

## CORRELATION BETWEEN AGE AND EDUCATION LEVEL OF COMPLIANCE TO IMPLEMENTING THE HEALTH PROTOCOL 6M COVID-19

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### ABSTRAK HUBUNGAN USIA DENGAN TINGKAT PENDIDIKAN TERHADAP KEPATUHAN PENERAPAN PROTOKOL KESEHATAN 6M COVID-19

Latar Belakang: COVID-19 adalah penyakit menular yang disebabkan oleh *Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)*. Virus ini dapat menyebabkan penyakit infeksi saluran pernapasan pada manusia. Dalam rangka mengatasi penularan COVID-19 maka dilakukan upaya pencegahan yaitu dengan menerapkan protokol kesehatan 6M COVID-19. Namun berdasarkan hasil presurvei didapatkan 7 (70%) dari 10 (100%) orang tidak patuh dalam melaksanakan protokol kesehatan 6M COVID-19.

Tujuan: Untuk mengetahui hubungan usia dan tingkat pendidikan terhadap kepatuhan melaksanakan protokol kesehatan 6M COVID – 19 pada masyarakat wilayah kerja Puskesmas Rajabasa Indah Bandar Lampung. Jenis penelitian kuantitatif dengan menggunakan rancangan penelitian berupa survei analitik observasional dengan pendekatan *cross sectional*. Jumlah sampel penelitian sebanyak 214 responden dengan pengambilan sampel menggunakan teknik *accidental sampling*, menggunakan alat ukur kuesioner.

Hasil: Berdasarkan hasil penelitian ini didapatkan bahwa paling banyak responden yang patuh dalam melaksanakan protokol kesehatan 6M COVID-19 yaitu dari kelompok usia dewasa sebanyak 50 (54,3%) responden dari total 92 (100%) responden, dan dari kelompok pendidikan tinggi yaitu sebanyak 67 (59,8%) responden dari total 112 (100%) responden.

Kesimpulan: Dari hasil uji *Chi-Square* didapatkan bahwa ada hubungan yang signifikan antara usia ( $p=0,047$ ) dan tingkat pendidikan ( $p=0,003$ ) terhadap kepatuhan melaksanakan protokol kesehatan 6M COVID – 19 pada masyarakat wilayah kerja Puskesmas Rajabasa Indah Bandar Lampung 2021.

Saran: Disarankan bagi masyarakat, terutama pada usia lanjut tetap selalu menjaga jarak, membatasi bepergian ke tempat ramai dan ke luar daerah jika tidak memiliki keperluan mendesak, diusahakan juga membawa peralatan pribadi. Bagi kelompok pendidikan rendah diharapkan untuk tetap mencari informasi-informasi yang dapat menambah wawasan dan pengetahuan, khususnya dalam hal ini tentang COVID-19.

Kata Kunci : Usia, Tingkat Pendidikan, Kepatuhan, Protokol Kesehatan 6M COVID-19

### ABSTRACT

Background: COVID-19 is an infectious disease caused by *Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)*. This Virus can cause respiratory infections in humans To cope with the transmission of COVID-19 and preventive namely by applying the health protocol 6M COVID-19. However, based on the survey results, 7 (70%) of 10 (100%) people disobedience in implementing the health protocol 6M COVID-19.

Purpose: To determine the correlation of age and education level of compliance to implement the health protocol 6M COVID – 19 in the community of the working area in Public Health Center Rajabasa Indah Bandar Lampung 2021.

Method: Quantitative research using a research design in the form of a observational analytic survey with cross sectional approach. The total of research sample as 214 respondents with sampling using accidental sampling technique. Using the measuring tool in the form of questionnaires.

Results: Based on the results of this study found that most respondents who are obedient in carrying out the health protocol 6M COVID-19, namely from the group of adult age as 50 (54,3%) respondents from a total of 92 (100%) respondents, and from a group of higher education that as 67 (59.8%) respondents from a total of 112 (100%) respondents.

Conclusion: From the results of the Chi-Square test showed that there was a significant connection between age ( $p=0.047$ ) and education level ( $p=0.003$ ) of compliance to implement the health protocol 6M COVID – 19 in the community of the working area in Public Health Center Rajabasa Indah Bandar Lampung 2021.

Advice: It is recommended for people, especially at an elderly age to always keep a distance, overcome traveling to crowded places and outside the area if they do not have urgent expertise, also try to bring personal equipment. For low education groups, it is expected to keep looking for information that can add insight and knowledge, especially in this case about COVID-19.

Keywords : Age, Education Level, Compliance, Health Protocol 6M COVID-19

## INTRODUCTION

Coronaviruses are a large family of viruses that cause disease in humans and animals. If it attacks humans, it will usually cause respiratory infections, ranging from the common cold to serious diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) (Kemenkes RI, 2020a). In 2019, a new type of Coronavirus was identified that is believed to be the cause of acute respiratory illness in Wuhan, a city in Hubei province, China. The Virus was named Novel Coronavirus 2019 (2019-nCoV) (Rauf et al., 2020). The transmission or spread of SARS-CoV - 2 is quite easy, spreading through splashes (droplets) from the nose or mouth of a person who has contracted COVID-19 while breathing or coughing (WHO, 2021).

WHO on January 30, 2020 designated COVID-19 as a Public Health Emergency of International Concern (PHEIC) and officially declared a pandemic in March 2020. The spread of COVID-19 has been reported by almost all countries in the world. As of 15 September 2021 confirmed 225,680,357 cases and 4,644,740 deaths were reported to WHO globally from countries in the world (WHO, 2021).

COVID-19 cases in Indonesia were first discovered in early March to april 2020. As of June 30, 2020, the Ministry of Health reported 56,385 confirmed cases of COVID-19 with 2,875 cases of death (CFR 5.1%) spread across 34 provinces (Kemenkes RI, 2020c).. Almost all provinces in Indonesia were affected by the COVID-19 pandemic, including Lampung Province, which was 47,856 cases and 3,668 deaths on September 9, 2021. Bandar lampung city is one of the cities with the most confirmed cases of COVID-19, namely until August 2021, there were approximately 10,640 cases and 753 deaths (Covid19.lampungprov.go.id, 2021).

The Ministry of health of the Republic of Indonesia as part of the task force for the acceleration of handling COVID-19 issued Ministerial Decree No. HK.01.07/MENKES/382 / 2020 on health protocols for people in public places and facilities in

the framework of prevention and control of corona virus disease 2019 (COVID-19). This is very important, following the health protocols that have been socialized by WHO (Kemenkes RI, 2020b). But in fact, there are still many people who do not apply health protocols, such as not using masks, not keeping their distance, and not keeping their hands clean, where the percentage of compliance to wear masks is 58.32%, while to keep the distance the percentage is 43.46% (Covid-19.go.id, 2020).

Community compliance with health protocols is essential to control the pandemic for the Prevention of COVID-19. Community compliance with health protocols is critical to controlling the pandemic. According to KBBI (Dictionary of Indonesian language), obedient means like according to orders, obey orders or rules and disciplined. Obedience means being obedient, obedience, submission to teachings and rules. Obedience is an attitude that arises in a person as a reaction to something contained in a rule that must be implemented. The attitude arises when the individual is faced with a stimulus that requires an individual reaction (Azwar, 2016). According to Petty, cocopio (1986) in Azwar, attitude is a general evaluation that man makes of himself, others, objects or issues (Wawan & Dewi, 2018). Attitudes will affect behavior through a process of careful and reasoned decision - making. Behavior itself has an understanding as an individual response to a stimulus or an action that can be observed and has a specific frequency, duration, and purpose whether realized or not (Wawan & Dewi, 2018).

According to Sunaryo 2004 factors that can influence behavior are: genetic factors (age, sex, physical properties, intelligence, and others) and exogenous factors/ factors from outside the individual (environment and other factors) (Sunaryo,2004).

Based on the results of a questionnaire survey conducted at the Rajabasa Indah Health Center on November 8, 2021, 7 out of 10 people did not comply in applying the 6M COVID-19 health

protocol or about 70% did not comply in applying the 6M COVID-19 health protocol.

## RESEARCH METHODS

The type of research used is quantitative research using observational analytic research design with cross sectional approach. This research was conducted on January 29-February 03, 2022 at the Rajabasa Indah Bandar Lampung Health Center. The determination of the population in this study was based on the average number of monthly patient visits in the last year at the Rajabasa Indah Health Center in 2021 and obtained an average population of 1.018 people.

The sample in this study is the people who come to get services at the Puskesmas Rajabasa Indah Bandar Lampung that meet the criteria of the sample set, with an estimated minimum sample number using the formula of Isaac and Michael as much as 214. Sampling was done by accidental

sampling technique, sampling by interviewing every community who came to get services at the Rajabasa Indah Bandar Lampung health center respondents who met the inclusion criteria. The instrument used is a questionnaire. Data analysis in this study using Chi-square test. This research has passed the ethical feasibility of the Komisi Etik Penelitian Kesehatan (KEPK) Malahayati University with no. 2318 EC / KEP-UNMAL/I / 2022.

## RESEARCH RESULT

This research was conducted at the Rajabasa Indah Bandar Lampung Health Center on January 29-February 03, 2022. The data obtained are primary data where researchers get data by interviewing every community who come to get services at the Rajabasa Indah Bandar Lampung Health Center. After the collection and processing of data and data analysis respondents, obtained the following research results :

**Table 1.**  
**Age frequency distribution in community working area of Puskesmas Rajabasa Indah Bandar Lampung**

Age	Frequency(n)	Presentation(%)
Teenagers (17-25 Years)	54	25,2%
Adult (26-45 Years)	92	43%
Elderly (46-65 Years)	51	23,8%
Seniors (>65 Years)	17	7,9%

Based on Table 1 Above It is known that of the 214 respondents there is the largest number of respondents is the adult age group (26-45 years) that is as many as 92 (43%) respondents, followed by the adolescent age group (17-25 years) as many as 54

(25.2%) respondents, and the elderly age group (46-65 years) as many as 51 (23.8%) respondents. While the fewest respondents were from the elderly age group (>65 years) as many as 17 (7.9%) respondents.

**Table 2**  
**Frequency distribution of education level in community working area of Puskesmas Rajabasa Indah Bandar Lampung**

Education Level	Frequency (n)	Presentation(%)
Higher Education	112	52,3%
Secondary Education	71	33,2%
Low Education	31	14,5%

Based on Table 2 above, it is known that of the 214 respondents, there are the largest number of respondents are the Higher Education Group, namely as many as 112 (52.3%) respondents, and

followed by the secondary education group as many as 71 (33.2%) respondents. While the fewest respondents were from the group of low education as many as 31 (14.5%) respondents.

**Table 3**  
**Frequency distribution compliance implementing the 6M COVID-19 health protocol in the community of the working area Puskesmas Rajabasa Indah Bandar Lampung**

Compliance Implementing the 6M COVID-19 Health Protocol	Frekuensi (n)	Presentase (%)
Obedient	114	53,3%
Disobedient	100	46,7%

Based on Table 3 above, it is known that of the 214 respondents, there are most of them who comply in implementing the 6M COVID-19 health protocol, namely 114 (53.3%) respondents, while

those who do not comply in implementing the 6M COVID-19 health protocol are 100 (46.7%) respondents.

**Table 4**  
**The results of the analysis of the age relationship to compliance implementing the 6M COVID-19 health protocol in the community of the working area Puskesmas Rajabasa Indah Bandar Lampung**

Age	Compliance Implementing the 6M COVID-19 Health Protocol						P value
	Obedient		Disobedient		Total		
	N	%	N	%	N	%	
Teen	34	63%	20	37%	54	100%	0,042
Mature	50	54,3%	42	45,7%	92	100%	
Elderly	26	51%	25	49%	51	100%	
Seniors	4	23,5%	13	76,5%	17	100%	

Based on Table 4 above, it is known that of the 54 respondents of the adolescent age group, there are 34 (63%) of respondents are compliant in implementing the 6M COVID-19 health protocol and as many as 20 (37%) of respondents are not compliant in implementing the 6M COVID-19 health protocol. Furthermore, of the 92 respondents of the adult age group, there were 50 (54.3%) respondents were compliant in implementing the 6M COVID-19 health protocol and 42 (45.7%) respondents were not compliant in implementing the 6M COVID-19 health

protocol. Then of the 51 respondents of the elderly age group, there were 26 (51%) respondents were obedient in implementing the 6M COVID-19 health protocol and as many as 25 (49%) respondents were not compliant in implementing the 6M COVID-19 health protocol. Meanwhile, of the 17 respondents of the elderly age group, there were 4 (23.5%) of respondents were obedient in implementing the 6M COVID-19 health protocol and as many as 13 (76.5%) of respondents were not compliant in implementing the 6M COVID-19 health protocol.

**Table 5**  
**The results of the analysis of the relationship of the level of Education to compliance implementing the 6M COVID-19 health protocol in the community of the working area Puskesmas Rajabasa Indah Bandar Lampung**

Education Level	Compliance Implementing the 6M COVID-19 Health Protocol						P value
	Obedient		disobedient		Total		
	N	%	N	%	N	%	
Higher Education	67	59,8%	45	40,2%	112	100%	0,003
Secondary Education	39	54,9%	32	45,1%	71	100%	
Low Education	8	25,8%	23	74,2%	31	100%	

Based on Table 5 above, it is known that of the 112 respondents of the higher education group, there were 67 (59.8%) respondents were compliant in implementing the 6M COVID-19 health protocol and as many as 45 (40.2%) respondents were not

compliant in implementing the 6M COVID-19 health protocol. Then of the 71 respondents of the secondary education group, there were 39 (54.9%) of respondents were obedient in implementing the 6M COVID-19 health protocol and as many as 32

(45.1%) of respondents were not compliant in implementing the 6M COVID-19 health protocol. While of the 31 respondents of the lower education group, there were 8 (25.8%) of respondents were obedient in implementing the 6M COVID-19 health protocol and as many as 23 (74.2%) of respondents were not compliant in implementing the 6M COVID-19 health protocol.

The results of the statistical test with chi-square obtained a p value of 0.003 ( $<0.05$ ), then it means that the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_a$ ) is accepted, which means that there is a significant relationship between the level of education to compliance with implementing the 6M COVID-19 health protocol in the community of the Rajabasa Indah Bandar Lampung Health Center working area.

## **DISCUSSION**

### **Correlation Between Age Of Compliance To Implementing The Health Protocol 6M Covid-19 In The Community Of The Working Area In Rajabasa Indah Public Health Center Bandar Lampung**

Based on the results of the chi-square statistical test in Table 4, the value of p value = 0.042 ( $p < 0.05$ ) is obtained, which means that there is a significant relationship between age and compliance with the 6M COVID-19 health protocol. This is supported by the data obtained that of the 214 respondents, there were 114 (53.3%) respondents were compliant in implementing the 6M COVID-19 health protocol and 100 (46.7%) respondents were not compliant in implementing the 6M COVID-19 health protocol. And from Table 4, it is also found that the most respondents who comply in implementing the 6M COVID-19 health protocol are from the adult age group of 50 (54.3%) respondents compared to those who do not comply, namely 42 (45.7%) respondents. While the least compliant in implementing the 6M COVID-19 health protocol is from the elderly age group as many as 4 (23.5%) respondents compared to those who do not comply, namely as many as 13 (76.5%) respondents. From these data, it can be concluded that the younger the respondents, the more obedient in implementing the 6M COVID-19 health protocol, and the older the respondents, the more non-compliant in implementing the 6M COVID-19 health protocol.

Singgih suggested that the older a person gets, the processes of mental development improve, but at a certain age, the increase in the process of mental development is not as fast as when he was a dozen years old (Purba, 2018). In addition, Abu Ahmadi (2001), also suggested that a person's memory is one of them influenced by age. The

increase in a person's age can affect the increase in knowledge gained, but at certain ages or towards old age the ability to receive or remember a knowledge will decrease.

The results of this study are in line with a study conducted by Afianti and Rahmiati (2021) which states that age has a real influence on compliance with implementing health protocols (p value 0.001). this is in accordance with the opinion of Pura (2016) which states that age is related to the level of compliance, although sometimes age is not the cause of disobedience but the older the patient's age will decrease memory, hearing, and vision, so that elderly patients become disobedient.

### **Correlation Between Education Level Of Compliance To Implementing The Health Protocol 6M Covid-19 In The Community Of The Working Area In Rajabasa Indah Public Health Center Bandar Lampung**

Based on the results of the chi-square statistical test in Table 5, the value of p value = 0.003 ( $p < 0.05$ ) is obtained, which means that there is a significant relationship between the level of education and compliance with implementing the 6M COVID-19 health protocol. This is supported by the data obtained that of the 214 respondents, there were 114 (53.3%) respondents were compliant in implementing the 6M COVID-19 health protocol and 100 (46.7%) respondents were not compliant in implementing the 6M COVID-19 health protocol. And from Table 5, it is also found that the most respondents who comply in implementing the 6M COVID-19 health protocol are from the higher education group of 67 (59.8%) respondents compared to those who do not comply, namely 45 (40.2%) respondents. While the least compliant in implementing the 6M COVID-19 health protocol is from the low education group as many as 8 (25.8%) respondents compared to the non-compliant ones, namely as many as 23 (74.2%) respondents. From these data it can be concluded that the higher the level of education of respondents, the more obedient in implementing the 6M COVID-19 health protocol, and the lower the level of education of respondents, the more non-compliant in implementing the 6M COVID-19 health protocol.

Koenjtaroningrat said that the higher the level of Education a person will be more easily receive information so that the more experience and knowledge possessed. Conversely, a lack of Education will hinder the knowledge of the development of one's attitude towards newly introduced values (Nursalam, 2001). Formal education forms a value for a person especially in

accepting new things. the higher the level of education of a person, the person will know more about the understanding of everything and when the person already understands it, the person's confidence in what they understand will increase, the awareness of their obligations will also increase (Pauji, 2020). Thus, a person who has a higher education, good knowledge and a good attitude tends to be more compliant with policies.

The results of this study are in line with research conducted by Afrianti and Rahmiati (2021) which states that the level of Education has a real influence on compliance with implementing health protocols ( $p$  value 0.035), the level of education, knowledge and attitude is something related to each other. This is supported by Wiranti et al (2020) which states that respondents who have higher education, good knowledge and a good attitude tend to be more obedient to the COVID-19 policy.

## CONCLUSION

1. It is known age frequency distribution in the Community Working Area of Puskesmas Rajabasa Indah Bandar Lampung with the largest order of adult age (26-45 years) as many as 92 (43.0%) respondents, teenage age (17-25 years) as many as 54 (25.2%) respondents, the elderly age (46-65 years) as many as 51 (23.8%) respondents, and the elderly age (>65 years) as many as 17 (7.9%) respondents.
2. It is known that the frequency distribution of education levels in the community working area of the Rajabasa Indah Bandar Lampung health center with the highest order is higher education as many as 112 (52.3%) respondents, secondary education as many as 71 (33.2%) respondents, and low education as many as 31 (14.5%) respondents.
3. It is known that the frequency distribution of compliance in implementing the 6M COVID-19 health protocol in the community of the Rajabasa Indah Bandar Lampung Health Center work area is the most compliant as many as 114 (53.3%) respondents while those who do not comply are 100 (46.7%).
4. It is known that there is a significant relationship between age and compliance with implementing the 6M COVID-19 health protocol in the community of the Rajabasa Indah Bandar Lampung Health Center working area with a result of  $p = 0.042$  ( $p < 0.05$ ).
5. It is known that there is a significant relationship between the level of education to compliance with implementing the 6M COVID-19 health protocol in the community of the Rajabasa Indah Bandar

Lampung Health Center working area with a result of  $p = 0.003$  ( $p < 0.05$ ).

