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CORRELATION OF EDUCATIONAL LEVEL AND AGE OF PREGNANT WOMEN ON TRIPLE ELIMINATION EXAMINATION IN SENTUL HEALTH CENTER WORKING AREA BOGOR DISTRICT IN 2023

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Abstract

Background: According to the 2020 Indonesia Health Profile, more than 90% of children contract HIV, Syphilis, and Hepatitis B infections from their mothers. Triple elimination is a program that aims to achieve and maintain mother-to-child elimination of HIV/AIDS, Hepatitis B, and Syphilis.

Method: This study, which is of significant importance, aims to determine the correlation between the educational level and age of pregnant women on triple elimination examinations in the work area of the Sentul Health Center, Bogor Regency, in 2023. This research uses a quantitative analytical research design. The population of this study is all pregnant women in the work area of the Sentul Health Center, Bogor Regency, for the month. December 2023, a total of 50 people used a sampling technique, namely total sampling.

Result: The results of this study were based on the chi-square test, namely that there was a significant correlation between the level of education of pregnant women and the triple elimination examination, the p-value was $0.001 < \alpha$ value (0.05), and there was a significant correlation between the age of the pregnant mother and the triple elimination examination, the value was obtained a p-value of $0.001 < \alpha$ value (0.05).

Suggestions: Providing knowledge and information about triple elimination examinations for pregnant women is recommended.

Keywords: Education Level, Age, Triple elimination, Pregnant Women

Introduction

Maternal Mortality Rate (MMR) moment This is still far from the target of the Sustainable Development Goals (SDGs), which aim to lower the Maternal Mortality Rate (MMR) by 70 per 100,000 Live Births (LB) and the Neonatal Mortality Rate (NMR) in lower 25 per 100,000 LB for the 2016-2030 period. WHO plans to eliminate the transmission of infectious diseases from mother to child (*mother-to-child transmission*). The three primary diseases focus are HIV, Hepatitis B, and Syphilis. These three diseases are endemic contagious diseases in the Asia and Pacific region. (WHO, 2018). *The United Nations Program on HIV and AIDS* (UNAIDS) reports that In 2015, globally, around 36.7 million people had HIV, with around 2.1 million of them being new cases. In 2021, there are an estimated 160,000 infections of new HIV in children, and globally, about 3.1 million children are HIV positive. Transmission of HIV from Mother to child accounts for 9% of all new infections in the world (UNAIDS, 2021).

The purpose of HIV testing for pregnant women is to prevent HIV transmission to babies born to HIV - infected mothers. Transmission of HIV from mother to baby can occur during pregnancy, childbirth, and breastfeeding. HIV infection in babies can cause pain, disability, And Death, thus harming the survival and quality of life of children. The National Program for Prevention and Control of Viral Hepatitis B moment Focuses on the Prevention of Mother-to-Child Transmission (PPIA) because 95 % of Hepatitis B infections are transmitted vertically, meaning from a mother who is positive for Hepatitis B to the baby she gives birth to. Early Detection of Hepatitis B (DDHB) activities have been implemented since 2015. If a pregnant woman with syphilis does not get appropriate treatment, it can infect 67 babies, and some pregnancies may end in abortion, stillbirth, or congenital syphilis. Also, If a Mother suffers from hepatitis B, 95% of babies born will be infected, and the babies will not be protected from hepatitis B unless they accept treatment standards (Ministry of Health, 2017).

According to the 2020 Indonesian Health Profile, more than 90% of children contract HIV, Syphilis, and Hepatitis B infections from their mothers. The prevalence of HIV, Syphilis, and Hepatitis B infection in pregnant women is 0.3%, 1.7%, and 2.5%, respectively. The risk of mother-to-child transmission for HIV is 20%-45%, for Syphilis is 69-80%, and for Hepatitis B is more than 90%. With Indonesia's large population, the above figure is relatively high, so more attention is needed to handle it

(Ministry of Health, 2017).

Triple Elimination is a program that aims to achieve and maintain mother-to-child elimination from HIV/AIDS, Hepatitis B, and Syphilis. To achieve better health for women, children, and their families through a coordinated approach, by 2020, 51.37% of pregnant mothers will carry out Detection of Early Hepatitis B. Your role in this research is crucial in understanding and improving the outcomes of this program.

Of the target number of pregnant women in 2020, 5,221,784 Mothers were pregnant. Achievements This still has not achieved the target, namely Early Detection of Hepatitis B; at least 80% of pregnant women are examined integrated with HIV and Syphilis (Triple Elimination). In 2020, there were 2,404,754 pregnant women tested for HIV in Indonesia. From this examination, getting it 6,094 (0.25%) pregnant women were HIV positive. Provinces with a percentage of pregnant women who positive for HIV highest is Province Papua West at 2.56%, Riau Islands at 2.32%, and Papua at 0.88% (Ministry of Health of the Republic of Indonesia, 2021).

Urgent efforts are needed to break the chain of transmission of HIV, Syphilis, and Hepatitis B by eliminating transmission, which is carried out as a form of State responsibility in ensuring the survival of children. HIV infection, Syphilis, and Hepatitis B have relatively the same transmission pattern, namely transmitted through sexual contact, blood exchange/contamination, and vertically from mother to child (Ministry of Health, 2017). According to Wulandari's research results (2023), the title factors related to triple examination elimination in the Way Mili Community Health Center Working Area, East Lampung Regency. Based on the research results using statistical tests, the $p\text{-value} = 0.001 (< 0.05)$, this shows a relationship between education and triple elimination examinations in the Way Mili Health Center Working Area, East Lampung Regency. With developments in the world of education, Which changed significantly, Lots of change patterns, and educators, from a typical and rigid educational pattern to a more modern one.

Meanwhile, according to the research results by Sabilla et al. (2020), the title research on the relationship between education level and age of pregnant women on the behavior of visiting triple elimination examinations at the Sumberlawang Community Health Center, Sragen. Based on the results of the analysis using the Fisher method show that there is a relationship between age and triple elimination examination visits with $p\text{-value}$

value = 0.010 (< 0.05).

According to the research results by Sabilla et al. (2020), the title research on the relationship between educational level and age of pregnant women on the behavior of visiting triple elimination examinations at the Sumberlawang Health Center, Sragen. Based on the results of the analysis using the Fisher method show that there is a relationship between age and triple elimination examination visits with $p\text{-value} = 0.010$ (< 0.05). The older a person is, the better his behavior will be. The older someone gets, the more responsible, orderly, and moral the person will be.

Based on the data above, the author is interested in researching "Level Relationships Education and Mother's Age Pregnancy against Triple Elimination Examination in the Sentul Community Health Center Working Area, Bogor Regency in 2023."

Method

The type of research used by researchers is type study quantitative Analytical is research to determine whether there is a relationship between variable independent and Dependent, with a Cross-Sectional approach design. In this research, we will study the relationship between the level of education and the age of the pregnant mother on the triple elimination examination, namely the level of education and the age of the pregnant mother as independent variables and the triple elimination examination as the dependent variable. The population in the study was all pregnant women in the work area of the Sentul Health Center, Bogor Regency, for the period December 2023, a total of 50 people.

The researcher used the technique that will be used in sampling is *total sampling*, so the sample in the research is all pregnant women in the work area of the Sentul Community Health Center, Bogor Regency, for the period December 2023 with a total of 50 people at the same time as the research time.

Univariate analysis is an analysis of each variable expressed by describing it and summarizing data scientifically in tables or graphs. In this study, bivariate analysis was carried out on two variables that were thought to be related or correlated.

Results

A. Univariate Analysis

Table 1
Distribution Frequency Level Pregnant Women's Education

Level of Education	Amount	Percentage (%)
Primary	13	26.0
Intermediate	35	70.0
High	2	4.0
Total	50	100

Based on the results of Table 1, a picture of the education level variable shows that out of 50 respondents, respondents had a level 13 people had primary education (26.0%), 35 people had secondary education (70.0%), and two people had higher education (4.0%).

Table 2
Distribution Frequency Age Pregnant mother

Age	Amount	Percentage (%)
< 25 years	13	26.0
25-40 Year	35	70.0
> 40 Years	2	4.0
Total	50	100

Based on the results of Table 2, an overview of the age variable shows that out of 50 respondents, 13 were < 25 years old (26.0%) and were 25-40 years old. As many as 35 people (70.0%), And Those aged > 40 years were two people (4.0%).

Table 3
Distribution Frequency Examination Triple Elimination of Pregnant Women

Examination Triple Elimination	Amount	Percentage (%)
Do the test	26	52.0
Didn't do the test	24	48.0
Total	50	100

Based on the results of Table 3, an overview of the triple elimination examination variables is obtained results that from 50 respondents who carried out the triple elimination test were 26 (52.0%), and those who did not do the triple elimination test were 24 (48.0%).

B. Bivariate Analysis

Table 4
Connection Level Education and Age Mother Pregnant to Inspection Triple Elimination

Variable	Inspection of <i>Triple Elimination</i>						P Value
	Doing <i>Triple Elimination</i>	Tests	Not doing the test <i>Triple Elimination</i>		Total		
Level of education	n	%	n	%	N	%	
%Primary	12	92.3	1	7.7	13	100	0.001
Intermediate	13	37.1	22	62.9	35	100	
High	1	50.0	1	50.0	2	100	
Total	26	52.0	24	48.0	50	100	
Mother's Age							
< 25 years	12	92.3	1	7.7	13	100	0.001
25-40 years	13	37.1	22	62.9	35	100	
> 40 years	1	50.0	1	50.0	2	100	
Total	26	52.0	24	48.0	50	100	

The results of Table 4 show that of the 50 respondents, the majority of them were 35 respondents who had higher education and carried out the triple elimination test. As many as 13 (37.1%) and 22 (62.9%) did not complete the triple elimination test. The results of the chi-square test between the educational level of pregnant women and the triple elimination examination showed a p-value of $0.001 < \alpha$ value (0.05), so it can be concluded that there is a significant relationship between the educational level of

pregnant women and the triple elimination examination in the work area Sentul Community Health Center, Bogor Regency in 2023.

Whereas For variable age Mother Pregnancy shows that of the 50 respondents, the majority were 35 respondents who were aged 25-40 years and carried out the triple elimination test as many as 13 people (37.1%) and did not carry out the triple elimination test as many as 22 people (62.9%). Intermediate *chi-square test results aged Mother pregnant to inspection triple elimination obtained a mark p-value* as significant as 0.001 $< \alpha$ value (0.05), so it can be concluded that there is an essential relationship between age pregnant women for triple elimination examinations in the Sentul Regency Health Center working area Bogor in 2023.

Discussion

A. Frequency Distribution of Education Levels and Ages of Pregnant Women in the Working Area of Sentul Community Health Center, Bogor Regency, in 2023

Based on the results of univariate analysis, a picture of the education level variable showed that out of 50 respondents, respondents had a level education base as much 13 people (26.0%), 35 people had a secondary education level (70.0%), and two people had a higher education level (4.0%). Meanwhile, for variables, age obtained results from fifty respondents, respondents were aged < 25 years, 13 people (26.0%), 35 were aged 25-40 years person (70.0%), and > 40 years as many as two people (4.0%).

According to theory, Arisandra (2016) states that the level of education is a unit of organized information that usually consists of a fact or procedure applied directly to performance. Karuniawan (2019) noted that education with various programs has a vital role in obtaining and improving the quality of a person's professional abilities. Hidayat and Nurasyiah (2017) state that education is an activity that increases a person's general knowledge, including theory, to decide problems related to goal achievement activities. Age is a period since a person existed and can be measured using unit time seen from a chronological perspective, average individuals can be seen to have the same degree of anatomical and physiological development (Sonang *et al.*, 2019). Age is also defined as a person's last birthday (Nur *et al.*, 2018).

Based on researchers' assumptions, the level of education is a stage of

education that is determined based on students' development level, the goals to be achieved, and the will to be developed. The level of education influences changes in attitudes and healthy living behavior. Higher education will make it easier for a person or community to absorb information and implement it in daily behavior and lifestyle, especially regarding health.

Age is defined as the length of a person's existence measured in units of time. The mother's age at the time of pregnancy influences the condition of the mother's pregnancy itself because apart from being related to the maturity of the reproductive organs, it is also related to psychological conditions, including readiness to accept pregnancy.

B. Frequency Distribution of Triple Elimination Examinations in the Working Area of Sentul Community Health Center, Bogor Regency, in 2023

Based on the results of the univariate analysis, an overview of the examination variable of the triple elimination test variable showed that out of 50 respondents, the number of respondents who carried out the triple elimination test was 26 person (52.0%), and not doing test *triple* as many *eliminations as possible* 24 people (48.0%).

Prevention of HIV transmission from mother to child programmatically starts with screening or simple, early detection of HIV infection, Syphilis, and Hepatitis B, according to the Regulation of the Minister of Health of the Republic of Indonesia No. 37 of 2012 concerning the Implementation of Public Health Center Laboratories to implement PPIA, namely to minimize the risk of transmission infection from mother to baby. The earlier the examination is carried out, the quicker treatment will be received and the smaller the risk of transmission. Pregnant women often come for PPIA examinations in the third trimester of pregnancy for various reasons. At every level of MCH services, health workers in health service facilities must carry out Triple Elimination tests for all Mothers with minimum. Once as part of a routine laboratory examination during the antenatal examination at the first visit (K1) until just before delivery. Triple Elimination Examination for HIV, Syphilis, and Hepatitis B should be done at the first visit in the first trimester (Ministry of Health, 2020).

C. The Relationship between Educational Level and Age of Pregnant Women on Triple Elimination Examinations in the Sentul Community Health Center

Working Area, Bogor Regency in 2023

The chi-square test between the educational level of pregnant women, the triple elimination test was obtained with a mark p-value as significant as $0.001 < \alpha$ value (0.05), so it can be concluded that there is a significant relationship between the level of education of pregnant women of the triple elimination examination in the work area of the Sentul Community Health Center, Bogor Regency in 2023. Meanwhile, based on the results of the chi-square test between the age of pregnant women and the triple elimination examination, it was found mark p-value as significant as $0.001 < \alpha$ value (0.05), so it can be concluded that there is a significant relationship between the age of pregnant women and triple elimination examinations in the Sentul Community Health Center work area, Bogor Regency, in 2023.

According to theory, the level of education is a stage of education that is determined based on the level of development of students, the goals to be achieved, and the will to be developed. The level of education affects changes in attitudes and healthy living behavior. Higher education will make it easier for a person or community to absorb information and implement it in daily behavior and lifestyle, especially regarding health. Age is defined as the length of a person's existence measured in units of time. The mother's age at the time of pregnancy influences the condition of the mother's pregnancy itself; apart from being related to the maturity of the reproductive organs, it also relates to psychological conditions, including readiness to accept pregnancy (Putri, 2019). Age can impact an individual's ability to understand and their overall mindset. As you age, you will continue developing and improving your understanding and thinking patterns. This will make it possible to acquire knowledge more effectively and comprehensively.

The results of this research are not in line with a study in Sleman, 2015. In the study, It was concluded that the level of education did not influence visits To carry out tests for HIV and other sexually transmitted infections, including syphilis (Setiyawati, 2015). Other research in Tabanan, Indonesia, in 2018 also showed results that were not in line with this research. This study concluded that the education level of pregnant women did not influence hepatitis B examination visits (Dhyanaputri *et al.*, 2019). HIV testing visits for pregnant women are not only

influenced by education level; other factors that are more influential are perceptions of obstacles, behavioral guidelines, and husband's support (Halim, 2016).

These results do not align with a study in Semarang, Indonesia, conducted in 2012. In this study, it was concluded that age did not influence maternal visits. For do inspection HIV and other sexually transmitted infections (Legiati *et al.*, 2012). Research in Medan, 2019 also showed similar results. In this research, it was concluded that age does not affect visits by pregnant women to undergo hepatitis B examinations (Putri, 2019). In this study, age had no effect Because of knowledge and family support; this perception is more influential than age.

Based on the researchers' assumptions, it was concluded that the factors that influence pregnant women to carry out *triple elimination examinations* are family support, knowledge, perceptions, and attitudes.

Conclusion

1. Based on the results of univariate analysis, the picture obtained is that part of the big Mother carried out the Triple Elimination test by 52%. In the education level variable, partial results were obtained: significant respondents with a secondary education base of 70%, respondents with a level education base of 26%, and the smallest with a higher education level of 4%. While variable age, the results showed that most Mothers are aged 25-40 years 70 %, age <25 years amounting to 26%, and the least at age >40 years by 4%.
2. The chi-square test between the educational level of pregnant women and the triple elimination examination, it was found that the p-value was $0.001 < \alpha$ value (0.05), so it can be concluded that there is a significant relationship between the educational level of pregnant women and the triple elimination examination in the work area of the Community Health Center. Sentul Bogor Regency in 2023. Meanwhile, the results of the chi-square test between the age of pregnant women and the triple elimination examination showed a p-value of $0.001 < \alpha$ value (0.05), so it can be concluded that there is a significant difference between the age of pregnant women and triple elimination examinations in the Sentul Community Health Center work area, Bogor Regency in 2023.

Suggestion

It is hoped that it can provide knowledge and information about the importance of triple elimination examination in pregnant women.

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FACTORS RELATED TO FAMILY PLANNING AFTER BIRTH IN THE WORKING WAY OF DADOK TUNGGUL HITAM PUBLIC HEALTH CENTRE IN 2023

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Abstract

Indonesia is the fourth most populous country in the world with a population of 273,879,750. To overcome population problems and reduce TFR (Total Fertility Rate) with contraceptive services and spacing of pregnancies through post-coital family planning. One of the behavioral determinants associated with the use of post-saline family planning includes maternal knowledge, attitudes and husband support. The purpose of this study was to determine the factors associated with the use of postpartum family planning in the working area of Dadok Tunggul Hitam Public Health Centre Padang City. This study is an analytic study with a cross sectional study approach with a sample size of 49 postpartum mothers using total sampling. Data analysis used univariate and bivariate with Chi-Square test. The results of the bivariate analysis showed that there was a relationship between the number of children, (p-value 0.006), knowledge (p-value 0.002), attitudes (p-value 0.007), and husband support (p-value 0.001) to the use of postpartum family planning.

Keywords: knowledge, attitude, husband support, KBPP.

Introduction

Population growth in the world has increased over time, especially in developing countries such as Indonesia. Based on the 2021 health profile data, Indonesia is the fourth most populous country in the world with a population of 273,879,750. To overcome the world population problem that affects all areas of life, especially health, WHO has identified population growth as one of the main indicators that must be considered in the 2030 SDGs, namely the proportion of women of childbearing age who are married and meet the needs of family planning with the latest methods. The indicator of contraceptive

use rate in Indonesia is 77.8% (Nurdi, 2019).

KBPP is a family planning service provided after childbirth up to a period of 42 days, with the aim of regulating birth spacing, pregnancy spacing, and avoiding unwanted pregnancies, so that every family can plan a safe and healthy pregnancy. Based on the data from New Siga, the achievement of KBPP is still very low at 15.8%, so there are still 85% of birth mothers who have not used KBPP (BKKBN, 2022).

Based on the annual report of City Health Department (DKK) Padang city in 2021, there were 16,541 postpartum mothers, only 7,169 (43.34%) of whom used postpartum family planning. Of the 11 sub-districts in Padang city, Kuranji sub-district (Belimbing Public Health Centre) has the highest postpartum family planning coverage of 1,020 people (99.0%) while the third lowest postpartum family planning achievement was 97 people (18.9%) in Koto Tengah sub-district (Dadok Tunggul Hitam Public Health Centre).

One of the determinants of behavior in the use of postpartum family planning is the mother's knowledge about postpartum family planning. According to Julina Sembiring in 2019, it was found that knowledge, mother's attitude, husband's support, and the role of health workers were related to the willingness to become postpartum family planning acceptors. Knowledge is a very important domain for the formation of one's actions including independence and responsibility in behavior. Postpartum contraceptive participation is strongly influenced by the knowledge possessed by the mother, without being based on good knowledge, it will affect the mother's acceptance of postpartum family planning (Haris, 2017).

The results of research by Astuti, et al (2018) show that there is a significant relationship between family support and the use of postpartum contraception. In line with the research of Salsatias (2022) which shows that the factors associated with the use of postpartum family planning are knowledge, attitudes and access to information while the unrelated factor is the motivation of respondents with the use of postpartum family planning.

Based on an initial survey conducted by researchers at Dadok Tunggul Hitam Public Health Centre in 2023 by interviewing 10 postpartum women, there were 2 people who knew about the use of postpartum family planning, 3 postpartum women who gave positive responses about the use of postpartum family planning, 2 postpartum women

who used postpartum family planning and 3 postpartum women who did not use postpartum family planning with more than 2 children.

Method

This study used an analytic design with a cross-sectional study approach. The population in this study were all laboring mothers with a sample of 49 post-saline mothers by total sampling. This research was conducted at the Dadok Tunggul Hitam Health Center Work Area in Padang City in 2023.

Data collection using questionnaires. Information about knowledge, attitudes, and husband support was obtained by filling out a questionnaire. Knowledge variables were obtained with a questionnaire using a Likert scale consisting of 25 statement items with a score of 1 for correct answers and 0 for wrong answers. The attitude variable was obtained with a questionnaire using a Likert scale consisting of 25 statement items with a score of 1 to 4. Husband support variables were obtained with a questionnaire using a Likert scale consisting of 25 statement items with a scoring of 1 to 4. Bivariate data analysis using the Chi-square test.

Results

Table 1. Frequency Distribution of Respondents' Use of Postpartum Family Planning in Dadok Tunggul Hitam Public Health Center Work Area, Padang City

Variable	Frequency (n)	Percentage (%)
Age		
Early Adulthood	36	73,5
Late Adulthood	13	26,5
Education		
Education Low	11	22,4
Education Medium	26	53,1
Education High	12	24,5
Number of Children		
Primipara	10	20,4
Multipara	30	79,6
Grande Multipara	9	18,4
Knowledge		
Poor	17	34,7
Fair	17	34,7
Good	15	30,6
Attitude		
Negative	27	55,1
Positive	22	44,9
Husband Support		
Less	26	53,1
Good	23	46,9
KBPP/ postpartum family planning		
Using	11	22,4

Not Using	38	77,6
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The results of the study in table 1 show that of the 49 respondents, 36 of them (73.5%) were in early adulthood, namely around 20 to 35 years old, the most respondents had a medium or high school education, namely 26 respondents (53.1%), and most of the respondents had multiparous children, namely 30 respondents (79.6%). In addition, the results also showed that out of 49 respondents, 17 people (34.7%) had poor knowledge about postpartum family planning, and 27 people (55.1%) respondents had a negative attitude about postpartum family planning. Of the 49 respondents, 26 people (53.1%) had insufficient husband support about postpartum family planning and most mothers did not use postpartum family planning as many as 38 people (77.6%).

