children in the city of Manado which amounted to 51 students had an OHI-S number of 141.19 and an average OHI-S index of 2.77, ages 6-10 years were the age group that had the highest percentage of moderate OHI-S

status was found in 11 children (42.31%).

It was concluded that the OHI-S status of autistic children was in the moderate category.

Research from the Faculty of Dentistry, University of Jember. This type of research is descriptive. Methods of collecting data from sources in the field. The data used are primary data and secondary data. This research was carried out at SLB B and TPA Autism SLB Branjangan in November 2018. The population, namely students with autism, aged 8-17 years, 39 totaled 35 people. Total sampling is a research method used to determine research subjects. The subjects were 35 autistic students at the Autism Special School and TPA B SLB Branjangan Jember Regency. The instruments used in this study were basic dental tools (mouth mirror, sonde, tweezers), disclosing solution and the OHI-S examination form. The data collected includes the results of measuring the level of dental and oral hygiene of autistic students which are then coded



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according to the Simplified Oral Hygiene Index (OHI-S) index. It is concluded that the OHI-S status of autistic children is in the moderate category and there are still many autistic children who suffer from dental and oral diseases.

Research from Sam Manado University dentistry study program at the faculty of medicine conducted by Christavia J. Motto et al. This type of research is descriptive with a cross-sectional design. This research was conducted at SLB YPAC Manado in December 2016. The population, namely students with special needs, aged 10-28 years at SLB YPAC Manado, amounted to 36 people who had met the inclusion criteria. The research subjects were obtained by the total sampling method. The research instrument was a diagnostic set (mouth mirror, sonde, dental tweezers), disclosing the dental and oral hygiene status of all research subjects calculated score adding up the DI-S and CI-S scores. From a total of 36 research subjects, an average OHI-S score was 1.3 with a DI-S score = 0.9 and a CIS score =

0.4, which was classified as dental hygiene status moderate and oral. ng solution and OHI-S inspection form. The test results showed that the dental and oral hygiene status of all study subjects was calculated based on the OHI-S score by adding up the DI-S and CI-S scores. From a total of 36 research subjects, an average OHI-S score was 1.3 with a DI-S score = 0.9 and a CIS score = 0.4, which was classified as moderate dental and oral hygiene status. It was concluded that the OHIS status in autistic children in Manado in 2014 was still the same as the OHIS status in 2017, still in the moderate category.

Research from the Faculty of Dentistry, Andalas University, Padang, West Sumatra by Chindy Septiani Ningsih and Didin Kustantiningtyastuti on deaf children aged 9-12 years at Special Schools in Padang using a cross sectional study design approach to analyze the dental and oral hygiene status of deaf children. The sample in this study amounted to 34 people. Data were collected using a knowledge level



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questionnaire and measurements of dental and oral hygiene with OHI-S. The results of statistical tests (chi square) obtained p value =  $0.187 > 0.05$ , it can be concluded that there is no significant relationship between the level of parental knowledge and dental and oral hygiene in deaf children aged 9-12 years in SLB Padang City, there may be other factors that affect OHIS such as concern, economic level, attitudes, and actions of parents towards the dental and oral hygiene of deaf children.

Research from Sultan Agung Islamic University conducted by Maria Victa Agusta R, Ade Ismail AK et al on deaf children aged 7-12 years at Widya Bhakti Special School and Semarang State Special School using consecutive sampling method. This research is an analytic observational study with a cross sectional study design. with the number of samples studied as many as 50 people. The test results obtained by researchers, the knowledge possessed by deaf children on average shows good enough results, but

there are still a number of children who have poor Oral Hygiene conditions more than those in the sufficient and good categories. This is because the information provided at school and in the family is good enough, but the knowledge possessed is not responded positively to attitudes and actions to maintain dental and oral health by deaf children due to the limited ability they have, so that the OHI-S condition is bad in the category. There are still quite a lot of good ones compared to other categories of knowledge. It was concluded that the OHIS status of deaf children was in poor criteria because of the limitations they had. Research from Sam Ratulangi University, Manado, dentistry study program by Vivie Indahwati, Max FJ Mantik et al. collection which amounted to 101 children according to the inclusion criteria. The variables of this study were the status of dental and oral hygiene and children with special needs. The research instruments used in this study were dental and oral hygiene status checks (OHI-S) and student biodata. This



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research uses descriptive analytic research. The results of the independent t test showed that there was a significant mean difference between the OHI status of SLB-B and OHIS status of SLB-C. There is a mean difference of 0.64 between the OHI-S status of SLB-B and SLB-C because the p value <0.05, it is concluded that the mean dental and oral hygiene status of SLB-B is significantly better than SLB-C.

### Conclusions

From the results of research on the Status of Dental and Oral Health in Children with Special Needs OHIS (Autism and Deafness) the found, conclusions were namely:

1. Dental and oral health status in autistic children was in the moderate category.
2. The oral health status of deaf children is in the poor category.

### Suggestions

1. It is necessary to pay attention to parents, educators and dentists / dental

nurses in an effort to improve dental and oral health in autistic children by carrying out routine checks every 6 months to increase promotive and preventive efforts regarding dental and oral health.

2. It is necessary to provide counseling about the importance of maintaining dental and oral hygiene in deaf children, teachers, and parents. When teachers and doctors provide counseling, it will be better if it is accompanied by direct practice by each child and is done repeatedly, so that children will remember better and can do it themselves.

