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Locus of Control and Self-Efficacy Relationship with Medication Adherence in Elderly with Hypertension

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A B S T R A C T

Patients with hypertension in the elderly often experience non-compliance in the treatment process. In addition, they also experience difficulty in controlling themselves, which is known as the locus of control. An unhealthy lifestyle in the elderly tends to have low self-efficacy, which has an impact on non-adherence to treatment. Therefore, this study aims to identify the dominant factors associated with medication adherence in the elderly with hypertension. The study design was correlational analytic with a cross sectional approach. The population in this study were 36 elderly people with a diagnosis of hypertension who were selected using a total sampling technique. The questionnaire used a multidimensional Health Locus of Control Scale (MHLCS) form C, Self-efficacy for Managing Hypertension, MMAS-8 (Morisky Medical Adherence Scale-8 Items). Data analysis using Pearson Product Moment static test and Linear Regression. In this study, it was found that locus of control and medication adherence had a significant relationship with p-value=0.005, and r-value =0.460, while self-efficacy and medication adherence had a significant relationship with p-value= 0.001 and r-value= 0.527. The most dominant variable of medication adherence was self-efficacy (p=0.02; B=0.335). Based on these results, it can be concluded that the elderly with hypertension who adhere to medication have a good locus of control and high self-efficacy. Adherence to taking medication can be improved by providing health education and increasing self-efficacy through support from family.

INTRODUCTION

The elderly tended to experience health problems caused by decreased body function due to the aging process and one of them in the cardiovascular system (Darmojo, 2010). Hypertension is a blood circulation disorder in which there is an excessive and constant increase in blood pressure in the arteries (Zubaili, M., Jayanti, A., Rahmi, A., & Akbar, 2019). Patients with hypertension in the elderly, tend to surrender to what happened to them without any effort to make changes (Iskandarsyah, A., de Klerk, C., Suardi, D. R., Sadarjoen, S. S., & Passchier, 2014).

The elderly felt able to control themselves against the disease suffered or the existence of external factors, this is called the locus of control which is the belief of individuals about the location of control power in their lives both internally and externally (Iskandarsyah, A., de Klerk, C., Suardi, D. R., Sadarjoen, S. S., & Passchier, 2014). The level of compliance with taking antihypertensive drugs is still very low and the length of suffering from hypertension has an impact on patient compliance (Liberty, I. A., Pariyana, P., Roflin, E., & Waris, 2018).

The success of hypertension management is influenced by the patient's adherence to taking medication, controlling stress, and maintaining a diet or diit (Bistara *et al.*, 2020). Hypertensive clients must have self-

efficacy in order to be motivated to strive optimally in the process of achieving better health quality through the belief to obediently carry out hypertension treatment so as to prevent complications. Self-efficacy is a determining aspect of individual compliance (Mahbubah, 2018). Good adherence of hypertensive patients to a therapeutic regimen will improve optimal health quality (Manurung, 2016).

Riskesdas 2018 stated an estimated number of cases of hypertension in Indonesia of 63,309,620 people. Hypertension occurs in the age group of 31-44 years (31.6%), age 45-54 years (45.3%), age 55-64 years (55.2%). The prevalence of hypertension of 34.1% is known that 8.8% are diagnosed with hypertension and 13.3% of people diagnosed with hypertension do not take medication and 32.3% do not routinely take medication (Development, 2019). The prevalence of hypertension in East Java is 13.47% or about 935,736 population with a proportion of men at 13.78% and women at 13.25%. While the prevalence of hypertension in the city of Sidoarjo by 8.79% (Office, 2017).

The initial survey conducted on 12 elderly people with hypertension in Kedungnolo Hamlet, Krembung Subdistrict, found 4 elderly people have a high locus of control and self-efficacy, 4 elderly people have low locus of control, 2 elderly people feel disturbed by taking drugs regularly from health workers, 2 people say difficulty obeying the rules of eating, taking medication surrender to the disease suffered because the elderly feel able to control themselves against the disease suffered.

Hypertension is influenced by factors of Age, race/ethnicity, urbanization, geography, sex (Manuntung, 2018). Increased blood pressure in the elderly occurs because the elasticity of the aortic wall decreases, thickens the valves in the heart and causes the heart valves to become stiff. This causes the heart's ability to decrease by 1% every year and a decrease in heart contraction and volume resulting in an increase in blood pressure caused by an increase in vascular resistance (Dewi, 2014). Prevention that can be done in patients with hypertension is to regularly take medication and run a healthy lifestyle (Ridwan, 2009).

A healthy lifestyle in people with hypertension can be achieved by having self-efficacy so as to minimize complications and improve their quality of life and conversely the low self-efficacy is more likely not to pay attention to a healthy lifestyle (Permasatasari, L. I., Lukman, M., 2014).

Locus of control plays a role in medication adherence, and health status can be controlled by itself as an internal locus of control. Meanwhile, social support, family support and health workers include communication relationships between patients and doctors and other medical personnel as an external locus of control (Katuuk, M., & Gannika, 2019) (Safitri, 2013).

The family's support can improve self-efficacy in sufferers (Bonsaksen, T., Lerdal, A., & Fagermoen, 2012). One source of self-efficacy associated with family support is verbal persuasion. When a person is encouraged by others to manage disease-related problems. Improving one's understanding of his illness, is when the closest person talks about his experience so that it affects others (Ramadhani, D. Y., MM, F. A., & Hadi, 2016). Support from the community by expanding promotive and preventive services for the

sustainability of the program so that it can increase awareness, understanding and compliance with blood pressure control, also taking hypertension medication regularly (Supriati, 2019). Based on the above facts, the purpose of this study is to identify the dominant factors associated with drug-taking compliance in the elderly with hypertension

METHOD

The study design is correlational analytics with a cross sectional approach. This research was conducted in November 2020 - March 2021 in Kedungnolo Hamlet RW 09 Tanjek Wagir Village Krembung Sidoarjo Subdistrict. The population in this study was the elderly with hypertension as many as 36 people, with a total sampling technique. This study used a Multidimensional Health Locus of Control Scale (MHLCS) form C questionnaire to determine locus of control, self-efficacy for managing hypertension, and MMAS-8 (Morisky Medical Adherence Scale-8 Items) to assess medication adherence. Respondents are required to fill in informed consent as evidence of consent to participate in the study. Then, the results of the questionnaire assessment carried out data processing with univariate, bivariate and multivariate tests. Bivariate using Pearson Product Moment and Multivariate using Linear Regression. All analysis using software SPSS Ver.25.

RESULT

Table 1 Distribution of Frequency of Characteristics of Elderly Hypertension in Kedungnolo Rw 09 Village Tanjek Wagir District Krembung Sidoarjo, March 2021, n = 36.

No.	Data	Frequency	Percentage
1.	Age		
	60- 70 years	32	88,89%
	71-81 years	4	11,11%
	Total	36	100%
2.	Gender		
	Men	10	27,78%
	Woman	26	72,22%
	Total	36	100%
3.	Long suffered from hypertension		
	≥ 2 years	19	52,78%
	≤ 2 years	17	47,22%
	Total	36	100%

Table 1 shows that the majority of respondents in Kedungnolo Hamlet, RW 09, Tanjek Wagir Village, Krembung District, Sidoarjo Subdistrict, aged between 60-70 years, were 32 respondents with a percentage (88.89%), and most of the respondents were female as many as 26 respondents with a percentage (72.22%). In addition, it was found that the duration of suffering from hypertension in the respondents obtained an average of 2 years as many as 19 respondents with a percentage (52.78%).

1. Locus of Control of Hypertensive People

Table 2 Characteristics of Respondents Based on Locus of Control in Elderly Hypertension in Kedungnolo Hamlet RW 09 Tanjek Wagir Village Krembung Sidoarjo Subdistrict

Locus of Control	Frequency	Presentation
Good	29	80,56%
Less Good	7	19,44%
Sum	36	100%

Table 2 shows most respondents have a locus of control with a good category of 29 respondents with a percentage of 80.56%.

2. Self-Efficacy of People with Hypertension

Table 3 Characteristics of Respondents Based on Self-Efficacy in Elderly Hypertension in Kedungnolo Hamlet RW 09 Tanjek Wagir Village Krembung Sidoarjo District

Self-Efficacy	Frequency	Presentation
Tall	29	80,56%
Low	7	19,44%
Sum	36	100%

Table 3 shows that most respondents have high-category self-efficacy with 29 respondents with a percentage of 80.56%.

3. Compliance with Taking Hypertension Medication

Table 4 Characteristics of Respondents Based on Drug Compliance in Elderly Hypertension in Kedungnolo Hamlet RW 09 Tanjek Wagir Village Subdistrict Krembung Sidoarjo

Drug Compliance	Frequency	Presentation
Can	28	77,78%
Unable to	8	22,22%
Sum	36	100%

Table 4 shows that most respondents have drug compliance with the category of able as many as 28 respondents with a percentage of 77.78%.

4. Locus of Control Relationship with Drug Compliance

Table 5 Locus of Control Relationship with Drug Compliance in Elderly Hypertension in Kedungnolo Hamlet RW 09 Tanjek Wagir Village Krembung Sidoarjo Subdistrict

Variable	Mean	Min-Maks	95% CI	p	r
Locus of Control	51,39	45-53	50,70-52,08	0,005	0,460
Drug Compliance	12,47	9-16	11,95-12,99		

The locus of control distribution in the elderly with hypertension in this study showed an average score of 51.39 with the highest score of 53 and the lowest being 45 with an estimated 95% interval between 50.70 to 52.08. Meanwhile, adherence to medication shows an average value of 12.47 with the highest score of 16 and the lowest being 9 and has an internal estimate of 95% IC between 11.95-12.99.

Locus of control and medication adherence has a significant relationship with p value = 0.005 and r value = 0.460 which indicates that the relationship between locus of control and medication adherence has moderate strength.

5. Self-Efficacy Relationship with Drug Obedience

Table 6 Relationship between self-efficacy and adherence to medication for elderly with hypertension in Kedungnolo Hamlet, RW 09, Tanjek Wagir Village, Krembung Village, Sidoarjo District

Variable	Mean	Min-Maks	95% CI	p	r
Self-Efficacy	25,36	20-27	24,66-26,06	0,001	0,527
Drug Compliance	12,47	9-16	11,95-12,99		

The distribution of self-efficacy in the elderly with hypertension in Kedungnolo Hamlet showed an average score of 25.36 with the highest score of 27 and the lowest being 20 and the 95% estimated interval between 24.66 to 26.06. Meanwhile, medication adherence showed an average value of 12.47 with the highest score of 16 and the lowest being 9 and it had an internal estimate of 95% between 11.95-12.99. Self-efficacy and medication adherence have a significant relationship with p value = 0.001 and r value = 0.527 which indicates a relationship between self-efficacy and adherence to moderate strength medication.

6. The Dominant Variable

Table 7 Results of Bivariate Analysis of Multivariate Candidate Variables with Drug Drinking Compliance in Elderly Hypertension in Kedungnolo Hamlet RW 09 Tanjek Wagir Village Krembung Sidoarjo Subdistrict

Variable	B	ONE	Beta Correlation	Sig.	R ²
Locus of Control	0,277	0,104	0,366	0,12	0,429
Self-efficacy	0,335	0,102	0,450	0,02	

The results of the linear regression test showed that each increase in medication adherence would increase by 0.335 after the locus of control variable was controlled, and there was an increase in drug adherence by 0.277 after the locus of control variable was controlled. The most dominant variable on medication adherence is self-efficacy.

DISCUSSION

Locus Of Control Relationship with Drug-Taking Compliance in Hypertensive Elderly

The results of this study found a significant relationship between locus of control and medication adherence. These results are in accordance with previous studies, that patients who have an internal control orientation are more obedient to the treatment process that must be carried out compared to patients who have an external control orientation (Omeje, O., & Nebo, 2011).

Other studies have explained that internal beliefs tend to distance him from the efforts of others to help him, thus feeling that only he is capable of making changes in his health while the help of others who are more competent will be rejected (Budiansyah, F. D., & Rositawati, 2015).

Meanwhile, individuals with external locus of control have their own beliefs that their health is determined by fate, fate and chance alone.

People with hypertension with internal dimensions will tend to have a high level of adherence to taking medication, and will make the individual feel responsible for the healing process himself. While the external dimension of the individual has orientation and motivation that comes from outside himself such as destiny or luck and has a low level of obedience due to the low responsibility for his recovery (Ainiyah, N. Izzah, S. R. Zahroh, C., Bistara, D. N. Faizah, 2021).

Elderly people with hypertension should understand about the treatment process undertaken and have confidence to survive. In addition, the need for interaction with fellow elderly people with similar diseases that can strengthen each other, also the role of the family closest and with a conducive environment will support the locus of control of the elderly both and obedient in the treatment process.

Relationship of Self-Efficacy with Drug-Taking Compliance in The Elderly of Hypertension

Based on the results of statistical analysis obtained a value of $p = 0.001$ which shows there is a relationship between self-efficacy and adherence to taking hypertension drugs in Kedungnolo Hamlet RW 09 Tanjek Wagir Village Krembung Sidoarjo District. The results of this study were obtained a value of $r = 0.527$ which showed a correlation between self-efficacy and adherence to taking drugs has moderate strength. In line with the results of the study (Kawulusan, K.B., Katuuk, M. E., & Bataha, 2019) where someone who has high self-efficacy shows obedient behavior in undergoing hypertension treatment.

Based on previous research shows that (Bandura, 2009) the high and low individual self-efficacy can be caused by several factors, including the nature of the tasks faced by individuals, which means that self-efficacy is contrary to individual abilities. Perception of the nature of the task, external inserted (reward) which means that external inventiveness can be a determinant of the level of individual self-efficacy, status or individual roles in an environment, meaning that individuals who are more active play a role. Individuals who have a higher position in their environment make themselves have a higher level of control so that self-efficacy will be higher, information about self-ability means that individuals who receive information related to their high abilities become their own motivation and directly individuals have higher abilities. higher and there is a large increase in self-confidence so that he is committed to completing the action as well as possible (Mahbubah, 2018).

High self-efficacy will encourage a person to be confident in the treatment that is being undertaken and increased knowledge through various media and family support will increase the confidence of the elderly. These beliefs will motivate and increase one's hopes of achieving a cure that ultimately encourages a person to behave obediently in undergoing hypertension treatment.

CONCLUSION

Locus of control and self-efficacy with adherence to taking medication both have an association, but the dominant factor is self-efficacy. Adherence to taking drugs can be improved by providing education through various existing media and improving self-efficacy through support from family.

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Effectiveness of Perineum Massage in Primigravida Pregnant Women on Perineum Rupture in Materials

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A B S T R A C T

Infection is one of the important causes of maternal mortality and morbidity. One of the risk factors for puerperal infection is due to actions during delivery such as episiotomy and perineal rupture. The perineum is the most common site for rupture during labor. Perineal rupture occurs in 85% of women during birth and 60-70% requires suturing. Perineal rupture occurs in almost all first deliveries. For this reason, efforts are needed to prevent perineal rupture, one of which is a simple method that everyone can do by doing perineal massage. Objective: To determine the effectiveness of perineal massage in women giving birth with perineal rupture at BPM Kusmawati, Amd Keb Surabaya. Methods: The design used is a quasi-experimental design with a Static Group Comparison. The study was conducted at BPM Kusmawati, Amd Keb Surabaya on September 5 to November 5, 2021. The population of all primigravida mothers at 37 - 40 weeks of gestation was 40 people. The sampling technique used Total Sampling which was divided into 20 subjects in the intervention group and 20 in the control group. Data collection techniques using a checklist sheet. The data were analyzed using the Fisher Exact Test. Results: showed p value = 0.000 (<0.05), then perineal massage was effective in preventing perineal lacerations and episiotomy in normal delivery, so perineal massage could be applied especially to primigravida from 37 - 40 weeks of gestation to prevent spontaneous perineal rupture. in normal delivery in women giving birth at BPM Kusmawati, Amd Keb Surabaya.

INTRODUCTION

Infection is one of the important causes of maternal mortality and morbidity. One of the risk factors for puerperal infection is caused by actions during delivery such as episiotomy and perineal rupture which can develop into more severe infections such as abscesses, eviscerations and thrombophlebitis (Dwi Angraini, 2016). The perineum is the most common site for rupture during labor (Winkjosastro, 2011). Perineal rupture occurs in 85% of women during birth and 60-70% requires suturing. Perineal rupture occurs in almost all first deliveries and is not uncommon in subsequent deliveries. The soft tissue of the birth canal and surrounding structures will be damaged with each delivery. Damage is usually more pronounced in nulliparous women because the tissue in nulliparas is denser and more resistant than in multiparous women (Dwi Masita, 2016). Various methods have been used to reduce perineal rupture both during pregnancy and during delivery. Perineal rupture can be prevented in a very simple way and can be done by everyone by massaging the perineal area or the perineal area of the vagina. In accordance with the aim, namely to determine the effectiveness of perineal massage in maternity mothers with the aim of preventing perineal rupture in maternity mothers. In accordance with the opinion of (Beckmann MM, 2017) that women who perform perineal massage starting at 35 weeks of gestation have a lower risk of

birth canal trauma in normal delivery and statistically significant 16% can reduce the incidence of perineal rupture. Women who do perineal massage an average of 1.5 times per week experienced a decrease of 16%. Safitri (2014) proves that there is an effect of perineal massage in primigravida on the incidence of perineal rupture ($p < 0.05$) in Independent Practicing Midwives in Bengkulu City.

In line with the same study conducted by Dartiwen (2015) which stated that there was an effect of perineal massage in primigravida on the incidence of perineal rupture during delivery in the working area of the Margadadi Public Health Center, Indramayu Regency. As it is known that perineal rupture can cause pararectal rupture, so that the rectum is separated from the surrounding tissue. Injury can cause pelvic floor weakness so that genital prolapse is easy and rectocele can occur (Winkjosastro, 2010).

Complaints that often arise due to infection with ruptured birth canal are pain and dysuria with or without urinary retention, purulent fluoride and fever. In more severe cases the entire vagina will be edematous, ulcerated and may be covered by exudate. Complications can occur due to perineal rupture in the form of mild to severe complications in the form of permanent and chronic complications that occur after the puerperium (Nikmah et al., 2021). Therefore, at BPM Kusmawati, Amd Keb applied perineal massage to pregnant women in the hope that pregnant women who gave birth at BPM Kusmawati, Amd Keb did not experience perineal rupture. Therefore, this study aims to determine the effectiveness of perineal massage in women giving birth to prevent perineal rupture in women during childbirth.

METHOD

This research is a Quasi-Experimental Design. This study uses a Static Group Comparison design where the treatment or intervention has been determined, then measurements (observations) are made by adding a control group or a comparison group. The results of these observations were then controlled or compared with the results of observations in the control group who did not receive the program or intervention. The population in this study were all primigravida mothers starting at 37-40 weeks of gestation with an estimated delivery from 5 September to 5 November 2021 which was seen based on the delivery bag at BPM Kusmawati, Amd Keb Surabaya as many as 40 people. The sample in this study was the entire population or the total sampling available at the time of the study that met the specified criteria and the controls adjusted to the number of cases with a ratio of 1:1. The number of samples in cases is 20 people and the number of control cases is 20 people. This research was conducted on the 5th of September to the 5th of November 2021. The type of data used was primary data in the form of a checklist regarding the implementation of perineal massage and secondary data obtained from partograph sheets of maternity mothers which were used to determine whether there was rupture of the perineum or not. at BPM Kusmawati, Amd Keb Surabaya. The data collection technique used in this study was obtained from primary data obtained directly through structured direct interviews by providing education

to respondents about the implementation of perineal massage including benefits, indications and contraindications, implementation time and method of perineal massage and secondary data see partograph observation sheet. Then the mother and husband were asked to read and sign the informed consent as mother's consent to participate in this study. Bivariate analysis in this study used the Fisher Exact Test.

RESULT

Table 1. Frequency Distribution of Respondents' Characteristics of Perineal Massage on Primigravida Mothers at BPM Kusmawati, Amd Keb Surabaya

No	Characteristics	Intervention Group		Control Group	
		Frequency	%	Frequency	%
1	Age				
	- < 20 Year	3	15	8	40
	- 20 - 35 Year	17	85	12	60
	- > 35 Year	0	0	0	0
	Total	20	100	20	100
2	Level Of Education				
	- College	5	25	6	30
	- Diploma	5	25	7	35
	- Senior High School	10	50	7	35
	Total	20	100	20	100
3	Work				
	- IRT	18	90	20	100
	- Enterpreneur	2	10	0	0
	- Civil Servants	0	0	0	0
	Total	20	100	20	100

Based on Table 1, it can be seen that the characteristics of respondents in the control group are mostly aged 20-35 years as many as 12 people (60.0%), based on the latest education level, most respondents are SMA and SMP each with 7 people (35.0%), based on the occupation of the majority of respondents as housewives as many as 20 people (100%). While the characteristics of respondents in the intervention group are mostly aged 20-35 years as many as 17 people (85.0%), the last education level is mostly junior high school as many as 10 people (50.0%) and most of the respondents as housewives are 18 people (90.0%).

Table 2. Frequency Distribution of Perineal Rupture Degrees in Maternal Maternity at BPM Kusmawati, Amd Keb Surabaya

No		Perineal Rupture Degree			
		Intervention Group		Control Group	
		Frequency	(%)	Frequency	(%)
1	No Ruptur	16	80	1	5
2	Degree 1	3	15	1	5
3	Degree 2	1	5	18	90
4	Degree 3	0	0	0	0
5	Degree 5	0	0	0	0
	Total	20	100	20	100

Table 2 shows that in the control group, most of the respondents experienced second-degree perineal lacerations as many as 18 people (90.0%), while in the intervention group most of the respondents did not experience perineal lacerations as many as 16 people (80.0%).

Table 3. Analysis of the Effectiveness of Perineal Massage on Perineal Rupture at BPM Kusmawati, Amd Keb Surabaya

Perineal Massage	Perineal Rupture			
	Rupture	%	No Rupture	%
No Massage	19	95	1	5
Massage	4	20	16	80
Total	23	57,5	17	43,5

P Value = 0,000

Based on Table 3 shows that of the 20 respondents who underwent perineal massage intervention, most of the perineal rupture did not occur 16 people (80.0%), respondents who had perineal laceration were 4 people (20.0%), while of the 20 respondents who did not Most of the perineal massagers experienced perineal lacerations as many as 19 people (95.0%) and 1 person (5.0%). The results of the Fisher's Exact test analysis showed *p value* = 0.000 (<0.05), then perineal massage affected the occurrence of perineal lacerations in primigravida mothers in normal delivery.

DISCUSSION

Based on the results of this study, it was proven that perineal massage was effective in preventing spontaneous perineal rupture or episiotomy in normal labor for primigravida mothers with $p = 0.000$ (<0.05). In accordance with the opinion of Beckmann (2013) that women who perform perineal massage starting at 35 weeks of gestation have a lower risk of birth canal trauma in normal delivery and statistically significant 16% can reduce the incidence of episiotomy.

Another study conducted by Dwi Masita (2016) found that the incidence of perineal rupture in the intervention group after perineal massage was only 21.4% while in the control group it was 71.4% with $p = 0.02$ (< 0, 05). According to the Indonesian Ministry of Health. (2004) perineal massage can make the perineum more elastic, easily stretched and reduce the incidence of trauma and pain during childbirth. Warm compresses of tissue on perineal massage for approximately 10 minutes will increase blood circulation so that the muscles in the perineal area are relaxed (not contracted or tense)(Beckmann MM, 2017).