## SUGGESTION

1. For the community, especially in the elderly and elderly groups, it is expected that they will always keep their distance and limit going to crowded places and also limit traveling outside the area if they do not have very important and urgent needs, they are also trying to bring personal equipment such as worship tools, cutlery, and others. For all people, especially those with low education, it is expected to keep looking for information that can add insight and knowledge, especially in this case about COVID-19.
2. For Puskesmas, to always carry out health promotion about the importance of the 6M COVID-19 health protocol is especially recommended in people with advanced age and low education levels, by conducting briefings using language that is easily understood by all people. In addition to conducting evaluations and warnings, it is especially emphasized on restricting people from traveling outside the area, maintaining distance and limiting going to crowded places.
3. For further researchers who want to conduct research on the same topic is expected to develop this topic even deeper. By looking for sources and information that has not been obtained in this study. And this research is also expected to be a consideration for those interested in conducting similar research.

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## EFFECT OF SERUM FERRITIN LEVELS ON THE EVENT OF PREECLAMPSIA IN PREGNANT WOMEN IN FIRST TRIMESTER

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### ABSTRAK PENGARUH KADAR FERRITIN SERUM TERHADAP KEJADIAN PREEKLAMPSIA PADA IBU HAMIL TRIMESTER PERTAMA

Latar Belakang Preeklamsia merupakan penyakit multisistem yang etiologinya belum diketahui, dengan manifestasi klinis yang beragam. Laporan terbaru dari WHO memperkirakan bahwa preeklamsia menyebabkan 70.000 kematian ibu setiap tahunnya di dunia. Society for the Study of Hypertension in Pregnant (ISSHP) mendefinisikan preeklamsia sebagai hipertensi de-novo dengan tekanan darah sistolik lebih tinggi dari 140 mmHg atau tekanan darah diastolik lebih tinggi dari 90 mmHg pada dua pengukuran terpisah (antara 4-6 jam). terjadi setelah usia kehamilan 20 minggu. Pemeriksaan kadar feritin serum untuk menyaring kejadian preeklamsia pada awal kehamilan sangat diperlukan karena tingginya jumlah penderita preeklamsia di Indonesia dan dampak negatif preeklamsia terhadap kehamilan.

Tujuan dari tinjauan literatur ini adalah untuk mengetahui pengaruh pemeriksaan kadar feritin serum terhadap kejadian preeklamsia pada ibu hamil trimester pertama.

Metode Beberapa database elektronik dicari untuk mengidentifikasi studi yang relevan dengan Juli 2021: Scopus, Pubmed, Google Scholar Scholar, dan PubMed. Kata kunci yang dipilih dalam pencarian mencakup 'Serum Ferritin' (dan variasinya, misalnya Ferritin dalam serum, Ferritin), dikombinasikan dengan istilah-istilah yang terkait dengan Preeklamsia termasuk 'Preeklamsia dan Kehamilan', 'Preeklamsia ibu', dan 'preeklamsia hipertensi.' Kriteria inklusi yang digunakan adalah artikel full text, menggunakan rancangan randomized controlled trial, eksperimental dan quasi eksperimen, menggunakan bahasa Indonesia dan Inggris, sampel ibu hamil dengan preeklamsia dan fokus literatur intervensi kadar feritin serum. Sebanyak 103 artikel teridentifikasi (Scopus=39; Google Scholar=23; PubMed=41).

Hasil diperoleh 19 jurnal internasional dan 11 jurnal nasional relevan. Hasil analisis menunjukkan adanya perubahan kadar feritin serum pada ibu hamil dengan preeklamsia.

Kesimpulan Kadar feritin serum yang lebih tinggi berhubungan dengan kejadian preeklamsia. Tinjauan menyeluruh ini mengkaji literatur untuk lebih memahami elemen-elemen ini, dan menggabungkan 30 artikel relevan untuk menjelaskan efektivitas pengujian serum feritin terhadap kejadian preeklamsia, serta beberapa rekomendasi untuk mengatasi masalah serius ini. Secara total, 30 artikel terkait serum feritin dan preeklamsia diidentifikasi.

Saran Perlu dikembangkan studi literatur lebih lanjut mengenai kadar feritin serum terhadap kejadian preeklamsia pada ibu hamil. Hal ini didasarkan pada beberapa temuan baru biomarker lain untuk mendeteksi kejadian preeklamsia pada ibu hamil

Kata Kunci Kadar Ferritin Serum, Preeklamsia, Ibu Hamil Trimester Pertama

### ABSTRACT

Background Preeclampsia is a multisystem disease of unknown etiology, with diverse clinical manifestations. The latest report from WHO estimates that preeclampsia accounts for 70,000 maternal deaths annually in the world. The Society for the Study of Hypertension in Pregnancy (ISSHP) defines preeclampsia as de-novo hypertension with a systolic blood pressure higher than 140 mmHg or a diastolic blood pressure higher than 90 mmHg on two separate measurements (between 4-6 hours). occurs after 20 weeks of gestation. Examination of serum ferritin levels to screen for the incidence of pre-eclampsia in early pregnancy is very necessary because of the high number of patients with preeclampsia in Indonesia and the negative impact of preeclampsia on pregnancy.



The purpose of this literature review is to determine the effect of examination of serum ferritin levels on the incidence of preeclampsia in first trimester pregnant women.

**Methods** Several electronic databases were searched to identify studies relevant to July 2021: Scopus, Pubmed, Google Scholar, and PubMed. Keywords selected in the search included 'Serum Ferritin' (and its variations, eg Ferritin in serum, Ferritin), in combination with terms related to Preeclampsia including 'Preeclampsia and Pregnancy', 'Maternal preeclampsia,' and 'hypertension preeclampsia.' The inclusion criteria used were full text articles, using a randomized controlled trial design, experimental and quasi-experimental, using Indonesian and English, samples of pregnant women with preeclampsia and the focus of the intervention literature on serum ferritin levels. A total of 103 articles were identified (Scopus=39; Google Scholar=23; PubMed=41).

**Results** 19 international journals and 11 relevant national journals were obtained. The results of the analysis showed that there was a change in serum ferritin levels in pregnant women with preeclampsia.

**Conclusions** Higher serum ferritin levels are associated with the incidence of preeclampsia. This scoping review examines the literature to better understand these elements, and incorporates 30 relevant articles to describe the effectiveness of serum ferritin testing on the incidence of preeclampsia, as well as some recommendations to address this serious problem. In total, 30 articles related to serum ferritin and preeclampsia were identified.

**Suggestion** There is a need to develop further literature studies on serum ferritin levels on the incidence of preeclampsia in pregnant women. This is based on several new findings of other biomarkers for detecting the incidence of preeclampsia in pregnant women

**Keyword :** Serum Ferritin Levels, Preeclampsia, First Trimester Pregnant Women

## **INTRODUCTION**

Preeclampsia is a multisystem disease of unknown etiology, with diverse clinical manifestations. Preeclampsia is a hypertensive disorder characteristic of pregnancy, the disease is characteristic of pregnant women after twenty weeks of gestation. WHO (World Health Organization) estimates that preeclampsia cases are seven times higher in developing countries than in developed countries (Osungbade, 2011). The prevalence of preeclampsia in developed countries is 1.3%-6%, while in developing countries it is 1.8%-18%. The latest report from WHO estimates that preeclampsia accounts for 70,000 maternal deaths annually in the world. In addition to maternal mortality and morbidity, preeclampsia also accounts for 500,000 infant deaths every year.

Maternal mortality rate (MMR) is one of the maternal and child health problems in the world and Indonesia. In Indonesia, the maternal mortality rate is still far from the target of the Millennium Development Goals (MDGs) in 2015, namely the MMR up to 102 per 100,000 KH, while in Indonesia it reaches 305 per 100,000 live births (Ministry of Health, 2017). Indonesia is in the 14th position out of 18 countries in the Association of Southeast Asian Nations (ASEAN) and the fifth highest ranking in the South East Asia Region (SEARO) (Sriwahyu et al., 2013). Preeclampsia is the second cause of maternal death (25.25%) after bleeding (30.32%) (Kemenkes RI, 2019).

Based on Riskesdas 2018, types of disorders or complications in pregnancy include continuous vomiting/diarrhea (20.0%), high fever (2.4%), hypertension (3.3%), immobile fetus (0.9%), bleeding in the birth canal (2.6%), amniotic fluid (2.7%), leg swelling with spasms (2.7%), prolonged cough (2.3%), chest pain/palpitations (1.6 %), and others (7.2%).<sup>3</sup> In 2013, the reported causes of maternal death were bleeding (30.3%), hypertension (27.1%), infection (7.3%), and others. (40.8%). The 2019 Indonesian Health Profile data recorded 1,066 deaths due to Hypertension in Pregnancy (HDK).

The Health Profile of South Sulawesi Province in 2018 showed an MMR of 142 per 100,000 KH. Hypertension was ranked first with 51 cases (35.9%) (South Sulawesi Health Profile, 2018).

It was recorded that 8 mothers died from preeclampsia from 2017 to September 2019 at the Wahidin Sudirohusodo Hospital Makassar (Wahidin Sudirohusodo Hospital Makassar, 2017 - September 2019).

At RSIA ST Khadijah III Makassar during 2018 there were 57 cases of preeclampsia out of 952 pregnancies (RSIA Sitti Khadijah III Makassar, 2018).

The incidence of preeclampsia at the Sitti Khadijah I Mother and Child Hospital from January to September 2018 was 40 cases (RSIA Sitti Khadijah I Makassar, 2018).

At the Siti Fatimah Hospital for Mother and Child in Makassar for the January – December 2018 period, 54 pregnant women suffered from pre-

eclampsia (1.51%), of which 7 had mild pre-eclampsia and 47 were severe pre-eclampsia, (RSKD Siti Fatimah, 2018).

In RSKDIA Pertiwi Makassar the number of mothers in 2017 there were 3,111 pregnant women, 72 people with preeclampsia then in 2018 from January to March there were 768 pregnant women, and 36 people with preeclampsia (RSKDIA Pertiwi Makassar, 2017 - March 2018).

The American College of Obstetricians and Gynecologists (ACOG) divides the risk factors for preeclampsia into three levels, namely low, medium and high risk. Childbirth with a full-term baby before including low risk. nulliparity, Body Mass Index (BMI) >30 kg / m<sup>2</sup>, family history of preeclampsia, sociodemographic characteristics, age >35 years, personal history factors (such as previous low birth weight and previous pregnancy interval of more than 10 years) were included in the risk factors currently. For high risk factors, including a history of previous preeclampsia, multiple pregnancies, chronic hypertension, type 1 or 2 diabetes, kidney disease, and autoimmune disorders. Heart disease is also a risk factor for preeclampsia.

The main cause of preeclampsia is not known. However, based on the results of this study, endothelial damage, placental ischemia and angiogenic imbalance are suggested as predisposing factors for preeclampsia. Placental ischemia occurs due to destruction of red blood cells in the placental area resulting in excessive release of heme and Fe into the circulation. This further induces the ferritin system, resulting in high levels of ferritin in the blood.

The diagnostic criteria for preeclampsia were changed by the International Society for the Study of Hypertension in Pregnancy (ISSHP) in 2014. The ISSHP defines preeclampsia as de-novo hypertension with systolic blood pressure higher than 140 mmHg or blood pressure

diastolic is higher than 90 mmHg on two separate measurements (between 4-6 hours) that occurs after 20 weeks of gestation combined with proteinuria (> 300 mg / day), in preeclampsia there is vascular spasm accompanied by water and salt retention. Proteinuria can be caused by arteriolar spasm resulting in changes in the glomerulus.

The picture of the placenta in patients with preeclampsia shows a histological picture with severe damage to blood vessels in the area of decidua cell attachment in the infarct area, this is in accordance with cell damage and Fe release. Catabolic amounts of transition metal ions, especially Fe, arise in the ischemic state of the placenta through destruction of red blood cells from thrombotic,

necrotic, and hemorrhagic areas, these substances can generate highly reactive hydroxyl radicals through Fenton chemistry. These radicals can initiate lipid peroxidation processes, which, if not controlled, can cause endothelial cell damage, as hypothesized by Hubel et al.

Serum ferritin is an acute-phase reactant, which is known to be elevated in response to many inflammatory conditions. Chronic inflammation also suppresses erythropoiesis, reduces iron/Fe usage and increases iron/Fe storage. Increased iron storage is indicated by an increase in serum ferritin level.

Ferritin is also known as a type of iron storage protein and is found extracellularly in serum. Preeclampsia can be associated with iron status through increased heme catabolism resulting from sustained mild hemolysis. Elevated serum iron and ferritin have the potential to be used diagnostically to warn of early-stage preeclampsia.

It is hoped that screening accompanied by management of early detection of serum ferritin levels and iron status can contribute to reducing the impact of preeclampsia on pregnant women and their fetuses can decrease in number.

Several studies have revealed that there is a relationship between increased ferritin levels and the incidence of preeclampsia. Rayman et al 2001 stated that median serum ferritin levels were 6 times higher in patients with preeclampsia compared to control subjects. Meanwhile, a study conducted by Entmann et al in 1983 stated that the ferritin level of preeclampsia patients was 91.8 ng/ml compared to normal pregnancy of 19.4 ng/ml.

Researchers have not found any recent studies related to the effectiveness of examination of serum ferritin levels on the incidence of preeclampsia in first trimester pregnant women. Based on this, researchers are interested in conducting research on the effectiveness of examination of serum ferritin levels on the incidence of preeclampsia in first trimester pregnant women.

## **RESEARCH METHODS**

### **Identifying Relevant Studies**

This type of research is a literature review with the journal year searched for the last 10 years. Several Electronic Databases Searched To Identify Relevant Studies Until July 2021: Scopus, Pubmed, Google Scholar, Google Scholar, and PubMed. Keywords selected in the search included 'Serum Ferritin' (and its variations, eg Ferritin in serum, Ferritin), in combination with terms related to

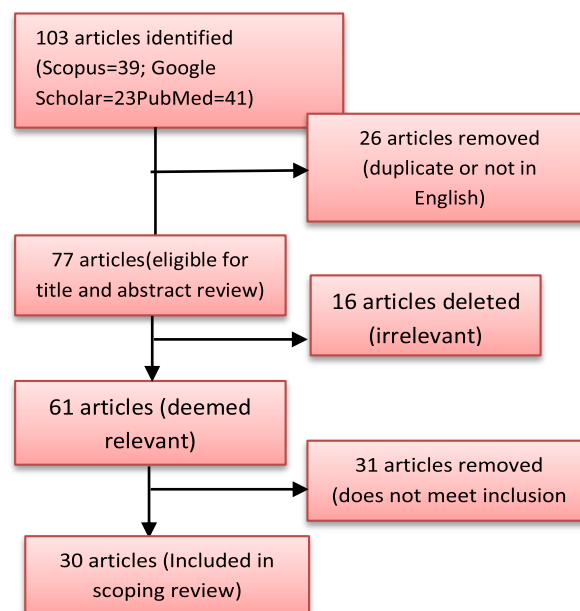
Preeclampsia including 'Preeclampsia and Pregnancy', 'Maternal preeclampsia,' and 'hypertension preeclampsia.' The search strategy is customized for the respective database thesaurus terms and field titles. A total of 103 articles were identified (Scopus=39; Google Scholar=23; PubMed=41). Removing all non-English articles and removing duplicates reduced this number to 77 articles that were eligible for title and abstract review. Of these, 61 articles were deemed relevant and underwent closer review. Articles were evaluated with the following inclusion criteria: 1) Articles must be about Examination of Serum Ferritin Levels Against the Incidence of Preeclampsia in pregnant women (eg studies involving Serum Ferritin as a Biomarker for early detection of Preeclampsia are included, but articles on Serum Ferritin as a Biomarker for early detection of anemia in pregnancy are excluded. ); 2) Examination of Serum Ferritin Levels should be performed on women who experience symptoms of preeclampsia in early pregnancy; 3) Articles must identify related factors;

and 4) Articles must be written in English and available in full-text. A total of 30 articles met these criteria (Figure 1).

### Mapping Data

The author undertook an extensive literature review via spreadsheet to review inclusion criteria and select articles, with any and all discrepancies resolved through discussion or input from the supervising author, KS. Articles that met the inclusion criteria were reviewed and data extracted and mapped relating to the study setting, study design, measure of Serum Ferritin Levels, study results, factors associated with Serum Ferritin Levels that influence the incidence of preeclampsia, and recommendations for treating preeclampsia. The factors that were significantly associated with Serum Ferritin Levels in the quantitative study were independently extracted by the authors and summarized in Table 1. The supervising authors reviewed all data points reported in Tables 1 and Figure 1.

## RESEARCH RESULTS



**Figure 1.**  
**Search strategy flowchart**

The sample size in the 30 included studies varied. The mean serum ferritin level in the severe preeclampsia group ( $187.3 \pm 42.8$ ) was higher when compared to normal pregnant women ( $26.28 \pm 6.69$ ). In this case there was a statistically significant difference ( $P < 0.05$ ) with a sample size of 30(1)

each. In another study 50 pre-eclamptic pregnant women as well as 30 healthy, age-adjusted pregnant women were enrolled. The study was conducted at Omdurman Midwife Hospital, Khartoum, Sudan. The results showed that serum ferritin was ( $76.7 \pm 27.3$  mg/dl) versus ( $62.9 \pm 28.2$  mg/dl) with a P value of

(0.034). Transferrin saturation percentage in pre-eclamptic women was ( $62.5 \pm 28.7\%$ ) compared ( $27.5 \pm 5.9\%$ ) with P value (0.034)(2).

The study was a descriptive observational study with a cross-sectional study approach with a comparative analysis of two groups of severe preeclampsia and normal pregnancy.

In relation to the research location, of the 30 research journals spread across several countries. 19 international journals and 11 relevant national journals were obtained. 11 studies were conducted in Indonesia, and two studies were from each of the following countries: 2 research studies in Sudan, 2 research studies in Iran, 2 research studies in Bangladesh, 3 research studies in Pakistan, 5 Indian research studies, each 1 research in Australia, Baghdad, Egypt, Mexico and Brazil. See Table 1 for more details on the study setting.

### Serum Ferritin Levels as Biomarkers

Preeclampsia biomarkers are more directed to efforts to determine pregnant women who are at risk of suffering from preeclampsia, this is important, so that in the future, primary health care centers can determine pregnant women who have a high risk of suffering from preeclampsia, and as soon as possible make referrals to secondary health centers or even tertiary. The biomarkers found can also be used as a basis in determining the therapy and actions needed if the patient's condition worsens.(3)

Examination of serum ferritin levels was carried out by taking 2 ml of blood from the median cubital vein, then centrifuged to obtain +100 microns of serum for further examination of serum ferritin levels using the ELISA method.