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### EFFECTIVENESS OF ORAL AND DENTAL HEALTH MAINTENANCE EDUCATION USING STYROFOAM DOLL AND HAND PUP MEDIA ON THE BEHAVIOR OF BRUSHING TOOTH OF CHILDREN AGED 7-8 YEARS AT SD N 1 AND 2 UJUNGPANDAN, JEPARA REGENCY

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#### ABSTRACT

The use of media in improving the maintenance of dental and oral health can affect the behavior of brushing teeth properly and correctly. Styrofoam dolls and hand puppets are media that can be used for dental and oral health education. The purpose of the study was to determine the effectiveness of oral health care counseling using Styrofoam dolls and hand puppets on the tooth brushing behavior of children aged 7-8 years at SD N 1 and 2 Ujungpandan, Jepara Regency. The type of research used is experiment with pretest-posttest design with two group design. The research sample was 60 sampling with total sampling technique. Data analysis used univariate and bivariate analysis with Wilcoxon test and Mann Whitney test. The results of statistical tests showed that the use of Styrofoam dolls and hand puppets had a significant effect on increasing knowledge and brushing attitudes, there was no significant change in the action, knowledge ( $p = 0.000 < 0.05$ ), attitudes ( $p = 0.002 < 0.05$ ), action ( $p = 0.000 < 0.05$ ). The use of styrofoam doll media is more effective, this is obtained from the difference in the average value of the increase in the behavior (knowledge, attitude and action) of brushing teeth in the styrofoam doll media group which is greater than the hand puppet media group.

**Keywords:** Styrofoam doll, hand puppet, behavior, dental health



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### INTRODUCTION

Dental and oral health is part of body health that cannot be separated from one another because it will affect the health of other body organs (Endang, 2012). In general, the dental and oral health conditions of school-age children tend to be worse than adults (Andalia Roza, 2017). This is because school-age children like to snack on sweet foods and drinks that can damage teeth and cause caries (Worotitjan et al., 2013).

Caries is one of the most common dental and oral health problems in children in the world. According to the World Health Organization (WHO), the incidence of caries in children is 60-90%. (Elfarisi, 2018). Based on the results of Basic Health Research(Ministry of Health RI Agency for Research and Development, 2018), the behavior of brushing teeth properly and correctly in the population more than 3 years in Indonesia reached 2.8% and in the Central Java Region 2%.

Dental health education is a learning process that is formed because of health needs that influence a person or community to carry out activities that aim to obtain a good degree of health. Education on how to brush teeth properly and correctly for children should be done with the simplest possible models and techniques, delivery using an interesting and attractive way without reducing the meaning of the education, for example by conducting counseling (Saptarini, 2009).

Changes in individuals, groups, communities behavior can be encouraged by health efforts through health education so they will know that we are willing and able to solve the problems they face. The purpose of health education is to increase the degree of human health(Amanah, 2007). Media that can be used for counseling to elementary school children are Styrofoam dolls and hand puppets. Styrofoam dolls are three-dimensional works of art which are made using styrofoam material, styrofoam itself is a



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processed material for Indonesia's natural wealth which the community can use to develop its potential. (Hasanuddin, 2016).

Hand puppets are three-dimensional works of art which are made using flannel, the picture of a hand puppet consisting of a head and two hands, the body and legs are only clothes that will cover the arms of the person who plays it, how to play hand puppets using the hands, thumbs and fingers. The little finger plays with the two hands of the hand puppet, the index, middle and ring fingers move the head of the hand puppet (Kurnia, 2017).

Based on the data from the preliminary study conducted on 60 students in grades 1 and 2 of SD N 1 and 2 Ujungpandan, obtained data with the results of 36 students with low dental and oral health knowledge and 24 students having fairly good dental and oral health knowledge. Results of the preliminary study by interviewing the principal and classroom teacher for grades 2 and 3 of SD N 1 and 2 Ujungpandan shows for the last 2 years they were not received counseling on oral

and dental health from welahan Public Health Center, data  $(OHI-S)=2,3$ , this situation has not met the national target  $OHI-S= 1,2$ , Child tooth decay score ( $deft$ ) = $2.7$ , this situation has not met the national target  $deft= 2$ .

### RESEARCH METHODOLOGY .

The type of research used is quasy experiment with pretest-posttest design with two group design. In this study, the pretest-posttest with Two Group Design was used by treating different groups using extension media. Group A was given counseling using styrofoam doll media and group B was given counseling using hand puppet media. Sampling with total sampling technique. Data analysis used univariate and bivariate analysis with Wilcoxon test and Mann Whitney test

### RESULTS

#### 1. Styroform Doll Media

##### a. Differences in Knowledge Before and After Treatment



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**Table 1 Test of Knowledge Differences with Styroform Dolls Media for Class II and III Students of SD N 1 and 2 Ujungpandan Jepara**

Counseling	Mean	Sd	Z	p-value
Pre	9.5	2.1	-	
			4.02	0.000
Post	13.3	1.3		

The table above shows that knowledge owned by students before and after the counseling with styroform doll media obtained a significant value of  $0.000 < 0.05$ . This shows that posttest knowledge is higher than pretest.

**b. Differences in Attitudes Before and After Counseling**

**Table 2 Test of Attitude Differences with Styroform Doll Media for Class II and III Students of SD N 1 and 2 Ujungpandan Jepara**

Counseling	mean	Sd	Z	p-value
Pre	7.6	2.0	-	
			3.11	0.002
Post	9.2	0.8	9	

Table 2 shows that Attitude owned by students on before and after the treatment of styroform doll media, obtained a significant value at the 95% confidence level, amounting to  $0.002 < 0.05$ . This shows that the attitude of the posttest is higher than the pretest.

**c. Differences Before and After Treatment**

**Table 3 Test of Differences in Actions with Styroform Dolls Media for Class II and III Students of SD N 1 and 2 Ujungpandan Jepara**

Counseling	n	mea	Sd	Z	p-value
Pre	6.6	1.2	-		
					0.000
Post	8.5	1.0	3.95		

The table 3 shows that the actions that owned by students on before and after the counseling of styroform doll media obtained a significant value of  $0.000 < 0.05$ . This shows that the posttest action is higher than the pretest.



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### 2. Hand Puppet Media

#### a. Differences in Knowledge Before and After Treatment

**Table 4 Test of Knowledge Differences with Hand Puppet Media for Class II and III Students of SD N 1 and 2 Ujungpandan Jepara**

Counseling	mean	Sd	Z	p-value
Pre	9.4	2.6	-	0.001
Post	11.9	2.5	3.20	

Table 4 shows that knowledge that students have before and after giving hand puppet media treatment obtained a significant value of  $0.001 < 0.05$ . This shows that posttest knowledge is higher than pretest.