The results showed that in the control group there were 19 people (95.0%) experienced perineal rupture with an episiotomy as many as 18 people (94.7%) and spontaneous perineal rupture was 1 person (5.3%). While in the intervention group the number of respondents who experienced perineal rupture spontaneously was only 4 people (20.0%), namely 3 people with degree I laceration and 1 person with degree II laceration.

Episiotomy was performed on most of the control group respondents because of the indication of a rigid perineum. According to Mochtar (2011) a rigid and inelastic perineum will inhibit the second stage of labor and can increase the risk to the fetus and can cause extensive perineal tears up to the third stage. The perineum is soft and elastic and wide enough, in general, it does not make it difficult to expel the fetal head, if there is a tear only to degree 1 and degree II. The number of respondents in the intervention group who did not experience perineal rupture was 16 people (80.0%) more than 1 person in the control group (5.0%). The number of respondents in the intervention group who did not have perineal rupture after doing perineal massage starting at 37 weeks of gestation, this can be influenced by the level of compliance of respondents in practicing perineal massage techniques correctly as many as 17 people (85.0%) with a massage frequency of at least 4 times a week. With the characteristics of the primiparous respondent group aged between 20 - 35 years as many as 17 people (85.0%), the level of education in junior high school as many as 10 people (50.0%) and high school as many as 5 people (25.5%), the most respondents as 18 housewives (90.0%), so that the respondents have a readiness to receive information and good motivation to practice new knowledge.

According to the results of a study published in the American Journal of Obstetrician and Gynecology concluded that perineal massage during pregnancy can protect perineal function for at least 3 months postpartum. The Cochrane Review recommends that this perineal massage should always be explained to pregnant women so that they know the benefits of this perineal massage. This perineal massage is very safe and harmless (Carroli G, 1999). In the intervention group, there were 4 respondents who experienced first-degree and second-degree perineal lacerations (40.0%), one of the reasons was that the mother's pressing technique at the time of the baby's birth was not correct and the perineal massage technique was still not appropriate. According to Dwi Anggraini (2016) pushing too hard makes delivery of the head faster and releases pressure suddenly, both of which increase the risk of intracranial damage to the baby and lacerations of the birth canal. One of the most important factors to prevent the occurrence of perineal lacerations other than through perineal massage, the correct way of pushing must be considered. Perineal massage can help reduce the occurrence of perineal rupture, especially if this perineal massage is carried out from 37-40 weeks of gestation.

The cause of perineal rupture is not only prevention of perineal massage, but many things that can cause perineal rupture, including babies that are too big, delivery assistance that is not up to standard and many other factors that can cause perineal rupture.

CONCLUSION

Based on the results of the research conducted, it can be concluded that perineal massage can prevent perineal rupture in normal delivery between the intervention group and the control group. Perineal

massage that is carried out correctly 4 or more times a week regularly for 10 minutes every day in the intervention group, namely primigravida from 37-40 weeks of gestation until delivery can reduce the incidence of perineal rupture. So that perineal massage can be applied to pregnant women, especially physiological primigravida women starting at 37-40 weeks of gestation to prevent spontaneous perineal rupture. Unless there are other causal factors that can lead to rupture of the perineum.

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The Effect of Nutrition Education with Monopoly and Leaflet on The Nutritional Knowledge Levels and Consumption Pattern Among 5th Grade Elementary School Students in Surabaya

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A B S T R A C T

In this era, many school-age children have unbalanced and unhealthy eating behaviors. Low nutritional knowledge levels cause the issues. This paper analyzes the differences in nutritional knowledge levels and consumption patterns before and after nutrition education with monopoly media and leaflets among 5th-grade elementary school students in Surabaya. The research method used a quasi-experimental design. The population was 170 5th grade elementary school students at SDN I and SDN II Surabaya. In addition, this study utilized probability sampling with a sample of 90 students. Next, data analysis used the Mann-Whitney and Wilcoxon tests with a significant level of α 0.05. There were differences in nutritional knowledge levels before and after nutrition education with monopoly media in both schools ($p=0.000$). Meanwhile, there were no differences in nutritional knowledge levels before and after nutrition education with leaflet media (SDN I Surabaya $p=0.073$ and SDN II Surabaya $p=0.052$). In addition, both schools had differences in consumption patterns before and after nutrition education with monopoly media ($p=0.000$). However, there were no differences in consumption patterns before and after nutrition education with leaflet media (at SDN I Surabaya $p=0.301$ and SDN II Surabaya $p=0.307$). Nutrition education with monopoly media is more effective in improving nutritional knowledge levels and consumption patterns than leaflet media in 5th-grade students. Further research could compare monopoly with other EGT (educational game tools, such as snakes and ladders nutrition or nutrition puzzle).

INTRODUCTION

A prosperous country is determined by quality human resources (HR), namely humans with physical and mental solid, excellent health, also good achievement levels. The development of human resources to produce superior quality needs concern from an early age, especially in school-aged children (Amrah, 2013). Furthermore, children's daily intake can determine the quality of consumption (Indrati and Gardjito, 2014).

Nowadays, many school-aged children have unbalanced and unhealthy eating behavior. Issues in children's eating behavior are they often do not eat breakfast, like to eat unhealthy snacks while at school, and consume fewer vegetables, fruit, and milk. In addition, they overeat fast or junk food and foods that contain lots of ingredients, preservatives, colorants, and flavor enhancers. Eating behavior, especially in school-aged children, can be influenced by their knowledge in meeting the proper nutrition in terms of quality and quantity according to their needs (Devi, 2012).

According to Deni and Dwiriani (2009), 40% of school-aged children had a low level of nutritional knowledge, 43.8% had a moderate level of nutritional knowledge, and 16.2% had a high level of nutritional knowledge. Nutritional knowledge can affect food consumption patterns in individuals. A

consumption pattern is a habitual response or behavior related to food consumption. Children's consumption patterns in Indonesia were 93.6% of children eating fewer vegetables and fruit (< 5 servings per day), and 53.1% consumed sweet foods or drinks (≥ 1 time per day). In addition, 40.7% of them ate sweet, fatty, and fried foods (≥ 1 time per day), also 77.3% consumed flavoring (≥ 1 time per day) (Badan Penelitian dan Pengembangan Kesehatan, 2013).

One Effort to improve nutrition-related problems is by providing nutrition education for school-aged children through communication, information, and education (IEC) about nutrition-related materials (RI, 2007)(Sari, 2019). There are various media methods in nutrition education (Notoatmodjo, 2003); one of them is a nutrition monopoly as an educational game tool (EGT). Nutrition monopoly is a board game containing pictures of the four pillars of balanced nutrition in a balanced nutrition cone. This paper analyzes the differences in nutritional knowledge levels and consumption patterns before and after nutrition education with monopoly media and leaflets in 5th-grade elementary school students in Surabaya.

METHOD

This research used a quasi-experimental design with a pre-and post-test control group. The population was 5th-grade elementary school students totaling 170 students at Public Elementary School (here and after it is called with SDN) I Surabaya and SDN II Surabaya. Sampling used probability sampling, with proportionate stratified random sampling. The sample size using the Slovin formula obtained a total sample of 90 students with 52 students at SDN I Surabaya and 38 students at SDN II Surabaya. The proportion of groups in SDN I Surabaya consisted of 26 students in the monopoly group (intervention) and 26 students in the leaflet group (control), and the proportion of groups in SDN II Surabaya consisted of 19 students in the monopoly group (intervention) and 19 students in the leaflet group (control). Inclusion criteria were 5th-grade elementary school students, physically and mentally healthy, and willing to be the research sample. Meanwhile, exclusion criteria were sick or recovering from illness, who were not present in the study, and who did not participate until they finished.

Before the intervention, respondents were given an explanation regarding the procedures, objectives, benefits and filled out and signed the consent form to become a respondent. Then, respondents were pre-tested by filling out a questionnaire to determine nutritional knowledge and conducting interviews about food consumption patterns for the past month. The next day, nutrition education was carried out using the nutrition monopoly game media in the intervention group. Researchers accompanied respondents from the beginning to the end of the game. Meanwhile, we provided a sheet of nutrition leaflets to be read and understood by the respondents in the control group. Interventions in both elementary schools were carried

out on different days. After the intervention, we gave a questionnaire as a post-test result to determine nutritional knowledge levels with the same questionnaire as during the pre-test and interview the respondents' eating patterns. Data collection consisted of primary data and secondary data. Primary data consisted of respondent characteristics of respondents, knowledge levels, and consumption patterns obtained through a questionnaire. The secondary data in this study was the general description of SDN I Surabaya and SDN II Surabaya received from schools.

Data analysis used the Mann-Whitney test to compare differences between intervention and control groups. In addition, Wilcoxon signed-rank test to compare pre-test and post-test (Notoatmodjo, 2010).

RESULT

1. Sex

Table 1. Sex Characteristic

Variable	SDN 1		SDN 2	
	n	(%)	n	(%)
Boys	28	53.8	20	52.6
Girls	24	46.2	18	47.4
Total	52	100	38	100

Table 1. shows that most respondents at SDN I Surabaya (53.8%) are boys, and 52.6% of respondents at SDN II Surabaya are boys.

2. Age

Table 2. Age Characteristic

Variable	SDN I		SDN II	
	n	%	n	%
10 years old	8	15.4	3	7.9
11 years old	40	76.9	29	76.3
12 years old	4	7.7	6	15.8
Total	52	100	38	100

Table 2. reports that almost all respondents at SDN I Surabaya (76.9%) are 11 years old, and 76.3% of respondents at SDN II Surabaya are 11 years old.

3. Nutritional Knowledge Levels Before Nutrition Education in Monopoly and Leaflet Groups

Table 3. Nutritional Knowledge Levels Before Nutrition Education at SDN I Surabaya

Nutritional Knowledge levels	Monopoly Group		Leaflet Group		<i>p</i>
	n	%	n	%	
High	3	11.5	0	0	0.094
Moderate	7	26.9	5	19.2	
Low	16	61.5	21	80.8	
Total	26	100	26	100	

Table 3 reveals that respondents with high nutritional knowledge levels at SDN I Surabaya are 11.5% in the monopoly group and 0% in the leaflet group before intervention. In addition, the Mann-

Whitney test obtains $p = 0.094$ ($\alpha > 0.05$). Thus, there was no difference in nutritional knowledge levels before nutrition education between monopoly and leaflet groups at SDN I Surabaya.

Table 4. Nutritional Knowledge Levels Before Nutrition Education at SDN I Surabaya

Nutritional Knowledge levels	Monopoly Group		Leaflet Group		<i>p</i>
	n	%	n	%	
High	2	10.5	0	0	0.080
Moderate	7	36.8	3	15.8	
Low	10	52.6	16	84.2	
Total	19	100	19	100	

Table 4 indicates that respondents with high nutritional knowledge levels at SDN II Surabaya are 10.5% in the monopoly group and 0% in the leaflet group before intervention. In addition, the Mann-Whitney test obtains $p = 0.080$ ($\alpha > 0.05$). Thus, there was no difference in nutritional knowledge levels before nutrition education between monopoly and leaflet groups at SDN II Surabaya.

4. Nutritional Knowledge Levels After Nutrition Education in Monopoly and Leaflet Groups

Table 5. Nutritional Knowledge Levels After Nutrition Education at SDN I Surabaya

Nutritional Knowledge levels	Monopoly Group		Leaflet Group		<i>p</i>
	n	%	n	%	
High	24	92.3	2	7.7	0.000
Moderate	2	7.7	9	34.6	
Low	0	0	15	57.7	
Total	26	100	26	100	

Table 5 shows that respondents with high nutritional knowledge levels at SDN I Surabaya are 92.3% in the monopoly group and 7.7% in the leaflet group after intervention. In addition, the Mann-Whitney test obtains $p = 0.000$ ($\alpha < 0.05$). Thus, there was a difference in nutritional knowledge levels after nutrition education between monopoly and leaflet groups at SDN I Surabaya.

Table 6. Nutritional Knowledge Levels After Nutrition Education at SDN II Surabaya

Nutritional Knowledge levels	Monopoly Group		Leaflet Group		<i>p</i>
	n	%	n	%	
High	19	100	1	5.3	0.000
Moderate	0	0	8	42.1	
Low	0	0	10	52.6	
Total	19	100	19	100	

Table 6 reveals that all respondents (100%) in the monopoly group at SDN II Surabaya have high nutritional knowledge levels after the intervention. In addition, a small portion of respondents (5.3%) in the leaflet group have high nutritional knowledge levels after the intervention. The Mann-Whitney test obtains a $p = 0.000$ ($\alpha < 0.05$). Thus, there was a difference in nutritional knowledge levels between monopoly and leaflet groups after nutrition education at SDN II Surabaya.

5. Nutritional Knowledge Levels Before and After Nutrition Education in Monopoly and Leaflet Groups

Table 7. Nutritional Knowledge Levels Before and After Nutrition Education at SDN I Surabaya and SDN II Surabaya

Group	Wilcoxon Test	
	SDN I	SDN II
	<i>p</i>	<i>p</i>
Monopoly	0.000	0.000
Leaflet	0.073	0.052

Table 7. indicates that the Wilcoxon tests have $p=0.000$ ($\alpha<0.05$) in the monopoly groups at SDN I and SDN II Surabaya. Thus, there were differences in nutritional knowledge levels before and after nutrition education with monopoly media. Meanwhile, the Wilcoxon test obtains $p=0.073$ ($\alpha>0.05$) in the leaflet groups at SDN I and $p=0.052$ ($\alpha>0.05$) at SDN II Surabaya. It means that there were no differences in nutritional knowledge levels before and after nutrition education with leaflet media.

6. Consumption Patterns Before Nutrition Education with Monopoly and Leaflet Media

Table 8. Consumption Patterns Before Nutrition Education in SDN I and SDN II Surabaya

	Group	Score	Category	<i>p</i>
SDN I	Monopoly	226	Low	0.472
	Leaflet	174	Low	
SDN II	Monopoly	174	Low	0.842
	Leaflet	129	Low	

Table 8. reports that consumption patterns before intervention in the monopoly and the leaflet group at SDN I and SDN II are low. The Mann-Whitney test at SDN I obtains $p=0.472$ and at SDN II gets $p=0.842$ ($\alpha>0.05$). Thus, there were no differences in consumption patterns before nutrition education between monopoly and leaflet groups in both schools.

7. Consumption Patterns After Nutrition Education Monopoly Media and Leaflet

Table 8. Consumption Patterns After Nutrition Education in SDN I and SDN II Surabaya

	Group	Score	Category	<i>p</i>
SDN I	Monopoly	330	High	0.048
	Leaflet	182	Low	
SDN II	Monopoly	256	Moderate	0.045
	Leaflet	172	Low	

Table 9. shows that respondents in the monopoly group had high consumption patterns at SDN I and moderate consumption patterns at SDN II after the intervention. Meanwhile, consumption patterns after intervention in the monopoly and the leaflet group at SDN I and SDN II are low. The Mann-Whitney test at SDN I obtains $p=0.048$, and SDN II gets $p=0.045$ ($\alpha<0.05$). Thus, there were differences in consumption patterns after nutrition education between monopoly and leaflet groups in both schools.

8. Consumption Patterns Before and After Nutrition Education with Monopoly and Leaflet Media

Table 10. Consumption Patterns Before and After Nutrition Education at SDN I and SDN II

Group	Wilcoxon Test	
	SDN I	SDN II
	<i>p</i>	<i>p</i>
Monopoly	0.000	0.000
Leaflet	0.301	0.307

Table 10. reveals that the Wilcoxon test in the monopoly group at SDN I and SDN II have $p=0.000$ ($\alpha<0.05$). Thus, both schools had differences in consumption patterns before and after nutrition education with monopoly media. Meanwhile, the Wilcoxon test in the leaflet group at SDN I achieves $p=0.301$, and SDN II acquires $p=0.307$ ($\alpha>0.05$). Thus, there were no differences in consumption patterns before and after nutrition education with leaflet media.

DISCUSSION

1. Nutritional Knowledge Level Before and After Nutrition Education with Monopoly and Leaflet Media

Our findings showed improved nutritional knowledge levels before and after nutrition education with monopoly. In addition, this study revealed no significant improvement in nutritional knowledge levels before and after nutrition education with leaflet (Table 7). It is supported by an investigation by Hamdalah (2013), which obtained a significance of $p=0.001$ ($\alpha<0.05$). Hamdalah's study found an increased knowledge after dental and oral health education with snakes and ladders game in the intervention group and picture book media in the control group in 3rd-grade students at SDN Patrang 02 Jember Regency. In addition, this study result is in line with the research by Azadirachta and Sumarmi (2017) among students at SDN 021 Sungai Kunjang, Samarinda. The study found a significant difference between knowledge level before and after nutrition education on balanced nutrition with pocketbook media ($p=0.000$). Meanwhile, there was no difference or effect between knowledge levels before and after receiving nutrition education on balanced nutrition with leaflet media ($p=0.52$).

Monopoly media was more effective in improving respondents' nutritional knowledge than leaflet media. It is because monopoly media provides a better stimulus in conveying material to respondents at SDN I and SDN II than leaflet media. Respondents can interact directly in monopoly media during nutrition education and easily remember the material presented. Meanwhile, respondents only read the material presented in leaflet media, so they are bored during nutrition education and cannot correctly receive or remind the material. As a result, respondents' knowledge in the leaflet group did not increase significantly. During the nutrition education activity, respondents in the monopoly group had higher responses and enthusiasm than the leaflet group. It is because the monopoly media can attract

respondents' attention and interest. Thus, nutrition education with monopoly media could significantly increase nutritional knowledge compared to the leaflet media.

2. Consumption Patterns Before and After Nutrition Education with Monopoly and Leaflet Media

This study found increased consumption patterns before and after nutrition education with monopoly. In addition, this paper indicated no significant improvement in consumption patterns before and after nutrition education with leaflet media (Table 10). It is supported by Hamdalah (2013) that health education with educational game tools (EGT) had a significant influence on the selection of healthy snacks in children ($p=0.000$). In addition, a study by Siwi, Yunitasari and Krisnana (2014) compared nutrition education with lecture and audio-visual media. Siwi's research found improvement in consuming healthy snacks after nutrition education with audio-visual media ($p=0.004$), but no significant difference after nutrition education by using lecture ($p=0.527$).

Predisposing factors for consumption patterns are nutritional knowledge and exposure to information. This paper found that nutrition education with monopoly increased nutritional knowledge levels, so consumption patterns also improved. Nutrition education with monopoly increases children's motivation and attention to learning and increases curiosity. Knowledge can affect respondents' way of thinking. Next, it can significantly improve respondents' consumption patterns in the monopoly group compared to the leaflet group's consumption patterns. Meanwhile, our findings revealed that nutrition education with leaflets could not increase knowledge levels, so consumption patterns could not improve. Low knowledge levels result in consumption patterns that do not vary, affecting food diversity in individuals.

In addition to knowledge levels, consumption patterns can also be influenced by several factors, including the sex and age of the respondents. Most respondents in this paper were boys (Table 1) and 11 years old (Table 2). Gender and age are related to a person's consumption pattern because the nutritional needs of men and women have differences, but the differences are not significant. Furthermore, the more mature a person's age, the higher his food intake because of increased nutritional needs

CONCLUSION

Nutrition education with monopoly media is more effective in improving nutritional knowledge levels and consumption patterns than leaflet media in 5th-grade students. Further research could compare monopoly with other EGT, such as snakes and ladders nutrition or nutrition puzzle.

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The Survey of Community Anxiety During the Emergency Care (Community Activity Restriction Enforcement) Period

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A B S T R A C T

In the few months, increased Covid-19 cases in Indonesia forced the government to Emergency CARE (Community Activity Restriction Enforcement) program in Java-Bali. In addition to COVID-19 impact, Emergency CARE also adds anxiety to the community. This paper aims to analyze community anxiety during the Emergency CARE period. It was a descriptive-analytic study with a survey method. The variable was community anxiety during the Emergency CARE period. Sampling used non-probability sampling with convenience sampling technique with 165 respondents scattered in Java and Bali. In addition, this study used the Zung Self-Rating Anxiety Scale (ZSAS) instrument. The results showed community anxiety was mostly respondents (78%) within normal limits, 16% experienced mild, and 6% had moderate anxiety. In conclusion, there is no community anxiety during the Emergency CARE period. However, the implementation of Emergency CARE potentially causes community anxiety because it has an average anxiety score that exceeds the minimum anxiety score based on the ZSAS instrument assessment. It is necessary to improve information, education, and communication (IEC) regarding preventing Covid-19 transmission and properly handling psychosocial problems in society to lead to a strong family during the pandemic. Furthermore, this survey could be a policy recommendation to follow-up in overcoming community psychosocial problems due to the Emergency CARE program.

INTRODUCTION

At the beginning of 2020, the world was shocked by a disease outbreak attacking the human respiratory tract and causing many deaths. The world gave the name of this outbreak COVID-19 (Wardani Erika, 2021). Many countries have made efforts to break the chain of COVID-19 transmission, including socialization and information about the disease, modes of transmission, and prevention efforts using various media (Karasneh, 2021). In May 2020, many countries began introducing a new order/pattern of life – a new normal life – to adapt to COVID-19, including Indonesia (Kusuma, Fatmawati and Mafticha, 2021). However, during 2020, this new habit has not been able to reduce cases of Covid-19 transmission in the community. Furthermore, entering early January 2021, the COVID-19 incidence has reincreased.

In recent months, the Covid-19 pandemic in Indonesia has experienced an increased incidence. According to the Indonesian Covid-19 task force, in June 2021, mortality reached 7,913, which was the highest number during the pandemic. These increased incidences surpassed the highest number of deaths since the pandemic in January 2021, with 7,860 cases (Wardani, Bistara and Setiyowati, 2020). The number of daily confirmed cases of COVID-19 in June also increased. On Saturday, June 26, 2020, the number of positive COVID-19 incidents was 21,095, with the accumulation of the total number of positive cases

being 2,093,962 (Wardani, Bistara and Setiyowati, 2020). This significantly increased cases forced the government to take strategic and immediate steps. The President's direction of the Republic of Indonesia through the YouTube account of the Presidential Secretariat on July 1, 2021, the President said that the spread of Covid-19 in Indonesia was growing very fast, especially in the last few days. In addition, a new variant is also a severe problem in many countries. Based on the considerations, the government imposed an Emergency CARE (Community Activity Restriction Enforcement), whose implementation began in Java and Bali (Mendagri RI, 2021).

Following up on the President's directive to implement Emergency CARE, the government issued an instruction from the Minister of Home Affairs concerning the Emergency CARE 2019 in the Java and Bali Regions on 3 - 20 July 2021 (Mendagri RI, 2021). As contained in a copy of the Minister of Home Affairs Instruction, some community activities must follow the rules. There were restrictions ranging from 25% to 50% in the essential activity sector. Meanwhile, in the non-essential sector, the limitation of activities was up to 100%. These restrictions significantly impacted students and parents, especially in small and large businesses of non-essential activities.

The COVID-19 outbreak impacts society psychologically, socially, and economically. Furthermore, Emergency CARE includes restrictions on community activities that are stricter than the regulations that have been in force so far, such as the CARE micro-scale. This implementation could lead to an increase in psychosocial cases since the Covid-19 pandemic. There should be the identification of psychosocial problems due to Emergency CARE's effect to prevent the rise in psychosocial disorders in the community.