Table 2. Factors Associated with the Use of Postpartum Family Planning in the Working Area of Dadok Tunggal Hitam Public Health Center, Padang City 2023

KBPP/ postpartum family planning								
No	Variable	Using		Not Using		Jumlah		P Value
		f	%	f	%	f	%	
1	Aged							0,133
	Early Adulthood	6	16,7	30	83,3	36	100	
	Late Adulthood	5	38,5	8	61,5	13	100	
2	Education							0,148
	Education Low	1	9,1	10	90,9	11	100	
	Education Medium	5	19,2	21	80,8	26	100	
	Education High	5	41,7	7	58,3	12	100	
3	Number of Children							0,006
	Primipara	6	60	4	40	10	100	
	Multipara	4	13,3	26	86,7	30	100	
	Grande multipara	1	11,1	8	88,9	9	100	
4	Knowledge							0,002
	Poor	1	5,9	16	94,1	17	100	
	Fair	2	11,8	15	88,2	17	100	
	Good	8	53,3	7	46,7	15	100	
5	Attitude							0,007
	Negative	2	7,4	25	92,6	27	100	
	Positive	9	40,9	13	59,1	22	100	
6	Husband Support							0,001
	Less	1	3,8	25	96,2	26	100	
	Good	10	43,5	13	56,5	23	100	

Table 2 shows the results of the chi-square test on the age variable obtained a p-value of 0.133, it can be concluded that there is no significant relationship between the age of the mother and the use of postpartum family planning. Likewise, the education variable obtained a p-value of 0.148, it can be concluded that there is no significant relationship between maternal education and the use of postpartum family planning. The

results of the chi-square test on the variables of knowledge, attitude and husband's support, obtained p-values of 0.002, 0.007 and 0.001, which means that there is a significant relationship between knowledge, attitude and husband's support with the use of postpartum family planning in the Working Area of Dadok Tunggul Hitam Public Health Centre Padang City.

Discussion

Postpartum family planning is family planning services provided immediately after childbirth up to 6 weeks or 42 days after birth. The use of postpartum family planning is highly recommended as more than 95% of postpartum clients do not want to become pregnant within 2 years while ovulation can occur within 21 days postpartum. The timing of postpartum family planning use depends on breastfeeding status, breastfeeding mothers do not need contraception until 6 weeks postpartum, and even if using MAL can last up to 6 months postpartum. The use of postpartum family planning is closely related to the behaviour of respondents in improving their health status. Green in Notoatmodjo 2014 analysed that human behaviour is determined by factors such as education, knowledge, attitudes, values, beliefs, and so on. In addition, most respondents still have the view that the use of postpartum family planning is not too important, due to the respondents' assumption that after giving birth their fertility will not quickly return.

Table 2 shows that of the 36 respondents who had an early adult age category (20-35 years), only 6 (16.7%) respondents used KBPP and as many as 30 respondents (83.3%) did not use KBPP. The results of the chi-square test obtained a p-value of 0.133, so H_a was rejected, it can be concluded that there is no significant relationship between the age of the mother and the use of postpartum family planning in the Dadok Tunggul Hitam Public Health Center Working Area, Padang City.

The results of this study are inversely proportional to research (Pardosi et al., 2021) on Factors Associated with Maternity Women's Interest in the Selection of Postpartum Contraceptives which states that there is a relationship between age and maternity women's interest in choosing Postpartum Contraceptives with a p value of 0.004.

One of the factors that influence a person to use contraception is age. Age is an intrinsic factor in a person's decision making that determines the contraceptives used. A woman who is still young still wants to have more than one child compared to those who

are old. Women aged > 35 years should terminate their pregnancy after giving birth to 2 or more than 2 children. Age 20-35 is an age that is not risky because this is a period when a woman's reproductive organs and hormonal system are mature enough to have children (Sari, et al, 2019).

The results of the RPJMN KKBPK program performance indicator survey conducted by BKKBN also show that the use of family planning is dominated by women aged ≥ 35 years. This is triggered by the desire not to have more children or feel that the children they have are enough. Women aged ≥ 35 years are also at risk for pregnancy and childbirth. Risks that can be experienced include gestational diabetes and gestational hypertension which are easier to attack pregnant women over 35 years of age due to the influence of pregnancy hormones. Premature births with low birth weight and the possibility of cesarean delivery are also higher in this age group, as well as the possibility of chromosomal abnormalities in babies born to mothers over 35 years old. In mothers who have been acceptors before, with repeat counseling, they will certainly be smarter in choosing the most appropriate family planning method according to their needs and medical conditions.

The results of this study stated that of the 26 respondents who came from moderate or high school education, 21 (80.8%) respondents did not use postpartum contraception while as many as 5 (19.2%) respondents used postpartum contraception. In addition, respondents from higher education used postpartum contraception as many as 5 (41.7%) respondents who used postpartum contraception and as many as 7 (58.3%) respondents who did not use postpartum contraception. The results of the chi-square test obtained a p-value of 0.148, so H_a was rejected, and it can be concluded that there is no significant relationship between maternal education and the use of postpartum family planning in the Dadok Tunggul Hitam Public Health Center Working Area, Padang City.

The results of this study are comparable to the research of Ruhanah, et all with the Correlation of Education and Family Planning Counselling during Pregnancy with the Use of Post-Saline Family Planning in Postpartum Mothers at the South Paringin Health Centre, the results of 60 postpartum women with secondary education level, who used post-saline family planning as many as 40 people (66.67%) and 20 people (33.33%) who did not use post-saline family planning. The results of statistical analysis with the Chi-

square test, obtained a value of $p = 0.430$ ($p > 0.05$) which indicates that there is no relationship between the mother's education level and the use of post-saline birth control.

Respondents who had a low level of education but used postpartum family planning were influenced by the presence of midwives in the area so that even though the respondent only had a low level of education, the respondent would still use postpartum family planning while respondents who had a basic education and did not use postpartum family planning were influenced by their low level of education which considered that postpartum family planning was not important and could be used after the postpartum period had passed.

The results of the study also found that of the 17 respondents who had insufficient knowledge about postpartum family planning, 16 respondents (32.6%) did not use postpartum family planning, of the 27 respondents who had a negative attitude, 25 respondents (92.6%) did not use family planning and of the 26 respondents who had insufficient husband support in using postpartum family planning, 25 respondents (96.2%) did not use postpartum family planning.

The results of this study are in line with research conducted by Sugiyarningsih (2017) on 'The Relationship between Postpartum Mothers' Knowledge and Postpartum Mothers' Behaviour in Postpartum Family Planning Participation at Puskesmas Tebing in 2017'. The results showed a significant relationship between knowledge and postpartum women's behaviour in postpartum family planning participation at Puskesmas Tebing. Knowledge is a very important area to shape one's own behaviour.

According to the researcher's assumption, high knowledge influences one's health behaviour. Therefore, respondents with good knowledge about postpartum family planning tend to use postpartum family planning compared to respondents who have low knowledge.

The results showed that out of 27 respondents who had a negative attitude in the use of postpartum family planning, only 2 respondents (4.08%) used family planning and as many as 25 respondents did not use family planning. Based on the results of the chi-square test with a p-value of 0.007, H_a is accepted, so it can be concluded that there is a significant relationship between maternal attitudes and the use of postpartum family planning in the Dadok Tunggul Hitam Health Centre Working Area, Padang City in 2023.

Based on table 2, it is known that of the 49 respondents who had a negative

attitude in the use of postpartum family planning, 27 people (55.1%), where 25 people (51%) did not use postpartum family planning. The results of this study are in line with research conducted by Setyawati in 2022 on the relationship between knowledge and attitudes with the use of post-saline contraception at the Pungpungan Community Health Centre, Bojonegoro Regency, where out of 57 respondents the frequency of unfavorable was 25 and favorable 32. In terms of educational background 14 out of 25 respondents who have a basic educational background are unfavorable. Attitude is a reaction or response of a person to an object, both internal and external as its manifestation cannot be directly seen, but can only be interpreted in advance of the closed behaviour. Attitude about postpartum family planning is the reaction of postpartum mothers about the use of postpartum family planning as an alternative to contraceptive use.

According to the researcher's assumption, a good attitude is that the wife's awareness of her reproductive rights regarding contraceptive decisions is complemented by knowledge about family planning so that the wife can take part in making decisions about choosing contraceptives. For this reason, it is recommended to provide counselling on family planning to instill a good attitude in mothers about family planning since the ANC visit. Postpartum family planning counselling provided during ANC can use leaflets, brochures, or videos so that mothers have a positive attitude.

Table 2 shows that of the 49 respondents who received poor husband support in the use of postpartum family planning, 26 people (53.1%) of whom 25 (51.0%) did not use postpartum family planning. The results of this study are in accordance with Green in Notoatmodjo in 2010 that husband support is a driving factor that can influence a person's health behaviour. Husband support is one of the socio-cultural variables that greatly influences the use of contraceptives for women as wives in particular, and in families in general. The results showed that most respondents who had poor husband support in the use of postpartum family planning tended not to use postpartum family planning. Meanwhile, respondents who received good support in the use of postpartum family planning only a small proportion used postpartum family planning. Respondents who did not use postpartum family planning mostly lacked good support from their husbands in the use of postpartum family planning, this is because husbands have poor knowledge about the use of postpartum family planning.

Limitation

In this study there are research limitations such as limited time for conducting research so that not many respondents are obtained.

Conclusion

Most of the mothers' ages were in the early adulthood category. Most of the mothers were in moderate education. Most of the mothers had multiparous children and a small proportion of the mothers had good knowledge about postpartum contraception. There is no association between age and education with postpartum contraception use. There is an association between knowledge, attitude and husband's support with postpartum contraception use.

Ethical Considerations

Ethical principles are applied in research activities starting from the preparation of the The ethical principle applied in research activities starting from the preparation until the results of the research are published is the consent to become a respondent. Before conducting research, the researcher gave informed consent to the respondents studied, and the respondents signed after reading and understanding the contents of the and willing to participate in research activities. The researcher did not forced respondents to be researched and respected the respondents' decision. Respondents were given the freedom to participate or withdraw from participation.

Acknowledgment

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Personal Protective Equipment Compliance In Preventing Hearing Loss In Agro-Industrial Area

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Abstract

Background: In Indonesia the impact of noise that causes hearing loss is still high compared to other countries in Southeast Asia. Noise can cause hearing loss in workers if the scale of the noise is high and occurs continuously. It can also trigger a decline in health that will have an impact on the performance of workers. Objective: to Analysis of PPE Compliance in Preventing Hearing Loss in Agro-Industrial Area. Methods: The research in this study used the literature review method. This search strategy uses several databases such as Pubmed, ResearchGate, and Google Scholar. This search use keywords PPE, Hearing Loss, and Agro-industrial. Results: Increasing noise intensity, duration of work, and duration of exposure can cause hearing loss because the inner hair cells and supporting cells are damaged. The longer the working period, the greater the noise exposure it will receive. The use of PPE can effectively prevent noise-induced hearing loss. Conclusion: Workers exposed to noise are highly susceptible to hearing loss. It depends on the intensity of the noise, the duration of exposure, the sensitivity of the individual or the worker itself and the frequency of the noise. Noise can be prevented, one of which is by using personal protective equipment when working. In this case, nurses can educate related to the use of PPE to prevent hearing loss.

Keywords: personal protective equipment, hearing loss, and agro-industrial

Introduction

Noise is one of the causes of physical conditions that pose a hearing hazard. Noise is all sounds or sounds whose presence is undesirable originating from production process tools and/or work equipment with a certain threshold value so that it can cause hearing loss. Noise can cause different responses from one individual to another. This is important to know when setting a standard because setting a standard or NAB at a certain level will not guarantee that all workers exposed to that level (8 hours/day or 40 hours/week) will be protected from health problems.¹

Hearing loss is a condition where hearing is impaired due to exposure to noise in the workplace over a long and continuous period of time. Hearing loss has long been known as an occupational disease.² The most severe impact of a noisy work environment is permanent deafness known as noise-induced hearing loss. Hearing loss due to exposure to noise in the workplace is a major health problem. A common cause of hearing loss is exposure to noise in the workplace and this is the main problem of occupational diseases after presbycusis in Asian regions such as Thailand, Myanmar, Vietnam, China, and so on. Occupational hearing loss causes 16% of cases of hearing paralysis in adults.³

There are around 360 million people who have hearing loss. Hearing Loss in the UK in 2013 stated that around 18 thousand people experienced hearing loss caused by conditions in the workplace. Not only on an international scale but also on a national scale there is a high level of hearing loss. Hearing Loss and Deafness in 2014 stated that in Indonesia the impact of noise causing hearing loss is still high, namely around 36 million or 16.8% when compared with countries in Southeast Asia. Exposure to noise does not occur in a relatively short time but over a long period of months to years and exposure to noise that exceeds the threshold is also one of the factors causing hearing loss.⁴

Personal Protective Equipment (PPE) is equipment that supports safety and workers in environments where there is a potential danger to the health and safety of workers. PPE used to protect workers from noise generally protects the hearing organs by reducing the intensity/strength of sound (Decibels - dB). Personal protective equipment to protect against noise exposure such as earplugs and earmuffs. Apart from the protection used for the ears, workers must also use other protection such as gloves

and so on. Effective steps to prevent accidents and protect workers from the impact of noise in the work area include repairing hardware or machines used during the production process and using personal protective equipment (PPE). The results of this scientific work aim to analyze the impact of noise on worker compliance in using personal protective equipment in agronursing areas. So by knowing the impact of noise, it will be easier to take steps or take preventive measures which can ultimately reduce the percentage of hearing loss experienced by workers.⁵

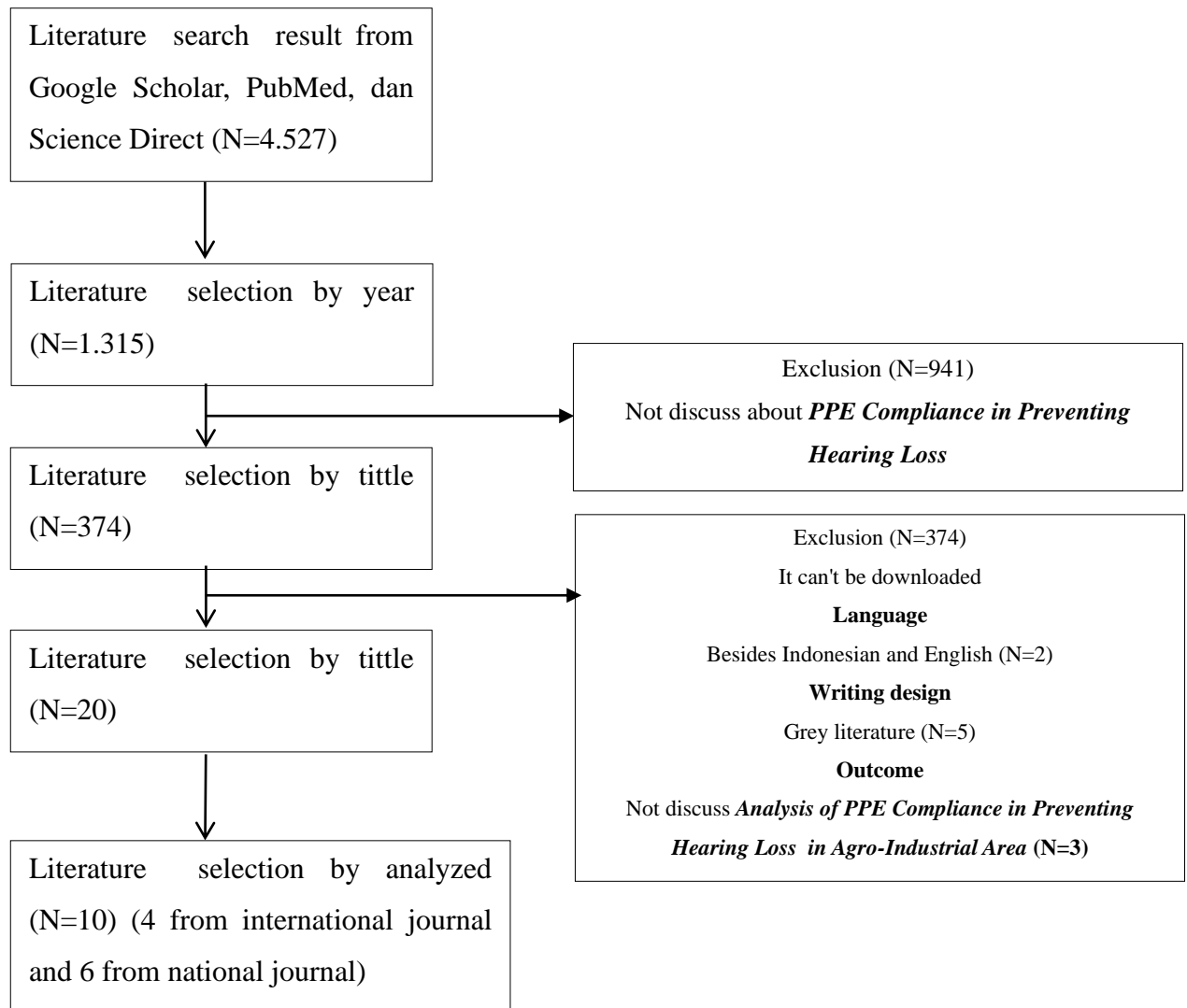
Method

The literature search process in this literature review used 3 databases: Google Scholar, PubMed, and ScienceDirect, with a range of publication years between 2020-2024. The Keyword generation as a tool to identify research using the Boolean Operator technique. The search was conducted using several keywords in English and Indonesian. The literature search process used the Indonesian language with the keywords "Intensitas Kebisingan" and "Kejadian Gangguan Pendengaran" and "Pemakaian APT" while in the English literature search, the keywords were "Noise Intensity" or "Incidence of Hearing Loss" or "use of ear protection device".

The article search process begins with the identification of keywords that have been determined. At the identification stage, 4,527 articles were obtained that match the keywords. The next stage is to select article titles and years of publication that match the research criteria. At the screening stage, 1,315 articles were obtained that fit the research criteria. After that, the articles were filtered according to the inclusion and exclusion criteria of the study. The inclusion criteria used in this study are research published in the last 5 years (2020-2024); research using Indonesian and/or English; full-text research, and research is not the result of a study (literature review, systematic review). Exclusion criteria in this study include: not an observational study and the study did not discuss the effectiveness of e-health on improving patient health services. There were 374 articles that met the inclusion and exclusion criteria. The next step is to filter articles based on abstracts to focus articles according to the research criteria. At this stage, 20 articles were found that met the research criteria.

From the 20 selected articles, another screening was carried out based on language, research design, research results, and several other predetermined criteria,

until finally 10 articles were found that fit the research criteria and could be processed at the analysis stage.



Results

Results should be clear and concise. The results should summarize (scientific) findings rather than providing data in great detail. Please highlight differences between your results or findings and the previous publications by other researchers. Tables or figures are put in Results no more than six.

Tabel 1. Literature Review

No.	Author & Jurnal Identify	Journal Title	Objective	Population and Sample	Methods	Summary of Result
A1	Author: Mauril Yunita Putri , Ragil Ismi Hartanti , Ana Islamiyah Syamila Jurnal Identify: Human Care Journal Vol. 9 No. 1 (2024)	Effects of Noise Intensity on Hearing Loss in Rice Milling Workers. ⁶	Analyzing the effect of noise intensity on hearing loss in rice mill workers	The research population was 35 respondents with a sample of 32 respondents. The sampling technique uses simple random sampling. Then the variables in this research include the independent variable and the dependent variable.	This research uses quantitative research with observational analytical methods using a cross-sectional approach. The research data source uses primary data originating from respondent interviews, workplace observations, noise measurements, and hearing loss examinations.	In the article, the results show that the age variable has a significant effect on hearing loss in workers. Workers aged >40 years will experience substantial hearing loss, making them more susceptible to hearing loss due to noise. Working period also has a significant effect on hearing loss in workers. The noise intensity variable obtained a significance value, so it means that it has a significant impact on hearing loss in workers.
A2	Author: Susan Fitriana Pakpahan , Rufina Kanasia Situmorang, Safrina Ramadhani Jurnal Identify: JINTAN: Jurnal Ilmu Keperawatan Vol. 3 No. 1 (2023)	Risk Factor Analysis of Hearing Loss Due to Noise in Palm Oil Mill Employees at Pt Aice Sumatera Industri Sei Mangke, Simalungun, North Sumatra. ⁷	Knowing the risk factors for hearing loss due to noise in palm oil mill employees	This research was conducted with a population of all palm oil factory employees in the processing section at PT Aice Sumatra Industry, a total of 32 people in the division, 3 sorting people, 4 loading ramp people, 3 press people, 3 sterilizer people, 4 clarifying people, 3 tippler people, 3 maintenance people, 3 kernel people, 3 boiler people, and 3 engine room people. The	This research uses an analytical study method with a cross sectional approach because it examines the independent variable and the dependent variable at one time. The independent variables measured were noise intensity, exposure time, work period, Ear Protective Equipment (APT). Meanwhile, the dependent variable is employee hearing loss. Research data uses questionnaires and observation sheets filled in by	The results showed that 22 people who were exposed to noise intensity > 85 dB experienced hearing loss, 2 people had severe hearing loss, 10 people had moderate hearing loss, while there was no mild hearing loss. 30 respondents who were exposed to noise intensity ≤ 85 dB, 1 person experienced hearing loss, none had severe hearing loss, 5 people had moderate hearing loss, while 4 people had mild hearing loss. It is also known that of the 32 respondents who had worked ≥ 5 years, 24 people had hearing loss, 4 people had severe hearing loss, 23 people had moderate hearing loss, while 1 person had mild

				sampling technique for this research is total population.	employees.	hearing loss. 30 respondents who had worked < 5 years, 4 people had hearing loss, none had severe hearing loss, 1 person had moderate hearing loss, while 3 people had mild hearing loss. And of the 32 respondents who were exposed to noise for \geq 8 hours, 2 respondents experienced severe hearing loss, 22 people experienced moderate hearing loss, and none experienced mild hearing loss.
A3	Author: Donny Haryxon Tobing, Sri Marhaeni, Hidayatul Fitria, Muhammad Ilham Arfi & Yuharika Pratiwi Jurnal Identify: Collaborative Medical Journal (CMJ) Vol. 4 No. 2 (2021)	The Relationship of Noise Intensity with Sensorineural Type Hearing Loss in Workers at the Palm Oil Mill (Pks) Pt. X Rokan Hulu in 2020. ⁸	To determine the relationship between noise intensity and sensorineural type hearing loss in workers at the PT palm oil mill (PKS). X	The sampling technique was carried out by total sampling with a sample size of 135 respondents. This is a sampling technique where the number of samples is the same as the population	The research design uses an analytical observational study with a cross sectional approach. This research was conducted at PKS PT. X Rokan Hulu. Data that can be tested statistically using the chi-square test.	It was found that there was a relationship between noise intensity and sensorineural type hearing loss in workers at PKS PT. X 2020. From this research it is known: 1. Description of the noise intensity experienced by workers at PKS PT. X means having a more significant percentage of workers in environments with risky noise intensity compared to workers in non-risk environments. 2. Description of sensorineural type hearing loss in workers at PKS PT. X means that a more significant percentage of workers experience sensorineural type hearing loss than workers who do not experience sensorineural type hearing loss.
A4	Author: Nur Khotimah Jamil, Sudarman, Anggi	The Effect of Weaving Machine Noise Exposure on	The research in this journal aims to determine the effect of	The population in this study was 100 people, and the sample used in	This research is a quantitative study using Cross Sectional design. The sampling	Respondents who experienced noise exposure with a duration of 8 hours / day were 22 people.