#### b. Differences in Attitudes Before and After Treatment

**Table 5 Test of Attitude Differences with Hand Puppet Media for Grade II and III Students of SD 1 and 2 Ujungpandan Jepara**

conselin	mea	Sd	Z	p-
g	n			e

Pre	7.7	1.6		
	-2,309	0.021		
Post	8.3	1.2		

Table 5 shows that Attitude owned by students on before and after the Counceling of hand puppet media dwhere the Wilcoxon test results obtained a significant value at the 95% confidence level, namely by obtaining a p-value of  $0.021 < 0.05$ . This shows that the attitude of the posttest is higher than the pretest.

#### c. Differences Before and After Treatment

**Table 6 Test of Differences in Action with Hand Puppet Media for Class II and III Students of SD N 1 and 2 Ujungpandan Jepara**

Counseli	mean	Sd	Z	p-
ng				value
Pre	6.4	0.8	-4.707	0.00
Post	8.3	0.7		0



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The table 4.13 shows that the actions that owned by students on before and after giving hand puppet media treatment obtained a significant value at the 95% confidence level, of  $0.000 < 0.05$ . This shows that the posttest action is higher than the pretest.

### 3. Media Difference Test Styroform Dolls

#### - Hand Puppet Media

##### a. Knowledge Difference

**Table 7 Test the Difference in Knowledge with Syroform Puppet Media - Hand Puppet Media**

Variable	mean	Z	p-value
Styrofoam doll	34.8	-2,215	0.027
Hand puppet	26.2		

Table 7 shows that knowledge that students have after giving hand puppet media treatment obtained a significant p-value of  $0.027 < 0.05$ . This shows that there is a difference in knowledge from the use of styroform doll media compared to hand puppets. Based on descriptive data, it shows that the use of styroform doll media

can increase knowledge better than hand puppet media.

##### b. Attitude Difference

**Table 8 Test of Attitude Differences with Syroform Puppet Media - Hand Puppet Media**

Variable	mean	Z	p-value
Styrofoam doll	34.2	-1,992	0.046
Hand puppet	26.7		

Table 8 shows that knowledge that students have after giving the hand puppet media treatment where the Mann Whitney test results obtained a significant p-value of  $0.046 < 0.05$ . This shows that there are differences in attitudes from the use of styroform doll media compared to hand puppets. Based on descriptive data, it shows that the use of styroform doll media can improve attitudes better than hand puppet media.

##### c. Action Difference



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**Table 9 Test the difference in student actions after using Syroform Puppet Media - Hand Puppet Media**

Variable	mean	Z	p-value
Styrofoam	32.6		
doll		-	0.266
Hand puppet	28.33	1,113	

Table 9 shows that the actions of students after giving the hand puppet media treatment where the Mann Whitney test results obtained a significant p-value of  $0.266 > 0.05$ . This shows that there is no difference in the actions of using styroform doll media compared to hand puppets.

## DISCUSSION

### 1. Knowledge

The use of styroform dolls and hand puppets seems to be able to help in the counseling process to explain how children should not neglect the

maintenance of their oral health. Visualization through puppets seems to make learning or knowledge transfer better. This can not be separated from the role that the use of the media will be able to provide a more real picture than the use of conventional teaching which only explains through words and pictures. These results support previous research conducted by (Cahyaningtyas, 2020) that the respondent after seeing the form of a puppet show that exemplifies how to brush teeth properly and correctly creates a sense of knowledge that arises when someone has sensed an object. In testing the difference in the effectiveness of using styroform dolls and hand puppets, it was shown that styrofoam dolls media in helping learning about dental and oral health seemed to be more effective than hand puppets.

### 2. Attitude

The results of testing the role of styroform dolls and hand puppets showed that they had a positive impact on increasing



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students' attitudes towards brushing teeth behavior. These results are related to the results of previous research conducted by(Prahestri, 2019) which stated that cartoon puppets and hand puppets are interesting media to use as counseling media as well as styroform dolls and hand puppets that can add information to respondents so that they can increase respondent involvement and understanding of dental and oral health counseling materials. The puppet media seems to allow respondents to get interactive 3D simulations, which leads to deeper insights into dental and oral health so that it will influence students to have a more positive attitude towards dental and oral health. As said by(Sari et al, 2019) who say attitude occurs after their knowledge of something increases, then the existing stimulus also increases due to an emotional reaction

The results of this study indicate that the majority of respondents showed a high interest and excitement in understanding the extension material using puppet media. It seems that the students

found the learning process using the puppet media fun, interactive, and they were motivated to learn more about oral health. The puppet media helped them to better understand the extension material and made them more enthusiastic in the learning process. These results are supported by research conducted(Fastabiqul Hanif, 2018)showed that there was an effect of dental and oral health counseling using hand puppet media on the improvement of 3, 4, and 5 grade students at Diponegoro Islamic Elementary School, Semarang. Thus, counseling using puppet media is very appropriate to use.

Furthermore, in testing the differences in the effectiveness of using styroform doll media and hand puppets, it was shown that styrofoam doll media in helping counseling about dental and oral health was more effective than using hand puppet media in improving students' attitudes towards dental and oral health

### 3. Action

The results of the action testing of styroform dolls and hand puppets showed



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that they had a positive impact in increasing students' actions to maintain oral and dental health. This is indicated by the obtained significant differences in the actions of the students from the pretest and posttest results in students who were given learning using styroform dolls and hand puppets, where both posttest results showed higher results than the pretest. These results are in line with research conducted by(Viki, 2019)which states that providing counseling with puppet media more quickly motivates children to practice good and correct movements in brushing their teeth. With the media characters of Styrofoam dolls and hand puppets made as close as possible to their original form and using attractive colors, respondents can easily remember the knowledge that has been given so that it affects attitudes and subsequent actions to brush their teeth properly and correctly. As stated by Efendi and Makhfudli (2009) which states that knowledge or cognitive is a very important domain in shaping one's attitudes and actions.. This means that both

styrofoam dolls and hand puppets both have the same effectiveness in increasing the respondent's actions to maintain dental and oral health.