Prior research by Aslamiyah (2021) revealed that COVID-19 impacted the respondents' psychology. They experienced decreased motivation, shock, sadness, depression, insomnia, trauma, and required motivational support from family and friends. In addition, they had community stigma as individuals with COVID-19. Furthermore, they had difficulties in social activities and economic – work delays, reduced income, and issues meeting food needs. COVID-19 pandemic is a non-natural disaster impacting the community's mental and psychosocial health conditions (Masyah, 2020). Several psychosocial problems during the COVID-19 pandemic are feeling tired, low self-esteem, inability to cope with issues both self and family, family conflict, anxiety, panic disorder, and depression (Marieta, 2020). In addition, Mega Tala Harimukthi, a UI psychologist in CNN Indonesia (2021a), said that the Emergency CARE created anxiety for the community to meet their daily needs, causing panic buying in personal protective equipment, daily necessities, and others. Thus, the COVID-19 pandemic affects the individuals' psychological condition widely and massively. During the pandemic, individuals begin to think about health and disease prevention information. However, some view it negatively by seeing the number of

deaths caused by the COVID-19, which creates anxiety in the community (Sari, 2020). Thus, researchers are interested in surveying to determine community anxiety during the Emergency CARE period.

METHOD

This paper was a descriptive-analytic study with a survey research method. The variable was community anxiety during the Emergency CARE period. Sampling used non-probability sampling with convenience sampling technique. Inclusion criteria were: (1) individuals living in the Java and Bali regions, including East Java, Central Java, West Java, Jakarta, Yogyakarta, Banten, and Bali; (2) respondents could read and access google forms; (3) people who were willing to participate in this study by filling informed consent in the initial google form display. This study has been done an ethical feasibility test by the Majapahit Health Research Ethics Commission of STIKES Mojokerto. Data were collected using a questionnaire distributed in a google form containing informed consent, respondent's consent form, demographic data, and Zung Self-Rating Anxiety Scale (ZSAS). Respondents must identify 20 indicators of anxiety problems that may be experienced after one week of implementing Emergency CARE. ZSAS questionnaire is a standardized questionnaire in English designed by William WK Zung (1971) to measure anxiety levels within the last one week. This questionnaire has been translated into Indonesian and did validity and reliability tests. The validity test results in each questionnaire question have the lowest value of 0.663 and the highest being 0.918, with a significance level of 5% or 0.05. Thus, the questionnaire is valid. In addition, the reliability test obtains 0.8, so the questionnaire is reliable. Furthermore, we distributed the google form through the WhatsApp social media application and Facebook by linking the google form link. This survey was carried out from 17-20 July 2021. There were 165 respondents in this research. The research data were analyzed univariately and presented with a categorical data scale in the frequency distribution.

RESULT

We presented the study results of univariate analysis, containing respondents' characteristics and community anxiety.

Table 1. Characteristics of Respondents

	Variable	Frequency	Percentage (%)
Age	17 - 25 years old	40	24
	26 - 35 years old	45	27
	36 - 45 years old	56	34
	46 - 55 years old	21	13
	56 - 65 years old	3	2
Sex	Male	42	26
	Female	123	74
Education	Junior High School	3	2
	Senior High School	44	27
	Higher Education	118	71
Region	East Java	121	73
	Central Java	8	5
	West Java	9	6
	DKI Jakarta	7	4
	DIY	2	1
	Bali	17	10
	Banten	1	1
Profession	Unemployment	55	33
	Indonesian National Armed Forces and Police of t Indonesia	2	1
	Profesional	46	28
	Professional technicians and assistants	49	30
	Administration staff	2	1
	Service and sales personnel	11	7
Religion	Moslem	139	84
	Hindu	15	9
	Katolik	3	2
	Protestan	8	5
History of Covid-19	Never been diagnosed with COVID-19	135	82
	Ever diagnosed with COVID-19	30	18
Covid-19 vaccination	Respondents have not received the covid-19 vaccine	62	38
	Respondents have received the covid-19 vaccine	103	62
Anxiety	Normal	129	78
	Mild anxiety	26	16
	Moderate anxiety	10	6

Table 1 shows that most respondents are 36-45 years old or late adulthood (34%), female (74%), unemployment (33%), Muslim (84%). In addition, they have higher education (71%), live in East Java (73%), have never been diagnosed with COVID-19 (82%), and have received the covid-19 vaccine (62%).

Furthermore, based on the ZSAS instrument, community anxiety is mostly within normal limits (78%), 16% have mild, and 6% have moderate anxiety.

Table 2. Crosstab between the characteristics of respondents and community anxiety

Variable	Anxiety Levels		
	Normal	Mild	Moderate
Age			
17 - 25 years old	28(70%)	2(5%)	10(25%)
26 - 35 years old	33(73%)	5(11%)	7(16%)
36 - 45 years old	48(86%)	2(4%)	6(11%)
46 - 55 years old	19(90%)	1(5%)	1(5%)
56 - 65 years old	1(33%)	0	2(67%)
Gender			
Male	33(79%)	2(5%)	7(17%)
Female	96(78%)	8(7%)	19(15%)
Education			
Junior High School	2(67%)	0	1(33%)
Senior High School	34(77%)	2(5%)	8(18%)
Higher Education	93(79%)	8(7%)	17(14%)
Place of origin			
East Java	96(79%)	7(6%)	18(15%)
Central Java	7(88%)	0	1(12%)
West Java	6(67%)	1(11%)	2(22%)
DKI Jakarta	7(100%)	0	0
DIY	1(50%)	0	1(50%)
Bali	11(65%)	2(11%)	4(24%)
Banten	1(100%)	0	0
Profession			
Unemployment	42(76%)	3(6%)	10(18%)
Indonesian National Armed Forces and Police of the Republic of Indonesia	2(100%)	0	0
Profesional	34(74%)	5(11%)	7(15%)
Professional technicians and assistants	41(84%)	2(4%)	6(12%)
Administration staff	2(100%)	0	0
Service and sales personnel	8(73%)	0	3(27%)
Religi			
Moslem	111(80%)	8(6%)	20(14%)
Hindu	9(60%)	2(13%)	4(27%)
Katolik	2(67%)	0	1(33%)
Protestan	7(88%)	0	1(12%)
Confirmed history of Covid-19			
Never	108(80%)	7(5%)	20(15%)
Ever	21(70%)	3(10%)	6(20%)
History of Covid-19 vaccine			
Not yet	45(73%)	6(10%)	11(17%)
Received	84(82%)	4(4%)	15(14%)

Table 2 reveals the crosstab between the characteristics of respondents and community anxiety. It shows that most respondents (30%) with mild to moderate anxiety are late teens (17-25 years old). In addition, 18% of homemakers and students have moderate anxiety. Furthermore, most respondents with normal anxiety have high educational levels and are scattered across all regions of origin.

DISCUSSION

The survey results showed that 78% of respondents were adaptive or normal, 16% experienced mild, and 6% had moderate anxiety. However, the anxiety level with a numerical data scale showed that the mean anxiety score was 33 points with a minimum anxiety score of 20 and a maximum anxiety score of 62 points. Based on the Zung-Self Rating Anxiety Scale (ZSAS) instrument developed by William W.K. Zung (1971), the minimum anxiety score is 20 points, and the maximum anxiety score is 80 points. Thus, the implementation of Emergency CARE potentially caused community anxiety because it had an average anxiety score that exceeded the minimum anxiety score based on the ZSAS instrument assessment. These findings are similar to a study by Sundarasan et al. (2020) regarding the psychological impact of COVID-19 and the lockdown regulation in Malaysia. Most respondents (92%) experienced normal anxiety, 5% had mild to moderate anxiety, and 3% underwent moderate to severe anxiety. In addition, Zheng et al. (2020) research regarding the correlation between community restrictions and anxiety due to COVID-19 revealed that higher-level restrictions cause more anxiety. The study indicates that the restriction during the COVID-19 pandemic positively correlates with anxiety ($r = 0.07$, $p=0.004$). According to Windarwati (2013), anxiety is a condition of psychological stress experienced due to disruption of family functions that threatens physical integrity and self-system. In psychiatric nursing, anxiety is one of the mental health problems in the nursing diagnosis or psychosocial problems. Untreated anxiety can potentially lead to mental health problems ranging from mild to severe (Mawaddah, Mujiadi and Rahmi, 2020). Therefore, the nurses' role is vital to overcome anxiety problems in clients.

Community anxiety during the Emergency CARE period can occur due to several factors. One of them is age. Our findings showed that most respondents (30%) with mild to moderate anxiety were late teens (17-25 years old). 17-25 years is the most vulnerable age group experiencing anxiety, primarily due to the implementation of Emergency CARE. In this study, the late teens consisted of eight teenagers in high school and four teenagers in college. Emergency CARE affected learning activities in schools, universities, academies, and education or training centers. There was online learning during Emergency CARE in the Java-Bali region until a time limit could not be determined (Mendagri RI, 2021). Based on Basic Health Research 2018, mental or psychiatric problems – such as stress, anxiety, and depression – increase in adolescence because a lot of pressure begins in this period and can trigger other issues. Thus, late teens become vulnerable to psychosocial problems (Kemenkes, 2013). This study's results align with Sundarasan et al. (2020) research. The study revealed that individuals aged 17 to 18 experienced more anxiety than older people. It is because late teens spend more time on social media. Although social media provides easy and fun access to information, especially during Emergency CARE, using social media can be tiring. In addition, negative information from social media could trigger their anxiety. Furthermore, it may impact mental health in the late teens.

Sex can predispose anxiety. Most respondents in this paper were female (75%). Research conducted by Sundarasan et al. (2020) found that women generally express more emotions than men, and the COVID-19 pandemic may have exacerbated it. The study showed that women's uncertainty tolerance threshold was lower than men. When women cross that threshold, they can have stress and anxiety.

In addition to age and gender factors, mild to moderate anxiety in this study could be caused by profession. 18% of homemakers and students in this paper had moderate anxiety. During Emergency CARE, several sectors were affected. One of which was teaching and learning activities that initially started to apply learning activities using the Blended Learning method or online and offline learning. However, there was only online learning during the Emergency CARE period. In addition, shopping centers, malls, trade centers, and other public facilities were also closed again. It can cause psychosocial problems for the respondents because the situation increases in severity, and it is uncertain when this will end. Furthermore, during the COVID-19 pandemic, students must adjust to distance learning and be isolated from their friends. Moreover, it potentially creates frustration, anger, hatred, and anxiety (Sundarasan *et al.*, 2020).

In this paper, the history of exposure to covid-19 was also a predisposing factor in mild to moderate anxiety. Our finding showed that most respondents had never been diagnosed with COVID-19 (72%). People became less anxious because of improved public awareness of health protocol and decreased Covid-19 active cases. However, there was a spike in positive cases of COVID-19 in Java and Bali with the new variant, namely the Delta variant. The Delta variant is six times more contagious than other variants, so there was an increased bed occupancy rate in the hospital by almost 90%. Therefore, the government enforced the implementation of the Emergency CARE with stricter restrictions on community activities. A study conducted by Zheng et al. (2020) revealed that a more significant number of new cases could lead to higher anxiety levels. Thus, pandemic severity can predispose to community anxiety.

Respondents with normal anxiety levels were scattered across all regions of origin (Table 2). In April 2020, President Jokowi established Mental Health and Psychosocial Support (here and after it is called DKJPS) program. The program's background was a report from the COVID-19 task force stating that the Covid-19 problem was not limited to physical issues but also psychological and other sectors. Thus, the DKJPS program is crucial. The program involves multi-professional and interdisciplinary thoroughly so that all stakeholders can use the program (Utami and Budi Anna Keliat, 2020). The program is disseminated to all Indonesian people, including the Java and Bali regions, through offline and online socialization, such as social media, seminars, and various multidisciplinary workshops.

In addition, this study indicated that most respondents with normal anxiety had high educational levels (Table 2). An investigation conducted by (Zheng *et al.*, 2020) revealed that people with higher education

reported more anxiety than people with low education ($B=0.07$, $SE=0.03$, $p= 0.03$). The more understanding the problem can cause an alert so that an anxiety response appears.

Most respondents with normal anxiety are Moslem (86%). It is because Islam views humans holistically, as a unitary physical and spiritual. Religion has the authority to seek the essence of nature, guidance, faith, destiny, death, angels, demons, sin, soul, spirit, revelation, the presence of God, and non-empirical or spiritual reality. Efforts to heal emotional disorders in Islam have been proven empirically. Religion can foster mental health and develop personality through worship activities such as prayer. Islam also encourages overcoming anxiety through self-approach and worshipping Allah, such as fasting and self-control (Hawari, 2006).

According to Hawari (2006), the therapeutic process for overcoming anxiety using holistic therapy includes four elements (Bio-Psycho-Social-Spiritual). Holistic therapeutic can form physical and mental health in a person. Dadang Hawari also argues that anxiety therapy is inseparable from those four elements. These approaches focus on human nature, namely the relationship between the four elements, to produce holistic treatment. Thus, the intervention of the four elements is carried out simultaneously, not separate and not independent, also interrelated.

CONCLUSION

There is no community anxiety during the Emergency CARE period. However, the implementation of Emergency CARE potentially causes community anxiety because it has an average anxiety score that exceeds the minimum anxiety score based on the ZSAS instrument assessment. It is necessary to improve information, education, and communication (IEC) regarding preventing Covid-19 transmission and properly handling psychosocial problems in society to lead to a strong family during the pandemic. Furthermore, this survey could be a policy recommendation to follow-up in overcoming community psychosocial problems due to the Emergency CARE program.

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A Rare Case of Spontaneous Uterine Rupture in Second Trimester Pregnancy with Bicornuate Uterus: A Case Report

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A B S T R A C T

Uterine rupture is a public health problem in developing countries. Uterine rupture in pregnancy is a rare fatal complication with a high fetal and maternal morbidity incidence. In this case report, we present the rare case of a woman with a bicornuate uterus who had a spontaneous uterine rupture in the second trimester of pregnancy. A 34-year-old woman with eighteen weeks of gestation presented abdominal pain due to uterine rupture in the last 12 hours. We discovered abdominal pregnancy by ultrasound examination. Furthermore, an exploratory laparotomy found a bicornuate uterus with uterine rupture and a nonviable fetus. Then, we did a supra-vaginal hysterectomy to control bleeding. Spontaneous uterine rupture in second-trimester pregnancy with a bicornuate uterus can impact fetal and maternal death. This case is rare and requires prompt diagnosis and treatment.

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INTRODUCTION

A bicornuate uterus is a uterine malformation produced due to impairment in the fusion of Mullerian ducts. It is a rare anomaly, but it is associated with worse reproductive outcomes –recurrent pregnancy loss and preterm labor are the most common (Kaur P, 2021). It is characterized by the presence of a cleft > 1 cm in the external contour of the uterine fundus (Narang, Cope, and Teixeira, 2019). In pregnancy, a bicornuate uterus increase the risk of spontaneous abortion, preterm delivery, uterine rupture, cesarean section, breech presentation, and a low live birth rate (Reichman and Laufer, 2010; Fouelifack *et al.*, 2014).

Uterine rupture is a public health problem in developing countries. Spontaneous uterine rupture most often occurs during labor in the context of an injured uterus. Meanwhile, uterine rupture during pregnancy is rare (Guèye *et al.*, 2012). Uterine rupture in pregnancy is a rare and often catastrophic complication with a high fetal and maternal morbidity incidence. Many factors increase the risk of uterine rupture. However, the overall incidence of uterine rupture is low, even in high-risk subgroups. From 1976 to 2012, 25 peer-reviewed publications described the incidence of uterine rupture. There were 2,084 cases

of uterine rupture among 2,951,297 pregnant women. overall, uterine rupture rate was 1 in 1,146 pregnancies (0.07%) (Nahum, 2016).

The diagnosis of uterine rupture is not always precise. In addition, maternal and fetal morbidity and mortality because of uterine rupture are still high (Guèye *et al.*, 2012). Management of this rare pregnancy complication requires several considerations. Cesarean delivery with uterine repair or hysterectomy may be appropriate for fetal viability. However, management decisions are complicated when the fetus is viable or very premature. The traditional approach is to terminate the pregnancy by uterine repair or hysterectomy (Hawkins *et al.*, 2018).

A uterine rupture event begins with an anomaly. Uterine anomalies are variations in the separation between the two uterine cavities, found about 0.1-3% of the female population (Fouelifack *et al.*, 2014). In 6-22 weeks' gestation, bilateral paramesonephric in the Mullerian duct undergoes a process of fusion. In addition, there is a canalization to form the uterus, cervix, and upper-two-thirds vagina (Reichman and Laufer, 2010). One of these abnormalities is the bicornuate uterus, caused by abnormal fusion of ducts. It might be diagnosed before or during pregnancy (Souvizi and Esfehiani, 2016). The European Society of Human Reproduction and Embryology/European Society for Gynecological Endoscopy (ESHRE/ESGE-2013) classified the bicornuate uterus as the uterine anomaly (Grimbizis *et al.*, 2013). The gold standard diagnostics use invasive, such as hysteroscopy, hysterosalpingography, laparoscopy, or laparotomy. In addition, the 2D ultrasound cannot determine the type of uterine anomaly, but the 3D does (Woelfer *et al.*, 2001). Furthermore, MRI can also be an accurate non-invasive diagnostic modality (TAKAGI *et al.*, 2003). Most cases are detected for the first-time during pregnancy and incidentally discovered.

This study explains the case reports of second-trimester pregnancy with a bicornuate uterus. This case discussion can prevent pregnancy complications through an active role in antenatal care and appropriate supporting examinations.

CASE PRESENTATION

Mrs. DH, 34 years old, second pregnancy at 18 weeks gestation, was referred to the emergency room of a district referral hospital in East Java, Indonesia. Her chief complaint was abdominal pain in the last 12 hours. Abdominal pain started in the lower abdomen then extended throughout the abdomen without radiating pain. Before referral, the patient was diagnosed with an abdominal colic. The patient was given oral pain medication but no response. The patient's age of menarche is 12 years, with the regular menstrual cycle for 5-6 days every 28-30 days. The patient was currently using intrauterine contraception for five years. The patient had her first term pregnancy eight years earlier with the spontaneous birth of a 3400-gram baby boy. The patient had amenorrhea in 4 months. She did a home pregnancy test two months earlier, and it was positive. The patient has never had prenatal care in this pregnancy.

On clinical examination found abdominal pain, nausea, vomiting, and weakness. Blood pressure 124/84mmHg, pulse 118bpm, respiration rate 20rpm, and temperature 36.6oC. There was no pale conjunctiva and no abnormalities on lung examination. Her stomach was a bit bloated. The vagina was normal and had no discharge. However, there was pain on palpation of the posterior cervical fornix and left adnexa with a pain scale of 6 (visual analog score-VAS). 2D ultrasound examination showed free fluid and the fetus in the peritoneal cavity. Preoperative laboratory examinations were within normal limits. In addition, the SARS-CoV-2 PCR swab test was negative.

Initial management of the patient was oxygenation, rehydration, and injection of 30 mg ketorolac. We did laparotomy 2 hours after the patient came into the hospital. During exploration, the uterus was found with two horns. The left side was more extensive and contained a nonviable fetus in the peritoneum. However, the right horn was still intact. Macroscopically, the right and left ovaries and fallopian tubes were within normal limits. We performed a supra-vaginal hysterectomy on the left uterine horn. In addition, we removed the fetus to control bleeding (see figure 1).



Figure 1. Nonviable fetus and partial left uterine horn

DISCUSSION

Spontaneous uterine rupture in second-trimester pregnancy with the bicornuate uterus is rare. However, a pregnant mother with a bicornuate uterus must deal with uterine rupture. Bicornuate uterus (BU) occurs because of incomplete fusion of the two Müllerian ducts during embryogenesis. It rarely can lead to rupture of the uterus during the early pregnancy. Still, it has high mortality and morbidity rates (Hefny *et al.*, 2015). A study also reported a ruptured left horn in the bicornuate uterus. The rupture in bicornuate uterus cases occurs because of the inability of the malformed uterus to expand like a normal uterus. The rudimentary horn rupture is possible in the late first trimester or even in the second trimester (Kore S, Pandole A, Akolekar R, Vaidya N, 2000).

Fetal death can occur due to spontaneous uterine rupture. Uterine rupture can also occur in the third trimester of pregnancy. A previous case report found a 33-year-old primigravida with severe acute abdominal pain and signs and symptoms of hemorrhagic shock. Still, the intrauterine fetus was alive at 28 weeks. Unfortunately, the fetal heart rate was inconclusive with variable decelerations and fetal bradycardia (Nikolaou *et al.*, 2013). In this case, the uterine anomaly was just identified when the uterine rupture occurred in the second pregnancy. Severe abdominal pain was initially diagnosed as abdominal colic. The early signs and symptoms of uterine rupture are usually nonspecific, making diagnosis difficult and delaying definitive therapy. Generally, fetal morbidity becomes clinically significant inevitable. It occurs only 10-37 minutes From diagnosis time to delivery (Nahum, 2016).

Appropriate management of uterine rupture depends on early detection. In the past, health providers should evaluate classic signs of uterine ruptures, such as sudden abdominal pain that begins with a "ripping" sensation, vaginal bleeding, termination of uterine contractions, and fetal regression. However, recent experience has shown that these signs are unreliable and often absent. Nowadays, fetal distress is the most reliable clinical symptom (Toppenberg and Block, 2002). In this paper, the authors discovered free fluid and fetus in the peritoneum by 2D ultrasound. Then, we diagnosed the patient had an abdominal pregnancy. When we did exploratory laparotomy, we found that the uterus had an indentation in the fundus, thus forming two uterine horns without septa. The left side was more extensive and contained a nonviable fetus in the peritoneum. However, the right horn was still intact. In this case, the type of anomaly was challenging to determine because of her uterine break.

In this case report, a patient has been pregnant and had a vaginal delivery in the previous pregnancy history. We suspected that she had one normal uterine horn and one rudimentary horn. In this pregnancy, implantation in the rudimentary horn caused the uterine rupture. So, we concluded as a Hemi-uterus with a rudimentary communicating cavity. A prior case reported a possible successful pregnancy in a complete bicornuate uterus (Souvizi and Esfehiani, 2016). In addition, A study reported a bicornuate uterine rupture that resulted in a live birth at 30 weeks gestation. Four hours after rupture, the laparotomy was performed (Nitzsche, Dwiggins, and Catt, 2017). On the other hand, there was a delayed operation in this case, and the fetus was not viable. In addition, the patient never had antenatal care and any history of previous section cesarean surgery. A Case report revealed a correlation between the history of uterine rupture and spontaneous uterine rupture in 27-28 weeks of gestation (M.D. and Dewi, 2018). However, there was no history of previous uterine rupture in this case.

Asymptomatic and low prevalence make uterine screening unpopular. Another study showed a 30 weeks pregnant woman who did not respond to induction on misoprostol – 200 mcg weekly 4 hours every week. The woman was diagnosed with bicornuate uterine rupture. In this case, the patient had never had labor induction. It increases the risk of uterine rupture in uterine anomalies. Spontaneous uterine rupture in

early pregnancy is an infrequent complication and usually occurs in uterine scar tissue. Uterine anomalies are a risk factor for spontaneous uterine rupture in early pregnancy. In early pregnancy, the clinical signs of uterine rupture are nonspecific and must be distinguished from an acute abdominal emergency (Tola, 2014).

According to previous studies, many of these abnormalities might be asymptomatic. It remains undiagnosed until abdominal surgeries, such as hysterectomy. In this regard, one of the first diagnostic clues is the occurrence of obstetrical complications. Studies have shown that uterine rupture might occur during pregnancy because of a thin wall and the inability of the malformed uterus to expand like a normal one (Souvizi and Esfehiani, 2016). uterine rupture in the rudimentary horn frequently occurs in the second and third trimesters. It is an obstetric emergency. The recommended treatment is surgical resection of the horn rupture or total hysterectomy (Heinonen, 2000).