	Resina Putri. Jurnal Identify: Medical Journal of Nusantara (MJN) Vol. 2 No. 3 (2023)	the Risk of Hearing Impairment in Employees of Pt. Kecubung Mojogedang. ⁹	exposure duration to weaving machine noise on the risk of hearing impairment in employees at PT Kecubung Mojogedang.	this study was 40 people.	technique is total sampling. The data collected will be analyzed univariately and bivariately, the data analysis technique in this study uses the contingency coefficient test.	And those who experienced noise exposure with a duration of <8 hours / day were 18 people. There is an effect of weaving machine noise exposure on hearing impairment in employees of PT Kecubung Mojogedang, according to the results of the Coefficient Contingency test obtained a value of 0.367 with a significance (p) of 0.013.
A5	Author: Nabilla Damar, Sukma Andjani, Dian Mediana Jurnal Identify: Jurnal Biomedika dan Kesehatan Vol. 4 No. 2 Juni 2021.	The relationship of noise exposure with hypertension in employees of cable industry plants. ¹⁰	The purpose of the study in the journal was to determine a relationship between noise exposure and hypertension	The population in this research journal is all workers who work in the production unit at the PT X cable factory who are exposed to noise at work and meet the criteria and the number of samples used is 78.	In this study the authors used an observational analytic method with a cross sectional approach. The sample was selected by probability sampling method, namely stratified random sampling, the data obtained were analyzed with univariate and bivariate using Chi-square and Kolmogorov- Smirnov tests with a significance level of <0.05.	It was found that the results of blood pressure measurements showed prehypertension, normal stage hypertension, and stage 2 hypertension. From this description it can be concluded that there is a relationship between noise intensity and age with hypertension, but there is no relationship between noise type, length of service and cigarette consumption with hypertension.
a A6	Author: Aung K. Zaw, Aung M. Myat, Mya Thandar, Ye M. Htun, Than H. Aung, Kyaw M. Tun, Zaw M. Han Jurnal Identify: Safety and	Assessment of Noise Exposure and Hearing Loss Among Workers in Textile Mill (Thamine), Myanmar: A Cross- Sectional Study. ¹¹	The main objective of this article is to assess the noise exposure level and associated factors of hearing loss among textile workers in Yangon	The population in this study consisted of textile mill workers in the Yangon Region, Myanmar. The total number of workers involved in the study was 226 individuals who were	The research method used in the article is a cross-sectional study conducted at a textile mill (Thamine) in the Yangon Region, Myanmar, from April to December 2018. A total of 226 workers from 3 weaving sections	The study found that 66.4% of the workers were exposed to noise levels equal to or greater than 85 dB(A), and the prevalence of hearing loss among the workers was 25.7%. Factors positively associated with hearing loss included age 35 years or older, below high school education, hearing difficulty,

	Health at Work 11 (2020)		Region, Myanmar.	randomly selected from 3 weaving sections in the textile mill. The sampling method used was a multistage sampling technique. Firstly, the 3 noisiest weaving sections (water jet loom, towel loom, and bed sheet loom) were selected using purposive sampling.	were selected for face-to-face interviews using a structured questionnaire. The assessment of noise exposure level and hearing loss was done using a digital sound level meter and pure-tone audiometer, respectively. Logistic regression analysis was performed to assess the associated factors of hearing loss.	tinnitus, hypertension, and more than 9 years of service duration in the textile mill. After adjusting for confounding factors, age 35 years or older and tinnitus remained significantly associated with hearing loss. The study suggests the importance of occupational hazard education, enforcement of safety regulations, regular audiometry tests, and implementation of hearing conservation programs in workplaces where noise exposure reaches or exceeds 85 dB(A) for 8 hours.
A7	Author: Xingsong Wang, Oluseyi Adewale Orelaja, Dauda Sh. Ibrahim, Stephen Mbam Ogbonna Jurnal Identify: Scientific African 8 (2020)	Evaluation of noise risk level and its consequences on technical operators of tobacco processing equipment in a cigarette producing company in Nigeria. ¹²	To evaluate the noise risk level and its consequences on technical operators of tobacco processing equipment in a cigarette producing company in Nigeria.	Population: Technical operators of tobacco processing equipment in a cigarette producing company in Nigeria. Sample: The study included 90 technical operators from each of the three departments (PMD, SMD, and UD) in three cigarette-producing companies located in different geopolitical areas of Nigeria	The study utilized industrial noise measurement using a Sound Level Meter to measure the noise level emitted by the machinery. Questionnaires were administered to evaluate the psychological and physiological impact of noise on the technical operators. The methods of noise control were also explored to address the identified noise risks.	The study found that the noise levels in the tobacco processing companies exceeded 85 dB, indicating that operators were exposed to high-intensity noise for 12-hour shifts, posing health hazards. The effects of noise on workers included physiological deterioration such as hearing impairment, while machines experienced excessive vibration and wear. The analysis revealed that the use of personal protective equipment (PPE) was the most common noise control method, but engineering controls were deemed more reliable for long-term solutions.
A8	Author : etcharat Kerdonfag, Winai Wadwongtham, Surasak Taneepanich	Hearing threshold levels among steel industry workers in Samut Prakan,	The studies aimed to identify the prevalence of hearing loss; factors contributing	The study population consisted of 93 male steel industry workers in high noise	The study utilized a cross-sectional design to investigate hearing threshold levels among steel industry	The discussed studies focused on occupational noise-induced hearing loss (NIHL) among steel industry workers in Thailand. The studies

	skul Jurnal Identify : Risk Management and Healthcare Policy 2019:12 57– 66	Thailand. ¹³	to NIHL such as age, exposure time, and noise levels, and the importance of regular assessment of hearing levels.	zones in two factories.	workers.	highlighted the high prevalence of hearing loss, especially at high frequencies, among workers exposed to high noise levels for long hours. It emphasized the importance of regular assessment of hearing levels, effective hearing conservation programs, and the use of hearing protection devices to prevent NIHL.
A9	Author : Rizky Andrian Sutrisno, Siswi Jayanti, dan Bina Kurniawan Jurnal Identify : Jurnal Kesehatan Masyarakat Vol.9 No. 1 (2021)	Faktor- Faktor yang Berhubungan Dengan Kepatuhan Penggunaan Alat Pelindung Diri Pada Pekerja Pabrik Tahu X Semarang. ¹⁴	The objective of this study was to examine the factors related to compliance with the use of personal protective equipment (PPE) among workers at Tofu Factory X in Semarang.	The population of the study consisted of all workers at Tofu Factory X in Semarang, totaling 35 individuals.	The study utilized an observational analytic approach with a cross- sectional design to analyze the correlation between various factors and compliance with personal protective equipment (PPE) usage among workers at Tofu Factory X in Semarang.	. The findings revealed that knowledge and attitude of the workers were associated with compliance, while factors such as age, supervision, coworkers, comfort, and availability of PPE showed no correlation with compliance. Recommendations included promoting safety awareness through the installation of safety signs and posters in easily accessible areas within the factory, as well as encouraging coworkers to remind each other to use PPE.
A10	Author : Wei Gong, Liangliang Zhao, Ling Li, Thais C. Morata, Wei Qiu, Huiling Amy Feng, and Baoli Zhu Jurnal Identify : International Journal of Environment al Research and Public Health (2021)	Evaluating the Effectiveness of Earplugs in Preventing Noise- Induced Hearing Loss in an Auto Parts Factory in China. ¹⁵	The objective of the study was to evaluate the effectiveness of hearing protection programs, specifically earplugs, in preventing noise- induced hearing loss among workers in industrial settings, with a focus on auto parts	The study population consisted of 385 noise- exposed workers from an auto parts factory in China, as well as 1268 non- noise-exposed employees from the health department. The sample included individuals who met specific eligibility	Participants provided their consent to participate in the study; historical noise exposure information was obtained through a questionnaire and company data	The collection of studies evaluated the effectiveness of hearing protection programs, specifically earplugs, in preventing noise- induced hearing loss among workers in industrial settings. Findings emphasized the importance of proper training, fit testing, and individualized approaches to hearing protection to mitigate the risk of high- frequency hearing loss. Factors such as age, gender, and cumulative noise exposure were

factories.	criteria, such as a minimum of one year of employment for noise-exposed workers	identified as influencing hearing outcomes, highlighting the need for tailored interventions to protect workers' hearing health.
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Discussion

Workers' hearing can be impaired due to high noise. Noise exposure can have an impact on outer hair cells causing degeneration to increase according to the intensity and duration of exposure. The higher the intensity and duration of noise exposure, causing the inner hair cells and supporting cells to be damaged which causes sensorineural hearing loss. Based on research by Tobing et al. (2021) noise intensity affects the hearing loss of workers.⁸ Noise intensity >85 dB in the range of 8 to 10 hours of work every day is not in accordance with the Regulation of the Minister of Health of the Republic of Indonesia Number 56 of 2016 concerning the Implementation of Occupational Disease Services which stipulates 8 hours of work per day at 85 dBA.¹⁶ In a study from Jamil et al. (2023) workers exposed to noise exposure for 8 hours per day were more than workers exposed to noise exposure <8 hours.⁹ This is in line with Putri's research (2024), where some workers were exposed to noise >8 hours with noise intensity >85 dB.⁶ The noise intensity factor is also reinforced by research from Wang (2020) which proves that workers who work with exposure for 12 hours have a high risk of experiencing noise-related disorders. Workers are exposed to 118.02 dB of noise, which exceeds the normal standard of noise acceptable to the ear.¹²

Based on Putri's research (2024), exposure duration does not have a significant effect on hearing loss. This is because workers are not exposed to noise in areas with high noise intensity for a long time, and symptoms appear when workers of vulnerable age are exposed to noise. Workers over the age of 40 will experience a significant decrease in hearing so that hearing loss is easy to occur due to the decreased function of the hearing organ.⁶ While in the research of Jamil et al. (2023) showed a relationship between exposure duration and hearing loss. The higher noise duration will be followed by the risk of hearing loss.⁹ This is in line with the research of Zaw et al. (2020), who said that a long duration of exposure to noise in the work environment can cause progressive and irreversible hearing damage to both ears.¹¹

The working period also has an influence on the hearing loss of workers. In workers with a working period above 10 years with high noise intensity, it causes damage to the hearing organ. So that the longer the working period of workers, the greater the noise exposure received by workers. Based on research by Zaw et al. (2020) workers who have more than 9 years of service in textile factories have a significant relationship with hearing loss. This suggests that the tenure factor can be an important risk factor in the development of hearing loss in textile workers.¹¹ This is in line with the research of Fitriana Pakpahan et al. (2023) who said hearing loss can be influenced by tenure.⁷

Health history is one of the factors where workers can experience noise-related disorders. Based on research from Damar (2021), the results show that workers who have hypertension are at risk of suffering from noise-related disorders. Noise is considered a non-specific biological stressor. Stress caused by high noise levels increases the release of adrenaline, constricts peripheral blood vessels, and eventually causes hypertension.¹⁰

Workers' knowledge of compliance with the use of PPE has an impact on noise disturbance. Based on research from Sutrisno (2021) workers who have good knowledge are more compliant in using PPE than workers who have less knowledge.¹⁴ The research is also in accordance with Soekidjo's theory where the theory says knowledge is an essential dominant to shape a person's actions. Behavior based on knowledge will continue to be carried out rather than behavior that is not based on knowledge.

Based on research from Gong (2021), it is proven that older workers have a higher risk of experiencing noise-related disorders than younger workers. Older workers have a body condition that is not as good as younger workers, thus increasing the risk of being affected by noise disturbance.¹⁵ Kerdonfag's (2019) research corroborates Gong's (2021) research where 23 - 40 years old have a small risk of experiencing noise disturbance than workers aged 40 - 59 years.¹³ However, research from Sutrisno (2021) says age is not associated with the risk of noise-induced annoyance. Age is not related to hearing loss but rather to PPE compliance, where young workers have a higher risk of hearing loss when not using PPE than older workers who use PPE.¹⁴

Conclusion

Noise can cause hearing loss in workers. Noise-induced hearing loss depends on noise intensity, duration of noise exposure, working period, worker's medical history, worker's knowledge about PPE compliance, and working age. Noise can be prevented by using personal protective equipment (PPE) during work such as earplugs. It also takes the role of nurses to educate workers to always comply with health protocols while working and the importance of using personal protective equipment in the form of earplugs.

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Conflict of Interest

None.

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Personal Hygiene Practices To Reduce The Risk Of Soil-Transmitted Helminth Infection In Farmers

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Abstract

Backgrounds: Soil-transmitted Helminths infections have become a frequent phenomenon among farmers due to their lack of hygiene, making it easy for nematode worms to enter the body. Soil-transmitted helminths can affect nutritional status, resulting in anemia, loss of appetite, and damage to the intestines. To overcome this phenomenon, adequate personal hygiene in farmers is needed. **Purpose:** The purpose of this study is to analyze how personal hygiene can affect the incidence of Soil-Transmitted Helminths infection. **Methods:** The method used is a literature review using 10 kinds of literature from 3 sources, namely Google Scholar, PubMed, and Science Direct with a publication range from 2020-2024. **Result:** The results showed that some articles showed an association between personal hygiene and the incidence of soil-transmitted helminths. Good personal hygiene can prevent the entry of nematode worms into the digestive tract of the body. Besides that, some articles also showed no association between personal hygiene and soil-transmitted helminth infection. **Conclusion:** Adequate personal hygiene such as always using gloves and complete personal protective equipment while working, always washing hands before eating, and maintaining environmental hygiene is needed by farmers to avoid the incidence of soil-transmitted helminth infection.

Keywords: personal hygiene, soil-transmitted helminth, farmer

Introduction

Farmer is a profession that focuses on managing land to grow and maintain plants as a source of food or energy, with the hope of earning income from these activities.¹ In the farming process, management activities will begin with the selection of plant seeds, cultivating, harvesting, packaging, distributing, and marketing plant products. Farming is one of the jobs that requires a person to be in direct contact with the soil which will have an impact on increasing the risk of hazards that can threaten the safety of farmers.² Farmers have a high risk of experiencing diseases that are caused by viral, bacterial, or parasite infections such as infection by eggs of intestinal worms.³

According to the World Health Organization, soil-transmitted helminth infections are the most common infection with an estimated 1.5 billion people or about 24% of the world's population, with the highest prevalence in Africa, China, South America, and Asia.⁴ In Indonesia, the incidence of soil-transmitted helminth infection has a diverse percentage in each region. In East Java Province, the incidence percentage showed a rate of 7.95%, Central Java of 33.8%, Bali of 13.5%, and North Sumatra of 60.4%.⁵

Soil-transmitted helminths (STH) are a group of nematode worms that require soil media for the development of eggs to become their infective form. Soil-transmitted helminth infections are generally caused by *Ancylostoma duodenale*, *Necator americanus*, *Ascaris lumbricoides*, and *Trichuris trichiura*. STH worm eggs and larvae can infect humans through oral ingestion or skin penetration. The eggs and larvae will then grow into adult worms in the human body which will eventually produce eggs and be excreted along with the patient's feces. Soil-transmitted helminths infections that occur in a person, including farmers, are closely related to a person's hygiene status.⁵

Personal hygiene is an action to maintain personal hygiene and health to obtain physical well-being and prevent the onset of disease. Poor personal hygiene in farmers such as the habit of eating raw food, rarely washing hands and cutting nails, not using gloves, footwear, and complete personal protective equipment when working in rice fields are the main transmission routes for worm eggs to infect farmers. In addition, the habit of not defecating in latrines and poor environmental sanitation are also supporting factors for soil-transmitted helminth infection in farmers.³ Based on the description above, the author is interested in analyzing how the influence of personal hygiene

owned by farmers or farmers' families on the incidence of soil-transmitted helminth infection.

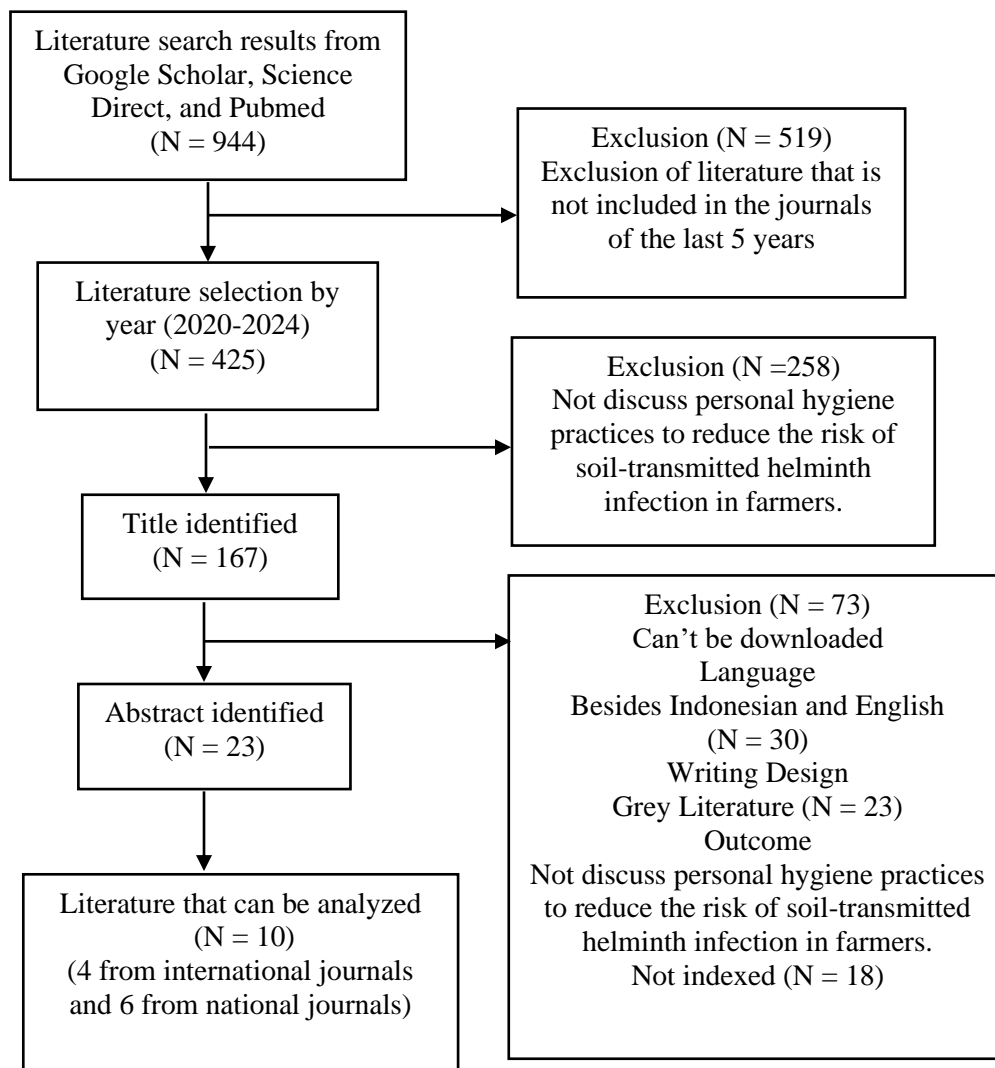
Method

This study used the literature review method. The literature review was chosen because it generated evidence from previous studies on the issue of personal hygiene practices to reduce the risk of soil-transmitted helminth infections in farmers. The article search process used 3 databases available on national and international article sites, such as Google Scholar, Science Direct, and Pubmed. The search was conducted using several keywords in English and Indonesian. The literature search in English used the keywords "Personal Hygiene" AND "Soil-Transmitted Helminth" AND "Farmers". Meanwhile, the literature search in Indonesian used the keywords "Personal Hygiene" DAN "Soil-Transmitted Helminth" DAN "Petani".

Based on the selection criteria, this literature review was conducted using inclusion and exclusion criteria. The formula for determining inclusion uses PICOS (Population, Intervention, Comparison, Outcomes, Study design). Based on the PICOS technique, the inclusion criteria were 1) The study population is farmers or family farmers, 2) Intervention of personal hygiene practices to reduce the risk of soil-transmitted helminths infection in farmers, 3) Comparison between farmers who implement personal hygiene practices and farmers who do not implement personal hygiene practices, 4) The results of the effect of personal hygiene practices to reduce the risk of soil-borne helminthiasis infection in farmers, 5) Quantitative research design, 6) The year of publication of the articles discussed is at least the last 5 years between 2020-2024, 7) Using Indonesian and English. Meanwhile, the exclusion criteria included topics that were not related to the discussion of the research problem, the publication year of the articles discussed was less than the range of 2020-2024, and articles using languages other than English and Indonesian were not included in the inclusion criteria.

The article search process began with the identification of predetermined keywords. At the identification step, 944 articles matched the keywords. The next step is to filter by selecting the year of publication that matches the research criteria, namely 2020-2024 and 425 articles fit the research criteria. After that, the articles were filtered

based on the titles of articles that met the inclusion and exclusion criteria of the study. 167 articles met the inclusion and exclusion criteria. The next step was to screen the articles based on the abstract and 23 articles fit the research criteria. Then, from the 23 selected articles, another screening was carried out on language, research design, research results, and several other predetermined criteria. At last 10 articles were determined that matched the research criteria and could proceed to the analysis step.



Page 1. Flow Diagram of Literature Analysis Based on PRISMA

Results

From the results of the study search, it was found that the majority of articles used a cross-sectional research design, with several methods such as analytic

observational study, descriptive research, sedimentation method, observational study, cluster randomized controlled trial, and a DeWorm3 trial. Based on the results of the review, most articles use samples in the form of nails and also feces from farmers or family farmers who will then be analyzed to determine the presence of nematode worms (Soil Transmitted Helminths). Reviewing the results of the review, some articles concluded that there is a significant influence between a person's hygiene and the incidence of soil-transmitted helminths in farmers. However, some articles also mentioned that there is no significant relationship between personal hygiene and the incidence of Soil-Transmitted Helminths in farmers. The difference in conclusions may be due to the different characteristics and habits of the sampled farmers. Some farmers may have been able to maintain personal hygiene and implement clean living such as diligently using gloves and complete personal protective equipment when working in the fields, diligently cutting nails and washing hands before eating, and creating a clean environment. However, some farmers are still unable to implement these habits, making them more vulnerable to Soil-Transmitted Helminths infection. Therefore, further research is needed to prove whether there is a relationship between personal hygiene and the incidence of soil-transmitted helminth infection.