### 4. Differences in media counseling for Styrofoam dolls and hand puppets on behavior

These results reflect that the use of styroform doll media is more effective in increasing knowledge and attitudes even though the students' actions are not significantly different. These results are supported by research(Prahestri, 2019)which shows there is a significant difference between the groups using cartoon puppets and hand puppets, both of them pay attention and show interest because both media use two senses, namely eyes and ears in the counseling process so that children in both groups both remember 50 % or more of what they see and hear.

In this study, styrofoam dolls were more effective than hand puppets. This is reinforced by the results of observations of responses from both groups at the time of



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the intervention, it can be seen from the weakness of this study, namely the difference in the responses of the two groups, where the Styrofoam doll media group looked more enthusiastic and enjoyed when counseling was carried out, while the hand puppet media group seen some children who are less enthusiastic and do not enjoy the counseling. This is because the manufacture of styrofoam doll media is easier to shape and make as close as possible to its original form, while hand puppets are more complicated in the manufacturing process, this allows children to be more focused and easily capture the contents of the counseling material with what they see and hear.

## CONCLUSION

1. The use of styrofoam doll media in dental and oral health care
2. counseling is effective in increasing tooth brushing behavior in grade II and III students of SD N 1 and 2 Ujungpandan Jepara.
3. The use of hand puppet media in counseling oral health care is effective in

increasing tooth brushing behavior in grade II and III students of SD N 1 and 2 Ujungpandan Jepara

4. The use of styrofoam doll media is more effective where the difference in the average value of increasing knowledge and brushing attitudes of the styrofoam doll media group is greater than the hand puppet media group although there is no significant difference in the average of the two media

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### RELATIONSHIP OF TOTAL LOSS AND REGION WITH QUALITY OF LIFE IN ELDERLY

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#### ABSTRACT

**Background :** The loss of one or more teeth means the loss of tooth function so that it can affect the quality of life. The quality of life associated with dental and oral health in the elderly is seen as a reflection of a person's comfort and disability in terms of limited physical, psychological, and social functions. The purpose of this study was to determine the relationship between the number and region of tooth loss with the quality of life in the elderly at the Margo Mukti Elderly Social Service Home, Rembang. **Methods :** This type of research is a quantitative observational analytic study with a survey research design *cross sectional*. The sample in this study amounted to 58 elderly people. Data was collected by examining the number and region of tooth loss followed by interviews using the Oral Health Impact Profile (OHIP-14) questionnaire. Data analysis using the test chi square and Kolmogorov Spirnov. **Result :** The results of statistical tests showed that there was a relationship between the amount of tooth loss and quality of life related to oral health with *value*= 0.006. The highest number of tooth losses was in the range of 6-23 teeth. There is a relationship between the region of tooth loss and quality of life related to oral health with *value* = 0.000. **Conclusion :** There is a relationship between the number of tooth loss and region with quality of life related to dental and oral health.

Keyword : Tooth Loss; Quality of Life; Elderly



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### INTRODUCTION

According to the Minister of Social Affairs Regulation Number 5 of 2018 concerning the national standard of social rehabilitation for the elderly, what is meant by the elderly or abbreviated as the elderly are groups of people who have reached the age of 60 (sixty) years or more. Currently, the number of elderly people in Indonesia is around 27.08 million (almost 10% of the total population) and in 2025 it is predicted to increase to 33.69 million (11.8%), and will continue to increase every year.[1]

The state of the loss of a tooth from its socket or place is called tooth loss. The main factors for tooth loss are often caries and periodontal disease. In the elderly it is mostly caused by periodontal disease, while caries is more affecting tooth loss at a young age.[2] Based on the 2018 Riskesdas, the prevalence of tooth loss due to extraction or self-date is highest at the age of 65 years and over with a percentage of 30.6% and the age range of 55-64 years has a percentage of 29%. The amount of tooth loss usually increases with age. Tooth loss is divided into partial tooth loss and total loss based on the pattern or structure of tooth loss.[3] In the region of tooth loss, it can be in the form of tooth loss in the anterior, posterior or both.[4] Anterior

and posterior teeth have their respective functions. Anterior teeth function to cut food, which is then sent to posterior teeth to be crushed. Anterior teeth also function in helping speech, lip support, and aesthetics, while posterior teeth emphasize their function in mastication.[5]

Loss of teeth that are not treated can interfere with the function and activity of the oral cavity, so that it will affect the quality of life (Melati et al, 2017). Quality of life according to the World Health Organization (WHO) is a person's perception in the context of the culture and norms that are appropriate to the person's place of life and related to the goals, expectations, standards, and concerns during his life.[7]

The disease or dental health problem that is often experienced by the elderly is tooth loss. Individuals who experience tooth loss can have a direct effect on masticatory function and even cause psychosocial problems[8]. Then think about how oral health can affect aspects of social life, including self-esteem (psychology), social interactions, school performance, work, etc.[9]

There are impacts and consequences of abnormalities or problems of the oral cavity that will affect the quality of life of the elderly. Measurement of quality of life related to dental and oral health in the elderly can be measured using the OHIP-14 questionnaire. This



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questionnaire is divided into 7 dimensions, which consist of functional limitations, physical pain, psychological discomfort, psychological disabilities, social disabilities, psychological disabilities, and limited barriers.[10] The results of a preliminary study conducted through interviews with employees of the Social Service Home for the Elderly Margo Mukti Rembang on January 5, 2020, obtained the number of elderly as many as 75 elderly. Through observations and interviews, it was found that on average each elderly experienced tooth loss of 10-12 elements of the tooth.

### METHOD

The type of research in this study is an analytical observational quantitative research with a survey design *cross sectional*. Sampling in the study using the total sampling method. Data was collected by examining the number and region of tooth loss followed by interviews using the Oral Health Impact Profile (OHIP-14) questionnaire. Data analysis was carried out by univariate and bivariate analysis, using chi square and Kolmogorov-Smirnov tests to determine the relationship between independent variables and dependent variables.