Uterine rupture during pregnancy is rare; however, the incidence increases. Critical steps for successfully managing uterine rupture include prompt diagnosis and definitive surgical management with concomitant maternal hemodynamic stabilization (Sutton *et al.*, 2016). In addition, the patient feels difficult to accept her situation. Thus, psychological assistance should support patients after a pregnancy failure.

CONCLUSION

Spontaneous uterine rupture in second-trimester pregnancy with a bicornuate uterus can impact fetal and maternal death. This case is rare and requires prompt diagnosis and treatment. Uterine anomalies are rare, but they have a high risk of uterine rupture. However, a quick response can prevent it from getting worse. Early diagnosis of uterine abnormalities before pregnancy will increase antenatal care and birth plan awareness. Premarital programs should include screening for uterine anomalies to prevent maternal death. In addition, patients with pregnancy failure should receive psychological support, especially when they can't get pregnant again.

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Effect of Ergonomic Gymnastics on Systolic Blood Pressure Among Individuals with Hypertension in Kaliasin Family Welfare Development

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A B S T R A C T

One of the things that can affect blood pressure is a lack of physical activity. Ergonomic gymnastics is an exercise that easy to learn and understand. This paper analyzes the effect of ergonomic exercise on systolic blood pressure among individuals with hypertension in the Kaliasin family welfare empowerment. This research was a pre-experimental study with a One-group pre-posttest design. The sampling technique utilized non-probability sampling with the purposive sampling technique. In addition, the population was 20 individuals with hypertension in Kaliasin family welfare empowerment. Fifteen people met the inclusion criteria – 45-55 years old and had stage I hypertension with 140-159 mmHg systolic. The independent variable was ergonomic gymnastics, while the dependent variable was systolic blood pressure. Ergonomic gymnastics were performed six times for two weeks with 25-30 minutes in each meeting. In addition, the instruments were ergonomic gymnastics manuals with an observation sheet and a sphygmomanometer. Data analysis utilized the Wilcoxon signed-rank test with a significance level of 0.05. The results showed that most respondents had 155-159 mmHg in systolic blood pressure (40%) before the ergonomic gymnastic. Meanwhile, after the intervention, they had 145-149 mmHg (33.3%) and 150-154 mmHg (33.3%). In addition, the Wilcoxon signed-rank test obtains $p=0.001$ ($\alpha \leq 0.05$). Thus, there was a difference in systolic blood pressure before and after ergonomic gymnastics. Ergonomic gymnastics can decrease systolic blood pressure. Individuals with stage I hypertension should perform ergonomic gymnastics routinely to avoid the complication of hypertension.

INTRODUCTION

Health is essential to carry out life well. Without health, every human being will be challenging to carry out their daily activities. Most people with busy activities will ignore the importance of exercising (Prasetyo, 2015). Individuals with fewer workouts potentially have increased blood pressure. Increased blood pressure or hypertension has become a concern in various parts of the world (Bistara and Kartini, 2018). It is often the number one non-communicable disease in many countries (Fitriani and Nilamsari, 2017). Blood pressure is the force of blood pushing against the walls of arteries. It occurs when blood is pumped from the heart to the rest of the body. In addition, it plays a vital role because blood will not flow without it. The blood pressure measurement results are systolic and diastolic pressures. Systolic pressure is the pressure that occurs in the arteries. It occurs when the heart pumps blood into the arteries. Meanwhile, diastolic pressure is the pressure that occurs in the arteries when the heart relaxes between two beats (contractions) (Palmer, 2007).

One of the things that can affect blood pressure is a lack of physical activity. Physical activity includes daily life activities, such as sweeping, mopping, washing clothes, gardening, cleaning the bathroom, and

drawing water (Effendi, Budhi Setianto, Agus Aan Adriansyah, Akas Yekti Pulih Asih, 2021). In addition, sports are also physical activity. 30 minutes/day of regular and routine exercise can help increase High-density lipoprotein (HDL) levels. Furthermore, physical activity significantly affects blood pressure stability. Individuals with physically unactive tend to have a higher heart rate. The condition causes the heart muscle to work harder in every contraction. The greater the heart workload, the greater the blood pressure in the artery walls. Thus, the peripheral pressure causes increased blood pressure.

Based on Basic Health Research (2013), hypertension prevalence was 45.9% in 55-64 years and 57.6% in 65-74 years (Riskesdas, 2013). In addition, 935,736 people (13.47%) had hypertension in East Java, consisting 387,913 man (13.78%) and 547,823 women (13.25%) (Kemenkes, 2017). In 2015, the Surabaya District Department of Health Office reported 16.78% of 818,331 individuals who checked in the health center had hypertension (Dinkes, 2015). The preliminary study results showed the number of hypertension cases in Kedung Doro Village in the last three months of 2018 was 85 people. Furthermore, Kaliasin family welfare empowerment has 50 members. In addition, we interviewed with the Head of the Neighborhood Association (here and after it is called RT) and the Chair of the Kaliasin family welfare empowerment. They said that individuals in RT 08 had never been taught ergonomic exercise.

Various factors predispose changes in blood pressure. One of them is a lack of physical activity. Regular daily physical activity can train the heart muscle and reduce peripheral resistance to prevent increased blood pressure. In addition, it can stimulate the release of endorphins, causing a euphoric effect and muscle relaxation. As a result, blood pressure does not increase (Sase, 2013). One of the easy physical activities to do every day to prevent chronic diseases – such as hypertension – is exercise. Exercise can increase the body's metabolic activity and oxygen demand. Ergonomic gymnastics is an exercise that easy to learn and understand. In addition, individuals of all ages can do it. Furthermore, it can increase blood vessel circulation and maintain health. It has very anatomical, simple, and harmless movements – such as pulling the nerve endings, restoring the position of the nerves, putting more pressure on the fine blood vessels in the head. It can circulate oxygen through the bloodstream to the brain. It also can activate sweat glands, the body's heating system, and other nervous systems. Ergonomic gymnastic movements are efficient to do by everyone from children to the elderly (Safitri, Safri and Jumaini, 2015).

A prior study examined the effect of ergonomic exercise in patients with Type 2 Diabetes on fasting blood glucose levels and glucose levels 2 hours postprandial. The study showed an average decrease in fasting blood glucose levels of -4.13 mg/dl and standard deviation ± 56.30 mg/dl. In addition, there were decreased glucose levels 2 hours postprandial levels with an average of 2.87 mg/dl and standard deviation ± 81.55 mg/dl (Fahmi and Widiyatmoko, 2013). Furthermore, stretching in ergonomic exercise could reduce musculoskeletal disorders pain scores in aluminum can makers (Nunik, Hakimi and Huriah, 2015). The ergonomic exercise can be an option for all age groups. This paper analyzes the effect of

ergonomic exercise on systolic blood pressure among individuals with hypertension in the Kaliasin family welfare empowerment.

METHOD

This research was a pre-experimental study with a One-group pre-posttest design. The sampling technique utilized non-probability sampling with the purposive sampling technique. In addition, the population was 20 individuals with hypertension in the Kaliasin family welfare empowerment. Fifteen people met the inclusion criteria – 45-55 years old and had stage I hypertension with 140-159 mmHg systolic. The independent variable was ergonomic gymnastics, while the dependent variable was systolic blood pressure. Ergonomic gymnastics were performed six times for two weeks with 25-30 minutes in each meeting. In addition, the instruments were ergonomic gymnastics manuals with an observation sheet and a sphygmomanometer. Then, we measured systolic blood pressure before and after ergonomic exercise. Data analysis utilized the Wilcoxon signed-rank test with a significance level of 0.05.

RESULTS

Table 1 contains the characteristics of respondents in this study. In addition, table 2 reveals systolic blood pressure before and after ergonomic gymnastics.

Table 1. Characteristics of respondents in Kaliasin family welfare empowerment, Surabaya (n=15)

Characteristics	Frequency	Percentage (%)
Age (years old)	45-49	5 (33.3%)
	50-55	10 (66.7%)
Gender	Female	15 (100%)
	Male	0 (0%)
Last Education	No School	1 (6.7%)
	Elementary School	3 (20.0%)
	Junior High School	1 (6.7%)
	Senior High School	10 (66.7%)
Occupation	Civil servants	0 (0%)
	Entrepreneur	4 (26.7%)
	Pensioners	0 (0%)
	Farmer/labor	0 (0%)
	Housewife	11 (73.3%)
Blood Pressure (Systolic)	145-149 mmHg	4 (26.7%)
	150-154 mmHg	5 (33.3%)
	155-159 mmHg	6 (40.0%)
Body Weight (kilograms)	40-49	2 (13.3%)
	50-59	6 (40.0%)
	60-69	5 (33.3%)
	70-79	2 (13.3%)
Exercise Habits		

	Not Often	12 (80.0%)
	Frequent	3 (20.0%)
Habit of Checking Blood Pressure	Often (2-3x/Month)	3 (20.0%)
	Rarely (1x/Month)	5 (33.3%)
	Never	7 (46.7%)
Eat healthy food	No	12 (80.0%)
	Yes	3 (20.0%)
Consuming high-salt foods	Not Often	4 (26.7%)
	Often	11 (73.3%)

Table 1. shows that all participants are female (100%), and most are 50-55 years old (66.7%). Most participants are housewives (73.3%), graduated from Senior High School (66.7%), have 50-59 kilograms of weight (40%). In addition, they do not often exercise (80%) and never do blood pressure checks (46.7%). Furthermore, they do not eat healthy food (80%) and often consume high-salt foods (73.3%).

Table 2. Systolic Blood Pressure before and after the Ergonomic Gymnastics (n=15).

Variable	Blood Pressure	Percentage %
Systolic blood pressure before ergonomic gymnastics	140-144 mmHg	0 (0%)
	145-149 mmHg	4 (26.7%)
	150-154 mmHg	5 (33.3%)
	155-159 mmHg	6 (40.0%)
	Total	15 (100%)
Systolic blood pressure after ergonomic gymnastics	140-144 mmHg	3 (20.0%)
	145-149 mmHg	5 (33.3%)
	150-154 mmHg	5 (33.3%)
	155-159 mmHg	2 (13.3%)
	Total	15 (100%)
Wilcoxon Test	$p=0.001$	

Table 2 reveals that most respondents have 155-159 mmHg in systolic blood pressure (40%) before the ergonomic gymnastic. Meanwhile, after the intervention, they have 145-149 mmHg (33.3%) and 150-154 mmHg (33.3%) in systolic blood pressure. In addition, the Wilcoxon signed-rank test obtains $p=0.001$ ($\alpha<0.05$). Thus, there was a difference in systolic blood pressure before and after ergonomic gymnastics.

DISCUSSION

1. Systolic blood pressure before ergonomic gymnastics

Our findings found that most respondents have 155-159 mmHg in systolic blood pressure before the ergonomic gymnastic. It is categorized as stage I hypertension. Predisposing factors of increased blood pressure are physical activity, diet consumption, and the habit of consuming high-salt foods.

Most respondents in this paper did not often exercise. Nuraini (2015) explains that lack of physical activity can increase the risk of hypertension because it is correlated with obesity. It impacts homeostasis imbalances, resulting in a faster heart rate, and the heart muscle has to work harder at each contraction.

Therefore, the more complex and often heart pump, the greater the force pushing on the arteries, causing hypertension. The authors assume that lack of activity can increase obesity. Individuals with obesity potentially have hypertension because fats in the arteries or veins can increase blood pressure. We believed that many respondents in this study were obese because most were homemakers, so they most likely had minimal exercise.

In addition, most respondents did not eat healthy food. An unhealthy eating pattern is a predisposing factor for obesity. Furthermore, individuals with obesity most likely experience hypertension or other diseases. A diet containing high salt intake, high fat, and much cholesterol will affect blood pressure (Hamidi, 2014). We assume that an unhealthy diet is one of the triggers for increasing blood pressure.

Furthermore, most respondents often consumed high-salt foods. Foods with an excessive sodium composition can increase sodium concentration in extracellular fluid, causing increased blood volume in extracellular fluid. As a result, the impact is hypertension (Nuraini, 2015). High-salt foods consumption impacts the blood volume, resulting in increased heart workload.

2. Blood pressure after Ergonomic Gymnastics

There was a change in the number of respondents with a systolic blood pressure of 140-144 mmHg (from 0 respondents before ergonomic gymnastics to 3 respondents after the intervention). In addition, the number of respondents with a systolic blood pressure of 155-159 mmHg also changed (from 6 respondents before ergonomic gymnastics to 2 respondents after the intervention). Ergonomic gymnastics has the potential to reduce blood pressure. One thing that needs attention is the frequency of doing ergonomic exercise.

Ergonomic gymnastics is an exercise utilizing deep and long breathing techniques. It makes a person to be relaxed, calm, and more concentrated. Its four movements are modifications of perfect Islamic prayer movements (Safitri, Safri and Jumaini, 2015). In addition, it provides extraordinary benefits in maintaining body fitness and improving blood flow because all blood vessels experience vasodilation. There are chest movement, bowing movement, sitting, and prostration movements in ergonomic gymnastics. Therefore, correct and regular ergonomic gymnastics can support body resistance and regulate normal blood pressure. In addition to ergonomic gymnastics, individuals must continuously improve and maintain a healthy lifestyle to control blood pressure to decrease high blood pressure (Triwibowo, 2011).

3. The Effect of Ergonomic Gymnastics on Systolic Blood Pressure

Our findings revealed a difference in systolic blood pressure before and after ergonomic gymnastics. It is in line with a previous study. The study found the highest systolic blood pressure before ergonomic gymnastics was 179mmHg, while after the intervention was 150mmHg. Most respondents experienced a decrease in blood pressure, with the average decline Mean Systolic was 33.65 mmHg (Syahrani, 2017).

Ergonomic gymnastics is a modification of the Islamic prayer movement. Prior research showed that the average systolic and diastolic blood pressure in the performing salah was lower than imitating prayer movements. After performing salah, systolic blood pressure decreased by 2.5%, and diastolic blood pressure decreased by 1.7% after imitating prayer movements. In addition, diastolic blood pressure decreased by 2.8% after performing salah and 1.6% after imitating prayer movements (Doufesh *et al.*, 2013). Doufesh (2013) argues that postural changes are associated with heart rate changes. In the standing position, there is decreased venous return due to the effects of gravity. The decreased venous return causes reduced cardiac output, leading to reduced baroreceptor stimulation in the aorta and carotid arteries. Then, it reduces parasympathetic nerve activity and increases sympathetic nerve activity.

The mechanism of lowering blood pressure from stretching stimulation in the aortic arch and carotid sinus is received and transmitted by the vagus nerve to the medulla oblongata (cardiovascular regulation center). Then the stimulation responds to increase baroreceptor reflexes. Baroreceptors are sensitive to changes in arterial pressure and stretch. They receive stimulation in stretching or alterations in arterial pressure located in the aortic arch and carotid sinus (Mutaqin, 2015). Then, they rapidly send impulses to the vasomotor center. The inhibited vasomotor center results in vasodilation of the arterioles and veins. As a result, there is a decreased blood pressure.

In addition, arteriolar dilatation reduces peripheral resistance. Venous dilation causes blood to accumulate, reducing venous return and decreasing cardiac output. Furthermore, afferent impulses from baroreceptors also reach the heart. It stimulates the activity of the parasympathetic center and inhibits the sympathetic center (cardio accelerator). Thus, there is a decreased heart rate and power of heart contraction. As a result, it can lower blood pressure.

CONCLUSION

Ergonomic gymnastics can decrease systolic blood pressure. Individuals with stage I hypertension should perform ergonomic gymnastics routinely six times in two weeks to avoid the complication of hypertension. Further research could use a control group and a more significant sample.

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Wet Cupping Therapy to Reduce Total Cholesterol Levels in People with Diabetes

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A B S T R A C T

Increased blood sugar levels in diabetes can cause escalated blood cholesterol levels, causing atherosclerosis. Managing high cholesterol levels in people with diabetes (PwD) can prevent complications. One non-pharmacological therapy for PwD with high cholesterol levels is cupping therapy. This paper aims to determine the effect of wet cupping therapy on lowering total cholesterol levels among people with diabetes in the work area of Mantang Public Health Center. This research was quasi-experiment with descriptive-analytical and one group pre-test and post-test design. It was conducted from April to June 2019 in 3 villages at Batukliang District. In addition, the population was people with diabetes having high cholesterol levels, totaling 350 patients. The sample in this study was 16 respondents using a simple random sampling technique. The independent variable was wet cupping therapy, while the dependent variable was total cholesterol levels. The instruments were a questionnaire and Easy Touch blood cholesterol test. In addition, data analysis was univariate and bivariate analysis using paired t-test. There were decreased total cholesterol levels before and after cupping therapy. Before cupping, the average total cholesterol level was 313.94, while after cupping was 206.31, with an average decrease in total cholesterol levels of 107.63. In addition, bivariate test results obtained $p = 0.000$ ($\alpha < 0,05$). Thus, there was a significant difference in total cholesterol levels before and after cupping therapy in people with diabetes. In conclusion, wet cupping therapy can reduce total cholesterol levels in people with diabetes having high cholesterol levels.

INTRODUCTION

Non-communicable diseases (NCDs) are public health problems in various countries. The increase in NCDs is often triggered by multiple aspects such as an unhealthy lifestyle. NCDs is a chronic disease and not transmittable from one person to another. One NCDs that is very life-threatening is diabetes (Kementerian Kesehatan RI, 2013). Diabetes is a disorder characterized by increased blood glucose levels. In 2021, Indonesia had around 19.46 million people with diabetes (PwD). These data make Indonesia the only one in Southeast Asia included in the top 10 countries with the most cases of people with diabetes (IDF, 2021).

Basic health research (2013) showed that West Nusa Tenggara (WNT) Province was in 18th place out of 33 provinces with high diabetes incidence in Indonesia. Diabetes incidence was 28,825 people, or about 1.3 of the total population in WNT. One of the regencies in WNT is Central Lombok. There was a 4.4% increased diabetes incidence from 2016 to 2017 in Central Lombok – from 2,943 in 2016 to 3,074 in 2017. In addition, in 2019, Central Lombok had grown cases of diabetes compared to 2018, which was 5,802 to 12,886 (Dinas Kesehatan Lombok Tengah, 2017).

Mantang Public Health Center (PHC) has increased diabetes prevalence, which continues to grow every year in the district of Central Lombok. In Mantang PHC, diabetes is the 3rd highest disease – 350 people

in 2017. A preliminary study revealed that the causes of this increase were lifestyle and unhealthy eating patterns in the community. As a result, many PwD had various complications, one of the complications was high cholesterol levels. In addition, other predisposing factors are age, gender, occupation, and education level (Smeltzer en Bare, 2015).

Diabetes lowers good cholesterol levels or high-density lipoprotein (HDL). In addition, it raises triglycerides and harmful cholesterol levels or low-density lipoprotein (LDL). Furthermore, diabetic dyslipidemia is a condition with Low HDL, high triglycerides, and LGL levels. It potentially increases heart disease and stroke risk. Individuals with diabetes experience an insulin deficiency. Insulin hormone has a role in entering blood sugar into cells in the body. Insulin deficiency impacts blood sugar cannot enter cells and accumulates in the blood. Furthermore, high blood sugar causes decreased HDL and increased LDL levels.

Insulin is an essential hormone for metabolizing sugar and cholesterol (fat) in the blood. It functions as glucose transportation from blood to the body's cells. However, releasing insulin hormone does not only cause blood sugar to be stored, but LDL levels also rise (Guyton en Hall, 2013). When the body has stored all glucose as needed, but there is still a lot of glucose circulating in the bloodstream, insulin will help convert that glucose into triglycerides in the body. As a result, there are increased triglycerides. Blood sugar, cholesterol, and triglycerides are interconnected. Therefore, PwD with high blood sugar levels should be more aware of this condition.

Various normolipidemic drugs is a pharmacological cholesterol treatment. It includes statin drugs, fibrates, resins, selective cholesterol absorption inhibitors, and nicotinic acid. The pharmacological treatment depends on the patient's considerations, including costs, demographic characteristics, and quality of life. Unfortunately, pharmacological cholesterol treatment is ineffective because almost 70% of individuals with cholesterol in Indonesia fail to achieve the cholesterol level target according to treatment guidelines. Besides that, the drug's price is relatively high. In addition, recurrence often occurs and causes side effects such as ulcers, muscle pain, and headaches. So, non-pharmacological therapy is crucial to reduce cholesterol levels, one of which is cupping therapy (Price en Wilson, 2014).

Wet cupping therapy is an activity of sucking blood with a tube-like device. The therapist then removes the cup and uses a small scalpel to make light, tiny cuts on the skin. Next, they do a second suction to draw out a small quantity of blood. Cupping therapy is a complementary and alternative therapy taught directly and recommended by the Prophet Muhammad. The negative pressure in cupping therapy generated from suctioning causes passive congestion of local tissue on the superficial surface and increases blood vessel dilation (Al-Bedah *et al.*, 2019). Moreover, cupping therapy has an anti-inflammatory effect; it decreases serum triglycerides, phospholipids, and LDL levels; it stimulates the

lipolysis process of fat tissue and regulates blood glucose levels to normal. Furthermore, cupping therapy disposes of excess cholesterol plaque in the blood to improve blood circulation (Al-Tabakha *et al.*, 2018). Prophet Muhammad SAW once said, "Healing can be obtained in 3 ways: drinking honey, cupping therapy, and hot iron. I do not encourage my people to use a hot iron" (HR. Bukhari-Muslim). Another hadith narrated by at-Tirmidzi states that Prophet Muhammad said, "I did not walk past a group of angels on Night Journey, but they all told me, "O Muhammad you must cup." Cupping therapy is easy to do without side effects compared to other treatments. This paper aims to determine the effect of wet cupping therapy on lowering total cholesterol levels among people with diabetes in the work area of Mantang PHC.

METHOD

This research was quasi-experiment with descriptive-analytical and one group pre-test and post-test design. It was conducted from April to June 2019 in 3 villages at Batukliang District. In addition, the population was people with diabetes having high total cholesterol levels, totaling 350 patients. The sample in this study was 16 respondents using a simple random sampling technique. The independent variable was wet cupping therapy, while the dependent variable was total cholesterol levels. The instruments were a questionnaire containing questions to respondents related to the characteristics of respondents (age, gender, body mass index, smoking status, alcohol consumption, and period of diabetes) and Easy Touch blood cholesterol test. Data analysis was univariate and bivariate analysis using paired t-test.

RESULTS

Table 1 contains the characteristics of respondents in this study. In addition, table 2 reveals total cholesterol levels before and after cupping therapy.

Table. 1 The Characteristics of Respondents

	Characteristics	Frequency	Percentage (%)
Age	35-45 Years old	6	37.5
	46-55 Years old	6	37.5
	56-65 Years old	4	25
Gender	Male	2	12.5
	Female	14	87.5
Body Mass Index	Underweight	0	0
	Healthy Weight	4	25
	Overweight	12	75
	Stage I Obesity	0	0
	Stage II Obesity	0	0

Period of diabetes	1-5 Years old	16	100
	> 5 Years old	0	0
Smoking Status	Smoke	2	12.5
	Never Smoked	14	87.5
	Total	16	100

Table 1 shows most respondents are 35-45 years old (37.5%) and 46-55 years old (37.5%). In addition, they are female (87.5%), overweight (75%), and never smoked (87.5%). Furthermore, their periods of diabetes are one to five years.