Table 1. Result of Literature Review

ID No.	Author and Journal Identity	Journal Title	Objective	Population and Sample	Method	Summary of Result
A1	Author: Makata et al. Journal Identity: BMC Medicine / 19(1): 1-13 (2021).	Hand Hygiene Intervention to Optimise Soil-Transmitted Helminths Infection Control Among Primary School Children: The Mikono Safi Cluster Randomised Controlled Trial in Northwestern Tanzania. ⁶	To determine the effectiveness of the Mikono Safi handwashing intervention on sustaining the prevalence of STH infections.	Stool samples from 3.081 school children living in farming areas with the majority of parents working as farmers.	This study used a cluster randomized controlled trial with a cross-sectional study.	The results showed that there was no effect of handwashing using water and soap intervention on soil-transmitted helminth infection. Only 1% of participants had evidence of hookworm infection, with no difference between trial arms. This may be due to infection occurring in the home or other transmission routes, or the fact that the children were already able to wash hands using soap and clean water.
A2	Author: Rahmawati et	Hubungan Higienitas	To determine the association	The number of samples used was	The research method used in	The research findings indicate that plantation

	al. Journal Identity: Journal of Agromedicine and Medical Sciences / 6(1): 7-13 (2020).	Perorangan terhadap Kejadian Soil- Transmitted Helminthiasis pada Pekerja Perkebunan Widodaren di Kabupaten Jember. ³	between personal hygiene and the incidence of soil- transmitted helminths among workers at Widodaren Plantation.	68 people (plantation workers) from Widodaren Plantation.	this journal is a cross-sectional research design.	workers with positive soil- transmitted helminthiasis tend to have poor behaviors towards handwashing, nail cutting, eating habits, defecation habits, toilet ownership, and the use of personal protective equipment. Personal hygiene plays a crucial role in causing the high incidence of worm- related diseases.
A3	Author: Avokpaho et al. Journal Identity: LoS Neglected Tropical Diseases / 15(8): 1-27 (2021).	Factors Associated with Soil-Transmitted Helminths Infection in Benin: Findings from the DeWorm3 study. ⁷	To assess and analyze the factors associated with Soil- Transmitted Helminths infection in Come.	Stool samples from 6.139 individuals (PSAC or aged from 1-4 years, SAC or aged from 5-14 years, and participants aged 15 years old and above) that mostly work as farmers. Stool samples were tested by Kato- Katz.	This study used a cross-sectional design with the DeWorm3 trial.	There is a significant relationship between Soil- Transmitted Helminth infections with some factors such as age, water, sanitation and hygiene, and also environmental. Adults, lack of clean water, poor personal hygiene such as not wearing shoes while working, infrequent hand washing, and open defecation were found to be strongly associated with STH infection.
A4	Author: Nath et al. Journal Identity: IJID Regions / 5: 1-7 (2022).	An Update of Intestinal Helminths Infections Among Urban Slum Communities in Bangladesh. ⁸	To assess the prevalence of intestinal helminth infections and associated risk factors among people living in urban slums in Bangladesh.	Stool samples from 360 individuals divided into 2 groups (school- aged and adults) that mostly work as farmers and come from farming families.	This research used a cross- sectional study.	Overall, from 360 samples it was found that 31.7% of participants had soil- transmitted helminths, with 13.3% having mixed infections. Several factors that contribute to intestinal parasitic infections are lack of hygiene, frequent contact with soil, the type of latrine used, lack of use of spray disinfectant in and around households, presence of free-roaming animals, and open defecation.
A5	Author: Idayani et al. Journal Identity: Bali Medika Jurnal / 8(3): 233-238 (2021).	Hubungan Antara Personal Hygiene dengan Infeksi Telur Cacing Usus (Soil Transmitted Helminths) pada Petani Sayur di	To analyze the correlation between personal hygiene and the incidence of soil- transmitted helminths in	100 grams of fecal samples from 30 vegetable farmers in Gianyar Regency who work in the rice fields.	This study used correlative descriptive research with a cross-sectional study design.	The results showed that there is no relationship between personal hygiene and the incidence of Soil- Transmitted Helminths with a p-value> 0.05, which was proven by the 25 farmers who showed poor personal hygiene and

		Kabupaten Gianyar. ⁹	vegetable farmers in Gianyar District.			the remaining 5 showed good personal hygiene, 6 of them tested positive for an infection and 24 people others were not infected.
A6	Author: Mebiana et al. Journal Identity: Meditory: The Journal of Medical Laboratory / 9(2): 78-85 (2021).	Deteksi Keberadaan Telur Soil Transmitted Helminth (STH) pada Kuku Petani. ¹⁰	To determine the relationship between personal hygiene and the presence of soil- transmitted helminths in farmers' fingernails.	Nail samples that were taken from 17 male farmers in Kaligondang District, Purbalingga Regency.	This study used an analytic observational with a cross- sectional design.	The results showed that there is no relationship between personal hygiene and the presence of STH in farmers' fingernails. Out of the 17 respondents, 11 of them had poor personal hygiene, and the remaining 6 had good personal hygiene. Based on this, only 5 out of 11 farmers with poor personal hygiene and 4 out of 6 farmers with good hygiene tested positive for STH infection.
A7	Author: Aritonang et al. Journal Identity: Jurnal Sains dan Teknologi Laboratorium Medik / 5(2): 34-29 (2020).	Analisis Telur Cacing Soil Transmitted Helminth (STH) pada Petani Sayur di Kartama Pekanbaru. ¹¹	This study was conducted to determine the presence or absence of Soil Transmitted Helminth (STH) eggs, on vegetable farmers in Kartama Pekanbaru.	27 fingernail and stool samples of vegetable farmers in Kartama Pekanbaru.	This study used the sedimentation method with a cross-sectional design.	The results of the analysis obtained from 27 samples examined at vegetable farmers in Kartama Pekanbaru are negative which proves that no Soil Transmitted Helminth eggs were found. This is because vegetable farmers always wash their hands with running water and soap, diligently cut their nails, and eat using a spoon.
A8	Author: Ohorella et al. Journal Identity: The International Journal of Health, Education and Social (IJHES) / 3(8): 44-55 (2020).	The Effect of Personal Hygiene, Environmental Sanitation and Characteristics of Children with Worms Infection in Elementary Schools in Tulehu Village, Salahutu District, Central Maluku City. ¹²	To analyze the effect of personal environmental sanitation characteristics and child hygiene on helminthiasis infection in elementary school children who are mostly children from farming families in Tulehu Village, Salahutu	202 students in 5 elementary schools, the majority of children from farmer families in Tulehu Village, Central Maluku District.	This study uses an analytical study with a cross-sectional design.	The results showed that the proportion of worms in 5 elementary schools in Tulehu village (72.77%) was evidenced by several variables associated with the incidence of worms, namely environmental sanitation (home and school environment), personal hygiene (nail hygiene, use of footwear and hand washing habits), child characteristics (knowledge, attitudes and parental income) with each p value = 0.0001 while the unrelated variable was gender with a p value = 0.2940.

			District, Central Maluku.			
A9	Author: Wikandari et al. Journal Identity: Indonesian Journal of Medical Laboratory Science and Technology / 3(2): 135-145 (2021).	Factors Related to Soil- Transmitted Helminth Infection in Vegetable Farmers. ¹³	To analyze factors associated with STH infection in vegetable farmers, especially in personal hygiene factors when working at the garden in the Semarang Regency.	55 vegetable farmers were aged 17-55 years with a minimum 1-year working period.	Observational study with cross- sectional. With the chi-square analysis.	There is a relationship between the habit of washing hands using clean water and soap by farmers before eating with the incidence of worms with significant results, namely $p = 0.000$. All the respondents had used toilet facilities while working with clean water and used footwear while working. Therefore there were only 3 cases in the study site.
A10	Author: Kurscheid et al. Journal Identity: PLoS Neglected Tropical Diseases/14(1 2): 1-17. (2020).	Epidemiology of Soil-Transmitted Helminth Infections in Semarang, Central Java, Indonesia. ¹⁴	To analyze the association of STH infection with knowledge of risk factors and personal hygiene in Semarang and the prevalence of STH infection.	16 villages and randomly selected with a maximum cohort of 550 people per village.	A cross-sectional study with Pearson's chi- squared, the Welch Two Sample t-test, and Spearman's Rho for the statistical analyses.	There was no significant association of STH infection with using a soap ($p = 0.27$). A total of 57% ($n = 3578$) of respondents used soap when washing hands at meals, before praying, and when preparing food. There was also no association of STH infection with the practice of cleaning up after defecation ($p = 0.14$).

Discussion

Soil Transmitted Helminth (STH) infection is one type of earthworm infection that often occurs in farmers. In addition to infecting the farmer, usually, the farmer's family will also be affected by the STH infection. Some types of worms included in the STH category are *Ancylostoma duodenale* (earthworm), *Ascaris lumbricoides* (roundworm), *Necator americanus*, and *Trichuris trichiura* (whipworm). The occurrence of STH infections in these farmers usually occurs due to a lack of hygiene. In a study by Rahmawati et al (2020), it was found that 26 workers experienced STH infections. STH infections occur due to a lack of hygiene behavior in farmers such as cutting nails, washing hands, eating habits, defecation habits, and the use of Personal Protective Equipment (PPE). The lack of hygiene in farmers' nails is because they do not use

gloves when working and the lack of knowledge of personal hygiene and about this STH.³ This is in line with research by Nath et al (2022) that study participants had soil-borne helminth infections. In addition to one's hygiene factor, frequent contact with individuals with soil will also affect STH infection. The presence of animals that are free to roam around the house and open defecation behavior are also risk factors for individuals infected with STH.⁸

Research by Wikandari et al (2021) shows that there is a relationship between the habit of washing hands before eating using clean water and soap with the incidence of STH infection.¹³ Similarly, research by Avokpaho et al (2021) shows that there is a relationship between STH infection and sanitation and hygiene factors. A farmer who rarely washes his hands after work and does not wear footwear while working is more at risk of STH infection. Because this is related to personal hygiene.⁷ The use of footwear as an intervention is also in line with research by Ohorella et al (2020) that personal hygiene behaviors such as the use of footwear, nail hygiene, and hand washing habits in farming families have a relationship with the incidence of STH infection. This is where the higher the level of personal hygiene of a person, the risk of being infected with STH will be lower. The habit of washing hands before eating is also a determining factor in whether the farmer can be infected with STH.¹² This is supported by research by Aritonang et al (2020) that found a low level of STH infection cases among vegetable plantation farmers in Kartama Pekanbaru. Most vegetable farmers in the Kartama area have a fairly good level of hand hygiene behavior. Therefore, good hand-washing habits will reduce the cases of STH infection.¹¹

In contrast to research conducted by Idayani et al (2021), personal hygiene does not correlate with the incidence of STH infection.⁹ This is in line with research by Kurscheid et al (2020) that there is no significant relationship between STH infection and the use of soap when washing hands. This is because almost 57% of respondents have implemented good hand-washing behavior marked by the low prevalence of STH cases in the area.¹⁴ Similarly, research conducted by Makata et al (2021) found that there was no effect of hand washing intervention using water and soap on the incidence of STH infection. The absence of this effect is because children can wash their hands using soap and clean water regularly. So the number of STH cases is relatively low in the area. In addition to the factor of routine hand washing, whether or not the farmer's

nails are clean is also a risk factor for STH infection.⁶ However, research by Mebiana et al (2021) found that there was no relationship between personal hygiene and the presence of STH eggs in farmers' nails. This is because the level of nail hygiene of farmers in the area is categorized at a high level. Maintaining personal hygiene by farmers including washing hands, using footwear when working, nail hygiene, and good defecation habits can make these farmers not at risk of STH infection. Therefore, apply personal hygiene from now on.¹⁰

To overcome the phenomena of farmers' lack of behavior in maintaining cleanliness, education about personal hygiene is needed for farmers. Research by Lee et al. (2023) states that a person with a high knowledge of hygiene will have a positive impact on the lower prevalence of soil-transmitted helminth infection. In communities with poor knowledge, habits that do not pay attention to hygiene, inadequate sanitation, and poor environmental conditions such as lack of access to clean water can be a major obstacle to the eradication program of soil-transmitted helminth infection in the community.¹⁵ Therefore, a strong approach and education are needed regarding the importance of maintaining personal and environmental hygiene to prevent soil-transmitted helminth infection in farmers.

Conclusion

Personal hygiene practices can reduce the incidence of Soil-Transmitted Helminth infections in farmers. While some studies may not consistently show a direct association, the overall consensus emphasizes the importance of maintaining personal hygiene, including hand washing and proper food handling, to prevent helminth-related diseases. Improving personal hygiene practices is critical in reducing the prevalence of these infections among at-risk populations such as farmers and schoolchildren.

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Conflict of Interest

None.

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Example:

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Stress Coping Strategies In Farmers As An Effort To Overcome Psychosocial Problems

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Abstract

Introduction: Agriculture plays a crucial role in Indonesia, with farmers as the backbone of this sector. However, farmers often experience high levels of stress due to workloads and other psychosocial issues. **Objective:** This study aims to review the literature on coping strategies used by farmers to address their psychosocial problems. **Method:** A literature review was conducted by searching for relevant articles in databases such as Science Direct, PubMed, and Google Scholar. Keywords related to “stress”, “farmers”, and “coping” were used. Selected articles were published in the last five years (2019-2024). **Results:** The literature review revealed that farmers employ various coping strategies to manage stress, including good work practices, stress management, mental health counseling, relaxation therapy, and coping strategies focused on problems or emotions. Social support, self-confidence, and self-efficacy also play crucial roles in reducing stress among farmers. **Conclusion:** Farmers in Indonesia face significant psychosocial challenges, but they demonstrate the ability to address these issues through various coping strategies. Social support and self-confidence are crucial in improving the mental well-being of farmers. The implications of this study emphasize the importance of developing more effective intervention programs to enhance the mental well-being of farmers in Indonesia.

Keywords: stress, farmers, coping

Introduction

In Indonesia, farmers play an important role as one of the largest groups of

workers. They struggle in the middle of open land as part of the informal workforce. A farmer is an Indonesian citizen who individually or with his family is involved in various agricultural businesses, including food crops, horticulture, plantations, and animal husbandry. Agricultural activities are not just the production of food but are also human involvement in a process that involves renewal, development, and consideration of economic aspects.¹ According to the Strategic Plan (Renstra) of the Ministry of Agriculture for the period 2020-2024, most of the country's economic growth and foreign exchange earnings come from the agricultural sector through exports of agricultural commodities.²

However, in fact, farmers in Indonesia often face increasing and increasing risks of psychosocial disorders. This is caused by changes in the world of agriculture, such as changes in the way the industry operates, increasing family burdens, and climate change. Farmers in Indonesia, in particular, are more vulnerable and at high risk of various health problems. One of the main problems is the psychosocial impact, especially stress due to the ever-increasing workload. For example, rice farmers are faced with extra challenges, such as minimal income from running their farming business. This can be caused by limited business capital, low education levels, and high production costs.³ Farmers also have to work long hours, up to 14 hours a day, with the risk of disease and the danger of accidents when lifting heavy loads. This challenge not only takes a physical toll but also puts serious mental stress. Work demands that are too heavy can cause extraordinary workloads and mental stress that disrupt the welfare of farmers.¹

Stress is a condition that often puts psychological pressure on a person when they face various obstacles or limitations in achieving desired opportunities (Muslim, 2020).⁴ Meanwhile, coping is a process carried out by individuals to overcome problems, relieve tension, and deal with the pressures that exist within themselves. Coping stress itself is an effort made by an individual to overcome pressure that leads to stress. This can involve various strategies, including direct problem-solving strategies (Problem Focused Coping) and emotional adjustment strategies (Emotion Focused Coping).⁵

Method

This research uses a literature review method. Searches were based on 3 databases: Science Direct, Pubmed, and Google Scholar. The selected literature reviews are articles published in the last 5 years (2019-2024). A literature search using English and Indonesian keywords. In searching English language literature, use the keywords "Stress Coping Strategies" OR "Stress Coping Strategies in Farmers" OR "Psychosocial Problems" OR "Psychosocial Problems in Farmers". Meanwhile, in Indonesian, the literature search used several keywords "Strategi Koping Stress" OR "Strategi Koping Stress pada Petani" OR "Masalah Psikososial" OR "Masalah Psikososial Pada Petani". Inclusion and Exclusion Criteria for the journals studied, namely Inclusion criteria consisting of 1) Articles written in Indonesian or English, 2) Articles are research or systematic reviews that are relevant to keywords, and 3) Articles published in 2019 to 2024. Meanwhile, Exclusion criteria consist of 1) The journal does not match the topic and research objectives, 2) The focus of the research is not on coping with stress among farmers. The results of the literature search are then identified, screened, and filtered, to select journals that match the research criteria.

The article search process begins by identifying predetermined keywords. In the identification step, 9,998 articles matched these keywords. The next stage is to carry out screening by selecting the article title and year of publication based on research criteria. In the screening step, 4,778 articles matched the study criteria. After that, the next step is to filter articles according to the research inclusion and exclusion criteria. 542 articles met the criteria for study inclusion and exclusion. After that, filter the articles to focus on articles that match the research criteria. In this step, 24 articles fit the criteria. Then, of the 24 articles, they were again screened for language, research design, results, and several other predetermined criteria. Finally, the 10 selected articles were determined to meet the research criteria and could proceed to the analysis stage.

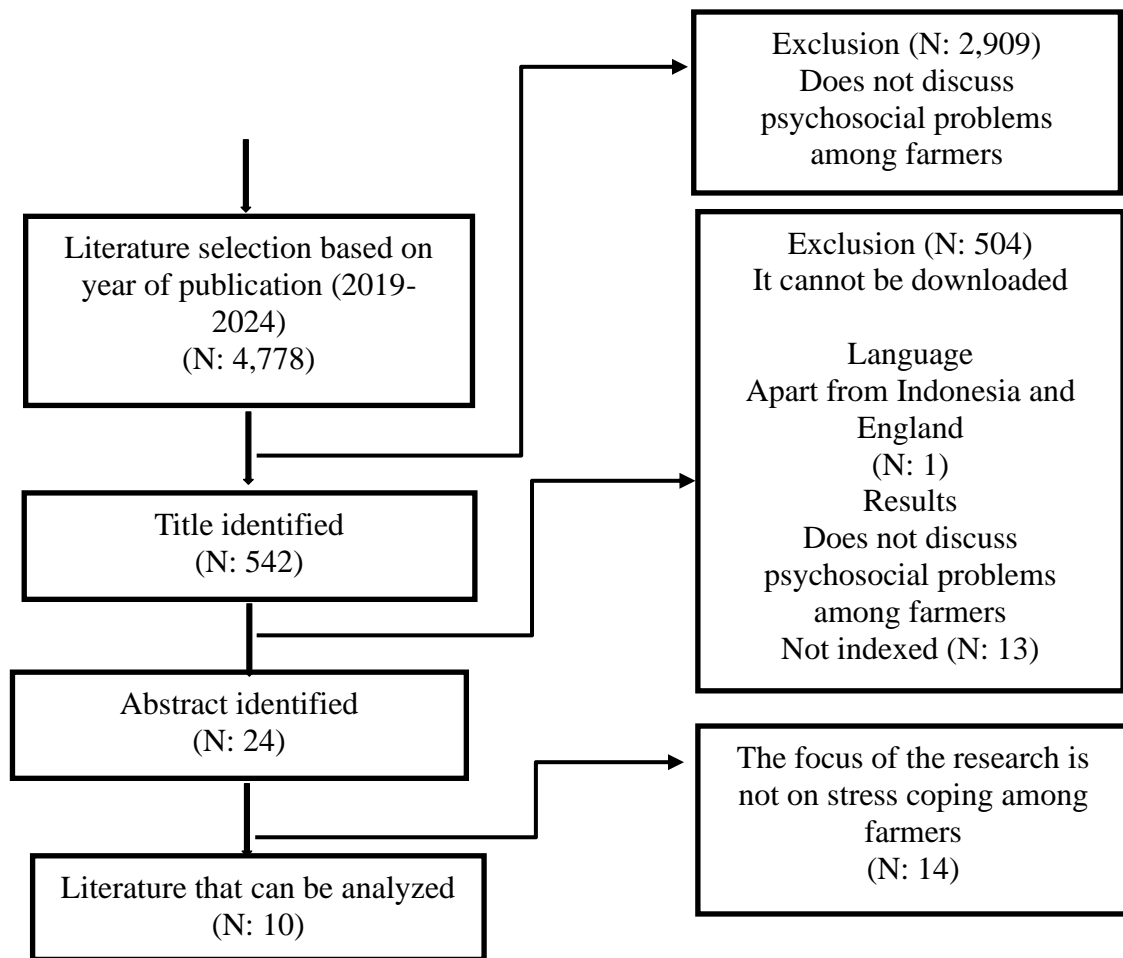


Figure 1. Literature Search Diagram

Results

Table 1. Literature Review Results

Table 1. Literature Review Results

No.	Author/Year	Article Title/Journal Title/Volume	Sample	Method	Results
1.	Noomnuai et al., 2024	Mental health disorders among Thai farmers: occupational and non-occupational	270 Thai farmers, 146 in the spray group, and 124 in the non-spray group.	Cross-sectional study	Good work practices and the use of Personal Protective Equipment (PPE) can be important factors in minimizing occupational

		stressors ⁶			chemical exposure and reducing the potential for mental health disorders among Thai farmers.
2.	Folorunsho, 2024	Sociological Analysis of Stress Management among Farmers and Rural Development in Selected Communities in Kwara State ⁷	360 respondents from various selected communities in local government areas (LGAs) in Kwara State, Nigeria.	Multi-stage sampling	Effective stress management can increase farmer efficiency and productivity. For example, adapting to the lack of rainfall which is one of the external factors, by looking for alternative irrigation facilities will have a positive impact on agricultural productivity.
3.	Silvanasari et al., 2022	The Effectiveness Of Community Mental Health Counseling On The Mental Health Of Farmers During The Covid-19 Pandemic ⁸	There were 80 farmers in the Jenggawah Jember Health Center Working Area who were divided into 2 groups, namely an experimental group of 40 people and a control group of 40 people.	Quasy-experimental with pretest-posttest control group design.	Mental Health Counseling provides mental health applications for farmers, which are very effective in improving farmers' mental health during the Covid-19 pandemic. The Counseling Activity Program for farmers is useful for increasing farmers' ability to deal with high levels of stress due to the Covid-19 pandemic. This counseling program helps farmers to adapt to new habits by teaching farmers to accept the Covid-19 pandemic.
4.	Wiyani et al., 2021	The combination of progressive muscle relaxation and traditional Balinese music therapy is effective in reducing farmers' work stress ⁹	36 respondents were divided into 2 groups, namely the control and intervention groups, 18 people each in Banjar Bongan Jawa, Tabanan, Bali.	Quasy experiment with a pretest-posttest nonequivalent control group design.	Combination therapy of progressive muscle relaxation and traditional Balinese music therapy is effective in reducing work stress felt by farmers in Tabanan, Bali.
5.	Fitria & Riyadi, 2022	Stress Coping Strategies for Melon Farmers After Harvest Failure in Maguwan Village, Sambit District, Ponorogo Regency ¹⁰	3 melon farmers experienced crop failure in Maguwan Village, Sambit District, Ponorogo Regency.	Qualitative descriptive.	The three sources who experienced stress after harvest failure showed positive changes after implementing stress-coping strategies. The coping carried out by Mr K and Mrs ME shows problem-focused coping. The type of coping that Mrs. SH uses is emotion-focused coping.