### RESULTS

a. Univariate Analysis of Research Variables

**Table 1 Characteristics of Elderly Social Service Homes for the Elderly Margo Mukti Rembang Based on Number of Tooth Loss**

Number of Tooth Loss	n	Percentage (%)
Many (x > 24)	20	34.5%
Currently (6 < x < 24)	26	44.8%
A little (x < 6)	12	20.7%
Total	58	100%

Based on the table 1 above, it is known that the frequency of tooth loss is 20 elderly (34.5%) having a lot of tooth loss or missing more than 24 teeth, 26 elderly (44.8%) experiencing moderate tooth loss or missing 6-23 teeth, and elderly who experienced tooth loss slightly or less than 6 teeth as many as 12 elderly (20.7%). So that respondents who have the most number of tooth loss in the medium category.

**Table 2 Characteristics of Elderly Social Service Homes for the Elderly Margo Mukti Rembang Based on Tooth Loss Region**

Tooth Loss Region	n	Percentage (%)
Posterior	9	15.5%



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Anterior	2	3.5 %
Anterior	47	81%
Posterior		
Total	58	100%

Based on the table 2 it can be seen that the region with the most tooth loss is in the anterior posterior region, which is 47 elderly (81%), while the posterior region is 9 elderly (15.5%), and in the anterior region only 2 elderly (3, 5%).

**Table 3 Characteristics of Elderly Social Service Homes for the Elderly Margo Mukti Rembang Based on Quality of Life**

Quality of Life	n	Percentage (%)
Well	39	67.2%
Bad	19	33.8%
Total	58	100%

Based on the table 3 it was found that more than half of the elderly at the Margo Mukti Social Service Institution in Rembang as many as 39 elderly (67.2%) had good quality of life, while those who had poor quality of life were 19 elderly (33.8%).

b. Bivariate Analysis of Research Variables

**Table 4 Cross-tabulation of the Relationship between the Number of Tooth Loss and the Quality of Life of**

**the Elderly Social Service Home for the Elderly Margo Mukti Rembang**

Tooth Loss		Quality of Life		Amount			
		Well		Bad			
		n	%	n	%		
Many (x > 24)	(x > 24)	8	40	12	60	20 100 %	
Currently (6 x < 24)		21	80.8 %	5	19.2 %	26 100 %	
A little (x < 6)	(x < 6)	10	83.3 %	2	16.7 %	12 100 %	
Total		39	67.2 %	19	32.8 %	58 100 %	

Based on the cross tabulation table between the relationship between the number of tooth loss and the quality of life of the elderly above, it is found that the elderly who have a good quality of life and the number of tooth loss are large are 8 elderly (40%) while those with poor quality of life with a large number of tooth loss are 12 elderly (60%). In the moderate number of tooth loss with good quality of life, there were 21 elderly (80.8%) and 5 elderly (19.2%) who had poor quality of life. The results of the subsequent cross tabulation were 10 elderly people (83.3%) with good quality



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of life and 2 elderly people (12%). Based on the results of cross tabulation, the highest percentage of the number of tooth loss with a good quality of life is 83.3%. The next analysis is statistical analysis which is carried out using the test *chi square*, with the result that value = 0.006 ( $\rho < 0.05$ ). So it can be concluded that Ha is accepted, which means that there is a significant relationship between the number of tooth loss and the quality of life of the elderly at the Margo Mukti Social Service Home, Rembang.

**Table 5 Cross-tabulation of the Relation of Tooth Loss Region on Quality of Life for the Elderly Social Service Home for the Elderly Margo Mukti Rembang**

Tooth Loss Region	Quality of Life		Amount			
	Well		Bad			
	n	%	n	%	"Legal"	%
Posterior	8	88.9	1	1.1	9	100
		%		%		%
Anterior	2	100	0	0	2	100
		%		%		%
Anterior	29	61.8	18	38.2	47	100
Posterior		%		%		%
Total	39	67.2	19	32.8	58	100
		%		%		%

Based on the cross tabulation table between the relationship between tooth

loss region and the quality of life of the elderly above, it was found that 8 respondents (88.9%), with poor quality of life, had 8 respondents (9%). In the region of missing anterior teeth with good quality of life, there were 2 respondents (100%) and none of them had poor quality. Respondents who have lost teeth in the anterior and posterior regions with good quality are 29 respondents(61.8 %), while with quality of life as many as 18 respondents (39.2%).

The statistical test used to determine the relationship between tooth loss region and quality of life is the test *chi square*. However, because it does not meet the requirements of the chi square test, the Kolmogorov-Smirnov alternative test is used. The results of the analysis carried out using the Kolmogorov-Smirnov test obtained the value of value = 0.000 ( $\rho < 0.05$ ). So it can be concluded that Ha is accepted, which means that there is a significant relationship between the region of tooth loss and the quality of life of the elderly at the Margo Mukti Social Service Home Rembang.

## DISCUSSION

The number of tooth loss in the elderly at the Margo Mukti Social Service Home in Rembang shows that there are still many elderly people who have lost more than 24 teeth, as many as 20 respondents (34.5%). The large number of tooth loss can be related to the age of the respondent where



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it is written by Anshary (2014) that the number of tooth loss usually increases with increasing age, both partial or complete tooth loss.

Tooth loss experienced by the elderly is more caused by dental caries and periodontal disease. Dental caries is usually the main reason for tooth extraction in the elderly because at a young age caries is not treated immediately so that the caries process lasts throughout life. In the supporting tissues of the teeth, there is a decrease in physiological factors marked by the weakening of the periodontal tissues of the teeth, causing the teeth to become loose and easy to fall out. Maintenance of dental hygiene in the elderly can also affect the health of the elderly's teeth. [11]

Tooth loss seen from the aspect of location or region was the most in the anterior-posterior region as many as 47 elderly (81%). When viewed from the two posterior and anterior regions, almost all respondents had tooth loss in the posterior teeth. In line with research conducted by Pioh et al. (2018), the incidence of tooth loss is highest in the posterior mandible. The reason is that the mandibular permanent molars erupted first, causing the caries percentage, which is likely to be extracted more quickly.