**Table 1.**  
**Relevant Studies**

Article Title	Country	Study Design	Research purposes	Review Method	Prevalence of Serum Ferritin Levels on the Incidence of PE	Conclusion
The Role of Serum Ferritin Levels on the Incidence of Preeclampsia	Indonesia	observational analytical research with case-control design	to determine the role of serum ferritin levels in the incidence of preeclampsia.	Serum ferritin examination was carried out using the ELISA method	The difference in mean serum ferritin levels between the preeclampsia and normal pregnancy groups was analyzed using an independent t-test. The results showed that the mean serum ferritin levels in the preeclampsia and normal pregnancy groups were $50.46 \pm 4.37$ ng/ml and $17.64 \pm 1.6$ ng/ml, with p value=0.004.	The conclusion of this study is that serum ferritin levels have no role in the incidence of preeclampsia.
Overview of Serum Ferritin Levels in First Trimester Pregnant Women at Hasanah Graha Afiah General Hospital Depok	Indonesia	The design used in the study was a retrospective cohort.	This study was conducted to describe the serum ferritin levels of pregnant women in the first trimester at Hasanah Graha Afiah General Hospital (RSU HGA) Depok.	The research subjects came from medical records of pregnant women in the first trimester at Hasanah Graha Afiah General Hospital, Depok, whose serum ferritin levels were checked and had met the inclusion and exclusion criteria.	Low serum ferritin levels were found in 21 study subjects, three of which were accompanied by anemia. Research subjects with low serum ferritin levels were dominated by pregnant women aged 20-35 years.	<ul style="list-style-type: none"> <li>• Low serum ferritin levels were found in 21 study subjects, three of which were accompanied by anemia.</li> <li>• Subjects with low serum ferritin levels were dominated by pregnant women aged 20-35 years. Dominant research subjects do not have anemia. There were research subjects who gave birth at HGA Hospital and there were also research subjects who had abortions. The dominant birth weight</li> </ul>

Comparison of Serum Ferritin Levels in Severe Preeclampsia and Normal Pregnancy	Indonesia	This research is an observational study with a cross-sectional design approach with comparative analysis	This study aims to determine the difference in serum ferritin levels between severe preeclampsia and normal pregnancy.	Each research blood sample taken was labeled with a code name, medical record number, and date of sampling. The blood was sent to the Medan Thamrin Laboratory	In this study, the number of samples was 60 patients, which were divided into 2 study groups, namely 30 patients for the group with severe preeclampsia and 30 patients for the group with normal pregnancy. There were no significant differences in patient characteristics in terms of age, parity and gestational age ( $p > 0.05$ ). Serum ferritin levels in severe preeclampsia were $187.3 \pm 42.8$ ng/ml and in normal pregnancy $26.28 \pm 6.69$ ng/ml. There is a statistically significant relationship ( $p < 0.05$ ). The correlation between serum ferritin levels with hemoglobin and hematocrit in severe preeclampsia was negative ( $p < 0.05$ ) and the correlation between serum ferritin levels with hemoglobin and hematocrit in normal pregnancy was found to be positive ( $p < 0.05$ ). And the correlation between serum ferritin and blood pressure in severe preeclampsia found a positive correlation ( $p < 0.05$ ).	was normal but there were also babies born weighing $>4000$ g. More than half of the study subjects were given multivitamins. Serum ferritin levels in severe preeclampsia showed a significant increase compared to serum ferritin levels in normal pregnancy.
Assessment of iron status in preeclamptic pregnant women visiting Omdurman's midwife hospital	Sudan	descriptive case control study	The aim of this study was to assess variations in serum iron levels, ferritin, and total iron binding capacity and percentage transferrin saturation in preeclamptic Sudanese women compared with healthy	Serum ferritin levels were measured using the AIA-PACK two-site immuno-enzyme-metric assay.	Serum iron in pre-eclamptic women was ( $140.6 \pm 51.3$ mg/dl), compared ( $71.7 \pm 19.7$ mg/dl) in the control group with a P value (0.008). Serum ferritin was ( $76.7 \pm 27.3$ mg/dl) versus ( $62.9 \pm 28.2$ mg/dl) with a P value (0.034). Transferrin saturation percentage in pre-eclamptic women was ( $62.5 \pm 28.7\%$ ) compared ( $27.5 \pm 5.9\%$ ) with P value	In Sudanese women with pre-eclampsia at Omdurman Midwife Hospital; serum ferritin and transferrin saturation percentage were significantly increased; whereas serum iron, total iron binding capacity and hemoglobin decreased significantly.

			pregnant women.		(0.034). The total iron binding capacity in pre-eclamptic women was (247.6 ± 57.7mg/dl) versus (270.0 ± 33.9mg/dl) with a P-value (0.047). Hemoglobin was (11.5 ± 0.84g/dl) versus (12.5 ± 0.62g/dl) with a P-value (0.000). No significant variation in mean age, BMI or urinary protein between the two groups was found.	
Evaluation of Serum Biomarkers and Other Diagnostic Modalities for Early Diagnosis of Preeclampsia	Indonesia	Randomized Controlled Trial (RCT) or Cohort study design	This systematic review aims to evaluate the potential of the various serum biomarkers and diagnostic modalities (uterine artery Doppler, MAP, and maternal history) available for early prediction of PE	An early detection of PE would allow a chance to plan the appropriate monitoring and for clinical management to be immediately done following early detection thus making prophylactic strategies much more effective.	Ninety-five articles were found that fulfilled all of our inclusion criteria. Placental growth factor (PIGF), pregnancy associated plasma protein A (PAPP-A), soluble fms-like tyrosine kinase (sFLT) and placental protein 13 (PP-13) were the most commonly studied biomarkers. Whereas uterine Doppler scanning and Mean Arterial Pressure (MAP) were the most commonly studied out of other modalities.	Current evidence shows serum biomarkers such as PIGF, PP-13 and sFlt yielded the best results for a single biomarker with others having conflicting results. However, a combination model with other diagnostic modalities performed better than a single biomarker. In the future, new techniques will hopefully provide sets of multiple markers, which will lead to a screening program with clinically relevant performance. However further studies are required to improve current methods. <sup>1</sup>
Levels of Heme Oxygenase-1 (Hmox-1) and Serum Ferritin in Patients with Preeclampsia and Normal Pregnancy	Indonesia	This study is an observational analytic with a cross-sectional design.	To determine the ratio of Hmox1 levels to serum ferritin in preeclampsia and normal pregnancy patients.	examination of Hmox1 levels and ferritin levels with the ELISA Kit as well as physical and laboratory examinations, then statistical calculations were carried out	From the study, the mean levels of Hmox-1 in normal pregnancy and preeclampsia were 1.2 (NB 1.6) ng/ml and 0.3 (NB 0.2) ng/ml, showing a significant difference (p<0.05). The mean ferritin levels in normal pregnancy and preeclampsia were 32.9 (NB 56.0) ng/ml and 43.0 (NB 45.2) ng/ml with a significant difference (p<0.05). Meanwhile, the correlation between Hmox-1 and serum ferritin levels for normal pregnancy and preeclampsia was r=-0.131 and r=0.174 with no significant difference (p>0.05).	Hmox-1 levels in patients with preeclampsia were lower than in normal pregnancies, while ferritin levels in patients with preeclampsia were higher than in normal pregnancies. Hmox-1 and serum ferritin levels were not significantly correlated.

Comparison of serum ferritin levels in pregnant women with preterm and term delivery	Iran	cross-sectional study	Since ferritin is an acute-phase reactant, this study aimed to evaluate serum ferritin levels in women with preterm and term labor.	Serum ferritin levels are measured by a particle-enhanced immunoturbidimetric method with a fully automated analyzer	The mean ferritin levels in all preterm groups were significantly higher than in the term group, but there was no difference between the preterm groups. In addition, ferritin levels in each preterm group were significantly higher than in the normal pregnancy group at the same gestational age. In preterm labor, ferritin levels were significantly higher in cases with premature rupture of membranes (PROM) or with prolonged leakage (more than 12 hours). In addition, in patients with PROM or prolonged leakage, ferritin levels were significantly higher in preterm labor than in term labor. A ferritin level of 37.5 ng/mL was recognized as the best limit for preterm labor, compared with term delivery, and the sensitivity, specificity, and diagnostic accuracy were 78.7%, 68.7%, and 73.6%, respectively.	The findings of this study suggest that serum ferritin levels can be used to identify patients at risk of preterm delivery.
Serum Ferritin in Preeclampsia and Eclampsia: A Case Control Study	Bangladesh	It was a case control study and was conducted during the period of January 2010 - December 2010 in the department of Obs & Gynae DMCH and dept	The main objective of the study was to evaluate the association of serum ferritin and iron in preeclampsia & eclampsia	Microparticle Enzyme Immunoassay (MEIA) technology	A total 100 pregnant women were included in this study. Of them 50 preeclamptic or eclamptic, nonanaemic patients not in labour (26-40weeks) were taken as case and 50 normotensive pregnant women were taken as control. Mean Serum ferritin level in case and control group was $100.03 \pm 123.52$ $\mu\text{gm/L}$ and $31.53 \pm 20.86$ $\mu\text{gm/L}$ respectively which is highly significant ( $P < 0.001$ ). Out of 50 cases ferritin level was raised in 10 cases (20%). In 80% cases ferritin level was below the cut-off value that is normal or below normal but in 100% of controls had ferritin	In this study it was observed that serum ferritin level were significantly higher in preeclampsia and eclampsia patients than the normal pregnancy. So, it may be concluded that increased level of serum ferritin may play a role in pathogenesis of preeclampsia and eclampsia. <sup>2</sup>

Evaluation of coagulation factors and serum ferritin in preeclamptic Pakistani women	Pakistan	Prolonged aPTT, PT and INR were recorded in both PE groups with a decrease in platelets and fibrinogen levels, compared to the control groups.	The study aimed to determine the role of coagulation factors and ferritin in relation to PE susceptibility in Pakistani women	APTT, PT, INR, fibrinogen levels and PLT were checked by automated coagulation analyser (poch-100i, Japan). Ferritin levels were determined by ferritin ELISA kit	level below the cut off value. Ferritin levels were not significantly ( $p=0.23$ ) different in any of the groups.	In conclusion, coagulopathic disorder should be clinically suspected and the coagulating factors in PE patients should be examined for early detection, effective antenatal care and for the proper management of this disorder to decrease maternofetal mortality, morbidity and perinatal mortality. <sup>3</sup>
Correlation of Hepcidin Levels and Ferritin Levels in Pregnant Women	Indonesia	This study is an analytic observational study with a cross-sectional design	This study aims to determine the correlation between hepcidin and ferritin levels in pregnant women.	Hepcidin levels were checked by ELISA method, and ferritin levels by immunochemiluminometric method	The median value of hemoglobin levels in pregnant women was 11.75 (9.3-14.6) g/dl. Hepcidin level 6.37 (1.01-90.18) ng/ml. Ferritin level 16.3 (2.9-102.25) ng/ml. Hepcidin levels with ferritin were weakly correlated and not significant in pregnant women ( $r=0.025$ ; $p=0.849$ ).	This study showed that there was no correlation between hepcidin levels and ferritin levels in pregnant women.
Iron Status In Preeclampsia	Pakistan	Design: Coefficient correlation study	To evaluate iron status in pregnancy induced hypertension and role of iron in the etiology and pathogenesis of pre-eclampsia	Ten ml of blood was collected from all the selected subjects of which two ml of blood was transferred to a bottle, containing EDTA and was used for hemoglobin and haematocrit estimation	Results depicts that mean age of pre-eclamptic group was significantly low ( $P<0.001$ ) as compared to control. Both parameters, Hemoglobin and Haematocrit were significantly higher ( $P<0.05$ ) in pre-eclamptic as compared to controls. Serum iron, serum ferritin and transferrin saturation were significantly higher ( $P<0.001$ ) in pre-eclamptic in comparison with control group. Total iron binding capacity and unsaturated iron binding capacity were significantly lower ( $P<0.001$ ) in pre-eclamptic group when compared to control group. Correlation coefficient between serum iron, total iron binding capacity (TIBC), serum ferritin, unsaturated iron binding capacity (UIBC) and systolic and diastolic blood	It is concluded that hemoglobin, haematocrit, serum iron, serum ferritin and transferrin saturation are significantly increased in pregnant women that later develops pre-eclampsia. Excess iron is postulated as casual factor in the oxidative stress ie; in its radical form, which may be involved in the pathogenesis of pre-eclampsia. Therefore, iron status of pregnant women should be assessed before giving iron supplements as these may cause more harm than benefit. <sup>4</sup>



High maternal serum ferritin in early pregnancy and risk of spontaneous preterm birth	Australia	the majority of randomised trials have not shown a significant reduction in preterm births following maternal administration of antibiotics	The aim of the present study was to examine the association between Fe biomarkers, including serum ferritin concentrations, and the risk of total (.37 weeks), early (.34 weeks) and moderate-to-late (34–36 weeks) sPTB.	Serum ferritin level was measured using a solid-phase direct sandwich ELISA method (Calbiotech, Inc.)	pressure in pre-eclamptic group showed no significant positive correlation in any parameter The multivariate analysis found increased odds of sPTB for women with elevated ferritin levels defined as .75th percentile (\$43mg/l) (OR 1.49, 95% CI 1.06, 2.10) and .90th percentile (\$68mg/l) (OR 1.92, 95% CI 1.25, 2.96). Increased odds of early and moderate-to-late sPTB were associated with ferritin levels .90th percentile (OR 2.50, 95% CI 1.32, 4.73) and .75th percentile (OR 1.56, 95% CI 1.03, 2.37), respectively. No association was found between the risk of sPTB and elevated sTfR levels or Fe deficiency	In conclusion, elevated maternal serum ferritin levels in early pregnancy are associated with an increased risk of sPTB from 34 weeks of gestation. The usefulness of early pregnancy ferritin levels in identifying women at risk of sPTB warrants further investigation. <sup>5</sup>
Total Iron Binding Capacity (TIBC), free iron, ceruloplasmin, transferrin and ferritin concentrations, in pregnant women with preeclampsia	Baghdad	Analytical case-control studies	The aim of this study was to compare Total Iron Binding Capacity (TIBC), Iron, ceruloplasmin, transferrin and ferritin concentrations, in preeclamptic and healthy pregnant women, and to investigate the association between these factors and preeclampsia.	The supernatant was used to measure Serum TIBC and iron content by the spectrophotometer method provided by Biolabo, France	The mean serum iron in the preeclampsia group was $97.0 \pm 7.83$ , while it was $94.35 \pm 11.81$ in the normal group ( $p \leq 0.01$ ). Similarly, the mean serum TIBC concentrations in normal pregnant and preeclamptic women were $319.65 \pm 32.35$ and $292.3 \pm 30.86$ , respectively ( $p \leq 0.01$ ). The mean serum ferritin was $0.33 \pm 0.056$ in preeclamptic women and in normal pregnant women was $0.29 \pm 0.039$ , a significant difference between the ceruloplasmin concentrations in the two groups, while the mean transferrin in preeclampsia and normal pregnant women was $204.61 \pm 21.60584$ and $223.75 \pm 22.64877$ , respectively.	Ischemic placental tissue may be a major source of potentially toxic iron in preeclampsia and the released iron species may contribute to endothelial cell etiology and injury, which can be reduced by antioxidant supplementation. Keywords: preeclampsia, iron, ferritin, ceruloplasmin, total iron binding capacity.
Ferritin Levels Decrease Between	Indonesia	This study is a cohort study.	To determine changes in ferritin levels in	The data were processed and	The number of samples obtained and met the inclusion	Conclusion: There is a significant decrease in ferritin levels in

Second and Third Trimester of Pregnancy			the second and third trimesters of pregnancy	analyzed statistically.	criteria in this study were 30 people. From the results of this study, it was found that there was a decrease in ferritin levels from second trimester to third trimester pregnant women as many as 28 mothers (93.3%) and there were 2 mothers (6.7%) who experienced an increase. These results indicated that serum ferritin levels in the second and third trimesters were significantly different ( $p < 0.001$ ). This difference can be seen in the median value of serum ferritin levels in the second trimester which is higher than in the third trimester (31.10 ng/ml > 22.20 ng/ml).	pregnant women from the second to third trimesters caused by the increased need for iron in pregnancy, which is due to hemodilution which peaks at 28 - 32 weeks of gestation and the iron transfer process. to the fetus but it can also be caused by factors of poor diet composition.
A Prospective Study of Evaluation of Changes in Biochemical and Urine Parameters in Pre-eclampsia	Iran	This study was targeted singleton pregnant women as the case group (50 patients of preeclampsia) or the control group (50 healthy parturients)	The purpose of this study was investigated that whether the measure of the biochemical and urine parameters in pregnant women has correlation relationship with preeclampsia	In order to survey of serum iron, ferritin, creatinine, platelet and liver enzymes, blood samples of case and control groups were taken before delivery and analyzed	it was found significant differences in the mean level of serum ferritin of the preeclampsic patients who have ELLP syndrome (EL: Elevated liver enzyme, LP: Low platelet count) in comparison with preeclampsia women with high level of liver enzymes. However, this relation meaningful was not shown among mean serum iron and EELP syndrome with preeclampsia. The correlation coefficients between iron and creatinine/proteinuria/a lbuminuria as well as ferritin and creatinine/proteinuria/a lbuminuria concentrations in group of preeclampsia were not significantly different	Present results revealed that a correlation relationship between the concentration of serum ferritin and iron and ELLP syndrome and preeclampsia may in fact exist <sup>6</sup>
Clinical Pathology And Medical Laboratory	Indonesia	Literature Review	To determine the body's iron reserves can be checked serum iron levels (SI), total iron binding capacity (TIBC), serum ferritin	Examinations that can be carried out by the method of immunoradiometric assay (IRMA) and enzyme linked immunosorbent assay (ELISA)	Serum transferrin receptors were measured by enzyme immunoassay and immunoturbidimetric assay.	Examination of serum ferritin levels proved to be the earliest indicator, which was decreased in a state of decreased body iron reserves.