Table. 2 The Effect of Cupping Therapy on Reducing Total Cholesterol Levels in People with Diabetes in Mantang Public Health Center, Central Lombok

Total Cholesterol Levels	N	Mean	Sd	Min-max	Dif. mean	<i>p</i>
Pre-test	16	313.94	49.57	240-385	107.63	0.000
Post-test	16	206.31	40.19	149-283		

Table 2 indicates decreased total cholesterol levels before and after cupping therapy. Before cupping, the average total cholesterol level is 313.94, while after cupping is 206.31, with an average decrease in total cholesterol levels of 107.63. In addition, bivariate test results obtain $p = 0.000$ ($\alpha < 0,05$). Thus, there was a significant difference in total cholesterol levels before and after cupping therapy in people with diabetes.

DISCUSSION

In this study, six respondents had high total cholesterol levels, and ten people were very high before wet cupping therapy. The causes of high cholesterol levels are controllable factors (daily diet) and uncontrollable factors (the liver function to produce cholesterol). Cholesterol can also increase due to the expenditure of too little cholesterol into the colon through bile acids. In addition, genetic factors can affect excessive cholesterol production. Furthermore, fat intake had a significant effect on cholesterol levels ($p < 0.01$) (Sharaf, 2013).

Meanwhile, all respondents experienced decreased total cholesterol levels after wet cupping therapy. Cupping therapy can cleanse blood circulation and has autoregulatory effects. According to Zhou *et al.* (2012), the mechanism of cupping therapy on reducing cholesterol levels is through the opening of the skin barrier to increase the skin's excretory function. The mechanism also includes the release of lipids and hydrophobic substances. One of the hydrophobic substances is lipoprotein, and one of the main components in lipoprotein is cholesterol. In this paper, cholesterol excretion was caused by a thin incision on the skin and suctioning in wet cupping therapy so that total cholesterol levels could decrease.

Our findings revealed decreased total cholesterol levels before and after wet cupping therapy in PwD. It is in line with a study conducted by (Mahmoud HS, 2013). The study found that cupping could reduce

average cholesterol levels with a decrease of 30.78 mg/dl. An investigation conducted by Hasan, Alam en Irshad (2014) also showed a reduction of cholesterol levels by 37 mg/dl after cupping therapy. A similar study conducted in Syria stated that individuals with high cholesterol levels experienced decreased triglyceride levels in 75.5% of cases and had normal LDL levels in 93.75% (Sharaf, 2013).

Wet cupping therapy also can increase body health status. A previous study revealed that it significantly reduced FBS (fasting blood sugar), serum urea, and serum creatinine at one, three, and four months compared to the base value. In addition, serum uric acid and SBP (spontaneous bacterial peritonitis) significantly decreased in one and four months (Husain *et al.*, 2020). Thus, wet cupping therapy could be an effective complementary medicine in disease prevention. It allows small and thin wounds on the skin's surface.

Furthermore, suction has a function as an artificial excretion through the skin. This process is an analogy of the kidneys' excretion process. Excreted components through cupping therapy include waste products of body metabolism, free radicals, chemical and biological substances released into the interstitial fluid, and hydrophilic and hydrophobic substances (lipoproteins or cholesterol) (Mahmoud HS, 2013). In this study, wet cupping therapy could reduce total cholesterol levels in PwD through excreting hydrophobic fluids.

CONCLUSION

Wet cupping therapy can reduce total cholesterol levels in people with diabetes having high cholesterol levels. It could be nursing implementation for complementary treatment in people with diabetes with high cholesterol levels. In addition, future research should use a more significant number of samples and a control group.

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The Correlation between Tuberculous Lymphadenitis and Nutritional Status in Children

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A B S T R A C T

Tuberculous lymphadenitis may cause weight loss and lead to malnutrition in children. This study analyzes the correlation between tuberculous lymphadenitis and nutritional status in children. It was an analytic observational study with a cross-sectional design. The population was pediatric patients under 18 years old with lymphadenitis, outpatient and inpatient admitted from January 2018 to December 2020 in dr. Soebandi public hospital, Jember, Indonesia. The samples were 76 respondents with total sampling. There were 52 tuberculosis lymphadenitis patients in the case group, while 24 were non-tuberculosis in the control group. The body weight data was from the medical record when the first diagnosis of lymphadenitis. Instruments were weight-for-age z-score curves (WHO, 2007) for under 60 months old children, while CDC Growth Charts 2000 for more than five-year-old children. Then, data analysis used the Chi-square test. Mostly, tuberculous lymphadenitis patients were girls (65.4%), 12-17 years old (67.3%), not underweight (61.5%), and lived in rural areas (73%). Furthermore, all of them were given isoniazid, rifampicin, and pyrazinamide. In addition, 100% of them had successful treatment. Meanwhile, most of the non-tuberculous lymphadenitis patients were boys (54.2%), 6-11 years old (58.3%), lived in the rural areas (79%), and were not underweight (66.7%). Treatment of the non-tuberculous lymphadenitis group consisted of antibiotics, analgesics, vitamins, and symptomatic medicine. The Chi-square test results obtained $p=0.667$ ($p>0.05$). In conclusion, tuberculosis lymphadenitis in the early incubation period does not correlate with nutritional status among children under 18 years old.

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by the bacterium *Mycobacterium tuberculosis* (Kementerian Kesehatan RI, 2018). Its categories are pulmonary and extrapulmonary TB. The most prevalent extrapulmonary TB is tuberculous lymphadenitis (Suhariani, Wizri en Hanang, 2015). Tuberculous lymphadenitis needs special attention because the case is a severe health problem globally. Data from the World Health Organization (WHO) explained that extrapulmonary TB incidents in 2018 were 6.4 million cases or 14% of all TB incidents in 2017 (World Health Organization, 2018). Unfortunately, its number continues to increase. In 2018, extrapulmonary TB cases were 15% of the 7 million TB cases (World Health Organization, 2019). A study by Gautam et al. revealed that globally individuals with TB were 9.6 million. In addition, 35% of them had tuberculous lymphadenitis with 60% - 90% in cervical lymph nodes (Gautam *et al.*, 2018). Tuberculous lymphadenitis does not only attack adults but also children under 18 years old. The research explained that the most tuberculous lymphadenitis patients were 5-9 years and boys (66.7%). In addition, they had poor nutritional status (82.8%)(Noviarisa, Yani, and Basir, 2019).

Nutritional status in children can be influenced by food intake consisting of carbohydrates, proteins, and lipids. Several factors that can affect a child's nutritional status include the amount of food, the type of food, the frequency of eating, and a history of infectious disease. Infectious diseases can cause decreased appetite to malnutrition conditions (Dewi and Adhi, 2014). Malnutrition can interfere with endogenous protein and fat synthesis. This event triggers an increase in proteolysis and lipolysis and leads to a wasting condition, namely a decrease in muscle mass and fat (Nunjannah and Sudana, 2018). This study analyzes the correlation between tuberculous lymphadenitis and nutritional status in children at dr. Soebandi Regional Public Hospital.

METHOD

This paper was an analytic observational study with a cross-sectional design. It received ethical approval from the ethics committee of the Faculty of Medicine, the University of Jember, with the number: 1.524/H25.1.11/KE/2021. The data was secondary data from outpatient and inpatient medical records from January 01 January 2018 to December 31, 2020, in dr. Soebandi Regional Public Hospital, Jember, East Java, Indonesia. This research was conducted from May to July 2021 in dr. Soebandi Regional Public Hospital, Jember. The population was pediatric patients with lymphadenitis disease. Meanwhile, the samples were 76 respondents with total sampling. There were 52 tuberculosis lymphadenitis patients in the case group, while 24 were non-tuberculosis in the control group.

Furthermore, the independent variable was tuberculous lymphadenitis. Meanwhile, the dependent variable was nutritional status. Inclusion criteria were (1) patients under 18 years; (2) respondents were diagnosed with tuberculous lymphadenitis or non-tuberculous lymphadenitis histopathological; (3) respondents with a history of chronic disease (HIV, malignancy, thalassemia, and diabetes mellitus). Meanwhile, the exclusion criteria were incomplete medical record data. The body weight data was from the medical record when the first diagnosis of lymphadenitis. Instruments were weight-for-age z-score curves for under 60 months old children, while CDC Growth Charts 2000 for more than five-year-old children. The measurement scale was the underweight nutritional status (skinny and poor nutrition) and not underweight (normal and overnutrition). Then, data analysis used the Chi-square test to determine the correlation between both variables.

RESULTS

Mostly, tuberculous lymphadenitis patients were girls (65.4%), 12-17 years old (67.3%), not underweight (61.5%), and lived in rural areas (73%). Furthermore, all of them were given isoniazid, rifampicin, and pyrazinamide. In addition, 100% of them had successful treatment. Meanwhile, most of the non-tuberculous lymphadenitis patients were boys (54.2%), 6-11 years old (58.3%), lived in the rural areas

(79%), and were not underweight (66.7%). Treatment of the non-tuberculous lymphadenitis group consisted of antibiotics, analgesics, vitamins, and symptomatic medicine (see Table 1).

Table 1. The characteristics of respondents

Characteristic	Tuberculous Lymphadenitis patients		Non-Tuberculous Lymphadenitis patients	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Sex				
Boy	18	34.6	13	54.2
Girl	34	65.4	11	45.8
Age				
0-5 years	9	17.3	10	41.7
6-11 years	8	15.4	14	58.3
12-17 years	35	67.3	0	0
Nutritional Status				
Underweight	20	38.5	8	33.3
Not Underweight	32	61.5	16	66.7
Residence				
Urban area	14	27	5	21
Rural area	38	73	19	79
Treatment				
Isoniazid (H), rifampicin (R), pyrazinamid (Z).	52	100	0	0
Analgesic, corticosteroids, metamizole sodium.	0	0	5	21
Multivitamins, antibiotics, metamizole sodium, antitussive.	0	0	12	50
Multivitamin, ambroxol, pseudoephedrine	0	0	7	29
Result of treatment				
Successfull	52	100	24	100
Failed	0	0	0	0

The Chi-square test results obtained $p=0.667$ ($p>0.05$). Thus, there was no significant correlation between tuberculosis lymphadenitis and nutritional status among children aged under 18 years in dr. Soebandi Regional Public Hospital (See Table 2).

Table 2. Chi-square test of the correlation of tuberculous lymphadenitis and nutritional status in children aged under 18 years

Tuberculous Lymphadenitis	Underweight Nutritional Status				Total		p
	Yes		No		N	%	
	N	%	N	%			
Yes	20	38.5	32	61.5	52	100.0	0.667
No	8	33.3	16	66.7	24	100.0	
Total	28	36.8	48	63.2	76	100.0	

DISCUSSION

Our findings showed that patients with tuberculous lymphadenitis were more common in girls (Table 1). *Mycobacterium tuberculosis* infection and gender in girls are related because the immune system of girls is more susceptible to infectious diseases than boys. A vulnerable immune system can be triggered by eating habits in girls with smaller portions than boys, affecting body defense (Nurwitasari, 2015). In addition,

most patients with tuberculous lymphadenitis in this study were 12-17 years (Table 1). The age of 12-17 years is an active age for activities outside the home or school-age children. As a result, they are vulnerable to exposure to *Mycobacterium tuberculosis* (Buntuan, 2014). By the age of 10, the progression of primary infection will increase. The triggers include exposure load, activities outside the home, immune depression, and malnutrition (Carvalho *et al.*, 2018). Furthermore, tuberculous lymphadenitis patients in this paper lived in rural areas. A study explained that education level, distance from home to health facilities, socio-cultural, and economic status of patients could be determinants of tuberculosis disease susceptibility (Sunantara, 2016).

In addition, all tuberculous lymphadenitis patients received anti-tuberculosis drugs. The drugs consist of isoniazid (H), rifampicin (R), and pyrazinamide (Z). The data showed that all samples received the same combination treatment. The treatment was chosen based on the pediatric tuberculosis treatment guidelines for tuberculous lymphadenitis patients (Kementerian Kesehatan RI, 2016). The results showed that all tuberculous lymphadenitis patients had successful treatment. The percentage of successful therapy in this study was influenced by the discipline factor, patient compliance in adhering to treatment, and parents' awareness to carry out an examination as early as possible. Health workers should give health education to tuberculous lymphadenitis patients. Thus, it will reduce the risk of treatment failure.

Most respondents in this study were not underweight (61.5% in the case group and 66.7% in the control group). In addition, tuberculosis lymphadenitis did not correlate with nutritional status in children under 18 years old in dr. Soebandi Regional Public Hospital. Based on the research facts, several factors influence the incompatibility of the hypothesis with the study results. This study results could be affected by factors including nutritional status measurement, nutritional maintenance in early health care, the role of parents, and the incubation period of bacteria. When patients were first diagnosed with tuberculosis lymphadenitis, they had normal body weight or weight loss but were still within the normal range of nutritional status. They did not have metabolic disorders and impaired appetite. Often, their symptom was only lumping in the lymph nodes. In addition, early health care and good parents' role were essential in children's nutritional intake to make children remain in normal nutritional status. Although *Mycobacterium tuberculosis* infection causes excessive protein breakdown and decreased muscle protein reserves, this process can be prevented and balanced by providing good nutrition to accelerate disease healing (Wisnugroho, 2016).

The incubation period of *Mycobacterium tuberculosis* also caused no correlation between both variables in this paper. Its incubation period is different from other infectious processes because it starts from when it enters the body until the primary complex is formed. It ranges from 2 to 12 weeks, at which time the bacteria multiply until they reach 10³-10⁴. This amount can trigger a cellular immune response (Kementerian Kesehatan RI, 2016). When the primary complex is in sufficient quantities, cellular

immunity forms hypersensitivity which is characterized by the appearance of symptoms and positive tuberculin test. In this process, most individuals still have good immune status to inhibit the proliferation of *Mycobacterium tuberculosis* bacteria (Jatu, 2018). Thus, most tuberculous lymphadenitis patients in this study still had a good nutritional status.

CONCLUSION

In conclusion, tuberculosis lymphadenitis in the early incubation period does not correlate with nutritional status among children under 18 years old. There should be a proper early diagnosis of tuberculosis lymphadenitis and promptly adequate treatment to manage this disease. Thus, there is prevention in the nutritional status deterioration in the patients.

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The Correlation between Clean and Healthy Living Behavior and Diarrhea Incidence in Children Under Five Years Old: A Literature Review Study

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A B S T R A C T

Diarrhea is a disease often accompanied by mortality and morbidity. Its incidence increased 1% per year from 300 thousand household samples. Lack of Clean and Healthy Living Behavior (in Indonesia, namely of a program is *Perilaku Hidup Bersih Sehat* or *PHBS*) can affect the incidence of diarrhea. This paper analyzes the correlation between *PHBS* and diarrhea incidence in children under five years old. The four *PHBS* indicators are exclusive breastfeeding, healthy latrines, clean water, and handwashing with soap (HWS). This research was a literature review study. We used a database of google scholar and the garuda portal. In addition, journal screening included three stages. The first stage was the selection of free access journals. Then, the second stage was the selection of titles and abstracts according to the keywords (*PHBS*, Diarrhea, and Children under five years old) and publication year. The third stage was selecting the background, method, results, and discussion. Eleven papers explained the correlation between the *PHBS* and diarrhea incidence in children under five. There were five articles revealing the association between the incidence of diarrhea and four *PHBS* indicators. In addition, *PHBS* indicators most associated with diarrhea sequentially were handwashing with soap (11 publications), exclusive breastfeeding (10 journals), healthy latrines (8 papers), and clean water (6 documents). In conclusion, exclusive breastfeeding, clean water, healthy latrines, and handwashing with soap correlate to diarrhea incidence in children under five years old. Health workers should provide health education regarding *PHBS*.

INTRODUCTION

Diarrhea is an abnormality in defecation with a frequency of three or more times. It is one of the environmental-based diseases. Unfortunately, it is the leading cause of morbidity and mortality. Based on data from the World Health Organization (WHO), diarrhea is a global problem with the potential for Extraordinary Events often accompanied by morbidity and mortality. Nearly 1.7 billion cases of diarrhea occur in children under five years, with a mortality rate of 525,000 each year (World Health Organization, 2017).

The incidence of diarrhea in Indonesia from 2016 to 2017 experienced a very drastic increase to 1,527 cases and 28 deaths with a Case Fatality Rate (CFR) of 1.97%. According to Basic Health Research (2018), diarrhea is a disease often accompanied by mortality and morbidity. Its incidence increased 1% per year from 300 thousand household samples. In addition, there were two provinces with the highest incidence of diarrhea, namely East Nusa Tenggara (214 cases and four deaths with a CFR of 1.87%) and Papua (122 cases and 28 deaths with a CFR of 22.95%) (Kementerian Kesehatan RI, 2019).

Diarrhea is still a health problem, especially in developing countries. Indonesia is one developing country with high diarrhea morbidity and mortality (Buletin, 2016). Based on the diagnosis by health workers, the highest prevalence of diarrhea was in the age group of 1-4 years (11.5%), infants (9%), and over 75 years (7.2%). In addition, a high prevalence of diarrhea was in women, rural areas, low education, and fishermen (Kementerian Kesehatan RI, 2020).

Lack of Clean and Healthy Living Behavior (in Indonesia, namely of a program is *Perilaku Hidup Bersih Sehat* or *PHBS*) can affect the incidence of diarrhea, especially in toddlers (Grafika, Sabilu en Munandar, 2017). In addition, four *PHBS* indicators are exclusive breastfeeding, healthy latrines, clean water, and handwashing with soap (HWS). This paper analyzes the correlation between *PHBS* and diarrhea incidence in children under five years old.

METHOD

This research was a literature review study on people with diarrhea, especially children under five years old. We used a database of google scholar and the garuda portal. In addition, journal screening included three stages. The first stage was the selection of free access journals. Then, the second stage was the selection of titles and abstracts according to the keywords and publication year (from 2015 to 2020). Keywords were *PHBS*, Diarrhea, and Children under five years old. The third stage was selecting the background, method, results, and discussion.

RESULTS

Eleven papers explained the correlation between the *PHBS* and diarrhea incidence in children under five in this study.

Table 1. Summary of literature review findings

Num	Authors and year of publication	Title	Method	Findings
1	Ahmad Ruhardi, Dini Yuliansari (Ruhardi & Yuliansari, 2021)	The correlation between <i>Perilaku Hidup Bersih dan Sehat (PHBS)</i> and diarrhea incidence in children under five years old	a Research design: Case-Control. b Sample: 52 respondents c Sampling: Purposive sampling. d Data analysis: chi-square test.	a There were clean water facilities for the community – dug wells (805 units), springs (25 units), Indonesian regional water utility company (1,814 units). b 46.1% of children aged 1 to less than two years had diarrhea c There was no association between the use of clean water and healthy latrines with diarrhea incidence in children under five years old.

Num	Authors and year of publication	Title	Method	Findings
				Meanwhile, exclusive breastfeeding and handwashing correlated with diarrhea incidence in toddlers.
2	Agus Dwi Pranata, Eddy, Chairul Asni (Pranata <i>et al.</i> , 2020)	The correlation between healthy behavior and diarrhea incidence among children aged 1-4 Years old in the work area of Langsa Barat Public Health Centre.	a Research design: Analytic Survey. b Method: retrospektif or deskriptif. c Sampling: propositional sampling. d sample: 97 respondents e Data analysis: chi-square test	a 22.7% of children aged 1-4 years old had diarrhea. b 25.8% of respondents had less PHBS. c 56% of respondents correlated less PHBS and diarrhea incidence. d The statistical test obtained $p=0.000$, so there was an association between PHBS and diarrhea incidence. e There were still cases of diarrhea in children aged 1-4 years old. The most predisposing factor for diarrhea was the use of unhealthy latrines.
3	Wiqodatul Ummah, Santy Irene Putri (Ummah & Putri, 2020)	The Relationship of Clean and Healthy Living Behavior (PHBS) Household Arrangements with The Event of Diarrhea in Children in Polindes Palaan Ngajum	a Research design: cross-sectional. b Sampling: purposive sampling. c Sample: 30 respondents.	a 65.7% of respondents correlated PHBS and diarrhea incidence. b The community should improve PHBS.
4	Laila J.F Jannah, Retno Mardhiati, Nurul Huriyah Astuti (Jannah <i>et al.</i> , 2019)	The Relationship between Clean and Healthy Behavior (PHBS) of The Household Part with The Incidence of Childhood Diarrhea	a Research design: Analytic Survey. b Method: cross-sectional. c Sample: 90 respondents. d Data analysis: chi-square test.	a Less PHBS predisposed the incidence of diarrhea in 83.9% of children under five years old. b 65.5% of children aged 12-24 months experienced diarrhea. c 39.2% of children aged 25-59 months had diarrhea. d Statistical test obtained $p<0.05$. Thus, there was a correlation between PHBS and the incidence of diarrhea in children under five years old.
5	Toyibah, Miftah Apriani & Apriani, 2019)	The association between <i>Perilaku Hidup Bersih dan Sehat (PHBS)</i> and diarrhea incidence among children under five years old	a Research design: Analytic Survey. b Method: cross-sectional. c Sample: 88 respondents. d Data analysis: chi-square test.	a 58% of respondents experienced diarrhea, while 42% did not experience it. b 47.7% of respondents did not use the toilet. c 45.5% of respondents did not do handwashing. d 71.4% of respondents with less knowledge experienced diarrhea. e 71.4% of respondents who did not use the toilet experienced

Num	Authors and year of publication	Title	Method	Findings
				diarrhea. f 72.9% of respondents who did not do handwashing had diarrhea g There was a correlation between knowledge and <i>PHBS</i> with diarrhea incidence in children under five years old.
6	Hilda Irianty, Ridha Hayati, Yeni Rizal (Irianty <i>et al.</i> , 2018)	The relationship between <i>Perilaku Hidup Bersih dan Sehat (PHBS)</i> and diarrhea incidence among children under five years old	a Research design: Analytic Survey. b Method: cross-sectional. c Sample: 76 respondents. d Data analysis: chi-square test.	a 63.2% of children under five years old had diarrhea in the last three months. b 46.1% of children aged 25-48 months had experienced diarrhea. c 92.3% of respondents with no exclusive breastfeeding had diarrhea. d 68.8% of respondents who did not use clean water experienced diarrhea. e 53.8% of respondents did not use the toilet. f 48.7% of respondents did not do handwashing. g 24.3% of respondents who did not do handwashing experienced diarrhea.
7	Mustakharramal Haera Usman, Nursalim, Sri Darmawan (Usman <i>et al.</i> , 2018)	The correlation between <i>Perilaku Hidup Bersih dan Sehat (PHBS)</i> and diarrhea incidence in Samataring Public Health Center, East Sinjai District, Sinjai Regency	a Research design: Analytic Survey. b Sample: 62 respondents. c Data analysis: chi-square test.	a 29% of respondents who did not use clean water had diarrhea. b 40.3% of respondents who did not do handwashing had diarrhea. c 37.1% of respondents who use unhealthy latrines experienced diarrhea. d Lack of <i>PHBS</i> could cause diarrhea, especially in children under five years old.
8	Eka Saraditha Safitri, Devi Rahmayanti, Herawati (Safitri <i>et al.</i> , 2017)	<i>Perilaku Hidup Bersih Dan Sehat</i> in the Household and the incidence of diarrhea among children under five years in the riverside	a Research design: cross-sectional. b Sample: 82 respondents. c Data analysis: Slovin test.	a 13.4% of respondents had less <i>PHBS</i> . b There was a correlation between less <i>PHBS</i> with the frequency of diarrhea in respondents, namely, three times of diarrhea as much as two respondents, four times of diarrhea as much as one respondent, five times of diarrhea as much as three respondents, and more than five times as much as five respondents. c There was a correlation between <i>PHBS</i> and the incidence of diarrhea in toddlers. The cause of diarrhea is food infected with bacteria, and the most common

Num	Authors and year of publication	Title	Method	Findings
				bacteria in children under five years old is <i>E. coli</i> .
9	Afford Hendra Wongkar, Maria Merry Futunanembun (Wongkar & Futunanembun, 2017)	The correlation between <i>Perilaku Hidup Bersih dan Sehat (PHBS)</i> in mothers and diarrhea incidence among children under five years old in Tompasso Public Health Center, South Minahasa Regency	a Research design: Descriptive Analytic. b Method: cross-sectional. c Sample: 30 respondents. d Data analysis: chi-square test.	a 30% of respondents did not use clean water. b 43% of respondents did not do handwashing. c 27% of respondents did not use healthy latrines. d 33% of respondents had less <i>PHBS</i> . e The highest incidence of diarrhea in children aged 1-3 years was 27%. f Statistical test obtained $p=0.000$. Thus, there was a correlation between <i>PHBS</i> in mothers and diarrhea incidence in children under five years old. g Respondents with good <i>PHBS</i> did not experience diarrhea in their children. On the other hand, respondents with less <i>PHBS</i> had diarrhea.
10	Elisabeth Maria Mas, Atti Yudiermawati, Neni Maemunah (Mas <i>et al.</i> , 2017)	The association between <i>Perilaku Hidup Bersih dan Sehat (PHBS)</i> in mothers and diarrhea incidence among children aged 1-5 years old in at the Mawar Integrated Health Post, Merjosari Village, Dinoyo Health Center Area, Malang	a Research design: cross-sectional. b Sample:40 respondents. c Instrument: questionnaire. d Data analysis: Spearman rank test.	a 73.33% of respondents had good <i>PHBS</i> . b 93.33% of respondents did not experience diarrhea. c The results of data analysis yielded $p=0.014$. Thus, there was a correlation between <i>PHBS</i> in mothers and diarrhea incidence in children aged 1-5 years with a correlation value of 0.445.
11	Isnaniar, Yuni Indri Lestari (Isnaniar & Lestari, 2017)	The correlation between <i>Perilaku Hidup Bersih dan Sehat (PHBS)</i> in mothers and diarrhea incidence in Garuda Public Health Center, Pekanbaru	a Research design: cross-sectional. b Sampling: Accidental sampling c Sample:33 respondents. d Data analysis: Chi-square test.	a. 54.5% of children under five had experienced diarrhea in the last six months. b. 83% of children under five had diarrhea for less than three days, while 16.67% had diarrhea for more than equal to three days. c. 18.2% of respondents did not use clean water, 45.5% did not do handwashing, and 6.1% did not use healthy latrines. d. Lack of <i>PHBS</i> affected diarrhea incidence, namely clean water use (50% of respondents), handwashing (100% of respondents), and use of healthy latrines (13.33% of respondents).