6.	Woolford et al, 2022	Male Farmers' Perspectives on Psychological Wellbeing Self-Management Strategies That Work for Them and How Barriers to Seeking Professional Mental Health Assistance Could Be Overcome ¹¹	15 male farmers with ages ranging from 23 to 47 years. The average age is 39 years with 20 years of farming experience.	Qualitative with an individual semi-structured interview approach	Male farmers use seven strategies to feel better emotionally interacting with friends or supportive networks, joining farmer groups, exercising, continuing to study, managing time between work and rest, being grateful, and focusing on things that they can control on the farm, such as how to manage and innovate.
7.	Fitria et al, 2023	Stress Management Due to Work Fatigue in Farmers ¹	There are approximately 30 farmers in Sukoreno Village, Kalisat District, Jember Regency.	Community service activities using a qualitative approach.	Deep breathing therapy and progressive muscle relaxation therapy can reduce muscle tension, improve physical recovery, reduce stress and anxiety, and improve sleep quality in farmers.
8.	Aristawati et al, 2022	Five Finger Hypnosis to Reduce the Degree of Anxiety for Milkfish Pond Farmers in Pasuruan City During the Covid-19 Pandemic ¹²	There are 25 fish pond farmers in Tapa'an Village, Pasuruan City	Experimental method with a quantitative approach, using pre-test and post-test questionnaires.	The application of five-finger hypnosis therapy significantly reduced the level of anxiety experienced by milkfish farmers in Pasuruan City during the COVID-19 pandemic.
9.	Padaallah et al, 2022	Description of Farmers' Stress and Coping Mechanisms in Kalisat-Jember District ¹³	100 respondents from the target population.	Descriptive non-experimental quantitative analysis with a cross-sectional design	Farmers in Kalisat tend to use coping mechanisms that focus more on emotions than on problems.
10.	Saragih et al, 2020	The Relationship between Self-Efficacy and Social Support and Coping Stress in Horticultural Farmers in Managing Farming Businesses in Saribudolok ¹⁴	160 horticultural farmers in Saribudolok who are mainly vegetable farmers.	Quantitative research with an observational analytical approach.	Self-efficacy is very important in dealing with stress in horticultural farmers. In addition, there is a positive relationship between social support and farmers' ability to deal with stress. The higher the social support received, the better farmers can deal with stress.

Discussion

The many studies that have been conducted show that farmers often experience

psychosocial problems. However, they have their own ways of dealing with the psychosocial problems they experience. One way they can do this is by implementing good work practices and using Personal Protective Equipment (PPE) when working on agricultural land. This method can reduce the possibility of psychosocial problems occurring in farmers.⁶

In dealing with psychosocial problems, farmers do not only focus on improving work procedures in the agricultural environment. They also manage stress so that the problem doesn't get worse. A study reveals that effective stress management can increase farmer efficiency and productivity. For example, adapting to the lack of rainfall which is one of the external factors. Farmers can look for alternative irrigation facilities that will have a positive impact on agricultural productivity.⁷

Another way farmers can deal with stress is by doing Mental Health Counseling. Mental Health Counseling provides farmers with an application that is very effective in improving farmers' mental health. With this Counseling Activity Program, farmers are able to improve their ability to deal with the high stress they are experiencing. Farmers can talk about the problems they experience. After that, the counselor will provide solutions that can help farmers deal with the psychosocial problems they face. Apart from farmers feeling more relieved because they can talk about their problems, farmers also feel helped by the solutions provided.⁸

In contrast to the study conducted by Wiyani et al. (2021), if farmers experience work stress they do a combination of progressive muscle relaxation therapy and traditional music therapy. Progressive muscle relaxation therapy involves the mind and body so this therapy can be done easily, cheaply, and independently. Music therapy itself can manage stress. The music used is music that is known and liked. The combination of the two has been proven to be able to reduce work stress in farmers.⁹

In dealing with the stressful conditions experienced by farmers due to crop failure, they prefer to use coping strategies to reduce their emotions due to the pressure they experience. There are two forms of coping strategies, namely, coping strategies that focus on problems (Problems Focused Coping) and coping that focus on emotions (Emotional Focused Coping). After implementing this strategy, they found a solution to solve the problem they were experiencing. Before knowing coping strategies, farmers used their own methods to overcome psychological problems but they were not very

helpful. According to them, implementing this strategy really helps farmers in overcoming psychosocial problems.¹⁰

In line with previous research, Woolford et al. (2022) show that male farmers have at least seven strategies to overcome the problems and emotions they face, using a combination of Problem Focused Coping and Emotional Focused Coping. These strategies include interacting with support networks, joining farmer groups, exercising, continuing to learn, taking time off, being grateful, and focusing on things they can control on the farm, such as innovating. This self-management helps farmers deal with the stress of their work and reduces the risk of serious problems such as depression and suicide.¹¹

However, research conducted by Fitria et al., (2023) found that some farmers felt stressed and tired because of their work, but not everyone in the community knew how to deal with the stress they experienced effectively, so counseling was carried out regarding stress management using techniques. deep breathing relaxation and progressive muscle relaxation. By using deep breathing relaxation techniques and progressive muscle relaxation, it has been proven to be able to reduce the stress experienced by farmers, this is because this stress management technique works by stimulating the relaxation response in the body, reducing muscle tension, diverting attention from stressful thoughts, and reducing related physical symptoms with stress.¹

Apart from that, research conducted by Aristawati et al. (2022) found that the COVID-19 pandemic caused a decrease in public interest in pond products, which had a direct impact on the farmers' economy. This situation creates feelings of anxiety among farmers. To overcome anxiety, five-finger hypnosis self-therapy training is carried out, which can help calm the mind and body. A pre-survey before training showed people's anxiety levels: severe (40%), moderate (25%), and mild (35%). However, after education, there was a significant reduction: severe (10%), moderate (10%), and mild (80%), indicating that the training was successful in reducing overall anxiety.¹²

Another study conducted by Padaallah et al. (2022) found that farmers in Kalisat tend to rely on coping mechanisms that are more focused on emotional aspects rather than problem-solving. They prioritize physical health as a response to stress that requires a lot of energy. In addition, positive beliefs and an optimistic outlook are very important for them in overcoming challenges, as this influences their motivation.

Spiritual beliefs are also the main foundation in facing difficult situations, providing strength and hope in facing various problems that arise.¹³

The results of research conducted by Saragih et al. (2020) emphasized that self-efficacy and social support have an important role in reducing stress in farmers. This research found a significant correlation between self-efficacy and coping with stress, as well as between social support and coping with stress. Self-efficacy and social support are part of the Problem Focused Coping strategy, which focuses on individuals' beliefs in their ability to complete tasks, achieve goals, and overcome obstacles, as well as the support provided by the closest people in the environment. Social support can take the form of information, advice, real help, or action from people who are trusted and care to help farmers face agricultural problems.¹⁴

Conclusion

Farmers are proven to experience many psychosocial problems, the main one being stress. On the other hand, they are able to overcome the psychosocial problems they are experiencing. Starting from improving work practices in the rice fields by using Personal Protective Equipment (PPE), adapting to external factors such as erratic rainfall, carrying out therapy, mental health counseling, and using coping strategies to deal with stress and other psychosocial problems

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Conflict of Interest

None.

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THE COMPARISON OF THE EFFECTIVENESS OF MANGO AND WHITE AMBON BANANA ON HEMOGLOBIN LEVELS IN TRIMESTER II PREGNANT WOMEN WITH ANEMIA

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Abstract

Background: Anemia is a condition in which circulating erythrocytes and/or hemoglobin (Hb) cannot fulfill their function of providing oxygen to body tissues. More than 50% of anemia cases spread throughout the world are directly caused by insufficient iron intake.

Purpose: To determine the comparison of the effectiveness of Mango and White Ambon Banana on Hemoglobin Levels in Anemic Pregnant Women in the Second Trimester at the Ciater Community Health Center, South Tangerang.

Method: This research is a quasi-experimental research design with a two group pre and posttest design, a sampling technique using cluster sampling, a total sample of 30 respondents divided into two treatment groups. This research was conducted in the Ciater Community Health Center area, South Tangerang City in October 2023. The instruments used were mango fruit and white Ambon banana, observation sheet, Easy Touch Blood Hemoglobin. Data analysis used paired sample t-test and Independent T-Test

Results: There is an effect of giving mangoes and white Ambon banana on hemoglobin levels in pregnant women in the second trimester at the Ciater Health Center with a p-value of 0.000. The results of the study showed that there was no difference in the average hemoglobin levels in pregnant women in the second trimester between the consumption of mangoes and white Ambon banana with a p-value of 0.292.

Conclusion: The results of the study show that there is no difference in the average effect of mangoes and white Ambon banana on the hemoglobin levels of pregnant women.

Suggestion: The results of this research can be put into practice independently, especially for consuming mangoes and Ambon banana to increase Hemoglobin levels

Keywords: Anemia, Mango, Pregnant Women, White Ambon Banana.

Background

Anemia is a condition in which erythrocytes and/or circulating hemoglobin (Hb) cannot fulfill their function to provide oxygen for body tissues. The cause of the high prevalence of anemia in women is due to many factors, including insufficient iron consumption and low iron absorption, bleeding, malaria, worm infections and other infections and adolescent girls experience menstrual cycles every month, but more than 50% of anemia cases spread around the world are directly caused by insufficient iron intake.

The World Health Organization (WHO) in the worldwide prevalence of anemia in 2015 shows that the prevalence of anemia in the world ranges from 40 to 88%. In Southeast Asia, 25-40% of adolescent girls experience mild and severe anemia. The number of people of reproductive age (10-19 years) in Indonesia is 26.2% consisting of 50.9% men and 49.1% women.¹

The Maternal Mortality Rate (MMR) in Indonesia nationally until 2020 is still high, namely 305 per 100,000 live births (KH), while the 2024 RPJMN AKI target is 183 per 100,000 KH and the Golbal SDGs AKI target is 70 per 100,000 KH. The highest causes of maternal mortality in Indonesia include bleeding 30.3%, hypertension 27.1%, infection 7.3% and old partus 1.8%.²

According to the Banten Provincial Health Office, in 2021 one of the largest contributors to AKI was bleeding during childbirth, around 37%. According to data from the Banten Health Office (2021), the high number of cases of maternal mortality in Banten Province can reach up to 135 cases of maternal mortality per 100,000 live births with the highest case of maternal mortality in 2018 in the Tangerang City area of 77 cases, followed by South Tangerang with a maternal mortality rate of 13 cases per 100,000 live births. Based on the prevalence of anemia in pregnant women in 2019 in the Ciater Health Center Work Area, which was 44.4%, it shows that there is a serious problem.³

The impact of anemia on the health and safety of the pregnant mother and her fetus includes postpartum depression is depression experienced by the mother after childbirth, a fatal risk if bleeding occurs during childbirth and causes the pregnant woman's body to fight more difficult infections, babies born with a low weight especially if anemia occurs in the first trimester of pregnancy, babies are born premature and are at risk of growth and development

disorders, babies born with anemia so that they experience health problems and growth and development disorders, fetal death before and after childbirth.⁴

There are several factors that cause anemia in pregnant women, including compliance with the consumption of blood supplement tablets and diet. Compliance with the consumption of blood supplement tablets is one of the health behaviors carried out by pregnant women. A high level of compliance can reduce the incidence of anemia in pregnant women. Compliance with taking Fe tablets is defined as the accuracy of pregnant women in consuming Fe tablets, namely 1 tablet routinely for at least 90 days during pregnancy.⁴ Supported by previous research conducted by Izzati *et al* (2021) showed that there was a relationship between the level of compliance with the consumption of Fe tablets in pregnant women in the second trimester of anemia in pregnant women in the second trimester at the Margasari Health Center.⁵

Banana is one of the non-pharmacological therapies consumed as a staple food in the tropics and this banana is enriched with iron which is effective in controlling iron deficiency and can be absorbed by the body almost entirely. Ambon banana also contain vitamin C which can help increase iron absorption and can reduce iron in the form of ferri to ferro. Vitamin C increases iron absorption from food through the formation of ferro-ascorbate complexes. Ascorbic acid with iron salts can increase iron absorption by 25%–50%. The administration of iron (Fe) tablets and banana (*Musa Paradisiaca var Sapientum Linn*) is more effective in increasing Hb levels in pregnant women than just giving Fe tablets alone.⁶

A study conducted by Siregar *et al* (2022) showed that there was an effect of consumption of banana (*Musa Paradisiaca var Sapientum Linn*) on increasing Hb levels in pregnant women with anemia in the Kayamanya Health Center Working Area.⁷ The study is in line with a study conducted by Tuju *et al* (2019) with the results that there is an effect of giving a combination of banana and Fe tablets on hemoglobin levels in pregnant women in the second trimester at the Pinolosian Health Center, South Bolaang Mongondow Regency.⁸

Another non-pharmacological therapy to treat anemia in pregnant women is by consuming mango fruit (*Mangifera indica L.*) Mango fruit (*Mangifera indica L.*) is one of the most important tropical fruits consumed worldwide, which is an excellent source of fiber, bioactive compounds such as provitamin A carotenoids, vitamin C and phenolic compounds. Mango is a common fruit and is considered an important source of micronutrients such as

vitamins and other phytochemicals. Mangoes provide energy, carbohydrates, proteins, fats, dietary fiber, phenolic compounds and omega-3 and -6 polyunsaturated fatty acids, which are essential for human health, growth and development. Up to 25 different carotenoids have been found in the flesh of mangoes, most of which are beta-carotene. Mangoes are used in weak conditions, hemoptysis, bleeding, and anemia.⁹

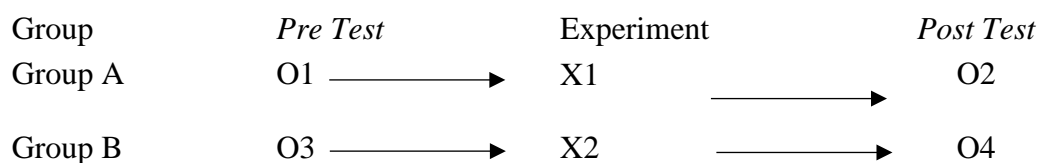
According to a study conducted by Abdulmaguid (2018) entitled "*Ameliorative iron-deficiency anemia levels using natural orange juice and fortified with different concentrations of mango, strawberries and beetroot juices in male albino rats*" suggests that mango is an anemia-lowering food, and its juice can significantly increase hemoglobin if consumed regularly. Some medical studies show that iron deficiency causes shortness of breath, dizziness, menstrual disorders, muscle cramps, anxiety problems, stress, and heart-related diseases.⁹

Based on a preliminary study at the Ciater Health Center, the number of anemia in pregnant women in the period January – September 2023 was 282 cases. In September 2023 there were 14 cases with an Hb value of <11 mg/dL and in October 2023 there was an increase to 48 cases with an Hb value of <11 mg/dL. Based on the above background, anemia in pregnant women is a very serious problem, and on this basis, researchers are interested in doing research on "The Effectiveness of Comparison of Mango Fruit (*Mangifera* sp) with White Ambon Banana (*Musa acuminata*) on Increasing Hemoglobin Levels in Pregnant Women in the Second Trimester".

Method

1. Research design

The design of this study is a *quasi-experimental design* research. The design used was a *two-group pretest and posttest design* to determine the effectiveness of the comparison of mangoes and white ambon bananas on changes in hemoglobin levels of pregnant women in the second trimester.



Information:

- O1 and O2 : *Pre-post test* group A with mango feeding
- O3 and O4 : *Pre-test-post test* group B with the administration of white ambon bananas
- X1 : Giving mangoes 1 time a day 250 grams for 14 consecutive days in the afternoon
- X2 : Giving white ambon bananas 1 time a day 250 grams for 14 consecutive days in the afternoon

2. *Setting and samples*

The sample used in this study was pregnant women in the Working Area of the Ciater Health Center, South Tangerang City. The sample calculation in this study used *cluster random sampling*.

Table 1. Sample Calculation

No.	Cluster	Populasi	Sampel
1	Posyandu 1	8	$\frac{8}{87} \times 30$ 3
2	Posyandu 2	4	$\frac{4}{87} \times 30$ 2
3	Posyandu 3	6	$\frac{6}{87} \times 30$ 2
4	Posyandu 4	7	$\frac{7}{87} \times 30$ 3
5	Posyandu 5	10	$\frac{10}{87} \times 30$ 4
6	Posyandu 6	4	$\frac{4}{87} \times 30$ 2
7	Posyandu 7	9	$\frac{9}{87} \times 30$ 2
8	Posyandu 8	6	$\frac{6}{87} \times 30$ 2
9	Posyandu 9	8	$\frac{8}{87} \times 30$ 3
10	Posyandu 10	5	$\frac{5}{87} \times 30$ 2
11	Posyandu 11	6	$\frac{6}{87} \times 30$ 2
12	Posyandu 12	5	$\frac{5}{87} \times 30$ 2
13	Posyandu 13	7	$\frac{7}{87} \times 30$ 3
Jumlah		85	30

In this study, there are inclusion criteria, namely pregnant women entering the second trimester, with mild anemia (Hemoglobin levels 9.0-10 gr/dl), primipara and multipara pregnant women, and mothers who do not experience taboos or allergies to bananas and mangoes. The exclusion criteria are pregnant women who have a history of degenerative diseases (diabetes mellitus, hypertension, heart, etc.).

According to Sani (2018) explained that for experimental research, the sample was 15 elements per group. Based on the inclusion criteria and the statement, the researcher used 15 samples for group A and 15 samples for group B. From these results, the researcher determined the number of samples, which was 30 respondents.

3. *Intervention (applies to experimental studies)*

This study uses an intervention in the form of giving white ambon bananas and mangoes. Giving pregnant women 2.5 grams (250 grams) of processed white ambon bananas once a day in the afternoon for 14 days. Meanwhile, the administration of mangoes is given in the form of processed mangoes to pregnant women once a day in the afternoon as much as 250 grams for 14 days.

4. *Measurement and data collection*

The research instruments used in the study are SOP (Standard Operating Procedure) for giving white ambon bananas and mangoes as well as SOP for checking Hb levels with *Easy Touch Blood Hemoglobin* and tools used to make and check Hb levels. In the initial stage, the researcher prepared a Standard Operating Procedure (SOP) as a reference for research on white ambon bananas, mangoes and Hb level checks. After the SOP was available, then prepared an observation sheet as a record of hemoglobin levels before the intervention, the activity of giving white ambon bananas and mangoes and recording hemoglobin levels after the intervention. Then prepare a hemoglobin checker, namely using *Easy Touch Blood Hemoglobin*.

5. *Data analysis;*

Hypothesis testing in this study is determined based on the results of the data normality test, so it will be possible to determine what test tool is most suitable to use. If the data is normally distributed, the parametric paired *sample t-test* and *T-Test Independent* are used, while for the data that is not normally distributed, the calculation uses non-parametric tests, namely *the wilcoxon test* and *the Mann Whitney test*.

Results

Average Hemoglobin of Pregnant Women in the Second Trimester Before and After Consumption of Mangoes and White Ambon Bananas at the Ciater Health Center

Table 2. Average Hemoglobin Level

Variable	Group	N	Mean	Mean Difference	Std. Deviation
Mango Fruit Juice (Group A)	Hb Pre Intervention	15	10,533	2,354	0,6321
	Hb Post Intervention	15	12,887		0,6209
White Ambon Banana (Group B)	Hb Pre Intervention	15	10,500	2.140	0,5964
	Hb Post Intervention	15	12,640		0,6379

From table 2 above, the average hemoglobin before the intervention was obtained in group A, namely those who consumed Mango Fruit (*Mangifera sp*) of 10.533 gr/dl which was classified as anemia. Meanwhile, the average hemoglobin obtained after intervention in group A, namely those who consumed Mango Fruit (*Mangifera sp*) of 12.887 gr/dl which was classified as non-anemia. The average difference in hemoglobin in group A is 2.354 gr/dl. So it can be concluded that there is an increase in hemoglobin in group A after the intervention.

The average hemoglobin before the intervention was carried out in group B, namely those who consumed White Ambon Banana (*Musa acuminata*) of 10,500 gr/dl which was classified as anemia. Meanwhile, the average hemoglobin obtained after intervention in group B, namely those who consumed White Ambon Banana (*Musa acuminata*) of 12,640 gr/dl which classified as not anemic. The average difference in hemoglobin in group B is 2,140 gr/dl. So it can be concluded that there is an increase in hemoglobin in group B after the intervention.

Normality Test

Before conducting a statistical test, a normality test is carried out first to find out whether the data obtained in the normal distribution is normal or not. Normalization can be done by looking descriptively from the data. The rule used to test normality is that the existing score of the Shapiro-Wilk connection is considered more accurate when the number of subjects we have is less than 50. If the Sig. number is greater than or equal to 0.05, the data is normally distributed, but if it is less than 0.05, the data is not normally distributed.¹⁰

The following is a normality test table using Shapiro – Wilk.

Table 3 Results of Shapiro-Wilk Normality Test

Variable	Group	Sig	$\alpha=0,05$	Decision
Mango Fruit Juice (Group A)	Hb Pre Intervention	0,672	$> 0,05$	Usual
	Hb Post Intervention	0,323	$> 0,05$	Usual
White Ambon Banana (Group B)	Hb Pre Intervention	0,233	$> 0,05$	Usual
	Hb Post Intervention	0,288	$> 0,05$	Usual

Based on Table 3, the results of the normality test both before and after the consumption of Mango Fruit (*Mangifera sp*) with White Ambon Banana (*Musa acuminata*) on the hemoglobin level of pregnant women in the second trimester were more than 0.05. Knowing whether it is normal or not is a sig > 0.05, then normal and If the sig < 0.05, it can be said to be abnormal. Based on these results, all variables are normally distributed.

Bivariate Analysis

Increase hemoglobin after intervention consumption Fruit Mango (*Mangifera sp*) is presented in the following table:

Table 4. Test on the Effectiveness of Mango Consumption on the Increase in Hemoglobin Levels of Pregnant Women in the Second Trimester

Group A (Mango)	n	Mean	Std.Dev	P-Value
Hb Pre Intervention	15	10,533	0,6321	0,000
Hb Post Intervention	15	12,887	0,6209	

Based on the results of the analysis using *the Paired Sample T-Test*, a p-value of $0.000 < \alpha$ (0.05) was obtained, meaning that H_0 was rejected and H_a was accepted, namely the Effectiveness of Mango Fruit Consumption (*Mangifera sp*) on the Increase in Hemoglobin Levels of Pregnant Women in the Second Trimester.