Hubungan antara Serum Ferritin dan Preeklampsia	Bangladesh	Research design: This is a case-control study with laboratory methods	The aim of the study is to explore the association between serum ferritin and Preeclampsia and to do a comparison of serum ferritin to assess risk of development preeclampsia between case and control	Collection of blood sample: Maintaining all aseptic precautions, 6 ml of venous blood was drawn from the antecubital vein of each pregnant woman in the sitting position 2 ml of that blood was taken in EDTA tube for Hb% and peripheral blood film. 4 ml of blood was immediately transferred into a clean, dry test tube and was centrifuged with 1 hour of collection. The serum thus obtained was stored at — 70° C until assessed.	In the present study, the mean serum Ferritin level of PE group was almost 10 times higher ( $167.11 \pm 10.43$ ngm/ml) than that of controls ( $17.0 \pm 3.03$ ngm/ml) than that of control ( $431.0 \pm 10.93$ gm/dl). More than one-third of the cases showed serum ferritin $>210$ ngm/ml, compared to none of the control group.	Serum Ferritin level is significantly higher in preeclamptic patients than the control group. <sup>7</sup>
Iron Status in Preeclampsia – A Study from South India	South India	This was a case control study which was a part of a larger study done to know the levels of various elements in women with preeclampsia	The aim of this study was to find out iron status parameters in preeclamptics and their comparison to normotensive pregnancies. This	Hemoglobin was estimated by Cyanmet Hemoglobin method, serum ferritin and iron were estimated by kit method.	Pregnancy outcome in both groups were compared. Data were expressed as Mean $\pm$ Standard Deviation. Comparison of serum levels of the elements was performed by Independent t test and Chi square test and P value of $< 0.05$ was considered as statistically significant. Mean serum iron and ferritin levels in preeclamptics were significantly higher compared to normotensives whereas hemoglobin levels did not show much difference.	Also preeclamptic women were older, with higher BMI and lower birth weight compared to normotensives. The higher serum iron and ferritin levels might play an important role in the etiopathogenesis of preeclampsia. Therefore, pregnant women with higher serum iron and ferritin levels should be investigated for preeclampsia. Iron status of pregnant women should be assessed before giving iron supplements as these may cause more harm than benefit. <sup>8</sup>
Effect Of Hemoglobin Levels Pregnant Women On The Predictive Value For Preeclampsia Of Rot (Roll-Over Test)	Indonesia	This was an analytic observational study with a cross-sectional design.	This study aims to analyze the effect of hemoglobin levels on the predictive value for preeclampsia of ROT (Roll Over Test) among pregnant women.	Data on hemoglobin levels were obtained from secondary data derived from the MCH Booklet and ROT values obtained by directly checking the supine and left	A statistical test was performed using a logistic regression test. Based on 30 samples of pregnant women, the results showed that 16 pregnant women had hemoglobin levels of $>13$ gr/dl (53.3%), and 14 pregnant women (46.7%) had a positive predictive value of ROT. The	The effect test analysis results showed a positive relationship between hemoglobin levels and the predictive value for preeclampsia ( $p=0.04$ , $B=1.299$ ). Thus, pregnant women who experienced an increase in the hemoglobin levels of 1 g/dl had a potential of

Iron Status In Preeclampsia	Abbottabad/Pakistan	Coefficient correlation study	To evaluate iron status in pregnancy induced hypertension and role of iron in the etiology and pathogenesis of pre-eclampsia	lateral maternal blood pressure. Serum ferritin was estimated by Enzyme-immunoassay Kit method.	Results depicts that mean age of pre-eclamptic group was significantly low ( $P < 0.001$ ) as compared to control. Both parameters, Hemoglobin and Haematocrit were significantly higher ( $P < 0.05$ ) in pre-eclamptic as compared to controls. Serum iron, serum ferritin and transferrin saturation were significantly higher ( $P < 0.001$ ) in pre-eclamptic in comparison with control group. Total iron binding capacity and unsaturated iron binding capacity were significantly lower ( $P < 0.001$ ) in pre-eclamptic group when compared to control group. Correlation coefficient between serum iron, total iron binding capacity (TIBC), serum ferritin, unsaturated iron binding capacity (UIBC) and systolic and diastolic blood pressure in pre-eclamptic group showed no significant positive correlation in any parameter.	1.299 times to have a positive ROT value. <sup>9</sup> It is concluded that hemoglobin, haematocrit, serum iron, serum ferritin and transferrin saturation are significantly increased in pregnant women that later develops pre-eclampsia. Excess iron is postulated as casual factor in the oxidative stress ie; in its radical form, which may be involved in the pathogenesis of pre-eclampsia. Therefore, iron status of pregnant women should be assessed before giving iron supplements as these may cause more harm than benefit. <sup>4</sup>
Increased serum ferritin levels in women with preeclampsia	Egypt, Cairo	This was a case-control study conducted in the emergency ward of Obstetrics and Gynecology Department of Suez Canal University Hospitals	To study the correlation between serum ferritin level and the severity of preeclampsia	Serum ferritin (ng/dl) was assayed using a quantitative test system. This is a solid phase enzyme-linked immunosorbent assay (ELISA) kit purchased from Immunospec Corporation. Serum	The mean serum ferritin was significantly higher in mild and severe preeclampsia groups vs. the control group ( $33.27 \pm 6.9$ and $69.47 \pm 20.1$ ng/ml versus $16.9 \pm 20.9$ ng/ml, respectively, $p$ -value $< 0.001$ ). Regarding, the mean serum iron level in the mild, severe preeclampsia and control groups, it was $201.87 \pm 58.13$ , $219.4 \pm 53.1$ $\mu$ g/dl and $173.9 \pm 56.58$ $\mu$ g/dl respectively ( $p$ -value $< 0.05$ ). There was a highly significant correlation between ferritin and each of systolic and diastolic	The level of serum ferritin was high in patients with preeclampsia, and it correlates well with the severity of the disease. <sup>10</sup>

Comparative analysis of iron status and other hematological parameters in preeclampsia	Mexico	Prospective, comparative, observational pilot study	To compare serum ferritin (SF) concentrations and other hematological parameters between patients with preeclampsia (PE) and normal pregnant women of the same gestational period who received supplemental iron during pregnancy.	an Sysmex XT-4000i hematology analyzer (Sysmex Corporation, Hyogo, Japan), and 5 ml were placed in a tube without anticoagulant to determine the concentrations of ferritin and serum iron in a COBAS INTEGRA® processor 400 PLUS (Roche Diagnostics GmbH, Mannheim, Germany).	blood pressures ( $r=0.8$ , $p<0.001$ and $r=0.7$ , $p<0.001$ respectively) In comparison with controls, preeclamptic patients had a higher weight, body mass index, and arterial pressure. Serum ferritin and serum iron were higher in patients with PE (median: 36.5 $\mu\text{g/l}$ vs. 20.9 $\mu\text{g/l}$ and 103.9 $\mu\text{g/dl}$ vs. 90.8 $\mu\text{g/dl}$ ) with a significant difference ( $P = 0.019$ and $P = 0.345$ ). SF values $>40 \mu\text{g/l}$ correlated with PE ( $r = 0.281$ ; $P = 0.032$ ). A platelet count less than $100 \times 10^9/\text{l}$ was higher in the PE group than in the control group (13% vs. 3%, $P = 0.354$ )	Higher SF levels, despite being within normal range, were associated with PE. The incidence of thrombocytopenia was higher in preeclamptic women, however, the remaining hematological parameters were similar in both groups. <sup>11</sup>
Dynamic Of Serum Ferritin Level In First Trimester Pregnancy	Indonesia	The design was retrospective cohort.	Objective of this study was to overlook serum ferritin levels in trimester 1 pregnancy.	Data were presented in percentages for categorical data. Numerical data presented in medians and ranges for abnormal data distribution; and mean and standard intersections for normal data distribution	Median serum ferritin levels in this study were still in the normal range of 40.82 (6.97 - 172.66) $\mu\text{g} / \text{L}$ . Twenty one subjects (69.1%) had normal serum ferritin level ( $\geq 30 \mu\text{g/L}$ ) and 47 (30.9%) had low ferritin level.	Median serum ferritin in this study was within normal range. Low level of serum ferritin found in 21 subjects, three among them also suffered from anemia. <sup>12</sup>
Assessment of Iron Status in Pregnant Ladies with Preeclampsia	Sudan	Methodology This case control study	The objective of this was estimated Iron status (Iron, Ferritin, TIBC, Transferrin) in pregnant women and preeclamptic women.	Collection of blood samples for the study about 5ml of venous blood was collected under aseptic precaution in a sterile bulb from selected subjects. Then the serum is separated by centrifugation which is used for estimation of Iron, Ferritin and TIBC. In the subjects serum concentrations of iron and TIBC were estimated using ferrozine	The approximate doubling of transferrin saturation in pre-delivery sera of women with preeclampsia relative to controls result from combined effect of increased serum iron and decreased total serum transferrin concentration(9). Mean ferritin levels were significantly elevated in both pregnancy induced hypertension and eclampsia as compared to controls(10).Maternal ferritin concentration is primarily a reflection of maternal, iron status, and a high level is associated with unfavorable	From this study, all iron profile (Iron, Ferritin, and Transferrin) were significant higher while, TIBC was significant lower. <sup>13</sup>

				method using Bio-System and ferritin was estimated using immuno enzymometric Assay (TOSOH-A1A-360). Transferrin saturation was calculated by the following formula.	outcome(6). Mean value of serum iron is significantly	
Hyperferritinemi a worsens the perinatal outcomes of conceptions of pregnancies with preeclampsia	Brazil	A cross-sectional study carried out in 2017 with a convenience sample of pregnant women with preeclampsia attended at a high-risk maternity hospital in Alagoas, Brazil.	To analyze the prevalence of hyperferritinemi a in pregnant women with preeclampsia and its association with adverse perinatal outcomes.	Women were dichotomized according to the serum ferritin level (150 ng/mL).	Except for ferritin level, there were no differences in C-reactive protein (CRP), hemoglobin, Glutamate Oxaloacetate Transaminase (GOT) and Pyruvic Glutamic Transaminase (PGT) levels between women with or without hyperferritinemia. After adjusting for potential confounders, hyperferritinemia was associated with low birth weight (2.19 [2.13–3.89 95%CI]), low birth length (7.76 [2.52–23.8 95% CI]) and being born small for gestational age (3.14 [1.36–7.28 95% CI]).	In the presence of hyperferritinemia, preeclampsia patients were associated with a higher rate of unfavorable neonatal outcomes. <sup>14</sup>
Comparative study of copper, zinc, iron, ferritin, calcium and magnesium levels in pregnancy induced hypertension and normotensive primigravida mothers	India	METHODS: It was a comparative cross sectional study of one year, September 2013 to August 2014, conducted in the Dept. of Biochemistry, Dept. of Gynaecology and Obstetrics, R. G. Kar Medical College & Hospital, Kolkata.	Several studies in this context have conflicting reports. So, a comparative study of serum levels of copper (Cu), zinc (Zn), iron (Fe), ferritin, calcium (Ca) and magnesium (Mg), in PIH and normotensive primipara mothers was conducted.	Fasting blood samples (10 ml) were collected at 8-9 a.m. into polypropylene tubes. Serum was separated within 2 hours and aliquots were kept frozen at -20°C until trace element analysis. All laboratory wares including pipette tips and autosampler cups were cleaned thoroughly with detergent and tap water, rinsed with distilled water, soaked in dilute nitric acid and then rinsed thoroughly	Serum Ca, Mg, Cu and Zn levels were found to be significantly reduced (<0.05) in the PIH group compared to the normal pregnant group. Serum ferritin was markedly increased in the cases (mean 90.41±47.39, p<0.00001). No significant correlation was found in serum Fe levels	Alteration of serum Cu, Zn, Ca, Mg and ferritin levels can be considered to have a role in the etiopathogenesis and severity of PIH. <sup>15</sup>

Association of first trimester maternal vitamin D, ferritin and hemoglobin level with third trimester fetal biometry: result from cohort study on vitamin D status and its impact during pregnancy and childhood in Indonesia	Indonesian	From July 2016 a prospective cohort study of pregnant women had begun in four cities in West Java, Indonesia. Data	The aim of this study was to explore the association between maternal vitamin D level in the first trimester and fetal biometry in the later stage of pregnancy with adjusted OR for other determinants like hemoglobin and ferritin level. Methods:	Serum vitamin D and ferritin analysis was performed by ELISA.	Among 203 recruited women, 195 (96.06%) had hypovitaminosis D. One hundred fifty two (75%) were in deficient state and 43 women (21%) were in insufficient state. Women with insufficient vitamin D had the highest proportion of anemia, while women with normal vitamin D level had the highest proportion of low ferritin level. Maternal serum vitamin D showed significant associations with biparietal diameter ( $\beta = 0.141$ , $p = 0.042$ ) and abdominal circumference ( $\beta = 0.819$ , $p = 0.001$ ) after adjustment with maternal age, pre-pregnancy body mass index, parity, serum ferritin level, and hemoglobin level.	Our study suggested that sufficient maternal vitamin D level was an important factor to improve fetal growth and development. <sup>16</sup>
Role of maternal serum ferritin as a predictive marker in intrauterine growth restriction	India	This was a longitudinal prospective study conducted in the department of obstetrics and gynaecology in our hospital between January 2011 and December 2012.	Measurement of maternal serum ferritin has also been used as a predictive marker of increase risk of IUGR	Maternal serum samples of all women were taken at 25th week and again at 30-32 weeks in trace free mineral evacuated tubes for assessment of serum ferritin by chemiluminescence. Mean of both values was calculated.	Mean ferritin value of women with average for gestational age neonates was 15.49 ng/ml and women with growth restricted neonates was 19.71 ng/ml. The women with mean serum ferritin above 20 ng/ml, were 6.26 times more likely to have asymmetrically growth restricted baby and 4.47 times more likely to have a symmetrically growth restricted baby when compared to women with serum ferritin value less than <20 ng/ml.	In our study negative correlation was found between the value of serum ferritin and neonatal birth weight. In future large randomized control trial is needed to found association between maternal serum ferritin and IUGR. <sup>17</sup>
HFE Gene Polymorphism and Iron Status in Preeclampsia	India	This is a hospital-based case-control study.	This study attempts to determine the association if any between C282Y allele of HFE gene with preeclampsia, and evaluate the serum iron status in women with pre-eclampsia and third trimester	8 ml of venous blood sample was collected after overnight fasting and 24 hours urine sample was collected and analysed. All the estimations were done by standard methods as given below. Serum ferritin -	There is no significant association between preeclampsia and HFE gene and C282Y allele polymorphism. 92% of the cases and 98% of the controls do not show mutation in the C282Y allele. Odds ratio for wild type is 1.065 and that of heterozygote is 4.261. 95% confidence interval is large (0.021-54.76), indicating a low	There are increased iron indices in preeclampsia when compared to the controls. Haemoglobin concentration and Haematocrit are raised in preeclampsia. There is no association of C282Y mutation of HFE gene with preeclampsia. Therefore, C282Y allele cannot be used as a

			healthy pregnant women, as this polymorphism is closely associated with haemochromatosis, a hereditary disorder in which serum iron is elevated, which is also seen in pre-eclampsia.	Enzyme immuno assay (ELISA).	level of precision in wild type. Z value for wild type is 0.031 and that of heterozygote is 1.275, p-value for both is not significant. Serum iron, ferritin and %age of transferrin saturation were significantly higher (p=0.001) in preeclamptic women, in comparison with the control group. Unsaturated Iron Binding Capacity (UIBC) and TIBC were significantly lower (p=0.001) in preeclamptic group.	molecular marker for preeclampsia. <sup>18</sup>
Increased Serum Ferritin and Iron Levels in Preeclampsia	India	This case control study was	The aim of the study was to assess the status of serum ferritin and iron in preeclampsia.	Estimation of serum ferritin and serum iron concentration was done by fully automated random access chemistry analyzer Cobas Integra,Roche make,	The mean serum ferritin concentration in cases and controls were 55.35µg/l and 17.19µg/l respectively. Mean serum iron concentration in cases was 190.88 µg/dl and that in controls was 83.66µg/dl.	This study showed significantly higher level of serum ferritin and serum iron in preeclamptic group as compared to the normotensive control group. <sup>19</sup>

### Prevalence of Serum Ferritin Levels on the Incidence of Preeclampsia

A total of 100 pregnant women were included in the study at the Obs & Gynae DMCH department and the dept. BSMMU Bangladesh Biochemistry period January 2010-De. Of those 50 preeclampsia or eclampsia, nonanemic patients not in labor (26-40weeks) were taken as cases and 50 normotensive pregnant women were taken as controls. The mean serum ferritin levels in the case and control groups were  $100.03 \pm 123.52$  gm/L and  $31.53 \pm 20.86$  gm/L, respectively, which were very significant ( $P < 0.001$ ). Of the 50 cases, ferritin levels increased in 10 cases (20%).

In a study conducted in Indonesia with the title the role of serum ferritin levels on the incidence of preeclampsia, the results of the difference in mean serum ferritin levels between the preeclampsia and normal pregnancy groups were analyzed using an independent t-test. The results showed that the mean serum ferritin levels in the preeclampsia and normal pregnancy groups were  $50.46 \pm 4.37$  ng/ml and  $17.64 \pm 1.6$  ng/ml, with p value=0.004.

In a study conducted in Pakistan under the title Evaluation of coagulation factors and serum ferritin in preeclampsia in Pakistani women, the mean and statistical significance of the coagulation parameters were observed and tabulated in Table 2. Prolonged aPTT, PT and INR were observed in both

groups of PE, especially in the group with PE. severe with decreased PLT and fibrinogen. A non-significant decrease ( $p = 0.23$ ) was observed in ferritin levels in the PE group compared to the control group. Statistical significance was checked for each parameter in the mild and severe preeclampsia group versus the control group.

In a study in Baghdad with the research title Total Iron Binding Capacity (TIBC), free iron, ceruloplasmin, transferrin and ferritin concentrations, in pregnant women with preeclampsia were obtained. The mean serum iron in the preeclampsia group was  $97.0 \pm 7.83$ , while  $94.35 \pm 11.81$  in the normal group ( $p \leq 0.01$ ). Similarly, the mean serum TIBC concentrations in normal pregnant and preeclamptic women were  $319.65 \pm 32.35$  and  $292.3 \pm 30.86$ , respectively ( $p = 0.01$ ). The mean serum ferritin was  $0.33 \pm 0.056$  in preeclamptic women and in normal pregnant women was  $0.29 \pm 0.039$ , a significant difference between the ceruloplasmin concentrations in the two groups, while the mean transferrin in preeclampsia and normal pregnant women was  $204.61 \pm 21.60584$  and  $223.75 \pm 22.64877$ , respectively.

### Recommendation

Most of the molecular researchers offer recommendations for the development of biomarkers in an effort to detect the incidence of preeclampsia in



pregnant women early. One of them is a serum biomarker, namely serum ferritin. Examination of serum ferritin levels to screen for the incidence of preeclampsia in early pregnancy is very necessary because of the high number of patients with preeclampsia in Indonesia and the negative impact of preeclampsia on pregnancy. It is hoped that screening accompanied by management of early detection of serum ferritin levels and iron status can contribute to reducing the impact of preeclampsia on pregnant women and their fetuses can decrease in number.

## DISCUSSION

The purpose of this article is to present up-to-date information and a comprehensive review of the existing literature on the Effectiveness of Serum Ferritin Levels on the Incidence of Preeclampsia in First Trimester Pregnant Women. In total, we included 30 peer-reviewed articles that met the inclusion criteria listed below. we state. The findings of this scoping review give some credence to previous literature studies, which describe serum ferritin as a biomarker that can be used as a reference in screening the incidence of preeclampsia in pregnant women.

With the broad coverage and diversity of the literature across geographies, sizes, models of practice, and sample size and composition, our review noted that all included studies featured both qualitative and quantitative research methods, most often cross-sectional study designs. While this methodology is certainly valuable for generating data that can easily be compared between groups and countries, it does little to address the 'why' or 'how' questions that could explain the extent of the effect of screening for preeclampsia in early pregnancy using biomarkers of serum ferritin levels. Without underestimating the value and importance of existing research in expanding our understanding of serum ferritin as a biomarker that can be considered in the early detection of preeclampsia in obstetrics. The cross-sectional design, which allowed the investigators to explore the relationship between variables, prevented us from identifying causal and temporal effects between serum ferritin levels and the incidence of preeclampsia. The case control study design will allow us to determine whether there are differences in serum ferritin levels in pregnant women with preeclampsia and in normotensive women. Design Correlation analysis is a statistical method used to determine a quantity that states how strong the relationship between serum ferritin levels and the incidence of preeclampsia is. In addition, there is also a retrospective cohort study design,

which is a retrospective study using secondary data, to see whether there is a relationship between serum ferritin levels and the incidence of preeclampsia in pregnant women.

Globally an estimated 2.87,000 women died in childbirth in 2010, of which India accounted for around 19%. The greatest impact of preeclampsia is in developing countries where it accounts for 20 – 80% of the marked increase in maternal mortality.

Preeclampsia is a disease of many theories. Among them, genetic factors, immunology, circulation, utero vascular changes and endothelial dysfunction are important concerns. Despite extensive research, the underlying mechanism of preeclampsia is not yet defined. Because the pathogenesis is not clear, preventive and curative measures are efforts that can help in handling cases of preeclampsia.

Several independent investigators have demonstrated through research that the vascular endothelium provides the single target organ system involved in preeclampsia. The relatively new endothelial injury theory explains many of the clinical findings in preeclampsia. Placental ischemia is a common cause of endothelial cell damage leading to the sudden symptoms of hypertension, proteinuria, and edema that are characteristic of this condition. It has been suggested that lipid peroxidation may play a role in the pathology of preeclampsia. The high level of these lipid hydroperoxides believed to be present in preeclampsia is one of the candidate agents capable of causing such damage to the vascular endothelium.

Prenatal serum ferritin concentrations were significantly higher in patients with eclampsia than in healthy pregnant women. Serum ferritin is the best sensitive marker of iron status parameters reflecting preeclampsia and the results can support the role of iron as a catalyst for oxidative stress and lipid peroxidation in the pathophysiology of preeclampsia.