Table 1 explains that most articles correlate *PHBS* (exclusive breastfeeding, healthy latrines, clean water, and handwashing with soap) and diarrhea incidence in children under five years old.

Table 2. The correlation between Four *PHBS* indicators and diarrhea incidence in children under five

Num.	Authors and publication year	The correlation between Four <i>PHBS</i> indicators and diarrhea incidence			
		exclusive breastfeeding	clean water	Healthy latrines	HWS
1	Ruhardi & Yuliansari (2021)	√	-	-	√
2	Pranata <i>et al.</i> (2020)	√	-	√	√
3	Ummah & Putri (2020)	√	√	√	√
4	Jannah <i>et al.</i> (2019)	√	√	√	√
5	Toyibah & Apriani (2019)	-	-	√	√
6	Irianty <i>et al.</i> (2018)	√	√	√	√
7	Usman <i>et al.</i> (2018)	√	√	√	√
8	Safitri <i>et al.</i> (2017)	√	√	-	√
9	Wongkar & Futunanembun (2017)	√	√	√	√
10	Mas <i>et al.</i> (2017)	√	-	-	√
11	Isnaniar & Lestari (2017)	√	-	√	√

Table 2 shows five articles revealing diarrhea is associated with all *PHBS* indicators. In addition, *PHBS* indicators most associated with diarrhea sequentially were handwashing with soap (11 publications), exclusive breastfeeding (10 journals), healthy latrines (8 papers), and clean water (6 documents).

DISCUSSION

1. Exclusive breastfeeding and incidence of diarrhea in children under five years old

Clean and Healthy Living Behavior (*PHBS*) is essential to prevent diarrhea in children under five years old. It includes four indicators – exclusive breastfeeding, clean water use, healthy latrines, properly disposing of baby feces, and handwashing with soap. Exclusive breastfeeding is crucial because it is the best natural food source for children. (Wongkar & Futunanembun, 2017). Meanwhile, formula milk needs to pay attention to the hygiene of the baby's feeding bottles. However, some parents neglect to wash the feeding bottles properly because of busy work (Pranata *et al.*, 2020).

Exclusive breastfeeding provides excellent protection for children because it plays a vital role in increasing the immune system. A previous study conducted by Grafika *et al.* (2017) in the working area of the Benu-Benu Public Health Center, Kendari, involved 104 children under five years old. Respondents were divided into 52 in the case group and 52 in the control group. The study found that respondents (35 children under five years old) without exclusive breastfeeding had a greater risk of diarrhea than those with exclusive breastfeeding. In addition, the incidence of diarrhea in children under five years old without exclusive breastfeeding had a percentage of 67.3%. This percentage was much higher than the incidence of diarrhea in children under five years old with exclusive breastfeeding (32.7%). In addition, a similar study by Isnaniar & Lestari (2017) at the Garuda Public Health Center,

Pekanbaru, implicated 33 children under five years old, 15 toddlers in the case group, and 18 in the control group. The study revealed that respondents without exclusive breastfeeding were at a greater risk for diarrhea than those with exclusive breastfeeding. Respondents who stop exclusive breastfeeding and not good maternal behavior in breastfeeding can cause diarrhea.

2. Clean water uses and incidence of diarrhea in children under five years old

People who live at the riverside had poor *PHBS*. They did not wash fruits and vegetables in running water. In contrast, fruits and vegetables that will be cooked should be washed with running water so that the dirt that sticks can dissolve with the water. One predisposing factor for diarrhea was a water source not 10 meters from a garbage dump or a sewage disposal site. This condition could contaminate the water with bacteria, especially *E. coli*. In addition, the water source should flow, and the water storage must have a cover (Safitri *et al.*, 2017).

In addition, research by Asih & Saragih (2019) in Palembang involved 51 children under five years old. Respondents were divided into 28 in the case group and 23 in the control group. The study found that respondents (17 children under five years old) who did not use clean water had a greater risk of diarrhea than those who used clean water. In addition, the incidence of diarrhea in children under five years old who did not use clean had a percentage of 68%. This percentage was much higher than the incidence of diarrhea in children under five years old who use clean water (42%).

Meanwhile, Ruhardi & Yuliansari (2021) research had a different result. The study concluded that there was no significant correlation between the use of clean water and the incidence of diarrhea in children under five. The odds ratio (OR) was 1.19 with a value of $p=0.76$ ($p > 0.05$).

3. Use of healthy latrines and incidence of diarrhea in children under five years old

Indiscriminate disposal of feces is a source of disease spread. In addition to the lack of clean water use, people living on the riverside also experienced problems with the disposal of feces. River water contaminated with bacteria causes disease transmission. Some people already had toilets available, but they did not clean and dispose of the baby's wastes properly so that bacteria could grow and spread. This condition is caused by parents' lack of knowledge and busy work (Irianty *et al.*, 2018).

A previous study by Grafika *et al.* (2017) in Palembang involved 88 mothers of children under five. The study revealed that 30 respondents who did not use healthy latrines had a greater risk of diarrhea than those who used healthy latrines. The incidence of diarrhea in children under five who did not use healthy latrines was more significant (70.4%) than those who use healthy latrines (28.6%). Mothers with good *PHBS* can prevent diseases, such as diarrhea. In addition, similar research also revealed that some mothers disposed of baby's feces incorrectly. So it could be a risk factor for diarrhea. Mothers often put

diapers/trousers containing their child's feces on the bathroom floor. The mother did not know the impact and dangers of Indiscriminate disposal of feces (Pranata *et al.*, 2020).

4. Handwashing with soap (HWS) and incidence of diarrhea in children under five years old

Handwashing with soap provides excellent protection for children to prevent bacteria spread. Research conducted by Grafika *et al.* (2017) in the working area of the Benu-Benu Public Health Center, Kendari, involved 104 children under five years old. Respondents were divided into 52 in the case group and 52 in the control group. The study found that respondents who did not do HWS (30 respondents) had a greater risk of diarrhea than those who did HWS. The incidence of diarrhea in children under five who did not do HWS was more significant (57.7%) than those who did HWS (45.8%). Many people already knew the importance of handwashing, but sometimes they did not understand when to wash their hands (Irianty *et al.*, 2018). Thus, health workers must socialize with parents regarding how to wash their hands correctly and adequately (Toyibah & Apriani, 2019).

CONCLUSION

In conclusion, exclusive breastfeeding, clean water, healthy latrines, and handwashing with soap correlate to diarrhea incidence in children under five years old. Health workers should provide health education regarding *PHBS*.

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The Potential of Home-based Cardiac Rehabilitation Via Telehealth in Patients with the Post-Acute Coronary Syndrome in Indonesia: A Literature Review Study

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A B S T R A C T

Patients with post-acute coronary syndrome (ACS) require cardiac rehabilitation. However, there were obstacles in in-hospital cardiac rehabilitation (IHCR), so that it impacts on recurrence and a decreased quality of life. This paper analyzes the potential of home-based cardiac rehabilitation (HBCR) via Telehealth in post-ACS patients in Indonesia. It was a literature review study. We used articles from electronic media through the keywords home-based cardiac rehabilitation, Telehealth, and acute coronary syndrome. Journals were obtained through search sites on Google Scholar, Science Direct, PubMed, and ProQuest. The identification criteria were using Indonesian and English with the year of publication from 2015 to 2020. Then, we analysed and synthesized eligible publications using the PRISMA method. Findings from eight journals showed that the most common barriers for patients in in-hospital cardiac rehabilitation were logistical barriers (distance, time, functional status) and the patient's insufficient knowledge regarding the importance of cardiac rehabilitation. HBCR is an implementation model that has the potential as an effective solution in overcoming logistical limitations between patients and doctors. Care providers in several developed countries have implemented HBCR. It significantly improved medication adherence, outcome, and safety profile in patients. Furthermore, virtual cardiac rehabilitation provided the same outcome and safety profile as IHCR. Indonesia needs to develop HBCR via Telehealth for secondary prevention management in patients after heart events, especially ACS. Developing Telehealth could reduce complications and recurrence, improve lifestyle and physical activity, lower the risk of rehospitalization, and reduce treatment costs.

INTRODUCTION

Heart disease is one type of catastrophic disease requiring comprehensive treatment. However, cardiac rehabilitation in several parts of Indonesia has not been directly proportional to the high number of patients. Patients after acute cardiovascular events require cardiac rehabilitation because it is an effective intervention and can reduce mortality and morbidity (Smolderen, 2017). Cardiac rehabilitation can allow post-cardiovascular patients to adapt to cardiac physiologic changes. It is one of the aspects of self-management and is essential in implementing discharge planning and a continuum of care (Wolf *et al.*, 2016).

In Indonesia, ischemic heart disease such as acute coronary syndrome (ACS) is the number one cause of increased mortality and morbidity rates. The number of ischemic heart disease patients with Disability Adjusted Life Years (DALY's) increased by 10.5%, from 5.9 million in 2006 to 6.25 million in 2016. In addition, The estimated incidence of DALYs was 200 per 100,000 population (Sunjaya, Sunjaya, and Priyana, 2019). Meanwhile, only 11.35% of patients with coronary heart disease (CHD) underwent cardiac rehabilitation in a hospital in Bandung (Saripudin, Emaliyawati en Somantri, 2018). Suboptimal

cardiac rehabilitation causes decreased quality of life and increased average claim for financing treatment in heart disease.

Several obstacles can cause low patient participation in the cardiac rehabilitation program. This condition impacts disease recurrence and decreases the quality of life. A prior study reveals the number 1 barrier to cardiac rehabilitation in CHD patients is logistical barriers – distance, transportation, and time (Saripudin et al., 2018). The obstacles are because Indonesia is an archipelagic region. In addition, cardiac rehabilitation centers in 2019 had not reached all areas in Indonesia.

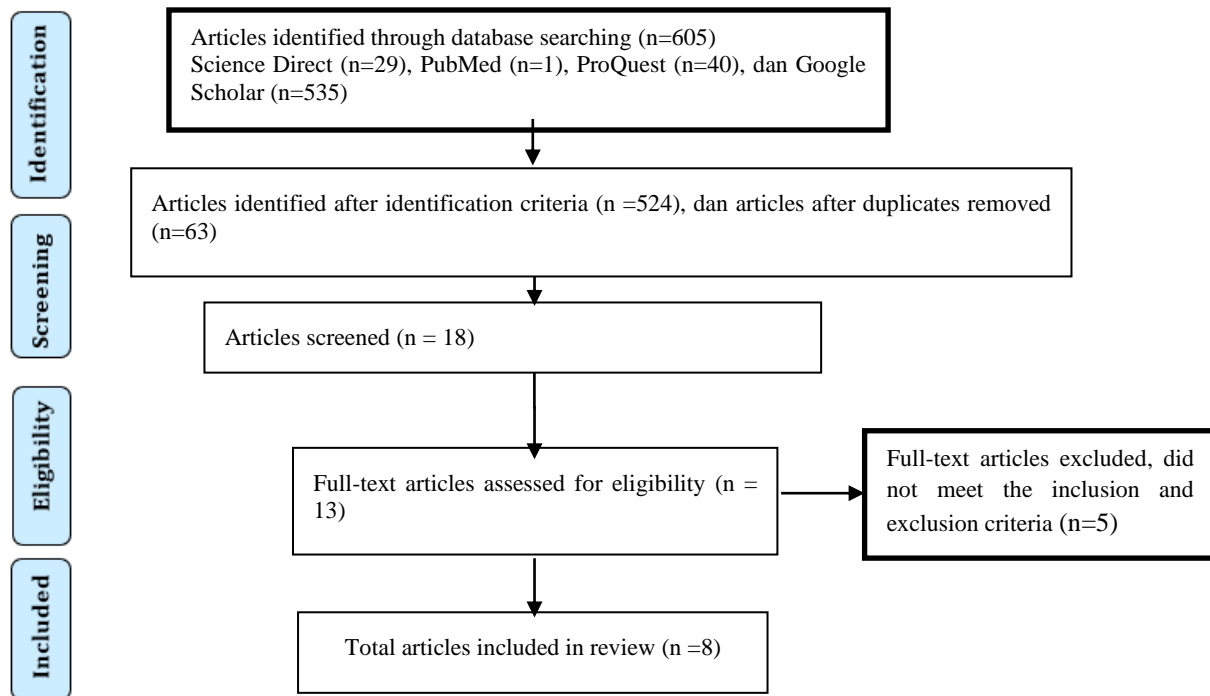
According to the American Heart Association (AHA), screening in patients with heart disease is crucial to assess the severity and typical symptoms of cardiovascular disorders. The vital point of the screening is working with the patient to identify a specific individualized treatment plan and further monitor the patient's symptoms (Smolderen, 2017). One potential resource to support self-management and navigation of health care is Telehealth.

Telehealth has the potential to develop home-based cardiac rehabilitation (HBCR) as an effort to overcome logistical barriers for patients. It includes symptom monitoring without reducing the frequency of access to health facilities. In addition, it is supported by an accessible 24-hour service. Thus, Telehealth can be a strategy to change behavior in the community. This paper analyzes the potential of home-based cardiac rehabilitation (HBCR) via Telehealth in post-ACS patients in Indonesia.

METHOD

This study was a literature review. We used articles from electronic media through the keywords home-based cardiac rehabilitation, Telehealth, and acute coronary syndrome. Journals were obtained through search sites on Google Scholar, Science Direct, PubMed, and ProQuest. The identification criteria were using Indonesian and English with the year of publication from 2015 to 2020. Then, we analysed and synthesized eligible publications using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) method.

Figure 1. PRISMA flow diagram of article selection



RESULTS

Table 1. Summary of literature review findings

Authors, Publication year	Country	Title	Sample/ article	Method	Findings
Wakefield <i>et al.</i> , 2019	United States	Creating and disseminating a home-based cardiac rehabilitation program: experience from the Veterans Health Administration	21 respondents	Mixed-methods: Quantitative and qualitative studies	The predisposing factors for the success of the cardiac base home rehabilitation (CBHR) program were leadership, availability of resources, easy access to knowledge and information, also planning, and support from family members. Respondents with middle to upper economic levels tended to be more successful in implementing CBHR.
Moulson <i>et al.</i> , 2020	Canada	Training/Practice Contemporary Issues in Cardiology Practice Cardiac Rehabilitation During the COVID-19 Era: Guidance on Implementing Virtual Care	Six articles	Rapid review	Virtual cardiac rehabilitation offers an alternative to providing the utmost care. It could give the same outcome and safety profile as in-hospital cardiac rehabilitation. Telecardiology providers must focus on the utilization and distribution of facilities and infrastructure and the availability of information sources for patients.
Thomas <i>et al.</i> , 2019	United States	Home-Based Cardiac Rehabilitation	-	Meta-analysis and systematic review	Implementation of home-based and in-hospital cardiac rehabilitation for 3 to 12 months showed the same improvement in outcomes.

Drwal <i>et al.</i> , 2020	United States	Cardiac Rehabilitation During COVID-19 Pandemic: Highlighting the Value of Home-Based Programs	Seven articles		Literature review	HBCR is an implementation model that has the potential to be an effective solution in overcoming logistical limitations between patients and doctors.
Saripudin <i>et al.</i> , 2018	Indonesia	Barrier Of Coronary Artery Disease (CAD) Patient Who Undergoing Cardiac Rehabilitation	42 Respondents		Quantitative descriptive	The most common barriers for patients in in-hospital cardiac rehabilitation were logistical barriers (distance, time, functional status) and the patient's insufficient knowledge regarding the importance of cardiac rehabilitation.
Sunjaya <i>et al.</i> , 2019	Indonesia	Insights and challenges of Indonesia's acute coronary syndrome telecardiology network: three-year experience from a single center in West Jakarta, Indonesia	2,017 ACS patients		Quantitative descriptive	Primary care facilities could efficiently perform cardiac rehabilitation through a telecardiology program. Over the three years, there was reduced patient ischemic time, from a median of 330 minutes to 275 minutes. The success of a telecardiology program requires good network availability.
Wolf <i>et al.</i> , 2016	Sweden	An eHealth Diary and Symptom-Tracking Tool Combined with Person-Centered Care for Improving Self-Efficacy After a Diagnosis of Acute Coronary Syndrome: A Substudy of a Randomized Controlled Trial	199 ACS patients		Randomized Controlled Trial	ACS patients who used Telehealth combined with patient-centered care (PCC) experienced four times faster improvement than patients who only performed PCC ($p=0.005$). In addition, the group using Telehealth had a significant increase in self-efficacy.
Nuraeni <i>et al.</i> , 2016	Indonesia	Factors Influenced the Quality of Life among Patients Diagnosed with Coronary Heart Disease	100 ACS patients		Cross-sectional	Factors affecting the quality of life in CHD patients included depression, anxiety, and revascularization. Furthermore, depression was the variable with the most significant effect. Thus, health providers should perform management to prevent depression.

Adherence to cardiac rehabilitation is one indicator that can improve patients' quality of life with CHD. Saripudin (2018) found that the most common barriers for patients in in-hospital cardiac rehabilitation were logistical barriers (distance, time, functional status) and the patient's insufficient knowledge regarding the importance of cardiac rehabilitation. Drawl *et al.* (2020) state that HBCR is an implementation model that has the potential as an effective solution in overcoming logistical limitations between patients and doctors. Care providers in several developed countries have implemented Home-based cardiac rehabilitation. HBCR significantly improved medication adherence, outcome, and safety profile in patients with CHD. Furthermore, Moulson *et al.* (2020) suggest virtual cardiac rehabilitation

that provided the same outcome and safety profile as IHCR (Wolf *et al.*, 2016; Sunjaya, Sunjaya and Priyana, 2019; Thomas *et al.*, 2019; Wakefield *et al.*, 2019; Moulson *et al.*, 2020).

DISCUSSION

1. Acute Coronary Syndrome in Indonesia

In Indonesia, ischemic heart disease such as acute coronary syndrome (ACS) is the number one cause of increased mortality and morbidity rates. The number of ischemic heart disease patients with Disability Adjusted Life Years (DALY's) increased by 10.5%, from 5.9 million in 2006 to 6.25 million in 2016. The Strong Heart Study by the American Heart Association in 2019 revealed that women aged 45 years had a higher incidence of cardiovascular disease than men (Muller *et al.*, 2019).

The characteristics of most patients with ACS in Indonesia were young adults (45-54 years) and had a history of hypertension, dyslipidemia, smoking, and hereditary diseases (Wahid, Risiko, and Koroner, 2019). Thus, the average ACS patients were generation X, and Y. Sanjaya (2019) investigated Indonesia's Acute Coronary Syndrome telecardiology network called iSTEMI. The study found that iSTEMI potentially increased interhospital referrals in implementing primary Percutaneous Coronary Intervention (PCI) procedures in Jantung dan Pembuluh Darah Harapan Kita Hospital, Jakarta.

The availability of the iSTEMI network in West Jakarta facilitated consultation and confirmation of diagnosis and treatment with the National Cardiovascular Center, with a confirmation presentation reaching 97%. In addition, there was a reduction in the time for patient transfer and procedures for the acute coronary syndrome. As a result, there was reduced patient ischemic time, from a median of 330 minutes to 275 minutes (Sanjaya, 2019). In addition, a survey by the Indonesian Internet Service Providers Association in 2016 stated that 132.7 million or 51.8% of Indonesia's population could access the internet. Thus, Telehealth has the potential to be developed into home-based cardiac rehabilitation in post-acute coronary syndrome patients.

2. Home-based Secondary Prevention Program for Patients with Acute Coronary Syndrome Using Telehealth

Home-Based Cardiac Rehabilitation (HBCR) can overcome obstacles in implementing in-hospital cardiac rehabilitation (IHCR). In IHCR, there are obstacles to patient participation, including logistical barriers, health workers, and patient psychological factors (Drwal *et al.*, 2020). HBCR can be an alternative for stable low-moderate risk patients after hospitalization. Several countries have implemented HBCR for self-monitoring the management of patients with cardiovascular problems and monitoring patients who discontinue IHCR. HBCR is considered more potential because patients can consult health staff every

day. In contrast, The IHCR is only done a few hours weekly (Thomas, 2019). Telehealth allows patients to consult with health workers via smartphones to overcome logistical barriers in IHCR.

The core components of HBCR are patient assessment, physical exercise, dietary counseling, risk factor management (smoking, blood pressure, weight, diabetes mellitus), and psychological intervention (Thomas, 2019). The outcome of HBCR is to help reduce the recurrence of secondary cardiovascular events after hospitalization. In addition, it helps restore optimal physical, mental, social, vocational, and sexual life after changes in health status (Nuraeni, 2016). The following are components of home-based cardiac rehabilitation:

1) Pain Management

Patients after cardiovascular events often complain of chest pain. The pain is different because it is above the pain threshold and tolerance. In addition, there is a decrease in circulating endorphins and enkephalins hormones released by the pituitary. There are pharmacological and non-pharmacological interventions in HBCR. The goal of pharmacological intervention is to increase blood flow by increasing the oxygen supply and reducing the myocardium's demand for oxygen. While non-pharmacological interventions prevent pain, reduce the risk of decreased cardiac output, increase self-care ability, reduce anxiety, and prevent complications.