Loss of teeth causes various losses, where the loss of teeth will also lose the functions that must be carried out. Loss of teeth creates gaps that result in aesthetic dissatisfaction and masticatory discomfort. [12] Anterior and posterior teeth have their respective functions. Anterior teeth function to cut food, which is then sent to posterior teeth to be crushed. Anterior teeth also function in helping speech, lip support, and aesthetics, while posterior teeth emphasize their function in mastication.[5]

The quality of life of the elderly related to dental and oral health at the Margo Mukti Social Service Home Rembang mostly has a good quality of life. Quality of life related to dental and oral health is measured by OHIP-14 (Oral Health Related Life 19) which emphasizes functional limitations, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and barriers. Based on the results of filling out the questionnaire, the highest score was found in aspects of physical pain and physical incapacity. According to Kosasih et al (2014) the emergence of pain experienced by the elderly is due to changes and declines in the function of the salivary glands so that the amount of saliva flow decreases, this causes oral discomfort, pain, increased



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caries and oral infections, and even difficulty swallowing food. Physical disability causes the elderly to not be able to consume all the food as when they were young. There is a decrease in muscle mass and strength due to a degenerative process, so that the elderly with poor physical quality will affect their activities. Meanwhile, the lowest score is on aspects of psychological limitations and social disabilities. Most of the elderly explained that they did not feel offended or embarrassed by the loss of their teeth. According to Perkasa et al (2018) this is because most of the elderly have accepted their shortcomings related to dental and oral health. The elderly realize and accept that tooth loss in old age is a natural thing.

The results of statistical tests on the relationship between the number of tooth loss and the quality of life related to dental and oral health in the elderly showed value  $< 0.005$ , it can be concluded that Ha is accepted and there is a significant relationship. This is in line with research conducted by Perkasa et al (2018) and Susanti (2017) that there is a relationship between the number of tooth loss and quality of life. Rizkillah et al (2019) stated that the greater the number of tooth loss, the quality of life of the individual will decrease. The reduced number of teeth in the mouth can certainly interfere with the

comfort of the elderly when eating and limit the types of food they want to consume. The elderly tend to choose soft foods and when eating hard foods sometimes cause pain. Older people who have lost their teeth tend to use their gums to bite or chew food. The existence of limitations caused by disruption of tooth function when consuming food, causes a lack of satisfaction in life.

The relationship between tooth loss based on tooth loss region with quality of life related to dental and oral health based on statistical tests showed that value  $> 0.05$  where Ha was accepted so that there was a relationship between tooth loss region and quality of life. This is in line with research conducted by Perkasa et al (2018) that there is a significant relationship between tooth loss based on the location of tooth loss and quality of life. Respondents with tooth loss in the anterior posterior on average have a poor quality of life. Loss of teeth can interfere with comfort during the masticatory process, especially if you lose teeth in the posterior maxilla and mandible.

The masticatory process will be disrupted when the molars or premolars are in contact, so this will affect the change and choice of food. The choice of food in the elderly will certainly affect the nutrition of the elderly which will be directly related to the general health of the elderly. [13]



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Speech function can be impaired due to loss of the main teeth in the anterior teeth. It is necessary to have tongue, lips, and anterior teeth contact in the pronunciation of certain letters such as s, sh, t, f, d, n, z, v. When the anterior teeth are missing, there is an incomplete speech apparatus that can affect the patient's voice and have difficulty speaking even though it is temporary. In addition, the loss of anterior teeth also greatly affects the aesthetics especially in.[12] The results of interviews and questionnaire questions in this study show the opposite, namely the aesthetic element is not too concerned about by the elderly, this is in line with the opinion of Perkasa et al (2018). The elderly admitted that they were not ashamed, and were not worried about the loss of their teeth.

### CONCLUSION

1. The highest number of elderly tooth loss is in the range of 6-23 teeth, with 26 elderly respondents (44.8%).
2. Most tooth loss occurred in the anterior and posterior regions with 47 elderly respondents (81%).
3. Quality of life related to dental and oral health, most of the elderly have a good quality of life with 39 elderly respondents (67.2%).

4. The results of statistical tests show that there is a relationship between the number of tooth loss and quality of life related to dental and oral health with value = 0.006
5. Results Statistical tests showed that there was a relationship between the region of tooth loss and quality of life related to dental and oral health with value = 0.000.

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1. For Social Institutions That Overse Respondents  
Efforts to prevent and maintain dental health This can be done by the orphanage through counseling and assistance to maintain dental health, maintain dental condition and reduce tooth loss.
2. For Health Workers  
Health workers in the social institution area are expected to provide dental and oral health services or facilities for the elderly at the Margo Mukti Social Home Rembang to improve dental and oral health and the quality of life of the elderly.
3. For Further Researchers  
It is hoped that the next researcher can add variables and samples with different characteristics, and examine other factors that influence it more broadly and complexly.
5. For Central Java Provincial Government  
There is a relationship between tooth loss and the quality of life of the elderly, so it is



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necessary to have dental health workers in elderly social service homes, so that the dental health of the elderly can be

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### LEVEL OF KNOWLEDGE ON MAINTENANCE OF TEETH AND MOUTH CLEANLINESS WITH AUDIO AND BRAILLE LEAFLET MEDIA IN BLIND CHILDREN IN SLB N SEMARANG

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#### ABSTRACT

Dental health education is a learning process aimed at individuals and community groups to achieve the highest degree of community dental health. The problem that arises is that blind children need the right media to increase knowledge of dental and oral health. Blind children use the sense of touch and hearing as a substitute for the sense of sight in the learning process. The purpose of the study was to see the level of knowledge on how to maintain oral hygiene in blind children with counseling using audio media and leaflet media braille.

This study uses an interventional analytic design with research subjects 24 blind children at SLB N Semarang using audio media and leaflet media braille. Each group was given their respective counseling media, namely audio media and leaflet media braille. Prior to the counseling, the students were given questions pretest, then they were given counseling. After being given counseling, the students were given a posttest. The data that has been obtained were analyzed using the statistical Wilcoxon Test and Mann Whitney tests.