Based on these conditions, it is very important to emphasize preventive measures by detecting preeclampsia as early as possible using predictors of preeclampsia. This study analyzed serum ferritin levels on the incidence of preeclampsia in pregnant women.

## Serum Ferritin Check

The study was conducted at the Department of Obstetrics and Gynecology, College of Medicine and Sir Salimullah Hospital. Serum Ferritin was tested at the Department of Biochemistry, BSMMU/Bangladesh. Blood sampling: Maintaining all aseptic precautions, 6 ml of venous blood was drawn from the antecubital vein of each pregnant

woman in a sitting position 2 ml of that blood was drawn in an EDTA tube for Hb% and peripheral blood film. 4 ml of blood was immediately transferred into a clean and dry test tube and centrifuged with collection for 1 hour. The obtained serum was stored at -70°C until assessed.

**Study population:** There were 40 cases of preeclampsia and 40 normotensive pregnant women enrolled from Sir Salimullah Medical College and Hospital, Dhaka. Normotensive pregnant women were taken as controls

**Laboratory method**

- Estimation of serum ferritin by MEIA.
- Estimation of Hb% by Colorimetric Method
- Estimation of blood urea, serum creatinine, serum electrolytes, random blood sugar, serum bilirubin, SGPO, SGOT by analyzer.

Another study entitled Comparison of serum ferritin levels in pregnant women with preterm and term deliveries by Tayebah Jahedbozorgan, Minoo Yaghmaei and Maryam Naserieh at Shahid Beheshti University of Medical Sciences, Tehran, Iran described that blood samples were collected from participants/sample under sterile conditions and stored in an iron-free tube at room temperature. Serum samples were separated within two hours and stored at minus 20°C. Serum ferritin levels were measured by a particle-enhanced immunoturbidimetric method with a fully automated analyzer. In addition, hemoglobin levels were measured using a fully automatic spectrophotometer.

In addition the research was carried out at the Pakistan Institute of Medical Sciences (PIMS) Islamabad, Quaid-e-Azam International Hospital, Islamabad and Quaid-i-Azam University, Islamabad after receiving approval from the ethics committees of the three institutes. Two hundred blood samples of pregnant women aged less than 35 years and in the third trimester were included for the study conducted from September 2015 to July. 2017. APTT, PT, INR, fibrinogen and PLT levels were checked with an automatic coagulation analyzer while ferritin levels were determined with a ferritin ELISA kit.

### **Limitations**

This scoping review is not without its limitations. First, remember that serum ferritin is a biomarker of preeclampsia, which has just been introduced in Indonesia. The small sample size is also one of the limitations in this study so that further studies are needed on a larger population including other parameters/biomarkers such as serum AST, LDH, hemopexin, total bilirubin, transferrin and percent transferrin saturation that can affect serum

iron levels in children. preeclampsia. Lack of funds and resources is the main problem of this research.

Our review is also limited by filtering out articles that are not available in English, or articles that are not accessible to the database subscriptions maintained by the University of British Columbia. Furthermore, there may be publication bias as a consequence of studies with significant findings preferentially selected by journals for publication and between health professions.

### **CONCLUSION**

Higher serum ferritin levels are associated with the incidence of preeclampsia. This scoping review examines the literature to better understand these elements, and incorporates 30 relevant articles to describe the effectiveness of serum ferritin testing on the incidence of preeclampsia, as well as some recommendations to address this serious problem. In total, 30 articles related to serum ferritin and preeclampsia were identified. Among the several articles in the review, biomarkers that have the potential to be the basis for screening the incidence of preeclampsia in pregnant women are also reviewed.

### **SUGGESTION**

There is a need to develop further literature studies on serum ferritin levels on the incidence of preeclampsia in pregnant women. This is based on several new findings of other biomarkers for detecting the incidence of preeclampsia in pregnant women

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## FACTORS AFFECTING THE INCIDENCE OF MATERNAL PREECLAMPSIA

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### ABSTRAK FAKTOR-FAKTOR YANG MEMPENGARUHI KEJADIAN PREEKLAMPSIA IBU

Preeklampsia merupakan salah satu penyebab mortalitas dan morbiditas ibu dan janin. Faktor-faktor yang mempengaruhi terjadinya preeklampsia adalah usia, paritas, riwayat hipertensi, diabetes mellitus, obesitas, molahidatidosa dan kehamilan ganda. Hasil presurvey didapat data pada tahun 2018 angka kejadian preeklampsia ibu bersalin di RSUD HM Ryacudu Kotabumi sebanyak 68 orang. Tujuan penelitian diketahui faktor-faktor yang mempengaruhi kejadian preeklampsia ibu bersalin di RSUD HM Ryacudu Kotabumi.

Jenis penelitian ini adalah *kuantitatif* dengan pendekatan *cross sectional*. Menggunakan data sekunder. Populasi dalam penelitian ini semua ibu bersalin dengan diagnosa preeklampsia yang di rawat di ruang kebidanan dalam masa rentang waktu Januari 2020 – Desember 2022 sebanyak 86 orang ibu bersalin. Sampel yang digunakan adalah *total population* sebanyak 86 orang ibu bersalin. Analisis data univariat dengan menggunakan distribusi frekuensi dan bivariat dengan menggunakan (*chi-square*).

Hasil penelitian didapatkan hasil Usia ibu bersalin yang beresiko usia <20 atau >35 tahun sebesar 45 responden (52,3%), riwayat hipertensi ibu yang beresiko sebesar 46 responden (53,5%), paritas ibu yang mengalami resiko 44 responden (51,2%).

Kesimpulan Ada hubungan usia dengan kejadian preeklampsia dengan *p-value* sebesar 0,010 dan OR 3.717, ada hubungan riwayat hipertensi dengan kejadian preeklampsia dengan *p-value* sebesar 0,001 dan OR 5.612, dan ada hubungan paritas dengan kejadian preeklampsia dengan *p-value* sebesar 0,006 dan OR 4.016.

Peneliti menyarankan ibu untuk meningkatkan kunjungan ANC lebih awal, dan mengajak ibu untuk sering mengontrol kehamilan nya agar tidak mengalami resiko pada kehamilan yaitu salah satunya adalah preeklampsia.

Kata kunci : Usia, Riwayat hipertensi, Paritas, Preeklampsia

### ABSTRACT

Preeclampsia is one of the causes of maternal and fetal mortality and morbidity. Factors that influence the occurrence of preeclampsia include age, parity, history of hypertension, diabetes mellitus, obesity, hydatidiform mole, and multiple pregnancies. Pre-survey data from 2018 revealed that there were 68 cases of preeclampsia among delivering mothers at HM Ryacudu General Hospital, Kotabumi, North Lampung. The research objective was to identify the factors affecting the occurrence of preeclampsia among delivering mothers at HM Ryacudu General Hospital of Kotabumi.

This study was a quantitative research with a cross-sectional approach, using secondary data. The population of this study consists of all delivering mothers diagnosed with preeclampsia who were treated in the obstetrics ward from January 2020 to December 2022, totaling 86 delivering mothers. The sample used is the entire population of 86 delivering mothers. Data analysis included univariate analysis using frequency distribution and bivariate analysis using the chi-square test.

The results showed that among the delivering mothers, 45 respondents (52.3%) were at risk due to their age being <20 or >35 years, 46 respondents (53.5%) had a history of hypertension which put them at risk, and 44 respondents (51.2%) who experienced risk had parity.

In conclusion, there is a relationship between age and the occurrence of preeclampsia with a *p-value* of 0.010 and an odds ratio (OR) of 3.717. There is a relationship between a history of hypertension and the occurrence of preeclampsia with a *p-value* of 0.001 and an OR of 5.612. There is also a relationship between parity and the occurrence of preeclampsia with a *p-value* of 0.006 and an OR of 4.016.

Researchers recommend that mothers increase their early Antenatal Care (ANC) visits and encourage them to frequently monitor their pregnancies to avoid risks, one of which is preeclampsia.

Keyword : age, hypertensive history, parity, preeclampsia

## **INTRODUCTION**

Preeclampsia is a condition characterized by distinct signs of high blood pressure (hypertension), tissue swelling (edema), and the presence of protein in the urine (proteinuria), which arises during pregnancy. This condition typically occurs in the third trimester of pregnancy, but it can also manifest in the second trimester. Preeclampsia presents a significant health concern as it can lead to specific pregnancy-related syndromes involving diminished organ perfusion due to vasospasm and endothelial activation. Among all pregnancies, preeclampsia is found in 3.7% of cases resulting in live births and maternal deaths due to these complications (Ministry of Health of Indonesia, 2013; Mose and Irianti, 2018).

Preeclampsia is the development of high blood pressure accompanied by proteinuria and edema as a result of pregnancy after the 20th week of gestation or immediately after childbirth. Preeclampsia is a disorder with symptoms of hypertension, edema, and proteinuria (Prawirohardjo, 2018). Previously, preeclampsia was always defined by the presence of new onset hypertension and proteinuria during pregnancy. Although these criteria remain classical definitions of preeclampsia, some women exhibit hypertension along with other multisystem disturbances indicative of severe preeclampsia, even without proteinuria. Edema is no longer used as a diagnostic criterion as it is frequently found in women with normal pregnancies.

The occurrence of an increase in systolic blood pressure of at least 30 mmHg or an increase in diastolic blood pressure of at least 15 mmHg, or a systolic blood pressure of at least 140 mmHg or a diastolic blood pressure of at least 90 mmHg or higher, accompanied by an increase of 20 mmHg or more, can be diagnosed as preeclampsia.

The incidence of preeclampsia and eclampsia varies from one country to another and within different regions. Various factors contribute to this variation, including the number of primigravida cases, especially young primigravida, excessive uterine distension such as hydramnios and twin pregnancies, obesity, maternal age exceeding 35 years, and the incidence of preeclampsia ranges between 3% to 5% of managed pregnancies. The worldwide prevalence of preeclampsia ranges from 0.51% to 38.4%. In developed countries, the prevalence of preeclampsia ranges from 6% to 7%. In Indonesia, the prevalence is approximately between 3.8% and 8.5%. Preeclampsia contributes to maternal mortality, and according to the World Health Organization (WHO, 2022), maternal death is partially attributed to this condition.

Based on the Indonesian Health Profile data for the year 2019, the causes of maternal death in Indonesia are hemorrhage (50.14%, 1280 cases), hypertension during pregnancy, including preeclampsia (41.75%, 1066 cases), and infections (8.11%, 207 cases). The impact of preeclampsia can lead to maternal mortality, preterm birth, Intrauterine Growth Restriction (IUGR), and stillbirth due to placental calcification, resulting in reduced food and oxygen supply to the fetus.

The exact cause of preeclampsia remains unknown, and thus researchers have conducted investigations to identify the most significant factors for pregnant women. In this study, we will identify the factors of maternal age, history of hypertension during pregnancy, and parity that are related to the occurrence of preeclampsia.

Although the exact cause of preeclampsia remains uncertain, clinical manifestations become apparent early in pregnancy, with accumulating subtle pathophysiological changes that become clinically evident over time. Preeclampsia is a multisystem disorder with a complex etiology specific to pregnancy. According to the course of the theory, there are two stages of preeclampsia depending on the emerging symptoms. The first stage is asymptomatic and characterized by the abnormal development of the placenta during the first trimester. Abnormal placental development, particularly angiogenesis, leads to placental insufficiency and the release of placental material into the maternal circulation. The release of placental material results in clinical manifestations in the second stage of preeclampsia, which is symptomatic. Symptoms in this stage include hypertension, renal impairment, proteinuria, and the potential for HELLP syndrome, eclampsia, and damage to other end organs (Hacker & Moore's et al., 2016).

Epidemiological data on preeclampsia in Indonesia are also well-known through research conducted at major hospitals across the country. A retrospective cohort study in 2016 at seven referral hospitals in Medan, Bandung, Semarang, Solo, Surabaya, Bali, and Manado identified 1,232 cases of preeclampsia in a year. Among all cases, several risk factors were found, including anemia (26%), obesity (10%), and chronic hypertension (8%). Maternal death was reported in 2.2% of cases, while perinatal mortality reached 12% (Ministry of Health of Indonesia, 2019).

The mortality rate indicates that preeclampsia occurs in 2-8% of pregnancies worldwide. Preeclampsia is a major cause of maternal and perinatal mortality. The incidence of preeclampsia is higher in multiparous women than in nulliparous

women. Hypertensive disorders during pregnancy occur in 10% of pregnant women globally. This condition encompasses preeclampsia, eclampsia, gestational hypertension, and chronic hypertension (ACOG, 2020).

Health Profile of North Lampung Regency due to several factors including hypertension at 38%, bleeding at 38% during pregnancy, and other contributing factors at 23%. In several Hospitals in North Lampung Regency, the high incidence of maternal preeclampsia cases at HM Ryacudu General Hospital reached 68 cases. The high maternal mortality rate in North Lampung Regency is attributed to inadequate health service facilities and geographical location leading to delays in delivery assistance (Department of Health of North Lampung, 2018).

Efforts to prevent and diagnose diseases as early as possible and provide treatment as soon as possible by identifying the characteristics of preeclampsia patients at HM Ryacudu General Hospital can help take protective measures

(Department of Health of North Lampung Regency, 2018). The purpose of this study is to determine the factors influencing the occurrence of maternal preeclampsia based on data from HM Ryacudu General Hospital Kotabumi in North Lampung.

## RESEARCH METHODS

This research used an analytic survey method with a cross-sectional approach. The study was conducted at HM Ryacudu General Hospital Kotabumi in North Lampung Province, Lampung, from March 20th to May 20th, 2023, using secondary data sourced from medical records. The population in this study consisted of all mothers with preeclampsia from January 2020 to December 2022, totaling 86 individuals. Using the total population, all individuals were included as samples. Data collection was performed by observing medical records using checklist sheets to examine factors related to the occurrence of preeclampsia. Data analysis was conducted using the chi-square test.

## Univariate Analysis

**Table 1**  
**Frequency Distribution of Maternal Age, History of hypertension, Parity and Preeclampsia**

Variable	Category	Frequency	Percentage
Age	At risk	45	52,3%
	Not at Risk	51	47,7%
History of Hypertension	Yes	46	53,5%
	No	40	46,5%
Parity	At risk	44	51,2%
	Not at Risk	42	48,8%
Preeclampsia	Severe PE	32	37,2%
	Mild PE	54	62,8%

Source: secondary data 2023

## Bivariate Analysis

**Table 2**  
**Relationship between age, history of hypertension, and parity with the incidence of preeclampsia**

Independent variable		Dependent variable							
		Preeclampsia				Total		P value	OR (CI)
		Severe		Mild					
		n	%	n	%	N	%		
Age	At Risk	23	51,1	22	48,9	45	100	0,010	3,717 (1,448 – 9,541)
	Not at Risk	9	22,0	32	78	41	100		
History of HT	Yes	25	54,3	21	45,7	46	100	0,001	5,612 (2,063 – 15,269)
	No	7	17,5	33	82,5	40	100		
Parity	At Risk	23	52,3	21	47,7	44	100	0,006	4,016 (1,561 – 10,333)
	Not at Risk	9	37,2	33	78,6	42	100		

Source: data analysis

## DISCUSSION

Numerous factors influence the occurrence of preeclampsia, such as maternal age, parity, obesity, history of hypertension, diabetes mellitus, multiple pregnancies, and hydatidiform mole. Therefore, it is strongly recommended that healthcare providers improve the quality of Antenatal Care (ANC) services by providing early education or counseling on various pregnancy-related abnormalities. This will help mothers understand the high-risk nature of their pregnancies.

This is in line with the theory that women with ages <20 or >35 years have less awareness of their health. Mothers below the age of 20 are considered adolescents, and they may lack information from their environment and healthcare providers. They tend to rely more on information from peers with similar experiences, without guidance from healthcare professionals. On the other hand, older women may be preoccupied and less concerned about reproductive health due to their perception of having sufficient experience, especially regarding their own reproductive health.

Statistically, the obtained odds ratio (OR) is 5.612, indicating that mothers with a history of hypertension are 5.612 times more likely to experience severe preeclampsia compared to respondents without a history of hypertension.

One predisposing factor for the occurrence of preeclampsia or eclampsia is chronic hypertension or previous vascular hypertension, and chronic diseases like chronic hypertension can develop into severe preeclampsia. This is especially true for mothers with a history of chronic hypertension exceeding 4 years. Chappel also concluded that there are 7 risk factors that can be assessed early as predictors of the occurrence of superimposed preeclampsia in pregnant women with chronic hypertension. Hypertension leads to disturbances in vital organs. Therefore, in pregnant women with a history of hypertension, previously affected organs become more severely impaired.

Women with chronic hypertension experience a decrease in blood pressure during early pregnancy followed by an increase in the third trimester. Research results show that preeclampsia increases by 25% in women who have suffered from chronic hypertension for more than 4 years.

Statistically, the obtained OR is 4.016, indicating that mothers with parity risk (mothers with <2 pregnancies) have a 4.016 times greater risk of severe preeclampsia compared to respondents without parity risk (mothers with 2-3 pregnancies).

The results of this study suggest that parity is safe if the number of live-born children is less than 3.

However, if there are more than 3 live births, the maternal mortality rate increases. Preeclampsia is more common in young primiparas than in multiparas. However, women with closely spaced births are at risk of preeclampsia. Parity impacts preeclampsia because the high blood flow to the placenta leads to a reduced oxygen supply, resulting in impaired fetal growth.

## CONCLUSION

There is a correlation between maternal age and the occurrence of preeclampsia (p value 0.010; OR = 3.717), a relationship between the mother's history of hypertension and preeclampsia (p value 0.001; OR = 5.612), and a connection between parity and the occurrence of preeclampsia (p value 0.006; OR = 4.016). Based on these findings.

## SUGGESTION

It is recommended to provide comprehensive information to couples of childbearing age during pre-conception to pay attention to these factors. Additionally, high-quality pregnancy examinations supported by early detection of preeclampsia risk factors can serve as alternative preventive and early treatment measures by healthcare professionals.

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## FACTORS ASSOCIATED WITH AEFI OF COVID-19 VACCINATION IN PREGNANT WOMEN

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### ABSTRAK FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN KIPI VAKSINASI COVID-19 PADA IBU HAMIL

Latar Belakang. Kelompok ibu hamil menjadi kelompok yang rentan terhadap infeksi COVID-19 karena pada ibu hamil tubuh mengalami penurunan kekebalan imunitas tubuh, sehingga rentan terinfeksi virus. Perubahan fisiologis juga terjadi pada kehamilan, seperti peningkatan diafragma, peningkatan kebutuhan oksigen, dan edema mukosa saluran pernafasan yang sangat berisiko terkena hipoksia (Prawihardjo, 2018).

Tujuan. Diketuinya Faktor-faktor yang mempengaruhi KIPI Vaksinasi covid-19 pada ibu hamil di Puskesmas Kemayoran Tahun 2022.

Metode. Desain penelitian yang digunakan adalah metode deskriptif kuantitatif dengan pendekatan cross sectional dengan desain penelitian retrospektif suatu penelitian dengan melakukan pengamatan ibu hamil dengan KIPI Vaksinasi covid-19 yang melakukan antenatal care di Puskesmas Kemayoran dalam satu kali waktu pada waktu bersamaan dengan jumlah sampel 80 orang ibu hamil.

Hasil. Berdasarkan hasil penelitian yang telah dilakukan di poli KIA Puskesmas Kecamatan Kemayoran dari 80 responden diperoleh informasi bahwa responden mengalami KIPI sebanyak 69 responden (69%), dan tidak mengalami KIPI hanya 11 responden (31%). Berdasarkan data hasil penelitian bahwa ada sekitar 93,5% responden yang berlatar belakang pendidikan tinggi tentang vaksinasi covid 19. Salah satu faktor yang dapat mempengaruhi pengetahuan seseorang adalah tingkat pendidikan.