Table 5. Test on the Effectiveness of White Ambon Banana Consumption on Increasing Hemoglobin Levels in Pregnant Women in the Second Trimester

Group B (White Ambon Banana)	n	Mean	Std.Dev	P-Value
Hb Pre Intervention	15	10,500	0,5964	0,000
Hb Post Intervention	15	12,640	0,6379	

Based on the results of the analysis using the *Paired Sample T-Test*, a p-value of $0.000 < \alpha$ (0.05) was obtained, meaning that H_0 was rejected and H_a was accepted, namely the Effectiveness of White Ambon Banana (*Musa acuminata*) on the Increase in Hemoglobin Levels of Pregnant Women in the Second Trimester. Based on the value of t, the calculation has a negative value, which is -9.327. t calculates a negative value because the initial Hb value

is lower than the final Hb value. So a negative t-count value can mean positive. So that the value of t is calculated to be 9.327. The calculated value $>$ the table value is $9,327 > 2,086$ so it can be concluded that H_0 is rejected and H_a is accepted. So there is an average difference between the initial and late hb which means the Effectiveness of the Consumption of White Ambon Bananas (*Musa acuminata*) on the Increase in Hemoglobin Levels of Pregnant Women in the Second Trimester.

Table 6. Comparison of Average Hemoglobin Levels in Group A (Mango Juice) and Group B (White Ambon Banana)

Variable	n	f	Sig	Sig 2 Tailed
Group A (Mango Juice)	15	0,059	0,810	0,292
Group B (White Ambon Banana)				

Based on the results of the analysis using *the Independent T-test*, it can be seen that t increase hemoglobin levels in group A and group B are 1.073. A $p\text{-value} = 0.292 > \alpha (0.05)$ was obtained, so H_a was accepted, which means that there was no difference in the average hemoglobin level in pregnant women in the second trimester between the consumption of Mango Fruit (*Mangifera sp*) and White Ambon Banana (*Musa acuminata*).

Discussion

Effect of Mango Feeding on Hemoglobin Levels in Pregnant Women in the Second Trimester

The results of the study showed that from the *Paired Sample T-Test*, a $p\text{-value}$ of $0.000 < \alpha (0.05)$ was obtained, meaning that H_0 was rejected and H_a was accepted, namely the Effectiveness of Mango Consumption (*Mangifera sp*) on the increase in hemoglobin levels of pregnant women in the second trimester. Based on the t-value, the calculation has a negative value, which is -14.762. t calculate this negative value because the initial Hb value is lower than the final Hb value. So a negative t-count value can mean positive. So that the t-value is calculated to be 14.762. The calculated value $>$ the table value is $14.762 > 2.086$, so it can be concluded that H_0 was rejected and H_a was accepted. So there is an average difference between the initial and late dates, which means that there is an Effectiveness of Mango Fruit Consumption (*Mangifera sp*) on the Increase in Hemoglobin Levels of Pregnant Women in the Second Trimester.

The results of this study are in line with the theory that mangoes are widely used as a source of vitamins needed for the body. In addition to being a source of vitamins, mangoes can be useful as a laxative, as a medicine to stop bleeding in the uterus, lungs, intestines, irritability and anemia.¹¹

The ethyl acetate fraction of mango leaves contains many phenolic compounds and flavonoids. Guillén *et al.*, (2022) stated that the compounds contained in mangoes are lupeol, mangiferin, gallic acid, chlorogenic acid, vanilla acid, ferulic acid, ascorbic acid and carotenoid compounds. Some of the amino acids contained in mango seeds are leucine, isoleucine, methionine, lysine, valine, phenylalanine and threonine. The phenolic compounds contained include tannins, gallic acid, coumarin, vanillin, mangiferrin, ferulic acid and other unidentified compounds.¹²

According to a study conducted by Abdulmaguid (2018) entitled "*Ameliorative Iron-Deficiency Anemia Levels Using Natural Orange Juice And Fortified With Different Concentrations Of Mango, Strawberries And Beetroot Juices In Male Albino Rats*" stated that mango is an anemia-lowering food, and its juice can significantly increase hemoglobin if consumed regularly.⁹ Several medical studies show that iron deficiency causes shortness of breath, dizziness, menstrual disorders, muscle cramps, anxiety problems, stress, and heart-related diseases. According to researchers, the content contained in mangoes is able to increase hemoglobin levels in pregnant women. But There has been no previous research to support this truth.

Effect of White Ambon Banana Feeding on Hemoglobin Levels in Pregnant Women in the Second Trimester

The results of the study showed that from the Paired Sample T-Test, a p-value of $0.000 < \alpha(0.05)$ was obtained, meaning that H_0 was rejected and H_a was accepted, namely the Effectiveness of White Ambon Banana (*Musa acuminata*) on the Increase in Hemoglobin Levels of Pregnant Women in the Second Trimester. Based on the t-value, the calculation has a negative value, which is -9.327. t calculate this negative value because the initial Hb value is lower than the final Hb value. So a negative t-count value can mean positive. So that the value of t is calculated to be 9.327. The calculation value > table value is $9,327 > 2.086$ so it can be concluded that H_0 is rejected and H_a is accepted. So there is an average difference between the initial and final dates, which means The effectiveness of the consumption of white Ambon bananas (*Musa acuminata*) on the increase in hemoglobin levels of pregnant women in the second trimester.

Based on the results of the analysis using the Independent T-test, it can be seen that t increase hemoglobin levels in group A and group B are 1.073. The p-value = $0.292 > \alpha (0.05)$, so H_0 was accepted, which means that there was no difference in the average hemoglobin level in pregnant women in the second trimester between the consumption of Mango Fruit (*Mangifera sp*) and White Ambon Banana (*Musa acuminata*).

Another intervention to increase Hb levels in pregnant women is consuming ambon bananas. Ambon bananas are a source of vitamin C which can increase the optimization of non-heme iron absorption so that absorption will be more in the intestines and potassium which regulates the delivery of nutrients to cells and facilitates the flow of oxygen to the brain. So hemoglobin is able to bind oxygen which causes the number of red blood cells and hemoglobin levels in the blood to increase.¹³

Another intervention to increase Hb levels in pregnant women is consuming ambon bananas. Ambon bananas are consumed as much as 320 grams (equivalent to 2 medium bananas) every day for 7 days. Consuming bananas regularly can increase hemoglobin levels in pregnant women with anemia p value 0.001. Ambon bananas contain potassium, magnesium, phosphorus, calcium, iron, vitamins, carbohydrates, fiber, protein and fat. In a ripe banana, there are 99 calories, 1.2 grams of protein, 0.2 grams of fat, 25.8 mg, carbohydrates, 0.7 grams of fiber, 8 mg of calcium, 28 mg of phosphorus, 0.5 mg of iron and 72 grams of water. The mineral of banana ambon can be absorbed almost entirely by the body, especially iron (in dry weight, iron content reaches 2 mg/100 gr, zinc 0.8 mg.¹¹ Banana ambon is effective in increasing Hb levels in pregnant women. An increase in Hb levels of 3.5 gr/dL.¹⁴

According to the assumption of the researcher in conducting the study for 7 days of each subject in the Ciater Health Center Working Area, there was an increase in hemoglobin values because all subjects were very cooperative to follow the recommendations well. So that the results of research on potential hazard identification, assessment and control of anemia in pregnant women can be applied as one of the sciences in providing pregnancy care services to individuals, families, groups and communities.

Limitation

The limitation of this study is about time of research only for 14 days, and the increase in hemoglobin has not been very significant.

Conclusion

The average difference in hemoglobin before and after the intervention in group A (Mango Juice Intervention) was 2.354 gr/dL. The average difference in hemoglobin before and after the intervention in group B (White Ambon Banana Intervention) was 2,140 gr/dL. There is an effect of mango administration on hemoglobin levels in pregnant women in the second trimester at the Ciater Health Center (p-value 0.000). And there was an effect of giving white bananas on hemoglobin levels in pregnant women in the second trimester at the Ciater Health Center (p-value 0.000). There was no difference in the average hemoglobin level in pregnant women in the second trimester between the consumption of Mango Fruit (*Mangifera sp*) and White Ambon Banana (*Musa acuminata*) (p-value 0.292).

Ethical Considerations

This research has passed an ethical exemption from the Health Research Ethics Commission of the Universitas Indonesia Maju with number 517/Sket/Ka.Dept/RE/UIMA/II/2024 and has been declared ethically feasible in accordance with 7 Standards WHO 2011.

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The Relationship Between the Use of Injectable Contraceptives and Changes in Body Weight

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Abstract

Background: Injectable contraception is a contraceptive method made into a liquid and injected into the body. Some contain estrogen and progesterone once a month, but some only contain progesterone every three months. The most frequent side effect of contraception is weight gain. Depo Medroxy Progesterone Acetate (DMPA) stimulates the appetite control center in the hypothalamus, which causes acceptors to overeat. Excessive weight gain causes a number of diseases, such as obesity, hypertension, diabetes, and heart disease. **Objective.** **Purpose :** this study aims to analyze the relationship between the provision of injectable contraception and weight changes in PMB "X" Cilincing District, North Jakarta. **Method :** this type of research is quantitative with a cross-sectional design. The population is all KB acceptors at PMB NY "X" Cilincing District, North Jakarta, in 2022, totaling 110 respondents, and the sample is total sampling. Data processing with SPSS using the chi-square test. **Results :** The highest age is 20-35 years old, 78 (70.9%) people; most respondents have a college education, 49 (44.5%) people; more than half of respondents are homemakers, 61 (55.5%) people; the highest parity is one person, 63 (57.3%) people, and the longest time as a KB acceptor, the most respondents are more than one year, 65 (59.1%) people. In this study, it was also reported that respondents who experienced weight gain were 89 (90.9%) people, and 87 (79.1%) used a 3-month injection KB. The results of the statistical test obtained a value of $p = 0.000$ ($p < 0.05$), which indicates a relationship between injection contraception and weight changes. **Conclusion :** There is a relationship between injection contraception and weight changes with a value of $p = 0.000$ ($p < 0.05$).

Keywords: injectable contraception, one-month injectable contraception, three-month injectable

Introduction

Contraception is a method used to prevent the meeting between mature egg cells (female cells) and sperm cells (male cells), which results in pregnancy. In using contraception, families generally have a plan or goal that they want to achieve. These goals are classified into three categories, namely delaying or preventing pregnancy, spacing pregnancies, and stopping or ending pregnancy or fertility which is included in family planning (KB) (1).

Depo Medroxy Progesterone Acetate (DMPA) injectable contraception is generally more widely chosen because it is easy to obtain and cheaper than others. In addition, injectable contraception is suitable for breastfeeding mothers. DMPA contraception will be much more effective if done regularly and according to a predetermined schedule namely it can be done every three months (2).

This type of hormonal contraceptive injection is increasingly used in Indonesia because it works effectively, and almost 63% of KB acceptors use hormonal contraception because it is practical to use, relatively cheap, and safe. Injectable contraception has the risk of side effects that are often experienced, such as menstrual disorders and weight changes; long-term use can reduce libido and bone density, but people tend to choose short-term contraception methods compared to long-term, injectable contraception is one of the short-term contraception methods that is widely used (3).

Based on the 2018 Indonesian Health Profile, the achievement of KB participants throughout Indonesia, most of the Active KB participants chose injections and pills as contraceptives, even very dominant (more than 80%) compared to other methods where injections (63.71%) and pills (17.24%). As for other types of contraceptives, IUDs were 7.4%, MOP 2.7%, MOP 0.5%, implants 7.4%, and condoms 1.2%. The highest achievement was in Bengkulu Province at 71.4%, while the lowest achievement was in Papua Province at 29.1%, while DKI Jakarta Province was 56.9% (4).

According to Fenniokha et al (2022), 61.4% of Indonesians who use contraception choose injectable contraception. There are two types of contraception options, namely 1-month Noristerat injectable contraception given 200 mg, 3-month Depo provera injectable contraception 150 mg, and Depo progestin 150 mg given once every three months. Based on the type of injectable contraception, the effect of DMPA

contraception causes weight gain because DMPA stimulates the appetite control center in the hypothalamus, which causes acceptors to eat more than usual (5).

Weight gain is mostly caused by the hormone progesterone, which facilitates the conversion of carbohydrates and sugars into fat, increasing fat under the skin. In addition, the hormone progesterone also increases appetite and decreases physical activity (6).

The most frequent side effect of contraception is weight gain. The cause of weight gain is the hypothesis of experts stating that Depo Medroxyprogesterone Acetate (DMPA) stimulates the appetite control center in the hypothalamus, which causes acceptors to overeat. The occurrence of weight gain in acceptors of injectable contraception requires further research on how injectable contraception affects weight gain (7).

With a greater appetite than usual, the body will have excess nutrients from the hormone progesterone converted into fat and stored under the skin. This change in weight is due to the accumulation of excess fat resulting from the synthesis of carbohydrates into fat (8).

This study aims to determine the relationship between weight gain and the use of injectable contraception in acceptors of contraception, both 1-month and 3-month injectable contraception.

Method

This type of research uses quantitative with a cross-sectional approach. The population in this study were injectable contraceptive acceptors at PMB "X" Cilincing District, North Jakarta, in 2022. The number of samples in this study was 110 people, sampling using the total sampling technique. The inclusion criteria were 1-month and 3-month injectable contraceptive acceptors who routinely became contraceptive acceptors at PMB NY "X" Cilincing District, North Jakarta, mothers who had complete data and were recorded in the data report at PMB "X" Cilincing District, North Jakarta for the 2023 period. The exclusion criteria for injectable contraceptives included injectable contraceptive acceptors who dropped out and 2-month injectable contraceptive acceptors. The data collection tool used a questionnaire consisting of identity (name of contraceptive acceptor, age of contraceptive acceptor, husband's name, education, occupation, and number of parties), type of injectable contraceptive used, and data on

the acceptor's weight before and after using contraceptives. Data processing used SPSS with the chi-square test. This research has passed the ethics of the Faculty of Medicine and Health, Muhammadiyah University, Jakarta No. 72/PE/KE/FKK-1 UMJ/V/2023.

Results

Based on the research results, the distribution of mothers using KB according to weight gain, duration of use, age, education, occupation, and number of parties of mothers using KB at PMB NY “X” Cilincing District, North Jakarta.

Table 1
Respondent Characteristics

Variable	Frekuensi (n=110)	Persentase
Age		
< 20	5	4.5
20-35	78	70.9
>35	27	24.5
Education		
Junior High School-Secondary High School	20	18.2
Senior High School	41	37.3
College	49	44.5
Occupation		
Housewife	61	55.5
PNS	5	4.5
Private	26	23.6
Self-employed	18	16.4
Parity		
1 child	63	57.3
> 1 child	47	42.7
Duration of birth control		
< 1 year	89	90.9
1-2 years	13	11.8
Weight changes		
Increase	89	90.9
Constant	13	11.8
Decrease	8	7.3
Type of birth control Injection		
1 month	23	20.9
3 months	87	79.1
Decrease	23	20.9

The highest age was 20-35 years old, 78 (70.9%) people; most respondents had a college education, 49 (44.5%) people; more than half of the respondents were housewives, 61 (55.5%) people; the highest parity was one person, 63 (57.3%) people, and the longest time as a KB acceptor for the most respondents was more than one year, 65 (59.1%) people. This study also reported that respondents who experienced weight gain were 89 (90.9%) people and 87 (79.1%) used 3-month injection KB (table 1)

Table 1

The Relationship between Injectable Contraceptives and Weight Changes

Injectable Contraceptives	Weight Change						p-value
	Increase		Constant		Decrease		
	N	%	N	%	N	%	
KB 1 Bulan	7	18,6%	11	2,7%	5	1,7%	0,000
KB 3 Bulan	82	70,4%	2	10,3%	3	6,3%	

The results of Table 2 above show that seven people experienced an increase in 1-month injectable contraception, 11 people experienced a constant weight, and five people experienced a decrease in weight. Meanwhile, 82 people experienced an increase in 3-month injectable contraception, two people experienced a steady weight, and three people experienced a reduction in weight. The p-value = 0.000 ($p < 0.05$) indicates a relationship between injectable contraception and changes in body weight.

Discussion

The characteristics of the respondents who accept injectable contraception are mostly 20-35 years old (table 1). This age range is a healthy reproductive age and is included in the period of spacing pregnancies. This finding is in line with previous studies that at this age, contraceptive acceptors are in the phase of spacing pregnancies (Mayla, Kholisotin, and Agustin, 2019); in addition, similar findings were also obtained that the choice of injectable contraception is related to age (Wahyuni and Rosaria, 2019).

Currently, health workers often convey information about contraception so that respondents quickly obtain this information. The level of education of respondents in this study mainly was college, where with higher education, acceptors understand more about contraceptive information, starting from the purpose of using contraceptives, advantages, disadvantages, and effects (Mayla, Kholisotin, and Agustin, 2019). Other findings state that education is related to the choice of injectable contraception (Septianingrum, Wardani, and Kartini, 2018; Wahyuni and Rosaria, 2019).

A person's income will influence the choice of contraception. DMPA contraception is included in cheap contraception. The reason for the cost of contraception is a factor related to the choice of contraceptive method (Septalia and Puspitasari, 2017). Most respondents are housewives, so they tend to look for cheap and affordable contraception (Moloku, 2016; Puspasari et al., 2022).

Parity factor will influence someone in choosing contraception, the number of children also plays a role in choosing contraception (Puspasari et al., 2022) More than 50% of respondents are first parity, this is because most of the KB acceptors at this research location are parity one.

The duration of contraception use for most respondents is 1-2 years and statistically has a correlation with weight gain (table 2). The duration of use of 3-month injection contraception greatly affects changes in body weight; However, Irianto's theory (2014) states that 3-month injection contraception is more towards weight gain. Still, the effectiveness of the 3-month injection contraception method depends on the user, which causes 3-month injection contraception not to cause weight gain completely. Women who use 3-month injectable contraceptives (Depo Medroxy Progesterone Acetate (DMPA)), on average, experience a weight gain of 5.5 kg and an increase in body fat of 3.4% within three years of using 3-month injectable contraceptives (Zubaidah, 2021). Weight gain is the most common complaint among injectable contraceptive acceptors (Purba, 2023). Duration of use is associated with weight gain. Weight was significantly ($P < 0.05$) positively correlated with femoral neck BMD and spine BMD at each time point regardless of contraceptive method. Weight changes at 12 and 24 months were highly correlated with changes in femoral neck BMD ($P < 0.0001$) for all treatment groups. No association between weight change and spine BMD changes was seen in DMPA, OC, or control subjects at 12 or 24 months (Bonny, Secic, and B. A. Cromer, 2011). Another report stated that weight gain of more than 5% after six months of DMPA use is at risk of continued excessive weight gain. (Bonny, Secic and B. Cromer, 2011)

Hormonal contraception generally uses estrogen and progesterone hormones in its therapy. The use of estrogen and progesterone hormones will increase the amount of progesterone and estrogen hormones in the body with its androgenic effects. The progesterone hormone functions to influence appetite; excess progesterone hormone will stimulate the appetite control center in the hypothalamus, which causes acceptors to eat more than usual so that appetite will increase and result in eating more, which ultimately causes weight gain (Kunang, 2020). The presence of solid progesterone hormone, which stimulates the lateral hypothalamus, influences changes in the weight of injectable contraceptive acceptors. With a greater appetite than usual, the body will

have excess nutrients. Excess nutrients from the progesterone hormone are converted into fat and stored under the skin, and this weight change is due to the accumulation of excess fat resulting from synthesizing carbohydrates into fat (Nursamsiyah and Rohmah, 2021). According to Kurniasari et al (2020), it was revealed that 3-month injectable contraception has a greater effect on weight gain because DMPA stimulates the appetite control center in the hypothalamus, which can cause acceptors to eat more than usual, thus potentially experiencing weight gain. Weight gain is caused by the hormone progesterone facilitating the conversion of carbohydrates and sugar into fat so that fat under the skin increases; in addition, the hormone progesterone also causes increased appetite and decreases physical activity. As a result, the use of injections can cause weight gain (Kurniasari, Susilawati, and Fenniokha, 2020)

Limitation

This study did not measure eating patterns before and after using contraceptive injections

Conclusion

Respondents experienced the most weight gain from the three-month contraceptive injection, and statistically, there is a relationship between contraceptive injection and weight gain.

Ethical Considerations

The study was approved by the ethics committee of of the Faculty of Medicine and Health, Muhammadiyah University, Jakarta No. 72/PE/KE/FKK-1 UMJ/V/2023, approved 23 May 2023

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Conflict of Interest

The authors declare no conflict of interest.

Author contribution

We encourage authors to provide statements outlining their individual contributions or roles to the manuscript.

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Progressive Muscle Relaxation Therapy to Increase Muscle Strength in the Elderly with Post-Non Hemorrhagic Stroke at Adiwerna Tegal

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Abstract

Background: Stroke is the second highest cause of death in the world and the highest cause of disability in the world. The 2018 *RISKESDAS* results showed that the prevalence of stroke cases in Indonesia was 10.9%. Stroke has a lot of impact on patients and their families. Progressive muscle relaxation therapy is one of the therapies that can be used to increase the muscle strength of the elderly after a non-hemorrhagic stroke by relaxing and tensing the body's muscles. **Purpose:** The study aimed to apply progressive muscle relaxation therapy to increase muscle strength in the elderly after a non-hemorrhagic stroke. **Method:** The study was descriptive research with a case study approach. The subjects were the elderly after a non-hemorrhagic stroke. Data were obtained through interviews, observations, physical examinations, and documentation studies. **Result:** Before applying the therapy, the patients' muscle strength value was 3; the patients' hand grip was weak. After doing the therapy for 3 days, the patients' muscle strength was still 3, but the patients' hand grip felt tight. **Conclusion:** The elderly people after non-hemorrhagic stroke are recommended to do progressive muscle relaxation therapy once a day with a duration of 15-20 minutes to stimulate the muscles so that it can increase their muscle strength.

Keywords: post-stroke in the elderly, progressive muscle relaxation

Introduction

Stroke is generally the second leading cause of death in the world and the leading cause of disability in the world. One in four people is at risk of stroke in their lifetime. This risk can increase the incidence of stroke if supported by an irregular diet, lifestyle, and activity patterns ¹. Stroke is one of the burdens of noncommunicable disease (NCDs) that continues to increase and cause a huge burden in both developed and developing countries, such as Indonesia ². The prevalence of stroke cases in

Indonesia is quite high. According to the results of the National RISKESDAS in 2018, the national prevalence of stroke was 10.9%. There are 14 provinces with a prevalence of stroke cases higher than the national rate, including East Kalimantan at 14.7%. The province with the lowest prevalence of stroke cases is Papua province with a prevalence of 4.1%. Central Java Province is also included in the provinces with a higher prevalence of stroke cases than the national rate of 11.8%, and most attack the elderly >75 years old. According to RISKESDAS Central Java in 2013, the highest prevalence of stroke cases in Central Java was in Salatiga City with 17.3%. Tegal Regency itself had a prevalence of stroke cases of 9.8% ³. Stroke most commonly affects people aged >75 years old ⁴.