Statistical test with Wilcoxon Test showed a significant difference with value  $p = 0.003$  between before counseling and after counseling with audio media and there was a



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significant difference  $p < 0.002$  between before counseling and after counseling with leaflet media *braille*. The *Mann Whitney Test* was used to see the level of knowledge of the two media, in this study showed a difference in the level of knowledge with a value of  $p < 0.001$  between the counseling group with audio media and leaflet media *braille*. According to the results of the *Mann Whitney Test*, it can be concluded that there is a difference in the level of knowledge on how to maintain oral and dental hygiene in blind children, where audio media counseling increases their knowledge more than leaflet media counseling *braille*.

**Keywords:** counseling, dental and oral hygiene, audio media, leaflet media *braille*.

### INTRODUCTION

According to Law No. 36 of 2009 on Health is a state of health, both physically, mentally, spiritually and socially that allows everyone to live a productive life socially and economically (Notoatmodjo, 2012). To realize the degree of health for the community, integrated health efforts are organized and decay in the form of individual health efforts and public health efforts. Health efforts are organized in the form of promotive, preventive, curative and rehabilitative activities that are carried out in an integrated, thorough and sustainable manner.

Indonesians have dental and oral health problems. Among them, 31.1 percent received treatment and treatment from dental medical personnel and another 68.9 percent did not receive treatment. This data shows that there are still high dental and oral health problems in Indonesia (RISKESDAS, 2013).

The number of dental health problems is very close to the number of dental caries in the community. Some of the factors that are closely related to the occurrence of dental caries, including age, gender, socioeconomic culture, medical behavior and knowledge and attitudes towards dental health (Qomarul, 2014). To reduce dental health problems need to be done to provide knowledge about dental health for the community. The provision of knowledge about dental health is through dental health education. Dental health education is a planned and directed effort to create an atmosphere so that a person or community group wants to change old behavior that is less favorable for dental health, to be more beneficial for dental health (Budiharto, 2013).

Extraordinary School (SLB) is a school for children with special needs, which is one type of school that is responsible for carrying out education for children with special needs. Children with special needs



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include deaf, deaf, deaf, deaf, *attention deficit hyperactivity disorder* (ADHD), deafness, autism, visually impaired, and visually impaired (KEMENKES RI, 2010).

According to the Indonesian Visually Impaired Association in Widjaya (2013) Visually impaired people are those who have no vision at all (total blindness) until those who still have residual vision but are unable to use vision to read ordinary writing measuring 12 points in normal light despite being assisted by glasses (less alert). Generally they show better sense of hearing and touch sensitivity compared to normal children (KEMENKES RI, 2010).

Sensitivity of the sense of touch from the good that must be prioritized in providing education, especially dental health education. Visually impaired people are very familiar and easily understand *braille* because of the pattern of reading with *braille*. Education on the maintenance of dental and oral health by using *braille* writing in the form of educational leaflets will be effective in supporting the optimization of the success and purpose of dental and oral education for the visually impaired, namely increasing dental and oral health knowledge of visually impaired people (Dewi, 2015).

Visually impaired children also have good hearing sensitivity (Widjaya, 2013).

Hearing sensitivity in visually impaired children needs to be considered in providing dental health education. One method that uses hearing sensitivity is the audio method. In the provision of education it is necessary to choose a learning medium that suits the child

The results of a previous study conducted by Dewi, R in 2015 found that there were significant differences in dental and oral health knowledge in visually impaired children were shown by an increase in average value before and after counseling using audio methods and *braille leaflets*.

## MATERIALS AND METHOD

### Research Design

The study is an interventional analytical study, with a post-test pre-test group design, which measures the outcome variable before and after the intervention. Using a *cross sectional* approach because of the type of research whose variable measurements are carried out at only one moment (Dewi 2015).

In a way:

#### Stage 1

- 1) Interview with the target before extension with a questionnaire instrument that



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has passed the validation test. Assisted by teachers and enumerators. This stage is done as the beginning of the level of knowledge of visually impaired children called *pretest*.

2) The target is given extension material with audio media for 10-20 minutes.

3) Interview back to the target after extension with the same kuesionar instrument this stage is called *posttest*.

### Stage 2

1) Interview with the target before extension with the kuesionar instrument. Assisted by teachers and enumerators. This stage is done as the beginning of the level of knowledge of visually impaired children called *pretest*.

2) The target is given extension material with *braille* leaflet media for 20-30

Kwnowledge	P Value	Interprestasi
Pretest	0,003	H0 rejected
Posttest		

minutes.

3) Interview back to the target after extension with the same kuesionar instrument this stage is called *posttest*.

### Data Analysis

The data is obtained from primary data, which is the result of the custodian which is then suspended according to the correct answer. Data before treatment and after treatment that has been tabulated, will be processed statistics using the *Wilcoxon Test*, used to find out the increase in dental and oral hygiene knowledge before counseling and after counseling. Furthermore, the *Mann Whitney Test* was conducted to find out the difference in the level of knowledge how to maintain dental and oral hygiene after counseling with audio media and braille leaflet media.

### RESULTS

Test to find out if there is a difference before extension and after counseling with audio media and braille leaflet media to the level of knowledge of dental and oral hygiene then the Wilcoxon Test is carried out.

Table 1. Test Results Differ Before and After Counseling Group Knowledge with Audio Media

Based on table 1 above it can be seen that the results of the *Wilcoxon Test* test value *p value* 0.003. So it can be concluded that H0 is rejected which means there is a difference before and after counseling with audio media to the level of knowledge in visually impaired children of SLB N Semarang.



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Table 2. Test Results Differ Before and After Knowledge of Counseling Groups

Kwnowledge	P Value	Interprestasi
Pretest	0,002	H0 rejected
Posttest		

with Braille Media Leaflets

Based on table 2 above it can be seen that the results of the Wilcoxon Test test value p value 0.002. So it can be concluded that H0 is rejected which means there is a difference before and after counseling with braille leaflet media on the level of knowledge in visually impaired children of SLB N Semarang.