Kesimpulan. Hasil analisis didapatkan bahwa variable pengetahuan adalah variable yang paling dominan p value = 0,024. Sehingga dapat disimpulkan bahwa variable yang paling dominan terkait KIPI vaksinasi adalah variable pengetahuan.

Saran Tenaga Kesehatan Puskesmas Kemayoran, Jakarta Pusat, sebaiknya berkolaborasi dengan kader Puskesmas dan tokoh masyarakat untuk memberikan vaksinasi COVID-19 pada ibu hamil, terutama pada usia kehamilan >13 minggu.

Kata kunci : Vaksin, Ibu Hamil, KIPI, covid 19

### ABSTRACT

Background. Pregnant women are categorized as the vulnerable group to COVID-19 infection due to their decreased immune system, making them susceptible to virus infection. Physiological changes also occur during pregnancy such as an increase in the diaphragm, increased oxygen demand, and edema of the respiratory tract mucosa which is at high risk of hypoxia (Prawihardjo, 2018).

Objective. Determine the factors that influence AEFI of COVID-19 vaccination in pregnant women at Kemayoran Public Health Center in 2022.

Method. The research design used was a quantitative descriptive method with a cross-sectional approach with a retrospective research design by observing pregnant women with AEFI of COVID-19 vaccination who carried out antenatal care at Kemayoran Public Health Center one time at the same time with a sample of 80 pregnant women.

Results. Based on the results of the study conducted at the MCH polyclinic at Kemayoran Public Health Center, of the 80 respondents, 69 respondents (69%) experienced AEFI, and only 11 respondents (31%) did not experience AEFI. Further, 93.5% of respondents who had a higher educational background were well-informed about the covid 19 vaccination. The level of education can affect a person's knowledge.

Conclusion. The results of the analysis found that the knowledge variable was the most dominant variable with a p-value of 0.024. Thus, it could be concluded that the most dominant variable related to the AEFI of vaccination was the knowledge variable.

Suggestion

Health Workers of Kemayoran Public Health Center, Central Jakarta, should collaborate with cadres of integrated healthcare centers and community leaders to provide COVID-19 vaccinations for pregnant women, especially for those whose gestational age is >13 weeks.

Keywords: Vaccines, Pregnant Women, AEFI, COVID -19

## INTRODUCTION

The death of pregnant women with COVID-19 was included in 8 cases of maternal death and 1 infant death (Antoun et al., 2020). A study conducted by London et al. (2020) reported 1 case of fetal death at 17 weeks of gestation. Pregnancy complications in pregnant women with COVID-19 include fetal distress and premature rupture of membranes (Chen et al., 2020). Moreover, a study carried out by Herbawani (2020) revealed that of the 363 total cases of COVID-19 in pregnant women, most of them were in the age criteria of 16-41 years.

Pregnant women are categorized as the vulnerable group to COVID-19 infection due to their decreased immune system, making them susceptible to virus infection. Physiological changes also occur during pregnancy such as an increase in the diaphragm, increased oxygen demand, and edema of the respiratory tract mucosa which is at high risk of hypoxia (Prawihardjo, 2018).

The Indonesian government has enacted a policy of providing COVID-19 vaccination to pregnant women. The Indonesian Obstetrics and Gynecology Association recommends five types of vaccines that can be given to pregnant women, namely the Pfizer, Moderna, Astra Zeneca, Sinovac, and Sinopharm vaccines. COVID-19 vaccination should be given starting at the gestational age of over 12 weeks or in the second trimester of pregnancy and no later than 33 weeks of pregnancy or the third trimester (POGI, 2021).

1.791 pregnant women in Jakarta were vaccinated with Sinovac, Moderna, and Pfizer vaccines in the period 2 - 18 August 2021. Nine of them even had their second dose of vaccination (Anies Baswedan, 2021).

Adverse events following immunization (AEFI) are defined as any untoward medical events following immunization that do not necessarily have a causal relationship to the vaccine. Adverse events can be in the form of detrimental or unintended indications, abnormal laboratory findings, symptoms, or disease (Direktorat Promosi Kesehatan RI, 2022).

A preliminary study conducted by the researchers at the maternal and child health polyclinic at Kemayoran Public Health Center in August - November 2021 showed that 64 pregnant

women received the COVID-19 vaccination which 36 pregnant women received the Sinovac vaccine (56.5%), 25 pregnant women received the Pfizer vaccine (39%), and 3 pregnant women received the AstraZeneca vaccine (4.5%). Of the 10 pregnant women who were vaccinated, 6 experienced fever and injection site pain. Based on the explanation above, the researchers were interested in conducting a study to determine "Factors associated with AEFI of COVID-19 vaccination in pregnant women at Kemayoran Public Health Center in 2022".

## RESEARCH METHODS

This study applied a quantitative descriptive method using a cross-sectional approach with a retrospective research design by observing pregnant women with AEFI of COVID-19 vaccination who carried out antenatal care at Kemayoran Public Health Center at one time simultaneously.

The dependent variable in this study was AEFI of COVID-19 vaccination in pregnant women, and the independent variables were predisposing factors. The population in this study were all pregnant women who had pregnancy visits at Kemayoran Public Health Center. The sample in this study was determined using a total sampling technique. The sample in this study was 80 pregnant women who had received COVID-19 vaccination and visited Kemayoran Public Health Center.

The data in this study were collected using the primary data method, namely the AEFI of COVID-19 screening form which was filled in by the respondents. This study was carried out in September 2022 at Kemayoran Public Health Center.

The data then were analyzed using a univariate data analysis to determine the distribution of factors associated with AEFI of COVID-19 vaccination in pregnant women. Then, a bivariate data analysis using the chi-square test was carried out to determine the relationship between the independent variables and the dependent variable.

## RESEARCH RESULTS

### Univariate Analysis

Table 1 above shows that 35 respondents (43.8%) received the Sinovac vaccination, 13 respondents (16.3%) received the AstraZeneca

vaccination, and 32 respondents (40%) received the Pfizer vaccination.

**Table 1**  
**Frequency Distribution of Types of COVID-19 Vaccines for Pregnant Women**

Types of COVID-19 Vaccine	Frequency	Percentage (%)
Sinovac	35	43.8
AstraZeneca	13	16.3
Pfizer	32	40

**Table 2**  
**Frequency Distribution of the Characteristics of Pregnant Women**

Characteristics	Frequency (n=30)	Percentage (%)
Age		
< 20 years old	16	20
20 – 35 years old	55	68.8
> 35 years old	9	11.3
Education		
High	63	78.8
Low	17	21.3
Occupation		
Having an occupation	33	41.3
Having no occupation	47	58.8
Parity		
Primiparity	35	43.8
Multiparity	42	52.5
Grand Multiparity	3	3.8

Table 2 above shows that of the 80 pregnant women, 55 respondents (68.8%) were categorized into the age group that was not at risk, and 25 respondents (31.3%) were in the age group that was at risk. 63 respondents (78.8%) had higher education, and 17 respondents (21.3%) had lower education. 47 respondents (58.8%) had no occupation or did not work, and 33 respondents (41.3%) had an occupation or actively worked. Further, 42 respondents (52.2%) were multiparous, and 35 respondents (43.8%) were primiparous. Whilst, 3 respondents (3.8%) were grand multiparous.

**Table 3**  
**Frequency Distribution of Gestational Age**

Gestational Age	Frequency	Percentage (%)
Trimester II	46	57,5
Trimester III	34	42,5

Table 3 above shows that 46 respondents (57.5%) were in their second trimester, and 34 respondents (42.5%) were in their third trimester.

**Table 4**  
**Frequency Distribution of Mother's Knowledge**

Knowledge	Frequency	Percentage (%)
Good	75	93,5
Poor	5	6,5

Table 4 above shows that of the 80 pregnant women, 75 respondents (93.5%) had good knowledge, and 5 respondents (6.5%) had poor knowledge

**Table 5**  
**Frequency Distribution of AEFI**

AEFI	Frequency	Percentage (%)
Having AEFI	53	66,3
Having no AEFI	27	33,7

Table 5 above shows that of the 80 pregnant women, 53 respondents (66.3%) had AEFI after COVID-19 vaccination, and 27 respondents (33.7%) had no AEFI after COVID-19 vaccination

#### Bivariate Analysis

#### Factors Associated with AEFI of COVID-19 Vaccination in Pregnant Women

Table 6 above shows that the correlation coefficient obtained was 0.160, meaning that the relationship is in the medium category (0.40-0.599).

**Table 6**  
**Age**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3,661	2	,160
Likelihood Ratio	3,548	2	,170
Linear-by-Linear Association	0,24	1	,877
N of Valid Cases	80		

**Table 7**  
**Education**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,710	1	,191		
Continuity Correction	1,038	1	,308		
Likelihood Ratio	1,652	1	,199		
Fishe's Exact Test				,249	,154
Linear-by-Linear Association	0,24	1	,194		
N of Valid Cases	80				

Table 7 above shows that the correlation coefficient obtained was 0.191, meaning that the relationship is in the medium category (0.40-0.599).

Table 8 above shows that the correlation coefficient obtained was 0.305, meaning that the relationship is in the medium category (0.40-0.599).

**Table 8**  
**Occupation**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,054	1	,305		
Continuity Correction	,619	1	,432		
Likelihood Ratio	1,068	1	,301		
Fishe's Exact Test				,345	,217
Linear-by-Linear Association	1,041	1	,308		
N of Valid Cases	80				

**Table 9**  
**Parity**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2,819	2	,244
Likelihood Ratio	2,755	2	,252
Linear-by-Linear Association	2,531	1	,112
N of Valid Cases	80		

Table 9 above shows that the correlation coefficient obtained was 0.244, meaning that the relationship is in the medium category (0.40-0.599).

Table 10 above shows that the correlation coefficient obtained was 0.227, meaning that the relationship is in the medium category (0.40-0.599).

**Table 10**  
**Gestational Age**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,459	1	,227		
Continuity Correction	,938	1	,333		
Likelihood Ratio	1,452	1	,228		
Fisrh's Exact Test				,243	,166
Linear-by-Linear Association	1,440	1	,230		
N of Valid Cases	80				

**Table 11**  
**Knowledge**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5,102	1	,024		
Continuity Correction	3,134	1	,077		
Likelihood Ratio	4,833	1	,028		
Fisrh's Exact Test				,042	,042
Linear-by-Linear Association	5,038	1	,025		
N of Valid Cases	80				

Table 11 above shows that the correlation coefficient obtained was 0.024, meaning that the relationship is in the medium category (0.40-0.599).

fetus receives immunity from the mother. This is because the fetus's immunity has not perfectly formed, so there is a very high risk of complications during pregnancy (Prawihardjo, 2018).

## DISCUSSION

### Types of Vaccine

Based on the results of this study carried out at the MCH polyclinic at Kemayoran Public Health Center, 80 respondents (100%) received the COVID-19 vaccination. 35 respondents (43.8%) received the Sinovac vaccination, 13 respondents (16.3%) received the AstraZeneca vaccination, and 32 respondents (40%) received the Pfizer vaccination. This is in line with the Indonesian Government's policy concerning the use of five types of COVID-19 vaccines for pregnant women, namely Sinovac, AstraZeneca, Sinopharm, Moderna, and Pfizer. COVID-19 vaccination is a mandatory vaccination for pregnant women because pregnant women are vulnerable to COVID-19 infection. During pregnancy, the body is in an immunosuppressive state and experiences physiological changes such as an increase in the diaphragm, increased oxygen consumption, and edema of the respiratory tract mucosa which makes pregnant women susceptible to hypoxia. Further, the fetus can be infected by viruses even though the

### The Age of Pregnant Women

Based on the results of this study, regarding the age of the pregnant women who had been given COVID-19 vaccination, 18 respondents (20%) were <20 years old, 72 respondents (72%) were 20-35 years old, and 10 respondents (10%) were > 35 years old.

The results of this study are in line with a study carried out by Aisyah (2021) showing that there was a positive and significant relationship between the age level of pregnant women and their willingness to carry out COVID-19 vaccination in which pregnant women in their reproductive age (20-35 years) were 3.22% more likely to carry out COVID-19 vaccination. In terms of beliefs in society, someone who is more mature is considered ready to make decisions than someone who is not yet mature (Kurniawati and Nurdianti, 2018). The age of the pregnant women influences their willingness to carry out COVID-19 vaccination. Pregnant women aged 20-35 years are considered mature enough to decide to carry out vaccinations which aim to make

themselves and the fetus they are carrying immune to the COVID-19 infection (Aisyah, 2021)

#### Education

Based on the results of this study carried out at MCH polyclinic at Kemayoran Public Health Center, of the 80 respondents who had been vaccinated, 76 respondents (76%) had a high level of education including senior high school – university level. Then, 24 respondents (24%) had primary – middle school education.

The results of this study are in line with the results of a study conducted by Lestari et al. showing that education significantly influenced the absorption of information about health protocols for preventing COVID-19. People who have higher education will better filter the information they receive, especially from social media. This is due to the rise of false/hoax news, especially regarding COVID-19 (Lestari et al., 2020). Higher education influences pregnant women's mindsets and acceptance of information regarding COVID-19 vaccination. This was showed by the number of well-informed respondents of 95 in which 76 highly educated respondents were closely related to questions regarding COVID-19 vaccination.

#### Occupation

Based on the results of this study carried out at MCH polyclinic at Kemayoran Public Health Center, regarding occupation, 63 respondents (63%) had no occupation or did not work, and 37 respondents (37%) had an occupation or actively worked. Most of the respondents who were given the COVID-19 vaccination at Kemayoran Public Health Center were not working, but the level of their knowledge was good.

The results of this study are in line with a study carried out by Nurrizka et al. entitled Pregnant Women's Access to Health Services during the COVID-19 Pandemic showing that the majority of pregnant women who were not working had the highest proportion of prenatal check-ups in hospitals during the COVID-19 pandemic, as many as 39%. Pregnant women who did not work were 51 % of the respondents. Pregnant women who work will make decisions and efforts to prevent pregnancy complications through prenatal visits as well as carrying out COVID-19 vaccinations according to government recommendations (Nurrizka et al., 2021).

#### Parity

Based on the results of this study carried out at MCH polyclinic at Kemayoran Public Health

Center, regarding parity, 42 respondents (52.2%) were multiparous, and 35 respondents (43.8%) were primiparous. Whilst, 3 respondents (3.8%) were grand multiparous.

The results of this study are in line with a study carried out by Nurrizka et al. showing that the group of pregnant women who had more than 2 children/multiparas had the most pregnancy checks, as many as 45 respondents (54.7%) (Nurrizka et al., 2021). Maternal parity influences the amount of information and experience the mothers obtain. Vaccination information can be obtained by reading or explanations from health workers. The amount of information obtained by pregnant women will further increase their knowledge about COVID-19 vaccination. This is also in line with a theory proposed by Notoatmodjo (2017) stating that information and experience are factors that influence a person's knowledge.

#### Gestational Age

Based on the results of this study carried out at MCH polyclinic at Kemayoran Public Health Center, regarding gestational age, 46 respondents (57.5%) were in their second trimester, and 34 respondents (42.5%) were in their third trimester.

The results of this study are in line with a study carried out by Nurrizka, et al. showing that 40 respondents (33.3 %) who received COVID-19 vaccination were in the second trimester of pregnancy, and 36 respondents (15%) were in the third trimester of pregnancy (Nurrizka et al., 2021). Gestational age is an important factor in the COVID-19 vaccination program because pregnant women who can receive COVID-19 vaccination are those whose gestational age must have reached the second trimester (14-28 weeks). This is because, in the second trimester, the fetal organs are already perfectly formed and the fetus can form the immune system (POGI, 2021).

#### Knowledge of COVID-19 Vaccination

Based on the results of this study at MCH Polyclinic at Kemayoran Public Health Center, of the 80 pregnant women, 75 respondents (93.5%) had good knowledge, and 5 respondents (6.5%) had poor knowledge

Regarding the indicators in questionnaire number 19 about whether or not pregnant women need to get the 3rd dose of the COVID-19 vaccine, most respondents (44%) answered incorrectly, meaning that pregnant women should not need the 3<sup>rd</sup> dose of the COVID-19 vaccine because according to the government recommendations, pregnant women only need to get the 2<sup>nd</sup> dose of

the COVID-19 vaccine. Meanwhile, in question number 20 in the questionnaire, regarding activities carried out by mothers, if they experience a reaction after vaccination, the majority of respondents (49%) answered incorrectly. If mothers experience reactions after vaccination, they should get enough rest and take medication recommended by health workers.

The results of this study are in line with a study conducted by Fonda Octarianingsih Shariff showing that 67 pregnant women at Talang Ubi Regional Hospital (60.9%) had a good level of knowledge about COVID-19, 37 pregnant women (33.6%) had sufficient knowledge, and 6 pregnant women (5.5%) had poor knowledge (Octarianingsih Shariff et al., 2021). Someone who has good knowledge will influence decisions and efforts to prevent pregnancy complications through prenatal visits. Knowledge is an important factor in shaping the actions of a person. Therefore, a pregnant woman will carry out a COVID-19 vaccination if she has good knowledge about COVID-19 vaccination.

#### AEFI

Based on the results of this study at MCH polyclinic at Kemayoran Public Health Center, of the 80 pregnant women, 53 respondents (66.3%) had AEFI after COVID-19 vaccination and 27 respondents (33.7%) had no AEFI after COVID-19 vaccination.

This is in line with the data from the Indonesian Obstetrics and Gynecology Association Surabaya indicating that from 11 places in Indonesia that provide vaccines to pregnant women, 80% of whom experienced mild side effects such as fever and pain at the injection site, and 13% of whom did not experience AEFI at all. Chairman of the National Commission on AEFI, Hinky Hindra Irawan Satari, said that every vaccine had to have an AEFI. The Sinovac, AstraZeneca, Sinopharm, and Pfizer vaccines have an AEFI rate below 1%, while the Moderna vaccine has an AEFI rate of 4%.

AEFI is medical events related to immunization in the form of vaccine effects, side effects, toxicity, sensitivity reactions, pharmacological effects or co-occurrence program errors, and injection reactions or causal relationships that cannot be determined (Depkes, 2005: 52). In the guidebook regarding the implementation of COVID-19 vaccination, the reactions that may occur after COVID-19 vaccination are almost the same as other vaccines. Some of the symptoms include pain, redness, swelling at the injection site, and other severe local reactions such as cellulitis. Then, systemic reactions

include fever, body muscle pain (myalgia), joint pain (arthralgia), asthenia and headaches, and other reactions such as allergies including urticaria, edema, anaphylactic reactions, and fainting (Kemenkes RI, 2020).

#### Factors Associated with AEFI of COVID-19 Vaccination in Pregnant Women

The results of the analysis carried out in this study showed that the knowledge variable was the most dominant variable with a p-value of 0.024. This means that the most dominant variable related to the AEFI of COVID-19 vaccination was the knowledge variable. The level of knowledge about the importance of COVID-19 vaccination could be influenced by the lack of information obtained by the respondents or the large number of "hoax" news circulating in society which can lead to misunderstanding of information. Several factors can cause fake news to become rampant. Those factors include looking for sensation, humor, profit-oriented, or just following certain parties either deliberately causing unrest or having a desire to pit one against another.