Stroke has a lot of impacts on the sufferer, including making someone insecure, reducing productivity, and lossing enthusiasm for life. The impacts that will be experienced after a stroke are paralysis and disability, communication disorders, emotional disorders, pain, sleep disorders, dysphagia, and many more ⁵. The impact of stroke is not only felt by the elderly, but also experienced by the elderly's family. The family must be extra careful when taking care of the elderly after a stroke because they experience limitations in carrying out daily activities such as bathing, eating, and moving due to decreased muscle strength. The family must also be able to adapt quickly regarding the condition of the elderly after a stroke. The role and support of the family for the elderly after a stroke are very important ⁶.

The role of the family in providing support and caring for the elderly after a stroke is needed. The condition of the elderly after a stroke depends on others to carry out activities of daily living (ADL). Family support is also needed to determine the implementation of therapy and where it is carried out to reduce functional damage so that the elderly are more independent in carrying out their daily activities. The therapy provided serves to increase muscle strength and maintain muscles that have recovered so that their strength is maintained and stimulated properly. Therapies that can be performed by range of motion (ROM), speech therapy, medical therapy, and progressive muscle relaxation therapy ⁷.

Progressive muscle relaxation therapy is a therapy that can be conducted to train the muscle strength of the elderly after a stroke. This therapy is one of the techniques that can be used to increase muscle strength. This is because when doing

progressive muscle relaxation therapy; there will be muscle contractions that cause the blood supply and oxygen to the muscles and brain to increase so that it can stimulate the smooth blood supply and metabolic processes in the body. Progressive muscle relaxation is a relaxation technique that combines deep breathing exercises and a series of easy and practical muscle contractions and relaxations because it can be applied anywhere and anytime, both in a sitting and lying position, according to the ability of the elderly ⁸.

The results of research conducted by Muhith stated that after the elderly were given a progressive muscle relaxation therapy intervention, there was a significant difference in muscle strength. This difference is because progressive muscle relaxation therapy has a relaxing effect on the muscles, thereby reducing muscle tension in the elderly. The elderly are given this therapy so that the nerves can be stimulated, and the sensation is when the muscles are tense and when the muscles are relaxed, so that it can increase muscle strength if done regularly and periodically. In this case, the role of nurses is needed to educate on the provision of therapy ⁹.

Nurses have a complex role in caring for the elderly after a stroke. The role of the nurse as a caregiver is to provide nursing care to the elderly after a stroke. The role of an educator is given in the form of health education, which includes post-stroke care or therapy as well as recommendations to families in an effort to help fulfill daily needs and prevent recurrent stroke attacks in the elderly ¹⁰. Based on this background, the authors are interested in making scientific papers entitled "Progressive Muscle Relaxation Therapy to Increase Muscle Strength in the Elderly with Post-Non Hemorrhagic Stroke at Adiwerna, Tegal Regency."

Method

The study used analytical descriptive research with a case study approach. The subjects of this study were 2 elderly patients after a non-hemorrhagic stroke who were treated with progressive muscle relaxation therapy to increase muscle strength. The inclusion criteria in this study were elderly with more than 60 years old, female, experiencing muscle weakness, post-non hemorrhagic stroke (more than 3 months), and first attack. The exclusion criteria in this study were elderly people who did not agree to be respondents and had mental disorders. This research instrument used manual muscle

testing (MMT) to measure muscle strength. This study was conducted by giving progressive muscle relaxation therapy to the elderly after a non-hemorrhagic stroke once a day for 15-20 minutes and carried out for 3 days.

Result and Discussion

The results of the assessment of patient 1 (Mrs. W) were that she was 60 years old and living at Tembok Lor Village; the patient said the left extremity had experienced weakness for more than 7 years; the scale for muscle strength of the left extremity was 3; the assessment of functional status with the KATZ index obtained a score of C; and the patient's blood pressure was 140/80 mm Hg. The results of the assessment of patient 2 (Mrs. M) were that she was 71 years old and living at Tembok Lor Village; the patient said that the left extremity had experienced weakness for more than 3 months; the left extremity muscle strength scale was 1; the functional status assessment with the KATZ index obtained a score of G; and the patient's blood pressure was 150/90 mmHg.

Table 1.
Results of the Application of Progressive Muscle Relaxation Therapy to Increase Muscle Strength in the Elderly with Post-Non Hemorrhagic Stroke

Subject	Pre Therapy	Post Therapy
Patient 1	<ul style="list-style-type: none"> - Patient's left extremity is weak, hand grip is weak - Muscle strength scale is 3 	<ul style="list-style-type: none"> - Patient's left extremity is weak, hand grip is slightly firmer - Muscle strength scale is 3
Patient 2	<ul style="list-style-type: none"> - Patient's right extremity is weak, hand grip is weak - Muscle strength scale is 1 	<ul style="list-style-type: none"> - Patient's right extremity is weak, hand grip is still weak - Muscle strength scale is 1

Evaluation of progressive muscle relaxation therapy performed on Mrs. W for 3 days obtained on the third day, the patient said the left hand and leg still felt weak, was willing to do progressive muscle relaxation therapy; the left extremity still felt weak, but when treated the patient's hand grip began to feel a little firmer, blood pressure 130/80 mmHg, heart rate 84x/min, muscle strength scale of 3. The result of applying progressive muscle relaxation therapy to Mrs. M for 3 days was that on the third day, the patient's family said the patient's right hand and leg were weak, was willing for the patient to do progressive muscle relaxation therapy; the right extremity was still weak; the patient's muscle strength scale was 1; blood pressure was 140/70 mmHg, and heart rate was 80x/min.

Progressive muscle relaxation (PMR) therapy is a simple relaxation exercise performed by tensing and relaxing the body muscles from head to toe. It is an exercise that can be performed manually by patients who experience weakness, hypertension, or insomnia, it can be done in a sitting or lying position in bed ¹¹. The benefits of progressive muscle relaxation therapy include reducing muscle tension, pain, anxiety, high blood pressure, heart frequency, reducing dysrhythmias, reducing oxygen demand, increasing sense of wellbeing and concentration, building positive emotions, and improving the ability to cope with stress ¹².

Another benefit of progressive muscle relaxation therapy is that it improves relaxation by reducing sympathetic nerve activity and increasing parasympathetic nerve activity, which will cause vasodilation in the arterioles. The parasympathetic system will release acetylcholine to inhibit sympathetic nerve activity. Acetylcholine is released into the blood vessel wall and stimulates endothelial cells in the blood vessels, which then stimulates the release of nitric oxide (NO) molecules. Nitric oxide molecules can reduce blood pressure in blood vessels. Sympathetic nerve activation decreases with the onset of the relaxation response, leading to reduced catecholamine levels. Catecholamine is produced in the brain, adrenal medulla, and some sympathetic nerve fibers. Catecholamine is a hormone that acts as a neurotransmitter or sends nerve impulses to the brain, narrowing blood vessels and increasing heart rate. This causes dilation of blood vessels and a drop in blood pressure ¹³.

This study used the Manual Muscle Testing (MMT) research instrument to assess the muscle strength of the elderly after a non-hemorrhagic stroke. Muscle strength assessment using the MMT instrument is popular and widely used by therapists to assess patient muscle strength. MMT has a range of values from zero to five. Scale 0 means no muscle contraction at all; it is the lowest scale. Scale 5 indicates that the patient's muscle strength is normal or has full muscle strength by being able to resist the force of gravity with maximum resistance. The advantages of this instrument are that it can be easily used, and does not require tools to determine or assess a person's muscle strength ¹⁴.

The results of the research on patient 1 partially resolved the problem with the difference before and after applying progressive muscle relaxation therapy for three days. The difference was that patient 1's hand grip when grasping the researcher's hand

felt tighter than on the first day of implementation. The results of research on patient 2 showed the same results; there were no significant results or differences between before and after doing progressive muscle relaxation therapy. The results of patient 2's research that have been obtained are in accordance with research conducted by Muhith, which states that there are significant differences after the elderly are given progressive muscle relaxation therapy ⁹.

This study has several obstacles, including patient 2, who has reduced hearing, so the data collection and implementation process were disrupted. In patient 2, the provision of progressive muscle relaxation therapy was not entirely in accordance with standard operating procedures (SOP) because the patient was unable to perform movements or progressive muscle relaxation independently due to weakness, so almost all actions or movements were assisted by researchers. Another obstacle faced by researchers was patient 1, who sometimes wandered during therapy and was less focused on what was taught or done by the researchers.

Conclusion

The results of the application of progressive muscle relaxation therapy on increasing muscle strength in patient 1 are partially resolved. This is in accordance with research conducted by Muhith, which states that there is a significant difference in the muscle strength of the elderly after therapy ⁹. However, in patient 2, no significant changes were felt. This may be due to the older age factor compared to patient 1, decreased hearing function, which makes obstacles in the implementation of therapy so that the elderly are less active in performing progressive muscle relaxation therapy. Progressive muscle relaxation therapy is ideally performed once a day for 15-20 minutes and takes a minimum of one week. It can also be done regularly or periodically for maximum results. For nurses, this research is expected to increase nurses' knowledge, especially regarding the implementation of geriatric nursing care. For health centers, it is expected that it can improve the quality of health services in general and the quality of care for the elderly so that it can help increase independence and muscle strength in the elderly after a non-hemorrhagic stroke. For educational institutions, it can be used as input and information for nursing students in handling the elderly after a non-hemorrhagic stroke. For patients, it is expected that patients and their families can

carry out progressive muscle relaxation therapy to increase muscle strength in the elderly after a non-hemorrhagic stroke independently and routinely every day.

Ethical Considerations

The study has received ethical approval from the research ethics committee of Universitas Bhamada Slawi.

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Conflict of Interest

There is no conflict of interest between the authors in this study.

Author Contribution

The authors received their respective tasks: preparation of research proposals, searching for elderly post-stroke respondents, and carrying out therapeutic activities that have been determined by the researchers.

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Factors Associated With The Incidence Of Anaemia In Grade X Students At Sman 1 Sukahaji, Majalengka District In 2023

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Abstract

Anemia is a condition in which the number and size of red blood cells or hemoglobin levels fall below the set normal limit, resulting in disruption of the capacity of the blood to transport oxygen throughout the body. The incidence of anemia in Indonesia is 48.9% with the proportion of anemia in the age group 15-24 years namely 32%. The purpose of this study was to determine the factors associated with the incidence of anemia in class X students at SMAN 1 Sukahaji, Majalengka Regency in 2023. This type of research uses an observational analytic study with a cross sectional approach. The number of samples is 129 female students taken by probability random sampling from 187 female students. The data were analyzed using the Chi-Square statistical test. From the results of statistical tests, it was found that there was a relationship between nutritional status ($p=0.017$), menstrual cycle ($p=0.014$), menarche ($p=0.000$), knowledge about anemia ($p=0.000$) and adherence to taking iron supplement tablets ($p=0.000$) with the incidence of anemia in class X students at SMAN 1 Sukahaji, Majalengka Regency in 2023. It was concluded that nutritional status, menstrual cycle, menarche, knowledge about anemia and adherence to taking blood supplement tablets are factors associated with anemia in class X students at SMAN 1 Sukahaji, Majalengka Regency in 2023. It is recommended for female students to increase consumption of iron and protein and it is hoped that the role of parents or teachers to monitor female students in consuming iron tablets.

Keywords: Anemia, Teenagers, Fe Tablets.

Introduction

The transition period from childhood to adulthood makes many changes in a teenager, both physical, psychological, and psychosocial changes. The growth and development that occurs in adolescence is a phase of very rapid change. Physically, the major changes that occur are in the process of sexual maturation and changes in posture which have an impact on increasing nutritional and food needs in adolescents.(Fikawati, Syafiq and Veratamala, 2017)

Psychic changes occur in emotional reactivity, cognitive control, and self-regulation that affect how adolescents make decisions, including their choices about what and when to eat (WHO, 2017). Adolescents consume a lot of food outside the home such as at school or at street vendors, coupled with increased autonomy in adolescents and strong peer influence make adolescents' food choices very free. Dietary and lifestyle habits are also formed during this time, affecting various forms of malnutrition. Poor food consumption puts adolescents at risk of poor growth and micronutrient deficiencies that lead to anemia (UNICEF, 2021).

The incidence of anemia in Indonesia is 48.9% with the proportion of anemia in the age group of 15-24 years is 32% (Rikesdas, 2018). Other data shows that in adolescent girls aged 13-19 years in West Java, the prevalence of anemia reaches 41.9% (West Java Health Office, 2021). Meanwhile, according to data from the Majalengka Regency health office in 2022, it shows that adolescents with anemia are 12.9%. From data obtained from the Sukahaji Health Center in 2022, the incidence of anemia in adolescent girls at SMAN 1 Sukahaji was 28.34%.

The cause of anemia in adolescents is due to a lack of nutrient intake (Ministry of Health, 2018). The lack of micronutrients caused by poor food consumption in adolescents can lead to anemia. Lack of nutritional intake is also affected by impaired iron absorption such as caused by worms in the body that can interfere with the absorption of food nutrients (WHO, 2017). Nutritional status as a reflection of a person's nutritional adequacy affects the incidence of anemia. Nutritional status with a thin category will have an increased risk of anemia because the protein contained in the body is lacking. Adolescents with thin nutritional status have a 1.5 times risk of developing anemia compared to normal nutritional status (Fikawati, 2017). Meanwhile, being overweight and obese show an increased risk of iron deficiency (WHO, 2017).

Adolescent girls who suffer from anemia when they become pregnant are at risk of giving birth to Low Birth Weight (BBLR) and stunting. Iron nutritional anemia is one of the main causes of anemia, including due to insufficient intake of iron source foods (Ministry of Health, 2021)

The impact of anemia that occurs in adolescents includes interfering with learning and productivity, decreasing physical fitness and thinking agility due to lack of oxygen to brain cells, decreasing individual working capacity, decreasing immunity so that anemia sufferers are susceptible to infectious diseases, and decreasing the ability to regulate body temperature (Fikawati, 2017 & Ministry of Health of the Republic of Indonesia, 2018).

The results of the study on 104 adolescent girls showed that most of the adolescent girls (86.4%) aged 12-18 years, 83 people (79.8%) adolescent girls experienced anemia before being given blood supplement tablets. After being given blood supplement tablets for 12 weeks and mentoring, 69 people (66.3%) adolescent girls were obedient in consuming blood supplement tablets and most adolescent girls (81.2%) did not experience anemia after consuming blood supplement tablets for 12 weeks (Kaltsum, 2021).

The purpose of this study is to determine the factors related to the incidence of anemia in class X students at SMAN 1 Sukahaji, Majalengka Regency in 2023.

Method

This type of research uses observational analytical research with a cross sectional approach. Which was held in June 2023 at SMAN 1 Sukahaji, Majalengka Regency. The sample of this study is adolescent girls aged 14-17 years. The sample was selected based on the probability random sampling technique and as many as 127 adolescent girls who met the inclusion and exclusion criteria. The inclusion criteria for this study are adolescents who are 14-17 years old in middle adolescence, adolescents who have experienced menstruation, adolescents who are not menstruating at the time of the study, and are willing to be respondents. Meanwhile, the exclusion criteria are respondents who have a history of illness or are under treatment.

This study consists of a bound variable and an independent variable with the incidence of anemia as a bound variable. The independent variables in this study were

nutritional status, menstrual cycle, menarche, knowledge about anemia, adherence to taking blood supplement tablets. Data processing is carried out by editing, coding, tabulating, and entry. Data analysis includes univariate analysis and bivariate analysis. The results of this research data were processed using the chi-square statistical test in the SPSS program.

Results

Table 1 Characteristics of adolescent girls at SMAN 1 Sukahaji Majalengka Regency

Variable	n	%
Incidence of Anemia		
Incidence of Anemia	80	62
Anemia	49	38
Total	129	100
Nutritional Status		
Normal	75	58,1
Abnormal	54	41,9
Total	129	100
Menstrual Cycle		
Normal	73	56,6
Abnormal	56	43,4
Total	129	100
Menarche		
Age <11 tahun	5	3,9
Age 11-13 tahun	107	82,9
Age >13 tahun	17	13,2
Total	129	100
Knowledge		
Good	63	48,8
Enough	48	37,2
Less	18	14
Total	129	100
Fe Tablet Consumption		
Obedient	78	60,5
Non-Compliance	51	39,5
Total	129	100

Table 1 shows that the number of students who are not anemic is 80 people (62%) and those who are anemic are 49 people (38%). The majority of students have normal nutritional status, namely 75 people (58.1%) and 54 students with abnormal nutritional status (41.9%). The majority of female students have a normal menstrual cycle, namely 73 people (56.6%) and 56 people (43.4%) with an abnormal menstrual cycle. The majority of female students experienced menarche at the age of 11-13 years (82.9%) and those who experienced menarche at the age of >13 years were 17 people (13.2%) and those who experienced menarche <11 years were 5 people (3.9%). The majority of female students have good knowledge about anemia, namely 63 people (48.8%), who have sufficient knowledge about anemia as many as 48 people (37.2%) and who have a poor level of knowledge as many as 18 people (14%). The majority of students

obediently consumed Blood Additive Tablets as many as 78 people (60.5%) and those who were not obedient were 51 people (39.5%).

Table 2 Bivariate Analysis

Variable	Kejadian Anemia				Total		Nilai	α
	Tidak Anemia		Anemia				p -	
	n	%	n	%	n	%	value	
Status Gizi								
Normal	53	41,1	22	17,1	75	58,2	0,017	0,05
Tidak Normal	27	20,9	27	20,9	54	41,8		
Total	80	62	49	38	129	100		
Siklus Menstruasi								
Normal	52	40,3	21	16,3	73	56,6	0,014	0,05
Tidak Normal	28	21,7	28	217	56	43,4		
Total	80	62	49	38	129	100		
Menarche								
Usia <11 tahun	1	0,8	4	3,1	5	3,9	0,000	0,05
Usia 11-13 tahun	75	58,1	32	24,8	107	82,9		
Usia >13 tahun	4	3,1	13	10,1	17	13,2		
Total	80	62	49	38	129	100		
Pengetahuan								
Baik	58	45	5	3,8	63	48,8	0,000	0,05
Cukup	20	15,5	28	21,7	48	37,2		
Kurang	2	1,5	16	12,5	18	14		
Total	80	62	49	38	129	100		
Kepatuhan Minum TTD								
Patuh	61	47,3	17	13,2	78	60,5	0,000	0,005
Tidak Patuh	19	14,7	32	24,8	51	39,5		
Total	80	62	49	38	129	100		

Discussion

Anemia is a condition where the number and size of red blood cells or hemoglobin levels drop from the normal limits set, resulting in disruption of blood capacitation to transport oxygen throughout the body (WHO, 2017). Anemia in adolescents is a condition experienced by adolescents, especially in adolescent girls where the hemoglobin level in the blood is below the normal limit, which is below 12 gr

/ dl. Adolescents are at a time when nutritional problems often occur which often lead to anemia (Kemenkes RI, 2018)

Anemia in adolescents can cause interference with learning activities and activities carried out. Prevention of anemia must be done in adolescents so that disorders due to anemia do not occur. Midwives and other health workers who are in contact with adolescents must provide counseling on anemia prevention and play an active role in carrying out the Ministry of Health's recommendations on anemia prevention.

The results of statistical tests in this study indicate that there is a significant relationship between nutritional status and the incidence of anemia in class X students at SMAN 1 Sukahaji. The description of nutritional status in this study is based on the results of IMT measurements. BMI is a simple tool to monitor nutritional status, especially with regard to underweight and overweight. Two parameters related to the measurement of body mass index, consisting of body weight and height. Body weight is measured to reflect the sum of several nutrients such as protein, fat, water, and minerals. Height, on the other hand, represents past nutritional status and is an accumulation of food consumption (Ministry of Health, 2017).

Major changes in adolescents require special attention as this period determines the health of adolescents in the future. Nutrition checks and providing adolescents with knowledge about nutritious food choices should be provided by health workers, especially by midwives.

The results of statistical tests in this study indicate that there is a significant relationship between the menstrual cycle and the incidence of anemia in class X students at SMAN 1 Sukahaji. The results of this study are in line with the results of research by Nofianti et al in 2021, which showed that out of 89 respondents, the distribution of respondents who experienced abnormal and normal menstrual cycles was almost the same, namely 44 respondents (49.4%) experienced abnormal menstrual cycles and 45 respondents (50.6%) experienced normal menstrual cycles.

Stress levels also affect the accuracy of the menstrual cycle in adolescents. According to research it was found that adolescents who experience stress are 4.7 times likely to get an irregular menstrual cycle. This happens because stress will affect the production of the hormone prolactin which is directly related to the activity of basal

cortisol elevation and raises the hormone LH. Furthermore, this has an effect on the onset of menstrual disorders (Islamy, 2019).

Therefore, it is necessary to increase the knowledge of adolescents to find out more about the menstrual cycle and its handling so that adolescents do not need to feel anxious about common cycle disorders. The role of midwives is to conduct counseling and health checks regarding the reproductive system in adolescents.

The results of statistical tests in this study indicate that there is a significant relationship between the age of menarche and the incidence of anemia in class X students at SMAN 1 Sukahaji. The results of this study are also in line with the results of Mutasya's research that the average age of menarche of Adabiah Junior High School students is 12.29 ± 0.49 years (Mutasya, 2016).

To prevent the occurrence of menarche too early or too late in adolescents, among others, by implementing PHBS, monitoring the association or spectacle of adolescents and providing good nutritional intake. The role of midwives is to conduct counseling and health checks regarding nutrition in adolescents.

The results of statistical tests in this study indicate that there is a significant relationship between knowledge and the incidence of anemia in class X students at SMAN 1 Sukahaji. The majority of respondents had good knowledge about anemia. This is inseparable from the role of Sukahaji Health Center health workers who routinely conduct counseling every month at SMAN 1 Sukahaji. Every month the person in charge of the Nutrition program from the Sukahaji Puskesmas together with the person in charge of the UKS SMAN 1 Sukahaji provide counseling and distribute TTD to female students.

The results of this study are different from the results of research conducted by Fajriyah on the knowledge of adolescent girls about anemia, it is known that as many as 27 adolescent girls (64.3%) have poor knowledge about anemia, and as many as 15 adolescent girls (35.7%) have good knowledge about anemia. It can be concluded that young women who are class X students of State Senior High School 1 Wiradesa are less knowledgeable about anemia (Fajriyah, 2016).

One of the efforts to improve the knowledge of adolescent girls about nutrition through nutrition education and campaigns using methods that are attractive to adolescents, lack of knowledge about nutrition causes some adolescents not to

understand whether the daily food consumed meets the requirements of a balanced menu or not, by increasing adolescents' knowledge about nutrition can be used as an initial stage so that adolescents want and are able to choose food consumption that is good for their bodies.

The results of statistical tests using the Chi square test obtained a p-value of 0.000 which means H_a is accepted ($p\text{-value} < 0.05$), in other words that there is a significant relationship between adherence to taking blood tablets with the incidence of anemia in class X students at SMAN 1 Sukahaji. Recommendations for taking blood tablets for adolescent girls are to take 1 tablet once a week, take blood tablets after meals, drink with water, do not drink with tea, milk, and coffee or after taking blood tablets (Kemenkes RI, 2018). Midwives provide counseling, information and education to adolescent girls about the benefits of giving Blood Addition Tablets and involve parents of adolescent girls will help increase the level of compliance of adolescent girls in the Blood Addition Tablet administration program.