Table 3. Test Results Differ Group with Audio Media and Braille Media Leaflets

Knowledge	P Value	Interprestasi
Media Audio	0,001	H0 rejected
Media Leaflet		
Braille		

Based on table 3 above, mann Whitney Test results p-valuevalue of 0.001. So it can be concluded that H0 is rejected which means there are differences before and after counseling with audio media and braille leaflet media to the level of knowledge in visually impaired children of SLB N semarang.

## DISCUSSION

### 1. Level of knowledge before and after audio media extension

In the extension group with audio media there was a difference in value between before counseling and after counseling to the level of dental and oral hygiene knowledge.

Because when providing counseling to visually impaired children they actively listen and understand the contents of each audio media extension material so that the results of posttest research obtained good criteria counseling with audio media. This is as mentioned by the Ministry of Health in Pulungan (2007) which states that extension is the addition of one's knowledge and abilities through learning practice techniques or instructions with the aim of increasing or influencing human behavior individually, group and society to be able to be more independent in achieving life goals.

Counseling using audio media also experienced an increase in the level of dental and oral hygiene knowledge in



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children. In line with research that has been done by Hastuti and Andriyani in Dewi (2015) which states that counseling with lecture or audio media can increase the level of knowledge.

### 2. Level of knowledge before and after *braille* leaflet media extension

In the counseling group with *braille* leaflet media there is a difference in value between before counseling and after counseling to the level of dental and oral hygiene knowledge counseling dental and oral hygiene extension with *braille* leaflet media can increase respondents' interest in reading it.

In visually impaired children sometimes have to take a little long time because of the limitations experienced by them to read *braille* where *braille* is one of the means for visually impaired children to obtain information and communicate. At the time of providing counseling with *braille* leaflet media respondents read well and thoroughly so that the results of *posttest* research obtained criteria are quite extension with *braille* leaflet media. This agrees with research conducted by Barus in Dewi (2015) in the study explained that counseling using printing methods such as posters and leaflets proved to increase knowledge in children.

The addition of knowledge to the group provided by *braille* leaflet media shows that *braille* has been shown to be used to improve reading skills. So, by reading the level of knowledge that visually impaired children have will increase and increase.

The use of *braille* leaflet media is also strengthened by the opinion of Tumirah (2012) which states that the use of *braille* writing aims to improve the reading ability of visually impaired children in getting information to increase their knowledge. This media focuses on touch. The sense of touch of a visually impaired child is quite good. Thus, *braille* leaflet media is quite appropriate to increase the knowledge of visually impaired children. Visually impaired children can still gain knowledge, especially dental and oral knowledge. This is stated in the guidelines of Children's Health Services in Extraordinary Schools (2012) which states that the lower generally visually impaired children show better sense of hearing and touch sensitivity than normal children.

### 3. Knowledge level using audio media extension and *braille* leaflet media

Audio media is more dominant than *braille* leaflet media because audio media with the target of visually impaired children emphasize hearing and *braille* leaflet media weighs touch. This according to Daryanto (2016) audio is one of the components based on sound / sound that is very effective and very helpful for educators if used as a learning medium.

Audio media can provide interesting messages and motivate learners. In addition to attracting and motivating audio media learners more effectively if they can stimulate learners to use their imagination, so that they can visualize the messages we convey.



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### CONCLUSION

Based on the results of research and discussion on the difference between audio media and *braille* leaflet media on the level of dental and oral hygiene knowledge is concluded as follows:

1. There is a difference between before and after extension with audio media to the level of knowledge in visually impaired children in SLB N Semarang with a value of  $0.003 < 0.05$ .
2. There is a difference between before and after counseling with *braille* leaflet media to the level of knowledge in visually impaired children in SLB N Semarang *p value*  $0.002 < 0.05$ .
3. There is a difference in extension media between audio media and *braille* leaflet media against the level of knowledge in visually impaired children in SLB N Semarang *p value*  $0.001 < 0.05$ .

### ACKNOWLEDGEMENT

1. For the organizer of dental health implementation services (UKGS) at SLB N Semarang is expected to use audio media in conducting health counseling in visually impaired children because it attracts and motivates learners more effectively can stimulate learners to use

their imagination, so that he can visualize the messages we convey.

2. For further research is expected to develop research by combining audio media with *braille* leaflet media or with other media.

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The current era is an era where the development of the era is very fast and has high complexity. This is also the case in the world of health, from the era of written documentation to the paperless era. From a simple and simple era to a complex problem. This requires us to always have the ability to understand and follow the direction of consumers. Health care is something that is also experiencing rapid development. All health workers, including nurses, midwives, dental hygienists, doctors, radiographers, and other health workers are required to provide services by prioritizing quality, effectiveness and cost effectiveness. Health care providers must have a good understanding and competence in both theory and implementation of legal and professional ethics. There is a need to combine a strong emphasis on biomedical ethics and a health law-based critique of ethical principles and legal approaches to respect for human dignity. Therefore, this event will be supported in developing a sophisticated international perspective on ethical issues, ethical dilemmas, codes of ethics, professional values in particular through the lens of a human rights approach. The role of health care providers is the main content to prepare students to have competency in basic concept knowledge of health ethics and law. The analysis of ethical dilemmas, conflicting interests surrounding health care and the application of biomedical ethical theory and health legislation will guide students to become professional healthcare providers. Having an understanding of the professional ethics of health workers is a necessity. This understanding provides students with the mental readiness to make ethical decisions related to the practice of the healthcare workforce. Have an understanding of legal concepts so as to avoid actions that include violations of the law in providing health employment practices. Explain and apply his knowledge of the rights and obligations of health workers and patients. At this stage of ability, students can perform health services in accordance with their rights and obligations professionally. Carry out medical dispute resolution. If later health providers face a medical dispute can make the right decision.

This International Health Conference activity was held in the context of the peak implementation of the National Health Day celebration in 2021. This activity became an event where practitioners, academics, and observers in various health fields could gather to conduct discussions, share experiences, and oral presentations according to their expertise. This International Health Conference activity involves the academic community in the Postgraduate Program of the Health Polytechnic of the Ministry of Health in Semarang.

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