From all those factors, fake news that spreads rampantly by taking advantage of certain situations such as the pandemic situation is frequently used to corner a party and cause unrest. Different educational backgrounds, varying environments, and receiving diverse messages certainly provide opportunities for the spread of fake news related to the COVID-19 vaccine (Priastuty et al., 2020). Knowledge is the result of knowing, and gained after people sense a particular object. Most human sensations are obtained using the eyes and ears through the process of seeing and hearing. In addition, knowledge is gained through experience and learning processes in formal and non-formal education (Notoatmodjo, 2012). Factors that influence people's knowledge about COVID-19 vaccination include education level.

Based on the results of this study, 93.5% of the respondents with higher educational levels had good knowledge regarding COVID-19 vaccination. Education level influences the knowledge of a person. Budiman and Riyanto (2013) stated that formal education has a significant influence on the knowledge of a person. However, some respondents who had lower education levels had a good level of knowledge about the importance of COVID-19 vaccination. This is because information about the importance of COVID-19 vaccination can be obtained easily via social media, and counseling carried out by the staff of the Public Health Center and the Health Service.

## CONCLUSION

Based on the results and discussion presented in this study, the Sinovac vaccine was the most common type of vaccine given to pregnant women, and the age of pregnant women when they got the COVID-19 vaccination was 20-35 years. Pregnant women who got the COVID-19 vaccination were highly educated. Moreover, most pregnant women who got vaccinated did not work, and were multigravida/a woman who had been pregnant more than once. Most pregnant women who got vaccinated were in the second trimester of pregnancy and were well-informed about COVID-19. In addition, most of the pregnant women had no history of COVID-19, and most of them experienced AEFI after COVID-19 vaccination.

## SUGGESTION

Health Workers of Kemayoran Public Health Center, Central Jakarta, should collaborate with cadres of integrated healthcare centers and community leaders to provide COVID-19 vaccinations for pregnant women, especially for those whose gestational age is >13 weeks. The collaboration can be carried out by providing information about COVID-19 vaccination and how to prevent COVID-19 so that COVID-19 infection in pregnant women can be prevented, as well as facilitating COVID-19 vaccination service locations.

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## MONITORING THE GROWTH AND DEVELOPMENT OF TODDLER DURING THE COVID 19 PANDEMIC USING THE RAJABALITA APPLICATION AND KIA

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### ABSTRAK MONITORING PERTUMBUHAN DAN PERKEMBANGAN BALITA PADA MASA PANDEMI COVID 19 MENGGUNAKAN APLIKASI RAJABALITA DAN KIA

Latar Belakang Pemerintah dalam pemantauan tumbuh kembang balita, salah satunya menggunakan program penimbangan berat badan dan pengukuran tinggi badan Balita di Posyandu yang dituangkan atau didokumentasikan kedalam buku KIA. Penggunaan Buku KIA sangat bermanfaat bagi orang tua dalam memantau pertumbuhan dan perkembangan Balita. Peneliti membandingkan efektifitas dari penggunaan aplikasi rajabalita dengan penggunaan buku KIA terhadap pemantauan tumbuh kembang pada balita.

Tujuan penelitian ini adalah untuk mengetahui perbandingan pemantauan tumbuh kembang Balita menggunakan Aplikasi Rajabalita dan Buku KIA

Metode penelitian ini menggunakan Desain penelitian true-eksperimen, dua kelompok dengan desain pra dan post tes. Teknik pengambilan sampel adalah *Simple Random Sampling* dengan jumlah sampel sebanyak 100 orang. Analisa data secara univariat dan analisa bivariat dengan T-Test Dependen dan T-Test Independent

Hasil penelitian yang diperoleh dari seluruh responden, 100 orang balita (100%), seluruhnya dalam status perkembangan normal. Dan diketahui bahwa persentase terbesar pada kualitas buku KIA yaitu pada tingkat relevansi informasi, yaitu sebesar 64 %, sedangkan persentase terbesar pada kualitas aplikasi yaitu pada kualitas ketepatan waktu informasi, yaitu 80%.

Kesimpulannya dapat diketahui bahwa penggunaan Aplikasi Rajabalita sangat bermanfaat dan efektif dalam memantau tumbuh kembang balita pada masa pandemic

Saran Peneliti menyarankan untuk terus melakukan kegiatan yang melibatkan masyarakat dalam hal pencegahan stunting dengan metode yang terus berinovasi, dan menggunakan media yang bermacam macam, sehingga akan lebih banyak masyarakat yang tertarik untuk melibatkan diri, dan pada akhirnya dapat menimbulkan kesadaran dan kemandirian masyarakat

Keyword : Balita; Aplikasi; Rajabalita; KIA;Tumbuh kembang

### ABSTRACT

Background: The government in monitoring the growth and development of toddlers, one of which is using a program for weighing and measuring the height of toddlers at Posyandu which is outlined or documented in the KIA book. Using the KIA Book is very useful for parents in monitoring the growth and development of toddlers. Researchers compared the effectiveness of using the Rajabalita application with using the KIA book in monitoring growth and development in toddlers.

The aim of this research is to find out the comparison of monitoring toddler growth and development using the Rajabalita Application and the KIA Book

This research method uses a true-experimental research design, two groups with a pre- and post-test design. The sampling technique is Simple Random Sampling with a sample size of 100 people. Univariate data analysis and bivariate analysis with Dependent T-Test and Independent T-Test

The research results obtained from all respondents, 100 toddlers (100%), were all in normal development status. And it is known that the largest percentage of the quality of the KIA book is the level of relevance of the information, namely 64%, while the largest percentage of the quality of the application is the quality of the timeliness of the information, namely 80%.

In conclusion, it can be seen that using the Rajabalita Application is very useful and effective in monitoring the growth and development of toddlers during the pandemic

Suggestions: Researchers suggest continuing to carry out activities that involve the community in preventing stunting with methods that continue to innovate, and using a variety of media, so that more people will be interested in getting involved, and in the end it can raise community awareness and independence.

Keyword : Toddler; Application; Rajabalita; KIA; Growth and development

## INTRODUCTION

WHO (World Health Organization) or the World Health Organization officially declared the corona virus (COVID-19) as a pandemic on March 9 2020. This means that the corona virus has spread widely throughout the world, including Indonesia and the city of Bandar Lampung in particular.

The term pandemic seems scary but is actually not related to malignancy but rather to its widespread spread. In facing the non-natural disaster outbreak Covid-19, society must apply the principles of infection control prevention and physical distancing. However, daily activities and life must continue, including in the health service line. This also includes health services for toddlers. The main problem for toddlers in Indonesia currently is the still high incidence of stunting.

Currently, many programs have been launched by the government in terms of monitoring the growth and development of toddlers, one of which is the program for weighing and measuring the height of toddlers at Posyandu which is outlined or documented in the KIA book. Using the KIA Book is very useful for parents in monitoring the growth and development of toddlers.

During the current pandemic, researchers assume that monitoring the growth and development of toddlers can be carried out by parents using an application, thereby reducing the risk of contact with health workers. In this way, we can minimize the risk of toddlers and parents contracting the Covid-19 virus, but still monitor the growth and development of their toddlers.

On this occasion, researchers intend to compare the effectiveness of using the Rajabalita application with using the KIA book in monitoring growth and development in toddlers.

## RESEARCH METHODS

The design of this research is true-experimental research, two groups with a pre- and post-test design. The sampling technique is Simple Random Sampling with a sample size of 100 people. Univariate data analysis and bivariate analysis with Dependent T-Test and Independent T-Test

The research results that have been achieved are that research activities have been carried out by teaching two groups of respondents. Respondents at

PMB Lia Maria are mothers who have toddlers, and are taught how to monitor the growth and development of toddlers using an application on the mother's cell phone. Another group is respondents at PMB Marlina Turnip, namely mothers who have toddlers who are taught how to monitor the growth and development of toddlers using the KIA book in the control group, then the toddler's growth, toddler development and mother's knowledge are measured. Questionnaires were given offline to respondents, beforehand a class was held to provide socialization on how to fill out the questionnaire. Respondents who had difficulty using the application were guided by an enumerator who worked at the Independent Midwife Practice where the respondent was used to getting toddler growth and development services.

Before collecting data, a perception equation was first carried out with the midwife and midwife assistant as enumerator. Enumerators were taught how to use the application to monitor the growth and development of toddlers in the intervention group, while in the control group, respondents used the KIA book to monitor the growth and development of toddlers.

## RESEARCH RESULT

### Growth Status of Toddlers in the KIA Application and Book Group

Table 1  
Distribution of Toddler Growth Status in the KIA Application and Book Group

Distribution	Amount	Percentage
Application Group		
Normal	45	90
Thin	2	4
Fat	3	6
KIA Book Group		
Normal	48	96
Thin	0	0
Fat	3	6
Gemuk	2	4

Based on table 1, it is known that in the application group, 2 (4%) toddlers with growth status were thin, 3 (60%) were fat. In the KIA Book group, 48 (96%) toddlers had normal growth status, and 2 (4%) had normal growth status, and 2 (4%) had obese growth status.

#### Development Status of Toddlers in the KIA Application and Book Group

Based on table 2, it is known that of all respondents, 100 toddlers (100%), all of them were in normal development status.

**Table 2**  
**Distribution of Developmental Status of Toddlers in Rajabalita Application Group and KIA Books**

Distribution	Amount	Percentage
Application Group		
Normal	50	100
Reference	0	0
KIA Book Group		
Normal	50	100
Reference	0	0

**Table 3**  
**Percentage Distribution of Quality of KIA Applications and Books**

Buku KIA	STS	TS	N	S	SS
Information Display Quality	0	8.0	12.0	60.0	20.0
Information Trust Level	0	8.0	12.0	60.0	20.0
Timeliness Quality of Information	0	0	16.0	64.0	20.0
Information Relevance Level	0	0	24.0	60.0	16.0
<b>KIA Book King Toddler Application</b>					
Information Display Quality	0	0	0	68.0	32.0
Application Group Amount percentage	0	0	0	72.0	28.0
Timeliness Quality of Information	0	0	0	80.0	20.0
Information Relevance Level	0	0	0	76.0	24.0

Based on Table 3, it is known that the largest percentage of the quality of the KIA book is the level of relevance of the information, namely 64%, while the largest percentage of the quality of the application is the quality of the timeliness of the information, namely 80%.

#### Comparison of the Distribution of Toddler Growth Status in the MCH Application and Book Groups

Based on table 4, it is known that the average growth rate for toddlers in the Rajabalita application group is 0.27, the average in the KIA book group is 0.31. The P value is 0.169 which means there is no significant difference between the growth status of toddlers in the application group and in the MCH book group.

**Table 4**  
**Comparative Distribution of Toddler Growth Status in the KIA Applications and Books Group**

Group	Mean	SD	SE	P Value	N
Aplication Rajabalita	0.2676	1.729837	0.345967	0.169	50
KIA Book	0.30992	1.134215	0.226843		50

#### Comparison of the Distribution of Toddler Development Status in Groups A and B

Based on table 5, it is known that the average development of toddlers in the Rajabalita application group is 86,707, the average in the KIA book group

is 84,005. The P value is 0.0, which means there is a significant difference between the developmental status of toddlers in the application group and in the MCH book group

Table 5  
Comparative Distribution of Toddler Developmental Status In Groups A and B

Group	Mean	SD	SE	P Value	N
Aplication Rajabalita	86.707	15.77313	3.55463	0,0	50
KIA Book	84.005	1.134215	0.226843		50

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## PRENATAL YOGA CAN REDUCES BACK PAIN AND HELPS PREGNANT WOMEN SLEEP BETTER

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### ABSTRAK YOGA PRENATAL DAPAT MENGURANGI NYERI PUNGGUNG DAN MEMBANTU IBU HAMIL TIDUR LEBIH BAIK

Latar Belakang: Perubahan fisiologis yang sering di alami ibu hamil trimester III sering menyebabkan ketidak nyamanan saat hamil seperti nyeri punggung dan kualitas tidur. Oleh sebab itu prenatal yoga sangat disarankan untuk ibu hamil sebagai salah satu cara mengurangi rasa nyeri, membuat ibu hamil merasa nyaman, tidur lebih nyenyak, dan rileks.

Tujuan Penelitian: Penelitian ini bertujuan untuk mengetahui adakah hubungan prenatal yoga dengan pengurangan nyeri punggung dan kualitas tidur ibu hamil trimester III.

Metode Penelitian: Jenis penelitian ini adalah *Analitik Correlational* dengan rancangan *Cross sectional*. Populasi penelitian ini adalah ibu hamil trimester III di Desa Citeko Atas Kabupaten Bogor sejumlah 30 orang ibu hamil. Diambil secara *Total Sampling* sejumlah 30 responden dikarenakan jumlah populasi yang kurang dari 100. Instrument penelitian ini menggunakan kuesioner. Pengolahan data menggunakan *Editing, Coding, Scoring, Tabulating* dan Uji statistik *Chi Square*. Yoga dilakukan pada bulan Juni 2023 selama 4 kali pertemuan, teknik dalam menghitung skala nyeripun dalam prenatal yoga menggunakan skala nyeri Bourbanais sama dengan kategori VDS yang memiliki 5 kategori dengan menggunakan skala 0-10.

Hasil Penelitian: Berdasarkan hasil penelitian yang di uji menggunakan *Chi Square* dapat diketahui nilai signifikan ( $p\text{ value}$ )  $0,001 < 0,05$  yang artinya adanya hubungan antara prenatal yoga dengan pengurangan nyeri punggung dan kualitas tidur pada ibu hamil trimester III.

Kesimpulan: Penelitian ini dapat diberi kesimpulan bahwa adanya hubungan yang signifikan antara prenatal yoga dengan penguran nyeri puggung dan kualitas tidur ibu hamil trimester III.

Saran: Diharapkan kepada ibu hamil trimester III dapat dilakukan penerapan prenatal yoga, dan lebih giat lagi mencari informasi dari mana saja termasuk tenaga kesehatan dan non tenaga kesehatan.

Kata Kunci: Prenatal Yoga; Skala Nyeri; Kualitas Tidur; Ibu Hamil Trimester III

### ABSTRACT

Background: Physiological changes that are often experienced by third trimester pregnant women often cause discomfort during pregnancy such as back pain and sleep quality. Therefore, prenatal yoga is highly recommended for pregnant women as a way to reduce pain, make pregnant women feel comfortable, sleep better, and relax.

Objective : This study aims to determine whether there is a relationship between prenatal yoga and the reduction of back pain and the sleep quality of third trimester pregnant women.

Methods: This type of research is Correlational Analytical with Cross sectional design. The population of this study were third trimester pregnant women in Citeko Atas Village, Bogor Regency with a total of 30 pregnant women. Total sampling was taken by 30 respondents because the population was less than 100. The research instrument used a questionnaire. Data processing uses Editing, Coding, Scoring, Tabulating and Chi Square statistical test. Yoga was carried out in June 2023 for 4 meetings, the technique in calculating the pain scale in prenatal yoga using the Bourbanais pain scale was the same as the VDS category which had 5 categories using a scale of 0-10.

Result : This study can be concluded that there is a significant relationship between prenatal yoga and the reduction of back pain and sleep quality of third trimester pregnant women.

Conclusions: This study can be concluded that there is a significant relationship between prenatal yoga and the reduction of back pain and sleep quality of third trimester pregnant women.

Suggestions: It is hoped that pregnant women in the third trimester can apply prenatal yoga, and be more active in seeking information from anywhere, including health workers and non-health workers.

Keywords: Prenatal Yoga; Pain Scale; Sleep Quality; Third Trimester Pregnant Women

## INTRODUCTION

According to WHO (2023) Maternal mortality is very high. About 287,000 women died during and after pregnancy and childbirth in 2020. Nearly 95% of all maternal deaths occurred in low- and middle-income countries in 2020, and most were preventable.

At the same time, between 2000 and 2020, Eastern Europe and South Asia achieved the largest reductions in maternal mortality ratios (MMRs): reductions of 70% (from an MMR of 38 to 11) and 67% (from an MMR of 408 down to 134), respectively. Despite its very high MMR in 2020, Sub-Saharan Africa also achieved a substantial 33% reduction in MMR between 2000 and 2020. Four SDG sub-regions roughly halved their MMR during this period: East Africa, Central Asia, East Asia, and North Africa and Western Europe reduced their MMR by about a third. Overall, the maternal mortality ratio (MMR) in the least developed countries decreased by just under 50%. In landlocked developing countries, MMRs decreased by 50% (from 729 to 368). In small island developing states, the MMR decreased by 19% (from 254 to 206) (WHO, 2023).

Research conducted by Mu'alimah M (2021) explains the effect of prenatal yoga on back pain in pregnant women in trimester 3, the focus of this research is on the effect of prenatal yoga on back pain in third trimester pregnant women at Puskesmas Mrican Kediri City so that the variables used are different from the research the author is doing.

Research conducted by vitria meilinda and loli alita ayani (November 2020) describes the effect of yoga exercises on improving sleep quality in primigravida mothers in trimester 3, this study focuses on the average sample sleep quality before yoga exercises of 9.20 with a standard deviation of 1.476. The average quality of sleep after yoga exercises is 5 with a standard deviation of 0.816. 4. There is an effect of yoga exercises on improving sleep quality in third trimester primigravida mothers at BPS "B" Bukittinggi City in 2020 with  $Z = 2.871$  and  $p \text{ value} = 0.004$ , so the variables used are different from the research the author is doing.

## RESEARCH METHODS

The research design carried out in this study was Cross Sectional with random sampling technique. This research was conducted in Citeko Atas Village, Cisarua District, Bogor Regency on 30 June 2023 with a total sample of 30 respondents. Ho will be tested with a level of significance of 0.05. The statistical test used is Chi Square statistical analysis.

## RESEARCH RESULTS

### Univariate Results

**Table 1**  
**Frequency Distribution of Prenatal Yoga Respondents by Age in Upper Citeko Village in 2023**

Age	Frequency (n)	Percentage (%)
17-25 year	12	40
26-35 year	14	46.7
36-45 year	4	13.3
>46 year	0	0

Based on table 1, it can be seen that out of a total of 30 respondents, most of the respondents, namely 14 respondents (46.7%) in this study were 26-35 years old, while a small proportion of 4 respondents (13.3%) were 36-45 years old.

**Table 2**  
**Frequency Distribution of Prenatal Yoga Respondents Based on Education in Citeko Atas Village in 2023**

Education	Frequency (n)	Percentage (%)
Primary school	6	20.0
Junior high school	11	36.7
Senior high school	12	40.0
College	1	3.3

Based on table 2, it can be seen that a total of 30 respondents, most of the respondents, namely 12 respondents (40.0%) have a high school education. While a small proportion of 1 respondent (3.3%) with tertiary education.

**Table 3**  
**Frequency Distribution of Prenatal Yoga Respondents Based on Knowledge in Citeko Atas Village in 2023**

Knowledge	Frequency (n)	Percentage (%)
Good (76%-100%)	13	43.3
Fair (56%-75%)	16	53.4
Less (<56%)	1	3.3

Based on table 3, it can be seen that a total of 30 respondents, most of which are 16 respondents (53.4%) have sufficient knowledge. While a small proportion of 1 respondent (3.3%) was less knowledgeable.

**Table 4**  
Frequency Distribution of Respondents Based on Knowledge of Prenatal Yoga in Citeko Atas Village in 2023

Source of Information	Frequency (n)	Percentage (%)
Health Workers	14	46.7
Non-Health Workers	16	53.3

Based on table 4, it can be seen that a total of 30 respondents, 16 respondents (53.3%) knew from non-health workers. While a small proportion of 14 respondents (46.7%) knew from health workers.

**Table 5**  
Frequency distribution of respondents based on whether or not they have ever participated in prenatal yoga in Citeko Atas Village in 2023

Source of Information	Frequency (n)	Percentage (%)
Ever	20	67%
Never	10	33%

Based on table 5, it can be seen that a total of 30 respondents, 16 respondents (53.3%) knew from non-health workers. While a small proportion of 14 respondents (46.7%) knew from health workers.