Non-pharmacological interventions include rest and thermotherapy. Rest serves to reduce oxygen consumption by the myocardium. In addition, thermotherapy uses hot packs warmed at a temperature of 50°C for 20 minutes per day or according to the patient's comfort. Thermotherapy can manage pain through surface tissue (skin) and muscle tissue. Stimulation of heat receptors will increase the secretion of endorphins so that it can reduce pain levels. In addition, endothelial duplication and increased nitric oxide (NO) will help myocardial perfusion, thereby reducing pain (Moradkhani en Baraz, 2018).

2) Stress Management / Psychological Traumatic Healing

Management of traumatic stress in post-acute coronary syndromes is rarely known, but it can have long-term effects on adopting healthy behaviors. Patients after cardiovascular events experience varying levels of stress, but the probability is higher than that of the general population (Tulloch, Greenman en Tassé, 2015). One of the most extreme of traumatic stress is Post Traumatic Stress Disorder (PTSD). PTSD is associated with cardiovascular reactivity, such as increased proinflammatory and endothelial dysfunction. Furthermore, it can develop into an exacerbation of heart disease (Tulloch, Greenman en Tassé, 2015).

Primary Care PTSD Screen (PC: PTSD) is a Valid posttraumatic stress screening to detect anxiety (Roberts *et al.*, 2016). In addition, psychoeducation about the signs and symptoms of PTSD and other psychological disorders related to heart disease is essential. It can help minimize symptoms and avoid exacerbations. It contains health education about sleep hygiene, rest schedule strategies, and relaxation

techniques (such as diaphragmatic breathing and progressive muscle relaxation). Furthermore, it is a nursing intervention to minimize stress (Tulloch, Greenman en Tassé, 2015).

3) Physical activity management

Support for staying physically active at home requires measurements of speed and distance. So it takes a particular device in a phone to measure these things. The target heart rate in independent physical exercise is 60-75%. Developing an android system such as an accelerometer system can be a solution for tracking location and measuring mobile phone motion's speed and direction. In addition, the accelerometer in the mobile phone can calculate the average daily energy expenditure level, which is visualized on a statistical graph. As a result, it can monitor the patient's physical activity.

4) Diet management

Diet management in CHBR is focused on the history of the food consumed and the time of daily consumption. Sources of nutrition can be adjusted to the patient's resources and can be monitored by health workers. In diet management, there is a modification of protein intake and a reduction in salt, saturated fat, and alcohol intake (Quiles en Miralles-visedo, 2014). Telehealth allows patients to input the type of food consumed. Then the care provider will evaluate and modify their food and measure the patient's BMI every week or month.

5) Patient assessment

The Seattle Angina Questionnaire - 7 (SAQ-7) is an assessment to evaluate the frequency of angina recurrence. It has 7 question items to measure the domains of physical limitations, angina stability, angina frequency, satisfaction with treatment, and perception of the disease. The instrument is valid for coronary artery disease and has high reliability and accurate predictive power (Chan *et al.*, 2014). Care providers can use this assessment to evaluate the success of CHBR.

3. Daily Monitoring of ACS patients via Telehealth

The growth of internet users in Indonesia in 2017 increased to 143.26 million from the previous year of 132.7 million users. There was a shift in the productive age generation of internet users. Internet users at the age of 19-34 were 74.23% and at the age of 35-54 years were 44.06% (Asosiasi Penyelenggara Jasa Internet Indonesia, 2017). In addition, the improvement of telecommunications via satellite, the Palapa Fiber Optic Ring project, 3G, 4G, and 5G networks provide connectivity access in almost all of Indonesia. Thus, there is an opportunity to develop preventive activities in the health sector with digital-based in Indonesia (Sunjaya, Sunjaya, and Priyana, 2019).

CHBR has the potential to increase physical activity, help control diet at home, improve medication adherence, counseling of stop smoking, and improve the patient's quality of life. Monitoring of post-hospitalized ACS patients is crucial to monitor clinical manifestations whether there is an improvement or

worsening of vascularization (Thomas et al., 2019). Telehealth via web and online applications in patients with cardiovascular disorders has been studied in several countries like Sweden and Japan. Daily activity measurements will be measured automatically in the mobile application. In addition, there is a questionnaire containing patient data and complaints every day. Furthermore, there are data on patient compliance in carrying out the intervention. Thus the care provider can evaluate the cardiac rehabilitation program (Wolf et al., 2016).

CONCLUSION

Indonesia needs to develop HBCR via Telehealth for secondary prevention management in patients after heart events, especially ACS. Developing Telehealth could reduce complications and recurrence, improve lifestyle and physical activity, lower the risk of rehospitalization, and reduce treatment costs.

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The Effect Of Adding Tempeh Dregs And Moringa Leaves On Protein Content in Catfish Meatballs: An Alternative High-Protein Food For Underweight Children Under Five Years Old

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A B S T R A C T

Basic Health Research in 2018 revealed that 13.4% of children under five years old were underweight. Providing high-protein foods such as meatballs can be an alternative problem-solving. Several ingredients (vegetable and animal protein) can be added to enrich protein. This study aims to determine the effect of adding tempeh dregs, and Moringa leaves on the protein content in catfish meatballs. This study was an experimental study with a completely randomized design (CRD) which formulated catfish, tempeh dregs, and Moringa leaves into four treatments with four repetitions. The formula in making meatballs were catfish 100% in the P0 group, catfish 60% + tempeh dregs 30% + moringa leaves 10% in the P1 group, catfish 60% + tempeh dregs 20% + 20% Moringa leaves in the P2 group, and 100% catfish + 10% tempeh dregs + 30% Moringa leaves in the P3 group. Meanwhile, the observation parameter was protein content. The data collection technique was carried out by proximate analysis of protein content with the Kjeldahl method. Data analysis used normality and homogeneity test, ANOVA test, and Least Significant Difference. The ANOVA test obtained $p=0.000$ ($p<0.05$). Thus, there were significant differences in protein content in catfish meatballs between the control and the treatment group, except in P3. The Least Significant Difference Test showed that the highest protein content was 9.0975% in the treatment with the formula 60% catfish meat, 30% tempeh dregs, and 10% Moringa leaves. In conclusion, adding tempeh dregs and Moringa leaves can increase protein content in catfish meatballs.

INTRODUCTION

Currently, Indonesia faces a major nutritional problem: Protein-energy Undernutrition (PEU). 17.7% of children under five years old in Indonesia had Underweight (weight for age is below the standard), reflecting stunting and wasting (Bappenas, 2019). Basic Health Research in 2018 revealed that 13.4% of children under five years old were underweight, and 3.3% were malnourished. The causes are food insecurity and low consumption of energy and protein in the daily diet so that it does not meet the recommended adequacy rate. The Ministry of National Development Planning in 2019 revealed that almost half of Indonesia's population (45.7%) had a low level of energy adequacy (<70% EAR/Energy Adequacy Ratio), and 36.1% had a low protein adequacy level (<80% PAR/Protein Adequacy Rate). In addition, economic access (affordability) to food is the leading cause of food insecurity. Further, PEU in children under five years old can cause stunting, susceptibility to infection, and decreased intelligence (Magdalena, 2017).

Providing high-protein foods such as meatballs can be an alternative problem-solving. Meatballs are processed products from animal protein sources (beef, chicken, and fish), popular among children and adults. Making meatballs is generally boiled and shaped round (Hasniar, M. and Ratnawaty, 2019). Several

ingredients (vegetable and animal protein) can be added to enrich protein and minimize meatball production costs. Hasniar et al. (2019) found that protein content in meatballs added with Moringa leaves was 9.46%. In addition, Aprilianti's research (2016) showed that protein content in catfish meatballs added with Moringa flour was 15.26%. Both protein content has met the meatball protein quality requirements based on the Indonesian National Standard (SNI) 2891-1992 of at least 8%.

Total Diet Study in Indonesia (2014) showed that the consumption of animal protein for most Indonesian people came from fish, which was an average of 78.4 grams/person/day. Meanwhile, vegetable protein consumption was only 56.7g/person/day derived from soybeans (Siswanto, 2014). Fish is an animal protein that is rich in nutrients. The protein content in fish is 18%, and the heating cannot easily damage its amino acids (Putra, 2013). One of the affordable and easy-to-find Fish is catfish. Catfish can adapt to the environment, tastes good, and has a protein content of 17.7% and fat of 4.8% (Astawan, 2008 in Ubadillah and Hersoelistyorini, 2010). In addition, one of the advantages of catfish compared to other animal products is that it is rich in leucine and lysine. Leucine is an essential amino acid indispensable for children's growth, especially in nitrogen balance (protein breakdown and formation in the muscle) furthermore, lysine functions on bone growth and calcium absorption (Rustaman, 2015).

Previous studies showed that Moringa is a unique plant, almost every part of Moringa has nutritional value. Fresh Moringa leaves contain four times more vitamin A than carrots (6.80 mg), vitamin B (423 mg/100 g), vitamin C seven times more than oranges (220 mg), potassium three times more than bananas (259 mg), calcium four times more than milk without lactose (440 mg), iron twenty-five times more than spinach (0.7 mg), and protein twice more than yogurt (2711.8 mg). In addition, it is easy to digest and assimilate by the human body (Krisnadi, 2013).

Tempeh dregs are soybean husks from the tempeh-making process that generally still have high nutritional value. They contain 12.67% protein and 9.71% fat (Listiyani, 2017). So far, there is a suboptimal use of tempeh dregs, only used as animal feed or fertilizer.

The authors are interested in researching catfish, tempeh dregs, and Moringa leaves as the essential ingredients for making meatballs because they have high nutritional content, especially protein, and have affordable prices. This study aims to determine the effect of adding tempeh dregs and Moringa leaves on the protein content in catfish meatballs. It can be used to diversify high-protein foods. Further, it can contribute to reducing malnutrition cases in East Java.

METHOD

This study was an experimental study with a completely randomized design (CRD) which formulated catfish, tempeh dregs, and Moringa leaves into four (4) treatments with four (4) repetitions. The details of

the formula in making meatballs were catfish 100% in the P0 group, catfish 60% + tempeh dregs 30% + moringa leaves 10% in the P1 group, catfish 60% + tempeh dregs 20% + 20% Moringa leaves in the P2 group, and 100% catfish + 10% tempeh dregs + 30% Moringa leaves in the P3 group. Meanwhile, the observation parameter was protein content.

The tools were a basin, cutting board, pan, meat grinder, stove, knife, ladle, strainer, and a digital scale. The test pieces of equipment were Petri Dish, Bunsen burner, 30 ml Kjeldahl flask, distillation apparatus, Erlenmeyer, and condenser. In addition, the materials were catfish meat, tempeh dregs, Moringa leaves, tapioca flour, salt, pepper, powdered mushroom broth, garlic, and ice cubes. The materials for testing were K₂SO₄, HgO, H₂SO₄, 0.02 N HCl, NaOH-Na₂S₂O₃ solution, and H₂BO₃ solution.

The research procedure was divided into two stages. The first stage was making meatballs which consisted of preparation and processing. Then the second stage was to analyze the protein content. In the preparation stage, we filleted catfishes, picked tempeh dregs, and separated Moringa leaves from the stems. We weighed each ingredient according to a predetermined weight. We washed all the ingredients and blanched Moringa leaves and tempeh dregs for 10 seconds. We did a preliminary experiment to find the composition of tapioca flour that matched the texture of the meatballs, which was 70 grams.

Further, the steps in the processing stage were:

1. We prepared 250 grams of catfish meats in the P0 group; also 150 grams of catfish meats, 75 grams of tempeh dregs, and 25 grams of Moringa leaves in the P1 group. In addition, we prepared 150 grams of catfish meats, 50 grams of tempeh dregs, and 50 grams of Moringa leaves in the P2 group; also 150 grams of catfish meats, 25 grams of tempeh dregs, and 75 grams of Moringa leaves in the P3 group.
2. We mixed two cloves of sliced garlic, 2 tsp salt, half tsp mushroom broth, quarter tsp pepper, and ice cubes, then ground them together using a meat grinder for each group.
3. We mixed tapioca flour until smooth in each treatment.
4. We prepared a pot filled with water, brought it to a boil, then turned off the stove.
5. We shaped the dough into a round shape, then put it in a pot of boiling water until the dough ran out in each group.
6. We boiled the meatballs until they floated and drained.

The data collection technique was carried out by proximate analysis of protein content with the Kjeldahl method. Data analysis used normality and homogeneity test, ANOVA test, and Least Significant Difference.

RESULTS

The analysis of protein content in catfish meatballs with the addition of tempeh dregs and moringa leaves can be seen in the table.1.

Table 1. Protein content in catfish meatballs

Group	Mean \pm SD	Notation
P0: Control (Catfish meat 100%)	7,05 \pm 0,464	a
P1: Catfish meat 60 %, tempeh dregs 30%, Moringa leaves 10%	9,09 \pm 0,310	b
P2: Catfish meat 60 %, tempeh dregs 20%, Moringa leaves 20%	7,67 \pm 0,368	c
P3: Catfish meat 60 %, tempeh dregs 10%, Moringa leaves 30%	6,93 \pm 0,151	a

Description: Numbers followed by the same letter in the same column are not significantly different

The ANOVA test obtained $p=0.000$ ($p<0.05$). Thus, there were significant differences in protein content in catfish meatballs between the control and the treatment group, except for the treatment with formula catfish 60%, 10% tempeh dregs, 30% Moringa leaves (P3). Then, we did the Least Significant Difference Test to determine the treatment with the highest protein content in catfish meatballs.

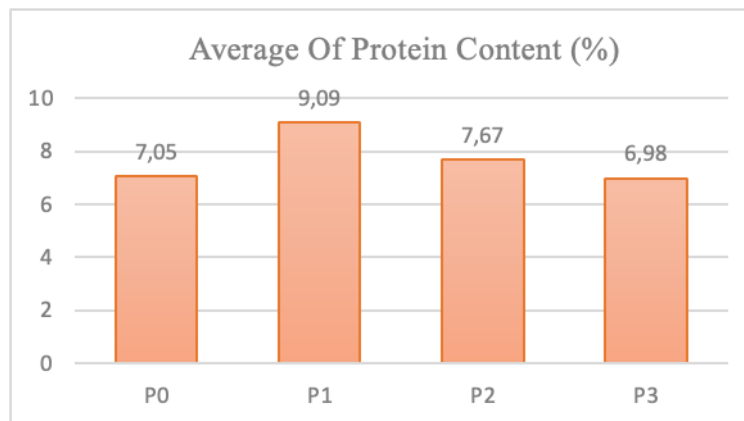


Figure 1. Average Protein Content in Catfish Meatballs

P0: Catfish meat 100%

P1: Catfish meat 60%, tempeh dregs 30%, Moringa leaves 10%

P2: Catfish meat 60 %, tempeh dregs 20%, Moringa leaves 20%

P3: Catfish meat 60 %, tempeh dregs 10%, Moringa leaves 30%

The Least Significant Difference Test showed that the highest protein content was 9.0975% in the treatment with the formula 60% catfish meat, 30% tempeh dregs, and 10% Moringa leaves (figure 1).

DISCUSSION

Protein-energy Undernutrition is a state of malnutrition caused by low consumption of energy and protein in daily food so that it does not meet the recommended adequacy (Andriani and Wirjatmadi, 2012). Malnutrition in children under five years old can cause a decrease in body resistance. It can disrupt a toddler's healthy life span, and a more profound impact is the emergence of disability, high morbidity, and

death (Mardisantosa, Huri, and Edmaningsih, 2018). One of the solutions is providing a variety of high-protein foods. Meatballs are a food source of animal protein that is very popular with people of all ages. They are easy to accept, have good taste, and are easy to process. Various kinds of meatball variations have developed, one of which is from fish.

This research showed significant differences in protein content in catfish meatballs between the control and the treatment group, except for the treatment with formula catfish 60%, 10% tempeh dregs, and 30% Moringa leaves (P3). A previous study revealed that adding 10% and 20% tempeh could increase the protein content of skewered catfish meatballs (Ikawati and Retty, 2016). Similar research by Jannah and Sulistiastutik (2018) also stated that the substitution of catfish and Moringa leaves significantly affected the protein content in mackerel dumplings.

Our findings revealed differences in protein content between the P0 and the P1 also P2 groups (table 1). The formulation in the P0 group contained only catfish meats, while the P1 and P2 contained catfish meat, tempeh dregs, and Moringa leaves. Catfish is a source of animal protein-rich in the amino acids' leucine and lysine, with a protein content of 17.7%. In addition, tempeh dregs were soybean husks that still have a high protein content of 12.67% (Listiyani, 2017), and other studies mentioned that the protein content of dry tempeh dregs was 14.53%. Furthermore, Moringa leaves had 28.66% protein content using the blanching method (Irwan, 2020).

However, this paper showed no significant difference between the P0 and P3 groups (table 1). It could be because the formulation in the P3 group contained 30% of Moringa leaves, while only 10% of tempeh dregs and 60% of catfish meats. Differences in the use of ingredients affect the protein retention process in boiling. It is in line with Suhandari's research (2015). The study found no significant difference between animal and vegetable proteins in the boiling process. Still, there was a difference in protein retention (resistance of an ingredient to various cooking types) between boiling and frying. Protein retention in boiling was higher than in frying.

Our findings indicated that the highest protein content was 9.0975% in the treatment with the formula 60% catfish meat, 30% tempeh dregs, and 10% Moringa leaves (P1). The protein content has met the meatball protein quality requirements based on the Indonesian National Standard (SNI) 2891-1992 of at least 8%. In addition, this study also indicated that the higher the use of tempeh dregs, the higher the protein content (figure 1). It is a discovery because tempeh dregs have not been widely used as a protein source for humans. They are only used as animal feed. Many research supports an increase in farm animals' nutritional status by giving tempeh dregs. A study by Listiyani (2017) found a significant difference in the effect of feeding added with tempeh dregs on the growth of weight and body length in the Sangkuriang

catfish. In addition, Evavianto's research (2018) showed that adding soybean skin (tempeh dregs) and fermented cassava *Rhizopus sp* could increase the bodyweight of merino sheep.

CONCLUSION

In conclusion, adding tempeh dregs and Moringa leaves can increase protein content in catfish meatballs. The community could utilize tempeh dregs, Moringa leaves, and catfish as an alternative high-protein food for underweight children under five years old. Further study should develop the use of tempeh dregs.

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The Effectiveness of Green Betel Leaf (*Piper betle* Linn) on Perineal Wound Healing: A Literature Review Study

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A B S T R A C T

The perineal injury during delivery can increase the risk of infection in postpartum mothers. This paper reviews the effectiveness of green betel leaf (*Piper betle* Linn) on perineal wound healing. It was a literature review study. The first literature review stage was to determine the problem using PICO questions. Then, search and collect data/literature with the following steps: write keywords in the journal database and choose articles according to the specified criteria. The databases were Google Scholar, Science Direct, and Technology Index (SINTA), and PMC. The population was national journals examining the effectiveness of betel leaf on perineal wound healing. In addition, inclusion criteria were national journals researching the effectiveness of betel leaf on perineal wound healing and published from 2015 to 2020. Meanwhile, the exclusion criteria were journals with no full text. The journal searching was carried out from 1 to 20 August 2020. Data analysis used the following methods: critical appraisal, skimming, scanning, separating irrelevant articles from relevant articles, reading relevant articles, and making notes or summaries. Then we arranged publications in the table and analyzed them. There were seven relevant journals from Google Scholar. The findings showed that betel leaf was effective for perineal wound healing. The betel leaf contains an antiseptic five times stronger than ordinary phenol. It also contains saponins that trigger collagen formation for wound healing. Future researchers should examine the degree of the perineal wound and explain the processing of betel leaf in detail.

INTRODUCTION

Childbirth is a physiological event. Many women experience a tear in the perineum during childbirth. Half of the tears occur between the vaginal opening and the anus, outside the genitals, vagina, and cervix. Further, it often causes symptoms such as pain accompanied by heat in the infected part. If the infection has spread to the bladder tract, it will feel sore when urinating and often accompanied by fever (Oxorn, 2010).

Indonesia's maternal mortality is divided into direct and indirect obstetric causes. Direct obstetric causes include bleeding (28%), preeclampsia/eclampsia (24%), and infection (11%). Indirect obstetric causes include obstetric trauma (5%) and other causes (11%). Maternal mortality after delivery was 60%, and during the puerperium within the first 24 hours was 50%. The most cause of death during the puerperium is bleeding after delivery. Those Bleeding are caused by uterine atony (50-60%), retained placenta (16-17%), residual placenta (23-24%), lacerations in the birth canals (4-5%), and abnormalities in the birth canal (0.5-0.8%) (Depkes RI, 2014). Injury to the birth canal can occur in spontaneous or assisted delivery. The incidence of perineal rupture in mothers aged 25-30 years was 24%, while in mothers aged

32-39 was 62%. Perineal rupture is the cause of postpartum hemorrhage. Further, bleeding causes 40% of maternal death (Triyanti *et al.*, 2017).

The incidence of infection in postpartum mothers is 20%, while perineal infection of 11%. Many actions have overcome this incidence, but the results have not been as expected (Manuaba, 2012). During delivery, wounds in the birth canal can be an entry point for infectious germs and commensal bacteria. Several conditions can increase the risk of infection in postpartum mothers, including perineal injury due to episiotomy, spontaneous rupture, and trauma in the fetus. Perineal wounds are localized, but they can cause systemic infection and spread to other body parts if not treated properly (Manuaba, 2012).

If there is not excellent and correct wound care in postpartum mothers, the perineal wound affected by lochia will become moist. Further, it increases the risk for the proliferation of bacteria that trigger perineal infection. Then, the infection can spread to the urinary tract and the birth canal. As a result, it can inhibit the wound healing process and cause tissue damage (Prawirohardjo, 2011). There is pharmacological and non-pharmacological perineal wound care. Pharmacological perineal wound care uses antiseptic. Meanwhile, non-pharmacological methods can use green betel leaf. (Kurniarum and Kurniawati, 2015).

Piper betle Linn is the Latin name of betel leaf. It has essential oils consisting of hydroxychavicol, cavibetol, estragole, eugenol, methyl eugenol, carvacrol. In addition, One-third of these chemical content consists of phenol. Most of it is chavicol which gives the betel leaf a distinctive odor and has five times the bacteria-killing power of ordinary phenol (Moeljanto, 2003). Betel leaf also contains saponins that can trigger the formation of collagen, a structural protein that plays a role in the wound healing process (Suratman *et al.*, 1996 in Celly, 2010). Chavicol content in betel leaf can function as an antiseptic. In addition, chavicol and chavibetol act as antiseptics to inhibit bacterial growth in wounds (Arifin, 2008 in Celly, 2010). In addition, eugenol and chavicol in green betel leaf have antibacterial properties (Ibrahim, 2015). Much research has analyzed the effect of betel leaf on perineal wounds. However, there has been no literature review study regarding the outcomes of betel leaf on perineal wounds. This paper reviews the effectiveness of green betel leaf (*Piper betle Linn*) on perineal wound healing.