Conclusion

The conclusions that can be concluded with the research entitled 'Factors Associated with the Incidence of Anaemia in Class X Students of SMAN 1 Sukahaji Majalengka Regency in 2023' are:

1. Most of the students are not anaemic, the nutritional status of the students is normal, the students experience a normal menstrual cycle, the students experience menarche at the age of 11-13 years, the students have good knowledge about anaemia and obediently consume TTD.
2. There is a relationship between nutritional status and the incidence of anaemia in Class X students of SMAN 1 Sukahaji, Majalengka Regency in 2023.
3. There is a relationship between menstrual cycle and the incidence of anaemia among Class X female students of SMAN 1 Sukahaji, Majalengka Regency in 2023.
4. There is a relationship between menarche and the incidence of anaemia in Class X female students of SMAN 1 Sukahaji, Majalengka Regency in 2023.
5. There is a relationship between knowledge about anaemia and the incidence of anaemia in Class X female students of SMAN 1 Sukahaji, Majalengka Regency

in 2023.

6. There is a relationship between adherence to taking blood supplement tablets and the incidence of anaemia among Class X female students of SMAN 1 Sukahaji, Majalengka Regency in 2023.

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OCCUPATIONAL THERAPY WITH CLOTHES BUTTONS TO IMPROVE FINE MOTOR SKILLS IN CHILDREN WITH MODERATE DISABILITIES AT SLB N SLAWI

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Abstract

Mental retardation or blindness is a condition of incomplete mental development or general intellectual disorder below average and characterized by impaired developmental skills or more. Fine motor skills are factors that affect growth and development. In children, occupational therapy can improve fine motor skills. The prevalence data at SLB N Slawi shows that the proportion of children with disabilities amounts to 307 students, with the highest score, namely people with disabilities, as many as 259 students who are divided into two types, namely type C and type C1. The purpose of carrying out occupational therapy is to install clothing buttons to improve fine motor skills in children with moderate disabilities. This study was a descriptive research with a case study research design. The study subjects were patients with moderate impairment who experienced fine motor impairment. Data was obtained through interviews, observations, physical examinations, literature studies, and research instruments. This research was carried out in June 2024 at SLB N Slawi, and an ethical feasibility test has been carried out. The results of this study showed that fine motor skills in children with moderate disabilities in wearing buttons per day, which were measured and recorded on the observation sheet, improved. The improvement of fine motor skills is evidenced by the difference in scores in Child F at the beginning of the meeting got a score of 8 and was originally unable to do it, but did it with help, which increased to 15, namely being able to do it independently, and in patient Child N at the beginning of the meeting got 14 points and was originally able to do with the help increased to 16, namely being able to do independently. Patients with fine motor development disorders can be given occupational therapy by buttoning clothes once a day for 15-30 minutes.

Keywords: Fine Motor, Occupational Therapy, Moderate Impairment

Introduction

Children with mental retardation or the disabled have delays and limitations in all aspects of development so that they have difficulty having the ability to take care of themselves and tend to have a dependence on the environment, especially on their parents and siblings, so that they need special attention¹. It is estimated that more than 450 million children in the world experience mental retardation or blindness. Mental retardation, or blindness, is a separate disease

burden in the world at 12% and is expected to increase by 15% by 2020².

The prevalence of Indonesia's population with moderate and severe disabilities based on the results of Riskesdas (2018) shows that the proportion of disabilities at the age of 5-17 years is 3.3%. The proportion of disability in children aged 5-17 years in Central Java Province is 2.9%, while the proportion of disability in children aged 5-17 years with the highest score in Central Sulawesi Province is 7.0%, and the lowest value in Jambi and Lampung Provinces is 1.4%³. The results of a preliminary study conducted by the researcher obtained data from interviews with homeroom teachers who said that children with disabilities who were in the first grade in the first semester were taught about the introduction and use of cutlery such as plates, glasses, spoons, and forks, the recognition of the names of organs in the human body, as well as the correct way to brush teeth. Based on the results of interviews with homeroom teachers, independence activities such as buttoning clothes and dressing will be carried out in the second semester in May – June to coincide with this research. From the results of the preliminary study, it was also obtained that the proportion of children with disabilities amounted to 307 students, with the highest score, namely people with disabilities, as many as 259 students who were divided into two types, namely type C and type C1. The type C group consists of children with mild disabilities, and type C1 consists of children with moderate disabilities.

Mental retardation, or what is often known as deafness, is classified into three categories: mild deafness, moderate deafness, and severe deafness. Mild impairment is defined as having an IQ between 55 and 70, while children with moderate impairment have an IQ between 40 and 55, and children with severe impairment have an IQ between 25 and 40. Children with mild to severe disabilities have different potentials according to the type of calcification⁴. It is said that the deaf are mild because most of them can still write and read. Children with mild disabilities are rarely found to have physical abnormalities, they look like normal children in general, but they cannot adjust independently. Children with moderate disabilities are very difficult and even unable to learn academically. Although they can still write their own names and even their home addresses, those with medium disabilities are classified as being able to train because they can be trained to take care of themselves, such as bathing, dressing, eating, and drinking, independently but still need constant supervision. Then, the last is the severely disabled, where they find it very difficult and even cannot escape the help of others to meet their daily needs in terms of taking care of themselves, eating, and so on⁵.

Children with mental retardation or the visually impaired mostly experience developmental disorders in their intellectual and motor skills that distinguish them from children their age. Each child has different growth and development from one another. However, children with mental retardation or the impaired experience a late development of fine motor skills when compared to children of their age, who should be able to develop new skills, but children with mental retardation or the impaired cannot show progress⁶.

Children with mental retardation or the visually impaired must often be trained in therapy to improve their fine motor skills. Fine motor is the ability to control movement through activities to train eye coordination or relax stiff muscles, as well as the regulation of the nervous system, fibrils, and muscles such as fingers and hands. Fine motor skills are considered an important factor in the process of developing cognitive abilities in children^{7,8}. Mental retardation in children who have impaired fine motor skills can result in several nursing problems. One of the nursing problems that arise in mentally retarded or visually impaired children is growth and development. Growth and development disorders are conditions in which individuals experience impaired ability to grow and develop according to their age group. In general, growth and development disorders can occur due to several causes, including the effects of physical incapacity, environmental limitations, inconsistent responses, neglect, separation from parents and/or close people, and stimulus deficiency⁹.

In children with mental retardation or the disabled, problems with growth and development disorders affect their fine motor skills. Fine motor skills are very important because they affect their lives. Exercises to improve fine motor skills in children with disabilities can reduce the negative impact. The impact of not being trained or experiencing fine motor delays in children can cause them to become insecure, shy, jealous of other children, and dependent on others. This can make it difficult for children to enter school because fine motor skills in socializing with their peers are very necessary, such as when playing and also writing¹⁰. Delays in fine motor development can also have an impact on subsequent development. There is a long-term negative impact on children who are delayed or not trained in fine motor skills; namely, they will be hampered in getting along with their peers, and even feelings will arise, namely, children feeling excluded¹¹.

Nurses have an important role as caregivers or providers of nursing care to children and their parents. Nurses can play a role in various aspects of providing health services and working

with other team members and families, especially in helping to solve problems related to child care. The role of nurses is also that of a party that provides education and motivates parents to teach the correct fine motor exercise stimulation therapy to children according to their growth and development tasks¹².

Disabled children who experience growth and development problems such as delayed fine motor development can face obstacles in carrying out daily activities. Therefore, efforts that can be made to reduce obstacles or problems in children with disabilities include providing several therapies, namely speech therapy, play therapy, behavioral therapy, physical therapy, and occupational therapy. Some of these therapies have different goals. One of the therapies that can be used to increase independence in children with disabilities is occupational therapy¹³.

Occupational therapy is a therapy that is carried out to help someone who has limitations. The limitations in question are physical, mental, and cognitive limitations so that sufferers do not depend on others, such as their parents or siblings, in living their daily lives. Occupational therapy can also increase confidence and independence in carrying out activities such as meeting their needs, starting with eating, drinking, dressing, and so on¹⁴.

Occupational therapy is very helpful for them, especially children with moderate disabilities, to practice moving their limbs. There are many ways that can be done in occupational therapy with moderately impaired children to improve coordination of movements. Examples are fine motor skills such as squeezing, attaching, knitting, writing, coloring pictures, attaching shoelaces, and attaching buttons, which are basically to move the fingers. Occupational therapy has a significant effect on the level of independence in caring for themselves in mentally retarded or visually impaired children, with the aim that it can be applied in daily life¹⁵.

Occupational therapy that can be applied to children with mental retardation or the impaired to improve fine motor skills is occupational therapy by buttoning clothes. This occupational therapy is carried out to train fine motor skills so that, in their daily applications, it is hoped that children can use clothes independently without the help of others. Based on previous research, it has conducted an assessment of the benefits of clothing button therapy for children with disabilities. Research conducted by¹⁶ shows that providing occupational therapy with clothes buttons to children with disabilities can improve their fine motor skills, with an average score before the intervention of 85.92 and an average score after the intervention of 144.38. Similar results are also shown by research¹⁷ by performing occupational therapy by

installing clothes buttons on children with disabilities. The score before the therapy of buttoning clothes in children was 37%, and after the therapy of buttoning clothes, it increased by 70% in their ability to be independent. Other research from¹⁸ It shows that the provision of therapy to button clothes has a positive impact from before the treatment or exercise and after the treatment or practice of buttoning the clothes of moderately low and moderately handicapped students to increase to the very high category.

Method

The method must be arranged as follows:

1. Research Design

The research design is a case study. A case study is research conducted on a case with a detailed, sharp, and in-depth process.

2. Setup and Sample

The subjects of the study were 2 moderately disabled child patients who underwent occupational therapy intervention by wearing clothes buttons to improve their fine motor skills with the following criteria:

1) Inculcation Criteria

- a. Children with moderate disabilities
- b. Children with moderate disabilities who are < 10 years old
- c. Disabled children with the ability to train

2) Exclusion Criteria

- a. Children with double blindness
- b. Hyperactive children
- c. Children who are sick or undergoing medical treatment

3. Measurement and Data Collection

The research instrument used is a deed test with a checklist or observation sheet. The research was conducted by providing occupational therapy by installing clothes buttons with medium-sized buttons and large-sized buttons for 15-30 minutes and carried out for 3 days.

4. Data Analysis

Data analysis is carried out since research in the field, when data is collected until all data is collected. The implementation of data analysis is carried out by presenting facts, then

comparing them with existing theories and pouring them into discussion opinions. The sequence in data analysis includes data collection, data reduction, data copying, and conclusions.

Result

Table 1. Observation Sheet of Children's Ability to Attach Buttons Child F (Day 1)

NO	Indicator	Score			Information
		0	1	2	
1.	Children are encouraged to choose which buttoned shirt to wear			√	1. Children have not focused on the activities that are being done
2.	The child inserts his right hand into the right arm hole of the buttoned shirt		√		2. Easy concentration is distracted by the around
3.	The child inserts his left hand into the left arm hole of the buttoned shirt		√		3. Children can tidying up the collar shirt
4.	Children equate both ends of buttoned clothes		√		4. Children can't yet be fastening the shirt and removing shirt buttons
5.	Holding the upper button with your right hand		√		
6.	Holding the buttonhole of the upper shirt with the left hand		√		
7.	Inserting or attaching the shirt buttons into the buttonholes	√			
8.	Tidying up clothes after buttoning them		√		
Total			8		

Information:

0 : Unable to do

1 : Do with help

2 : Do it independently

Table 2. Observation Sheet of Children's Ability to Attach Buttons Child N (Day 1)

NO	Indicator	Score			Information
		0	1	2	
1.	Children are encouraged to choose which buttoned shirt to wear			√	1. The child is quite focused but still appear nervous and tremor
2.	The child inserts his right hand into the right arm hole of the buttoned shirt			√	2. Children can't yet tidy up the collar clothes worn still must be with help
3.	The child inserts his left hand into the left arm hole of the buttoned shirt		√		3. Children can't yet unbutton
4.	Children equate both ends of buttoned clothes		√		
5.	Holding the upper button with your right hand			√	
6.	Holding the buttonhole of the upper shirt with the left hand			√	
7.	Inserting or attaching the shirt buttons into the buttonholes			√	

8.	Tidying up clothes after buttoning them	√	clothes worn
Total		14	

Information:

0 : Unable to do

1 : Do with help

2 : Do it independently

Table 3. Observation Sheet of Children's Ability to Attach Buttons Child F (Day 2)

NO	Indicator	Score			Information
		0	1	2	
1.	Children are encouraged to choose which buttoned shirt to wear			√	1. The child seems more focused and less concentrated
2.	The child inserts his right hand into the right arm hole of the buttoned shirt			√	In installing shirt buttons
3.	The child inserts his left hand into the left arm hole of the buttoned shirt			√	2. Easy to switch attention towards other bits reduced
4.	Children equate both ends of buttoned clothes		√		to
5.	Holding the upper button with your right hand			√	3. Children can't yet be
6.	Holding the buttonhole of the upper shirt with the left hand			√	Unbuttoning
7.	Inserting or attaching the shirt buttons into the buttonholes			√	clothes worn
8.	Tidying up clothes after buttoning them			√	
Total				14	

Information:

0 : Unable to do

1 : Do with help

2 : Do it independently

Table 4 Observation Sheet of Children's Ability to Attach Buttons Child N (Day 2)

NO	Indicator	Score			Information
		0	1	2	
1.	Children are encouraged to choose which buttoned shirt to wear			√	1. The child seems calmer and less nervous about buttoning shirt
2.	The child inserts his right hand into the right arm hole of the buttoned shirt			√	
3.	The child inserts his left hand into the left arm hole of the buttoned shirt		√		2. Children seem to be able to unbuttoning clothes worn
4.	Children equate both ends of buttoned clothes			√	
5.	Holding the upper button with your right hand			√	
6.	Holding the buttonhole of the upper shirt with the left hand			√	
7.	Inserting or attaching the shirt buttons into the buttonholes			√	
8.	Tidying up clothes after buttoning them			√	
Total				15	

Information:

0 : Unable to do

1 : Do with help

2 : Do it independently

Table 5 Observation Sheet of Children's Ability to Attach Buttons Child F (Day 3)

NO	Indicator	Score			Information
		0	1	2	
1.	Children are encouraged to choose which buttoned shirt to wear			√	1. Children seem to be more enthusiastic at fastening the shirt
2.	The child inserts his right hand into the right arm hole of the buttoned shirt			√	
3.	The child inserts his left hand into the left arm hole of the buttoned shirt			√	2. Concentration and more child focus good
4.	Children equate both ends of buttoned clothes			√	
5.	Holding the upper button with your right hand			√	3. Children can do little to remove shirt buttons that in his use
6.	Holding the buttonhole of the upper shirt with the left hand			√	
7.	Inserting or attaching the shirt buttons into the buttonholes			√	
8.	Tidying up clothes after buttoning them			√	
Total				15	

Information:

0 : Unable to do

1 : Do with help

2 : Do it independently

Table 6 Observation Sheet of Children's Ability to Attach Buttons Child N (Day 3)

NO	Indicator	Score			Information
		0	1	2	
1.	Children are encouraged to choose which buttoned shirt to wear			√	1. The child seems to be more focused and children's concentration much better
2.	The child inserts his right hand into the right arm hole of the buttoned shirt			√	
3.	The child inserts his left hand into the left arm hole of the buttoned shirt			√	2. Children are getting more calm down and start used to installing shirt buttons
4.	Children equate both ends of buttoned clothes			√	
5.	Holding the upper button with your right hand			√	3. Children can take off Shirt buttons that in his use
6.	Holding the buttonhole of the upper shirt with the left hand			√	
7.	Inserting or attaching the shirt buttons into the buttonholes			√	
8.	Tidying up clothes after buttoning them			√	
Total				16	

Information:

0 : Unable to do

- 1 : Do with help
- 2 : Do it independently

Discussion

Occupational Therapy Attaches Buttons to Improve Fine Motor Skills in Children with Moderate Disabilities

In pediatric patients with growth and development disorders due to stimulus deficiency, actions taken to improve fine motor skills in children with moderate disabilities are occupational therapy by installing clothes buttons to improve fine motor skills in children. The action was carried out by the researcher in the SLB N Slawi hall for 3 days, 1 day, 1x meeting, and was given therapy for 15-30 minutes. The tools and materials used in the implementation of occupational therapy measures are clothes with buttons, and clothes with medium-sized buttons, and clothes with large buttons, and observation sheets.

The implementation carried out for 3 days, the researcher found that in the two children when the first day they met, the children seemed nervous and lacked focus. The lack of fine motor skills in patients was seen when patients were asked to directly put on their clothes and button their clothes before being given a sample by the researchers. This implementation action is measured using an observation sheet which then the results are inferred from the score obtained by the patient.

This study was conducted on June 10-12, 2024, on both patients with Child F, who is male, and patient Child N, who is female and is both 9 years old. Both patients are 1st grade students at SLB N Slawi, and both have developmental disorders due to a lack of fine motor skills.

The implementation of the first day on Child F and Child N put on the buttons for 30 minutes, the two patients appeared to be accompanied by their mother during the implementation action. The ability of children to button clothes to improve their fine motor skills in Child F showed a score of 8 out of 16 total overall scores, Child F still looks unfocused and is easily distracted by things around him. On Child N has a higher score than the ability to button clothes to improve his fine motor skills, which is 14 out of 16 total overall scores. Child N is a little more focused and concentrated, although he is still nervous and looks difficult.

The implementation of occupational therapy on the second day showed that the effect of occupational therapy on wearing buttons was better than on the first day of action. This can be proven from the researchers' observations: both patients experienced better levels of

concentration and focus as well as eye-hand coordination in accordance with the increased score obtained in Child F score increased to 14 out of 16 total overall scores. Child N score increased to 15 of the total overall score. Both patients began to be cooperative and seemed enthusiastic about putting on buttons.

The implementation of occupational therapy on the third day showed that the results of the implementation of the ability to button clothes in both patients were increasing. The results of the level of ability to button clothes of Child F increased with a score of 15 out of 16 total overall scores. Child F seemed to be even more enthusiastic because on the previous day he had succeeded in buttoning his shirt independently. The results of the level of ability to button clothes of Child N increased with a score of 16 out of 16 overall, Child N seems to be getting used to buttoning clothes because it seems that Child N wants to immediately install buttons before being given orders or warnings from the researcher. The concentration and focus of both children and the coordination between the eyes and hands are increasingly appropriate.

The difference in scores in the level of ability to button clothes experienced by the two patients was caused by motor stimulation factors and psychological disorders, Child F plays more often, and parents lack discipline in providing stimulus, especially training fine motor skills on Child F, however Child F often interacts with other people, such as his father and mother, and plays bicycles with his friends, while Child N was occasionally trained by his parents to button his clothes independently, and he was often asked for help by his grandmother to help with housework, Child N rarely interacts with anyone other than his mother and grandmother because he only rode bicycles in the yard with his younger brother. This is in accordance with the theoretical concept that children need to be given stimuli to train motor skills in this case, the motor in question is fine motor because stimulation from the outside can trigger activity in the brain to create small electrical connections called synapses. The amount of stimulation received by the child can directly affect how many synapses are formed. In addition to developing children's ability to think and communicate, stimulation also stimulates children's curiosity and observation skills. Repeated and consistent stimulation strengthens these relationships and makes them permanent¹⁹. In addition, this study supports previous research conducted by Rosmi that shows boys tend to experience more psychological disorders than girls. Learning difficulties are more experienced by boys, for example obstacles in reading, obstacles in arithmetic, obstacles in drawing and coloring, and obstacles in writing and doing self-care²⁰.

Results of research conducted by researchers about occupational therapy to install clothes buttons to improve fine motor skills in moderately impaired children were carried out on June 10-12, 2024 with 2 respondents each meeting 3x for 15-30 minutes using an act test instrument with a check list tool in the SLB N Slawi hall. The researcher used 2 pieces of clothes or button-down clothes with medium-sized buttons and large buttons that are safe for children to do to improve fine motor skills in children. The results were obtained that there was an increase in fine motor skills in installing clothes buttons per day measured and recorded on the observation sheet. The level of children's ability to button clothes to improve fine motor skills is evidenced by the difference in scores in Child F at the beginning of the meeting got a score of 8 and was originally unable to do it, but did it with help, which increased to 15, namely being able to do it independently, and in patient Child N at the beginning of the meeting got a score of 14 and was initially able to do it with the help of increasing to 16, namely being able to do it independently, and the problem of growth and development disorders was resolved. The results of this study are supported by other studies showing that occupational therapy with clothes buttons in moderately impaired children who experience growth and development disorders can improve fine motor skills. The average score before the intervention was 85.92 and the average score after the intervention was 144.38¹⁶.

The results of improving the ability to button clothes to improve fine motor skills in moderately impaired children with problems with growth and development disorders were obtained, namely that the score before the therapy of buttoning clothes in children was 37% and after the therapy of buttoning clothes increased by 70%¹⁷. This is in line with research that states that buttoning clothes can improve fine motor skills in children, as seen in improving children's fine motor skills with success criteria increasing up to 70%²¹.

Researchers assume that the improvement of fine motor skills in children with moderate disabilities is influenced by stimulus deficiencies carried out by parents, so that it has a great effect on children experiencing growth and development disorders. Occupational therapy, wearing clothes buttons, is used as a therapy that can improve fine motor skills in children, train coordination between eyes and hands, and train independence in children in using buttoned clothes independently at home.

Conclusion

Based on research conducted at SLB N Slawi, the following conclusions were obtained:

1. Occupational therapy of wearing clothes buttons on the improvement of fine motor skills in children with moderate disabilities in both children is characterized by the level of children's ability to button clothes on fine motor skills increasing as evidenced by the difference in scores in Child F at the beginning of the meeting got a score of 8 and was originally unable to do and did it with help increased to 15, namely being able to do it independently, and in patient Child N at the beginning of the meeting got 14 points and was originally able to do with the help, which increased to 16, namely being able to do independently.
2. The results of this study are expected to improve the researcher's ability, skills, and experience and can add knowledge and insight to the researcher's conducting research through the application of occupational therapy intervention, such as wearing clothes buttons to improve fine motor skills in children with moderate impairment.
3. The results of the research are expected to be used as a reference and become a consideration in conducting research on patients with growth and development disorders in moderately impaired children who experience fine motor disorders. The suggestion from the researcher is that this is expected to provide information and input for teachers in implementing the right occupational therapy.

Ethical Considerations

This research has received ethical approval from the Faculty of Health Sciences, Bhamada Slawi University (Letter No.001/Univ.Bhamada/KEP. EC/V/2024).

Confession

This research uses personal funds by researchers for publication.

Conflict of Interest

There is no conflict of interest in conducting this research.

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