METHOD

This research was a literature review study. The first literature review stage was to determine the problem using PICO questions. Then, search and collect data/literature with the following steps: write keywords in the journal database and choose articles according to the specified criteria. The databases were Google Scholar, Science Direct, and Technology Index (SINTA), and PMC. In addition, the inclusion criteria were national journals examining the effectiveness of betel leaf on perineal wound healing and published from 2015 to 2020. Meanwhile, the exclusion criteria were journals with no full text. The journal searching began on 1 to 20 August 2020. Data analysis used the following methods: critical appraisal, skimming and

scanning, separating irrelevant articles from relevant articles, reading relevant articles, and making notes or summaries (including author, year, title, source, research objectives, research methods, results, conclusions). Then we arranged articles in the table and analyzed them.

RESULTS

There were 121 publications in Google Scholar with seven relevant articles, while there were 403 journals in Science Direct with no relevant articles. Thus, seven reports revealed the effectiveness of green betel leaf on perineal wound healing (Table 1).

Table 1. Article selection

Database	Keywords	Articles	Relevant Articles
Google Scholar	<i>Effectiveness</i> OR efektifitas AND <i>Piper battle linn</i> OR daun sirih hijau AND <i>healing</i> OR penyembuhan AND <i>perineal wound</i> OR luka perineum AND <i>post-partum mother</i> OR Ibu post-partum	121	7
Science Direct	<i>Effectiveness</i> OR efektifitas AND <i>piper battle linn</i> OR daun sirih hijau AND <i>healing</i> OR penyembuhan AND <i>perineal wound</i> OR luka perineum AND <i>post-partum mother</i> OR Ibu post-partum	403	0
Total		524	7

Table 2. Summary of literature review findings

Author, Publication Year	Title	Design	Sample	Location	Procedure	Results
(Kurniarum and Kurniawati, 2015)	The effectiveness of perineal wound healing in postpartum women using betel leaf	Quasi Experiment	Cluster sampling. 30 respondents in the intervention group (betel leaf), and 30 respondents in the control group (betadine)	Three Independent Midwifery Practices (IMPs) in Klaten	Giving betel leaf decoction to wash perineal wounds for seven days in postpartum women.	Age: 20 – 35 years = 89.3% Education = High School 35% Employment = 71.7% Primipara = 34% Wound healing in the intervention group: Dry = 22 respondents (73.3%) Wet = 8 respondents (26.7%) Wound healing in the Control group: Dry = 12 respondents (40%) Wet = 18 respondents (60%) $p= 0.009$ OR: 4.125
(Anggeriani and Lamdayani, 2018)	The effectiveness of giving betel leaf (<i>Piper Betel L</i>) on the speed of perineal	Pre-Experiment	30 respondents with purposive sampling: 15 respondents in the intervention	Sagita IMP	Betel leaf decoction every two times a day after bathing. The decoction method was 100 grams of betel leaf, added 1L of water, and cooked for 20 minutes. The authors observed	Wound healing Intervention group: 4 – 7 days (5.47 days) Control group: 6 – 8 days (7.60 days) $p= 0.000$.

	wound healing in postpartum mothers		group, 15 in the control group		wounds 3,5,7,9 days after the intervention.	
(Yuliaswati and Kamidah, 2018)	Efforts to accelerate the healing of perineal wounds through the use of betel boiled water	Quasi-experiment	Forty respondents with total sampling. • 20 in the intervention group • 20 in the control group	Panjawi Maternity Hospital	Five pieces of betel leaf boiled in 1 liter of water, then waited until it was lukewarm. Respondents wiped perineal wounds with the decoction after urinating and defecating.	Age: 20 -35 years =22 (55%) Homogeneity test: $p= 0.976$ Wound healing Mean in the experiment group: 5.85 (4-8 days) Mean in the control group: 6.85 (5-8 days) $p= 0.010$.
(Sari, 2017)	Comparison of wound healing perineum with and without betel leaf decoction in Lismarini Independent Midwifery Practice in 2016	Quasi-experiment	Thirty respondents with accidental sampling. 15 respondents with betel leaf decoction (intervention group) and 15 without betel leaf decoction (control group)	Lismarini IMP	The authors boiled five pieces of betel leaf in 1 liter of water and waited until lukewarm. Respondents wiped their perineal wound with betel leaf decoction from front to back parts of the wound after bathing, urinating, defecating	In the intervention group: Fast healing = 11 people (36.7%), Normal healing = 4 people (13.3%), and slow healing = 0 people In the control group: Fast healing = 0 people, Normal healing = 7 people (33.3%), and slow healing = 8 people (16.7%). $p= 0.000$.
(Sitepu, Hutabarat and Natalia, 2020)	Effect of Green Betel Leaf Decoction on Perineal Wound Healing in Post Partum Mothers	Pre-experimental	31 respondents with the consecutive sampling	Pera Simalingkar B Clinic, Medan Tuntungan District, Medan	The authors used green betel leaf decoction. They observed the degree of the perineal wound before and after the intervention.	Age >30 years= 16 respondents (51.6%) Senior high school= 24 respondents (77.4%) Working= 29 respondents (93.5%) Pre-test: Degree 0= 16 respondents (51.6%) Degree 1= 15 respondents (48.4%) Posttest: Degree 0= 26 respondents (83.9%) Degree 1= 5 respondents (16.1%) $p= 0.018$
(Christina and Kurniyanti, 2014)	The Effectiveness of Betel Leaf Decoction in Accelerating the	Completely randomized design (CRD) to find the highest chavicol	19 respondents	Independent Midwifery Practices in Malang Regency	The first stage: Some green betel leaves were dried in an oven with a temperature of 60°C (treatment 1) to produce dry betel leaves with a water content of 14% and	The highest chavicol content was in betel leaf decoction with a boiling time of 20 minutes. After giving betel leaf decoction with the highest chavicol content, the

Healing of Perineal Wounds	content. Then, Quasi-experiment to determine the outcome of the highest chavicol content on perineal wound healing	partly without drying (treatment 2). The two treatments were dried again to make paste and starch. Then, the drying results were boiled with water at a temperature of 100°C for 10 minutes, 15 minutes, and 20 minutes. Each result of the boiling time interval was separated between the dregs and the extraction results to produce different chavicol extractions. Furthermore, the chemical test of chavicol was carried out to determine the highest levels of chavicol from the three-time groups. The second stage was the implementation of experiments using betel leaf decoction with the highest chavicol content in the perineal wound among postpartum mothers.	respondent's perineal wound healed and dried up in 3-4 days postpartum. In addition, there were no signs of infection. Furthermore, respondents reported that the pain in the perineal suture wound also quickly decreased. Thus, betel leaf was effective in perineal wound healing ($p=0.000$).			
(Kurniawati and Ulfa, 2015)	The Difference of The Using of Betel Leaves to recover The Perineum Wound	True Experimental Design	Sixteen respondents with purposive sampling. Eight respondents were in the intervention group (betel leaf) and 8 in the control group.	Ringinan yar Village	The authors used betel leaf decoction. The tools and materials were betel leaf, boiling water, one measuring cup, and one basin. Data collection techniques were observing time in the wound healing process until the wound dries and using standard operating procedures of perineal care.	There was a difference in perineal wound healing time between intervention and control groups ($p=0.000$).

DISCUSSION

Location

All studies were carried out in Indonesia – 71.4% in IMPs, 14.3% in a clinic, and 14.3% in the village. The research location is where the researchers obtain information about the data and conducts the research. Place selection should consider attractiveness, uniqueness, and suitability for the chosen topic so

that researchers can find meaningful and new things (Mughtar, 2015). In addition, it can explain the characteristics of the community/respondents in the research. In this paper, there were no journals that used two research locations. Thus, the study results were not biased due to differences in the characteristics of respondents from two different places.

Research Design

The research design in this paper was two journals with quasi-experimental design (28.5%), two with pre-experimental (28.5%), two with experimental (28.5%), and one with true experimental (14.3%). The research design is a method or strategy to obtain data and facts processed for research purposes (Sugiyono, 2010). It is an overview of the research that researchers will carry out to achieve specific goals (Indrawan and Yuniawati, 2014). All journals in this literature review used an experimental design, with or without the control group. This design was based on the research objectives because the experimental design can determine the effects of the therapy/treatment. The treatment is given by the same person and technique, so that effects could be measured properly and minimized bias.

Sample

The sampling techniques in this paper were one journal (14.3%) with cluster sampling, two journals (28.5%) with purposive sampling, one journal (14.3%) with total sampling, one journal (14.3 %) with accidental sampling, and no description in 2 journals (28.5%). The average sample used in this literature review was 16 – 70 respondents. The population is a collection of subjects, variables, concepts, or phenomena. Each sample member determines the population's nature (Morissan, 2012). In addition, the sample is part of the population or part of the characteristics of the population (Hidayat, 2018). The population in the research journal follows the sampling procedure. The advantage of using samples in research are cost and time savings. In addition, the data is more accurate because the authors do not involve too many respondents.

Betel leaf

All journals in this literature review used green betel leaf (100%) – 6 journals (85.7%) washed the perineal wound with betel leaf decoction, and one journal (14.3%) did vulva hygiene with betel leaf. The betel plant has been used for various kinds of treatment. Almost all parts of the betel plant can be used, such as roots, stems, stalks, leaves, and fruit (Chakraborty, A. K., Rhambade and Patil, 2011). Betel plant decoction is medicine for impetigo, eczema wounds, burns, lymphangitis, furunculosis, and stomach pain. In addition, betel leaf can heal urticaria, pharyngitis, and swelling. The roots and fruit of the betel plant can be used to treat malaria and asthma (Dwivedi and Shalini, 2014) (Triyanti *et al.*, 2017)

Betel leaf contains various substances to neutralize the imbalance of acid-base metabolism in the body, such as Si, Cl, Zn, Mg, Ca, and K (Periyanayagam, Mubeen, and Basha, 2014). The content of betel leaf is very much metabolites such as volatile oils (safrol, eugenol, eugenol methyl ester, isoeugenol),

phenolic components (chavicol, hydroxyl chavicol), hydroxyl fatty acids (stearate, palmitic, myristic acid), and fatty acids (stearic and palmitic). That content has antibacterial effects (Bangash *et al.*, 2012). Not all of the processing of the betel leaves in the seven journals are explained in detail. Overall, that processing by boiling directly, and some are extracted first and then boiled. The different ways of processing betel leaves will have other content produced. However, the content was still effective and had better perineal wound healing outcomes than the control group.

Perineal Wound

In this paper, most journals did not mention the degree of the perineal wound in their studies. In addition, the authors observed perineal wounds on the first, fifth, seventh, and ninth days. A perineal wound is an injury in the perineum caused by a tear in the birth canal due to an episiotomy or rupture during delivery (Purwoastuti and Walyani, 2015). It is an injury in the urogenital diaphragm and levator ani muscle during delivery. It is not visible because the injuries occur in the perineal skin or the vagina. Further, it can weaken the hip base so that it is easy for genital prolapse occurs (Rukiyah and Yulianti, 2014). Wounds on the perineum are classified in several degrees, namely degrees 1 to 4. Each degree has a different area and depth of the injury. The observation of perineal wounds can be appropriately measured by examining the degree of the wound.

The Effectiveness of Green Betel Leaf Against Perineal Wound Healing

All journals (100%) showed the effects of betel leaf on perineal wound healing in postpartum mothers. Betel leaf contains chemical content consisting of hydroxychavicol, chavibetol, estragole, eugenol, methyl eugenol, carvacrol. Those contents have five times the bacteria-killing power of ordinary phenol. In addition, chavicol and chavibetol are substances that function as antiseptics that can inhibit the growth of bacteria in wounds (Arifin 2008 in Celly, 2010). Betel leaf also contains saponins that stimulate collagen formation, which plays a role in wound healing (Suratman *et al.*, 1996 in Celly, 2010). A study by Celly (2010) showed the effect of betel leaf on the acceleration of perineal wound healing among postpartum mothers in Sumbermulyo Village, Jogotero District, Jombang.

Perineal wound care can prevent infection in birth canal injuries. Using betel leaf decoction is one of the non-pharmacological perineal wound cares. Betel leaf contains antifungal, antibacterial, and antibiotic therapeutic effects. In addition, there is an arecoline to help activate the central nervous system. So that peristaltic motion and blood circulation in the wound area increase. In addition, it can improve oxygenation, so that wound healing becomes faster. The betel leaf's chemical contents and properties can support perineal wound healing because containing an antiseptic five times stronger than ordinary phenol. It also contains saponins that trigger collagen formation for wound healing. So, using betel leaf decoction can cause perineal wounds to heal faster than without using betel leaves.

CONCLUSION

All journal articles revealed that betel leaf (*Piper betle Linn*) was effective for perineal wound healing with a $p < 0.05$. Using betel leaf as a complementary therapy must be supported by good personal hygiene and adequate nutritional intake so that the wound can heal properly and infection does not occur. Future researchers should examine the degree of the perineal wound and explain the processing of betel leaf in detail.

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Granting Exclusive Breastfeeding Certificate to Increase Maternal Motivation for Exclusive Breastfeeding

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A B S T R A C T

The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) have recommended exclusive breastfeeding, but there are still mothers who do not provide exclusive breastfeeding. In 2018, its number was only 37.3%, while the government's target of exclusive breastfeeding coverage of 80%. One effort to support exclusive breastfeeding mothers is giving certificates. This study aims to determine the correlation between granting exclusive breastfeeding certificates and maternal motivation for exclusive breastfeeding. It was a correlational study with a cross-sectional design. The independent variable was granting exclusive breastfeeding certificates, while the dependent variable was maternal motivation for exclusive breastfeeding. The population was breastfeeding mothers for more than six months in Bedingin Village, Sugio District, Lamongan Regency. The samples were 40 respondents with simple random sampling. We interviewed respondents with a questionnaire as a research instrument. Then, data analysis used the Chi-Square test with $\alpha = 0.05$. 87.9% of mothers who received exclusive breastfeeding certificates had good motivation for exclusive breastfeeding. In addition, the Chi-Square test obtained $p=0.000$ ($\alpha < 0.05$). Thus, there was a significant correlation between granting exclusive breastfeeding certificates and maternal motivation for exclusive breastfeeding. In conclusion, awarding exclusive breastfeeding certificates increase maternal motivation for exclusive breastfeeding. Further, it could improve coverage of exclusive breastfeeding in Indonesia. The local government should make policies in issuing exclusive breastfeeding certificates.

INTRODUCTION

Breastfeeding is a mutually beneficial activity between mother and baby. Breastfeeding creates a close relationship between mother and baby. Breast milk has a vital role because it contains good nutrients for the growth and development of babies, so breast milk is highly recommended. The government stipulates exclusive breastfeeding as an indicator of accelerated nutrition improvement in the National Movement for the first 1000 days of life, starting from pregnancy until the child is two years old (Kementerian Kesehatan RI, 2013).

According to Government Regulations number 33 of 2012, exclusive breastfeeding is breast milk given to babies from birth to 6 months without adding or replacing other food or drinks. It is in line with The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) recommendation. In addition, the government also regulates procedures for providing special facilities for breastfeeding and or expressing breast milk.

However, there are still mothers who have not given exclusive breastfeeding. According to Basic Health Research (2018), 37.3% of mothers provided exclusive breastfeeding. It was still low compared to the

government's target of exclusive breastfeeding coverage of 80% (Sakti, 2018). In 2019, the national coverage of babies with exclusive breastfeeding was 67.74%. This figure has exceeded the Strategic Plan target in 2019 of 50%. In addition, East Java ranked 3rd nationally, with a coverage of 78.27% (Primadi, 2020). In addition, research conducted in the Olak Kemang Health Center, Jambi, revealed that the coverage of exclusive breastfeeding was still below the Minimum Service Standard target (Silvianta, Halim en Ridwan, 2018). Furthermore, according to Statistics Indonesia, the number of babies with exclusive breastfeeding in Lamongan Regency in 2016 was 87%. This number exceeds the government's target. However, it means that there were still mothers who did not provide exclusive breastfeeding.

One effort to support exclusive breastfeeding mothers is granting certificates. Public Health Center or village government can issue these certificates to appreciate mothers with successful exclusive breastfeeding. However, not all health centers or villages government provide these certificates. This study aims to determine the correlation between granting exclusive breastfeeding certificates and maternal motivation for exclusive breastfeeding.

METHOD

This paper was a correlational study with a cross-sectional design. The independent variable was granting exclusive breastfeeding certificates, while the dependent variable was maternal motivation for exclusive breastfeeding. The population was breastfeeding mothers for more than six months in Bedingin Village, Sugio District, Lamongan Regency. The samples were 40 respondents with simple random sampling. We interviewed respondents with a questionnaire as a research instrument. Then, data analysis used the Chi-Square test with $\alpha = 0.05$.

RESULTS

Table.1, 2, 3, and 4 explain the characteristics of respondents. In addition, Table.5 to Table.6 show independent and dependent variables. Furthermore, table.7 reveals the correlation between both variables.

Table 1 Characteristics of Respondents by Age

Num	Age (years old)	Frequency	Percentage (%)
1.	17-25	10	25
2.	26-35	20	50
3.	36-45	6	15
4.	46-55	4	10
Total		40	100

Table 1 shows that half of the respondents are 26-35 years old and a small portion (10%) are 46-55 years old.

Table 2. Characteristics of Respondents by the Number of Children

Num	Number Of Children	Frequency	Percentage (%)
1.	1	14	35
2.	2	18	45
3.	>3	8	20
Total		40	100

Table 2 indicates that almost half of the respondents (45%) have two children and a small proportion (20%) have more than three children.

Table 3 Characteristics of Respondents by Mother's Occupation

No	Mother's Occupation	Frequency	Percentage (%)
1.	Working	8	20
2.	Not Working	32	80
Total		40	100

Table 3 reports that most respondents (80%) do not work or are homemakers, and a small proportion (20%) work.

Table 4 Characteristics of Respondents by Mother's Education

Num	Last Education	Frequency	Percentage (%)
1.	Elementary School or Junior high school	20	50
2.	Senior High School	16	40
3.	College	4	10
Total		40	100

Table 4 reveals that half of the respondents have primary education (Elementary School or Junior high school), and a small proportion (10%) have tertiary education.

Table 5 Granting exclusive breastfeeding certificates

Num	Respondents received exclusive breastfeeding certificates	Frequency	Percentage (%)
1.	Yes	33	82.5
2.	No	7	17.5
Total		40	100

Table 5 shows that most respondents (82.5%) received exclusive breastfeeding certificates and a small portion (17.5%) are not.

Table 6 Maternal motivation for exclusive breastfeeding

Num	Motivation	Frequency	Percentage (%)
1.	Good	29	72.5
2.	Not enough	11	27.5
Total		40	100

Table 6 indicates most respondents (72.5%) have good motivation, and a small proportion (27.5%) have not enough motivation.

Table 7 The correlation between granting exclusive breastfeeding certificates and maternal motivation for exclusive breastfeeding

Exclusive breastfeeding certificates	Maternal Motivation				Total		<i>p</i>
	Good		Not enough		f	%	
	f	%	f	%			
Yes	29	87.9	4	12.1	33	100	0.000
No	0	0	7	100	7	100	

87.9% of mothers who received exclusive breastfeeding certificates had good motivation for exclusive breastfeeding. In addition, the Chi-Square test obtained $p=0.000$ ($\alpha<0.05$). Thus, there was a significant correlation between granting exclusive breastfeeding certificates and maternal motivation for exclusive breastfeeding.

DISCUSSION

Our findings showed that most respondents received exclusive breastfeeding certificates (table 5). It means that mothers had successful exclusive breastfeeding for up to 6 months without giving any food to the babies. There are various efforts to increase the coverage of exclusive breastfeeding. One of them is providing counseling to mothers and families so they understand the importance of exclusive breastfeeding. Exclusive breastfeeding babies have a better chance of normal development according to age than those who are not. Thus, breast milk is still better than formula milk (Nurjanah, Keperawatan en Kebidanan, 2015). In addition, a policy from the government can encourage an increase in the coverage of exclusive breastfeeding. This policy is stated in the Government Regulation of the Republic of Indonesia Number 33 of 2012 regarding exclusive breastfeeding. However, unfortunately, not all local governments implemented an exclusive breastfeeding policy (Safitri en Puspitasari, 2018).

Furthermore, family support also affects exclusive breastfeeding because family is emotional support (Umami, W., 2018). A study found a correlation between a husband's support and exclusive breastfeeding. Support can be provided in materials or assistance in solving problems. So, it will motivate mothers to exclusive breastfeeding (Nasution, Liputo en Masri, 2016). A good husband's support increase confidence and have stable emotions in the mother. In addition, the role of grandmothers also plays an essential role in increasing successful exclusive breastfeeding. Grandmothers with successful experience of exclusive breastfeeding can encourage exclusive breastfeeding mothers. A prior study found that grandmothers with 2-4 children and 2-4 grandchildren had sufficient self-efficacy. In addition, grandmothers can increase maternal self-efficacy through repeatedly verbal persuasion (Wibowo et al., 2019).

This study showed that most exclusive breastfeeding mothers did not work (table 3). They were with their babies for 24 hours every day, so it was easier for them to provide exclusive breastfeeding than working mothers. It is in line with a previous study that showed working mothers had a low ability to provide exclusive breastfeeding compared to mothers who did not work. Working mothers did not store breast

milk due to the assumption that breast milk had gone bad. Hence, they preferred to throw them away rather than keep them (Mareta en Masyitoh, 2016). In addition, working mothers faced obstacles due to a short period of leave before the end of exclusive breastfeeding, so they could not provide exclusive breastfeeding (Umami, W., 2018). Factors affecting exclusive breastfeeding were maternal age, mother's occupation, the number of children, and mother's knowledge (Dewi, 2016). A similar investigation revealed that mothers with good knowledge tended to provide exclusive breastfeeding. They decided to give it to their babies because they knew its benefits (Amir, Nursalim en Widyansyah, 2018).

In addition, this paper found that mothers had good motivation for exclusive breastfeeding (Table 6). Mothers with high motivation were 6.767 times more likely to have successful exclusive breastfeeding (Dania en Fitriyani, 2020). High motivation makes mothers strong, not easily discouraged, and not easily give up, so that there is a desire to provide exclusive breastfeeding. According to the Big Indonesian Dictionary, motivation is encouragement that arises in an individual, consciously and unconsciously, to do actions with specific goals. Mothers with good motivation get encouragement to succeed in exclusive breastfeeding. After achieving these goals, they will get satisfaction. However, there were still mothers who did not receive an exclusive breastfeeding certificate (Table 5). A small portion of mothers in this study failed exclusive breastfeeding because of Many factors. Prior research found that predisposing factors for failed exclusive breastfeeding were breast milk not coming out and children being fussy, so mothers chose to give formula milk (Silvianta, Halim en Ridwan, 2018).

Our findings revealed a correlation between granting exclusive breastfeeding certificates and maternal motivation for exclusive breastfeeding (Table 7). An exclusive breastfeeding certificate is a paper containing information about a mother's success in struggling with exclusive breastfeeding for six months. Some respondents said that those certificates were an appreciation to motivate them. The award can be gifts or certificates. Certificates of achievement can also stimulate mothers who will provide exclusive breastfeeding.

Several regions have granted certificates for exclusive breastfeeding mothers. One of them is the Purbalingga district government, with 195 certificates in 2019. In addition, the Sugio Health Center and the Sugio Village Government collaborate with the Sugio branch of the Aisyiyah women's organization to issue exclusive breastfeeding certificates. In addition, East Lampung has also given 459 of those certificates in 2020 (Qhadumi, 2020). However, not all regions have implemented a policy of granting breastfeeding certificates (Widiyatno, 2019).

CONCLUSION

Granting exclusive breastfeeding certificates increase maternal motivation for exclusive breastfeeding. Further, it could improve coverage of exclusive breastfeeding in Indonesia. The local government should make policies in issuing exclusive breastfeeding certificates.

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