**Table 6**  
Frequency Distribution of Prenatal Yoga Respondents Based on Pain Scale in Citeko Atas Village 2023

Pain Scale	Frequency (n)	Percentage (%)
No pain	14	47%
Mild Pain	6	20%
Moderate Pain	10	33%
Severe Pain	0	0%
Very severe pain	0	0%

Based on table 6, it can be seen that a total of 30 respondents, most of which are no pain 14 respondents (47%), moderate pain 10 (33%), while a small proportion of mild pain 6 respondents (20%).

**Table 7**  
Frequency Distribution of Prenatal Yoga Respondents Based on Sleep Quality in Citeko Atas Village 2023

Sleep Quality	Frequency (n)	Percentage (%)
Good Sleep Quality	21	70%
Poor Sleep Quality	9	30%

Based on table 7, it can be seen that a total of 30 respondents mostly have good sleep quality, and while some have poor sleep quality, 9 respondents (30%).

## Bivariate Analysis

**Table 8**  
Relationship between prenatal yoga and pain scale

Pain Scale	Prenatal Yoga					
	Ever (66%-100%)		Never (<66%)		Total	
	N	%	N	%	N	%
No pain	14	100	0	0	14	100
Mild Pain	6	100	0	0	6	100
Moderate Pain	0	0	10	100	10	100
Severe Pain	0	0	0	0	0	100
Very severe pain	0	0	0	0	0	100

Based on table 8, it shows that 30 respondents, almost half of the respondents did not feel pain because they had participated in the

application of prenatal yoga before, namely 14 respondents (100%).



Table 9  
Relationship between Prenatal Yoga and Sleep Quality

Sleep Quality	Prenatal Yoga					
	Ever (66%-100%)		Never (<66%)		Total	
	N	%	N	%	n	%
Good	20	95.3	1	4.7	21	100
Bad	0	0	9	100	9	100

Based on table 9, it shows that 30 respondents, almost half of the respondents have good sleep quality because they have participated in the application of prenatal yoga before, namely 20 respondents (95.3%).

## DISCUSSION

Based on the results of this study, based on the reduction of back pain on the application of prenatal yoga, that from a total of 30 respondents, most of them, namely 14 respondents, did not feel pain because they had participated in prenatal yoga with the results of statistical tests obtained data values processed with SPSS for windows with the Chi Square test showed that the significant value of  $p = 0.001 < (0.05)$ ,  $H_0$  was rejected, meaning that there was a relationship between the application of prenatal yoga with a reduction in the pain scale of third trimester pregnant women in Citeko Atas village, Cisarua District, Bogor Regency.

The same research conducted by Miftakhul Mu'alimah (2021) regarding "The Effect of Prenatal Yoga on Back Pain in Third Trimester Pregnant Women" with 16 respondents. It can be seen from Miftakhul Mu'alimah that most of the respondents, namely 16 respondents after prenatal yoga, there was a reduction in back pain in third trimester pregnant women.

According to the researcher, there is a relationship between prenatal yoga and reducing back pain in third trimester pregnant women. This study uses a pain scale category based on Syaf'i 2010 which says pregnant yoga exercises are part of antenatal care at certain health care centres, such as hospitals, health centres, clinics, or other health care centres.

The categories in the Bourbanais pain scale are the same as the VDS categories, which have 5 categories using a scale of 0-10. According to AHCPR, 1992 in Potter and Perry (2010), the pain criteria on this scale are: 0 : No pain, 1-3: Mild pain, objectively the patient can communicate well, 4-6: Moderate pain, objectively the patient hisses, grins, can show the location of pain, can describe it, can follow orders well, 7-9: Severe pain, objectively the patient sometimes cannot follow commands but still

responds to actions, can show the location of pain, cannot describe it, cannot be overcome by changing the position of long breath and distraction, 10: Very severe pain, the patient is no longer able to communicate, hitting.

Based on the quality of sleep on the application of prenatal yoga, that from a total of 30 respondents, almost half of the respondents had good sleep quality, namely a total of 20 respondents (95.3%) because they had participated in the application of prenatal yoga before, obtained data values processed with SPSS for windows with the Chi Square test showed that the significant value of  $p = 0.001 < (0.05)$ ,  $H_0$  was rejected, meaning that there was a relationship between the application of prenatal yoga and the quality of sleep of third trimester pregnant women in Citeko Atas village, Cisarua District, Bogor Regency.

Research conducted by Vitria Meilinda and Loli Alita Ayani (November 2020) explains about "The Effect of Yoga Gymnastics on Improving Sleep Quality in Trimester 3 Primigravida Mothers". It can be seen from vitria meilinda and loli alita ayani that most of the respondents, namely 10 primigravida mothers in third trimester. According to researchers, there is a relationship between prenatal yoga and improving sleep quality in third trimester pregnant women. This study uses non-parametric tests to take the average results of sleep quality.

According to Zahra et al., (2019). The category is said to be good sleep quality = PSQI value  $<$ , poor sleep quality = PSQI value  $> 5$ .

## CONCLUSION

Based on the results of the discussion in the study on the relationship of prenatal yoga to the reduction of back pain and sleep quality of third trimester pregnant women, the following conclusions were obtained:

Based on the results of the study obtained from the frequency distribution of respondents in the application of prenatal yoga based on the age of the mother in Upper Citeko Village, that out of a total of 30 respondents most of them, namely 14 respondents (46.7%) in the age of 26-35 years. Based on the results of research obtained from the

frequency distribution of respondents in the application of prenatal yoga based on maternal education in Upper Citeko Village, that out of a total of 30 respondents most, namely 12 respondents (40.0%) had a high school education. Based on the results of the study obtained from the frequency distribution of respondents in the application of prenatal yoga based on the mother's source of information in Upper Citeko Village, that out of a total of 30 respondents most, namely 16 respondents (53.3%) knew from non-health workers. Based on the research results obtained from the frequency distribution in the application of prenatal yoga with a reduction in back pain in third trimester pregnant women in Upper Citeko Village, that out of a total of 30 respondents, most of them, namely 14 respondents (100%) who had participated in prenatal yoga were very influential in reducing back pain in third trimester pregnant women. Based on the results of the study obtained from the frequency distribution in the application of prenatal yoga with the quality of sleep of third trimester pregnant women in Upper Citeko Village, that out of a total of 30 respondents most, namely 20 respondents (95.3%) who had participated in prenatal yoga were very influential in the quality of sleep of third trimester pregnant women. Based on the results of analysing the relationship between prenatal yoga and back pain reduction in third trimester pregnant women in Upper Citeko Village, it shows that from a total of 30 respondents, most of these respondents who have participated in prenatal yoga are very influential on reducing back pain in third trimester pregnant women, namely 14 respondents (100%). After being tested with Chi Square, it shows that the significant value of  $p = 0.001 < (0.05)$ ,  $H_0$  is rejected, meaning that there is a relationship between prenatal yoga and back pain reduction in third trimester pregnant women. Based on the results of analysing the relationship between prenatal yoga and sleep quality in third trimester pregnant women in Upper Citeko Village, it shows that out of a total of 30 respondents, most of these respondents who have participated in prenatal yoga are very influential on sleep quality in third trimester pregnant women, namely a total of 20 respondents (95.3%). After being tested with Chi Square, it shows that the significant value of  $p = 0.001 < (0.05)$ ,  $H_0$  is rejected, meaning that there is a relationship between prenatal yoga and a reduction in sleep quality experienced in third trimester pregnant women.

## SUGGESTIONS

It is hoped that pregnant women in the third trimester can apply prenatal yoga, and be more active in seeking information from anywhere, including health workers and non-health workers.

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## RELATIONSHIP BETWEEN EARLY INITIATION OF BREASTFEEDING AND CHANGES IN BODY TEMPERATURE OF NEWBORNS

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### ABSTRAK HUBUNGAN INISIASI MENYUSUI DINI DENGAN PERUBAHAN SUHU TUBUH BAYI BARU LAHIR

Latar Belakang Inisiasi Menyusui Dini (IMD) merupakan langkah awal keberhasilan pemberian ASI eksklusif. IMD juga berguna untuk hubungan ibu dan bayi serta membuat bayi merasa tenang. Dada ibu merupakan penstabil suhu yang dapat mengatur dan menghangatkan suhu tubuh bayi yang berisiko kedinginan akibat adaptasi terhadap udara di luar kandungan setelah melahirkan. dengan IMD risiko kehilangan panas (hipotermia) pada bayi baru lahir dapat menurunkan angka kematian. Peneliti kemudian tertarik untuk melakukan penelitian mengenai hubungan inisiasi menyusui dini dengan perubahan suhu tubuh bayi baru lahir. Metode penelitian yang akan dilakukan adalah dengan menggunakan metode observasi analitik dengan desain cross sectional yang melibatkan 30 sampel. Teknik yang akan digunakan adalah Accidental Sampling, sedangkan pengumpulan datanya menggunakan lembar observasi prosedur pelaksanaan IMD dan termometer digital aksila. Pengumpulan data meliputi coding, editing dan tabulasi, kemudian data dianalisis secara manual dan komputer dengan uji chi-square. Hasil uji statistik diperoleh nilai  $P = 0,002$  (nilai probabilitas  $(p) < (0,05)$  )  $H_a$  diterima sehingga dapat disimpulkan ada hubungan Inisiasi Menyusui Dini (IMD) dengan perubahan suhu tubuh bayi baru lahir di UPT Puskesmas Wuluhan, Kabupaten Jember. Kesimpulan Sehingga hasil penelitian ini diharapkan dapat menambah wawasan pengetahuan tentang hubungan inisiasi menyusui dini dengan perubahan suhu tubuh bayi baru lahir di kemudian hari.

Saran Banyak sekali saran yang perlu disampaikan untuk mengembangkan penelitian selanjutnya khususnya yang ingin peneliti sampaikan kepada berbagai pihak dan diharapkan dapat dijadikan sebagai bahan penelitian untuk penelitian selanjutnya. selanjutnya bagi Instansi Pelayanan Kesehatan diharapkan dapat memberikan edukasi kepada pasien ibu hamil mengenai hubungan IMD dengan perubahan suhu tubuh di BBL.

Kata Kunci : Inisiasi Menyusui Dini, Perubahan suhu tubuh pada bayi baru lahir.

### ABSTRACT

Background Early Breastfeeding Initiation (IMD) is the first step in the success of exclusive breastfeeding. IMD is also useful for the relationship between mother and baby and makes babies feel calm. The mother's chest is a temperature stabilizer that can regulate and warm the baby's body temperature who is at risk of cold due to adaptation to the air outside the womb after giving birth. with IMD the risk of heat loss (hypothermia) in newborns can reduce mortality. Researchers are then interested in conducting research on the relationship between early initiation of breastfeeding and changes in body temperature of newborns.

method is The research that will be conducted is using analytical observation method with a cross section design involving 30 samples. The technique that will be used is accidental sampling, while the data collection will use an observation sheet for the IMD implementation procedure and axillary digital thermometer. Data collection includes coding, editing and tabulating, then the data is analyzed manually and on a computer with the chi-square test. Results Statistical test results obtained  $P$  value = 0.002 (probability value  $(p) < (0.05)$  )  $H_a$  is accepted so it can be concluded that there is a relationship between Early Breastfeeding Initiation (IMD) with changes in body temperature of newborns at UPT Puskesmas Wuluhan, Jember Regency

Conclusion So that the results of this study are expected to add insight into knowledge about the relationship between early initiation of breastfeeding and changes in body temperature of newborns in the future.

Suggestion There are a lot of suggestion that need to share for develop further research especially The researcher expected that they would like to convey to various parties and hoped that it can be used as research material for next research. and then for Health Service Institutions is expected to be able to provide education to pregnant women patients regarding the relationship between IMD and changes in body temperature at BBL

Keywords : Early Initiation of Breastfeeding, Changes in body temperature in newborns.

## INTRODUCTION

Early Breastfeeding Initiation (IMD) is the first step in the success of exclusive breastfeeding. IMD is also useful for the relationship between mother and baby and makes babies feel calm. The mother's chest is a temperature stabilizer that can regulate and warm the baby's body temperature who is at risk of cold due to adaptation to the air outside the womb after giving birth. With IMD the risk of heat loss (hypothermia) in newborns can reduce mortality. Researchers are then interested in conducting research on the relationship between early initiation of breastfeeding and changes in body temperature of newborns. Colostrum contained in breast milk is useful for increasing the baby's immunity and reducing IMR due to hypothermia. IMD is done by placing the baby on the mother's chest or stomach for at least the first hour after the baby is born. Babies who are given the opportunity for IMD are not given clothes, so that their skin sticks to the mother's skin. Within the first 1 hour of life a baby is born into the world, the baby is guaranteed to immediately get the opportunity to do IMD (RI Ministry of Health, 2017). Newborns cannot regulate their body temperature properly, so they are easy to experience stress with changes in temperature from inside the uterus to temperatures in the outside the uterus / ambient temperature. As a result of this imbalance between heat production and heat loss, it results in hypothermia according to what has been explained that according to (WHO) the World Health Organization defines neonatal hypothermia as an underarm temperature of less than 36.5°C so that with this temperature it can regulate and warm the temperature. the baby's body is at risk of cold due to adaptation to the air outside the womb after childbirth. Hypothermia is one of the important causes of death and neonatal morbidity in developing countries, which increases mortality five times, every 1 ° C decrease in body temperature increases mortality by 80% (Demissie BW 2018, 2018). The effects of untreated hypothermia will cause several complications including: metabolic acidosis caused by the body carrying out anaerobic metabolism. A further impact due to an increase in norepinephrine causes systemic blood vessel vasoconstriction resulting in impaired oxygenation and tissue perfusion which continues with death. (Simbung et al., 2021). According to research conducted by (Darmayanti, 2021), the results found that 31 respondents (59.6%) successfully carried out IMD, and most of the babies, namely 37 respondents (71.2%) did not experience hypothermia. The results of this study IMD is significantly related to the incidence of hypothermia.

Based on what was described above, the researcher was then interested in conducting research on the relationship between early initiation of breastfeeding and changes in the body temperature of newborns so that the hope is that the implementation of IMD can provide knowledge to all communities so that mothers and babies are saved from the dangers of hypothermia. neonatal as the axillary temperature is less than 36.5°C so that with this temperature it can regulate and warm the baby's body temperature which is at risk of cold due to adaptation to the air outside the womb after childbirth. Hypothermia is one of the important causes of death and neonatal morbidity in developing countries, which increases mortality five times, every 1 ° C decrease in body temperature increases mortality by 80% (Demissie BW 2018, 2018). The effects of untreated hypothermia will cause several complications including: metabolic acidosis caused by the body carrying out anaerobic metabolism. A further impact due to an increase in norepinephrine causes systemic blood vessel vasoconstriction resulting in impaired oxygenation and tissue perfusion which continues with death. (Simbung et al., 2021). According to research conducted by (Darmayanti, 2021), the results found that 31 respondents (59.6%) successfully carried out IMD, and most of the babies, namely 37 respondents (71.2%) did not experience hypothermia. The results is significantly related to the incidence of hypothermia. Based on what was described above, the researcher was then interested in conducting research on the relationship between early initiation of breastfeeding and changes in the body temperature of newborns so that the hope is that the implementation of IMD can provide knowledge to all communities so that mothers and babies are saved from the dangers of hypothermia.

## RESEARCH METHODS

This study uses a correlation design based on a cross sectional approach. Nursalam (2017) explains that correlation research is research that examines the relationship between variables and aims to find, explain a relationship, estimate and test based on existing theory. Based on this concept, this research was conducted with the aim of finding the relationship between early initiation of breastfeeding and changes in body temperature of newborns at the Wuluhan Health Center, Jember Regency. In addition, Notoadmodjo (2017) explained that cross sectional is a research approach to study the dynamics of the correlation between risk factors and effects, by way of

approach, observation or data collection at one time. In this study the focus was on all newborns at UPT Puskesmas Wuluhan Jember Regency as many as 30 people using accidental sampling. According to Nursalam (2017) Accidental sampling is a sampling technique based on coincidence, namely consumers who coincidentally/accidentally meet with researchers can be used as samples, if it is deemed that the person met by chance is suitable as a data source. In this study using two variables, namely the independent variable and the dependent variable. The independent variable or variable X is the variable that is seen as the cause of the emergence of the dependent variable which is thought to be the result. Meanwhile, the dependent variable or Y variable is the variable (effect) that is presumed, which varies according to changes in the independent variables. (Sugiyono, 2017). This research was carried out at UPT Puskesmas Wuluhan Jember Regency on August 3 - September 3 2022. The data source used in this research.

This is significantly related to the incidence of hypothermia. Based on what was described above, the was then interested in conducting research on the relationship between early initiation of breastfeeding and changes in the body temperature of newborns so that the hope is that the implementation of IMD researchers can provide knowledge to all communities so that mothers and babies are saved from the dangers of hypothermia. The coding used in this study includes:

### Data Analysis

Statistical test results obtained Pvalue = 0.002 (probability value (p) <  $\alpha$ (0.05) Ha is accepted so that it can be concluded that there is a relationship between Early Breastfeeding Initiation (IMD) and Changes in body temperature of newborns at UPT Puskesmas Wuluhan, Jember Regency.

## RESEARCH RESULTS

### Frequency distribution of respondents based on the age of mothers who gave birth at the Wuluhan Health Center, Jember Regency

Based on table 1, it was found that the majority of respondents aged 20-30 years were 13 people (43.8%).

**Table 1**

**Frequency distribution of respondents based on the age of mothers who gave birth at the Wuluhan Health Center, Jember Regency**

Age Responden	Frequency	Percent %
< 20 tahun	5	16.7
20 - 30 tahun	13	43.3
> 30 tahun	12	40.0

**Frequencies distribution of the characteristics of respondents based on the education of mothers who gave birth at Wuluhan Health Center, Jember Regency.**

**Table 2**

**Frequency distribution of the characteristics of respondents based on the education of mothers who gave birth at the Wuluhan Health Center, Jember Regency**

Education	Frequency	Percent
Low(SD, SMP)	13	43.3
Middle (SMA )	9	30.0
Hight (PT)	8	26.7

No Education Frequency Percent Low (SD, SMP) 13 43.3, Intermediate (high school) 9 30.0, High (PT) 8 26, Total 30 100.0

Based on the education level of the respondents, the majority of them had low education (SD, SMP) 13 respondents (43.3%)

**Frequency distribution of the characteristics of respondents based on the occupation of mothers who gave birth at the Wuluhan Health Center, Jember Regency.**

**Table 3**

**Frequency distribution of the characteristics of respondents based on the occupation of mothers who gave birth at the Wuluhan Health Center, Jember Regency.**

Job	Frequency	Percent %
Work	8	26.7
No Work	22	73.3

Based on the level of work that most of the respondents did not work 22 people (73.3%)

Frequency distribution of the characteristics of respondents based on the parity of mothers who gave birth at the Wuluhan Health Center, Jember Regency.

Table 4

Distribution of frequency characteristics of respondents based on parity of mothers who gave birth at the Wuluhan Health Center, Jember Regency

Paritas	Frequency	Percent%
Primipara	18	60.0
Multipara	12	40.0

Based on maternal parity, most of the Primipara respondents were 18 people (60%)

Frequency distribution of the characteristics of respondents based on Early Breastfeeding Initiation for mothers who gave birth at the Wuluhan Health Center, Jember Regency

Shows that most of the respondents did IMD as many as 24 responden (80 %).

Table 5

Frequency distribution of respondents' characteristics based on Early Breastfeeding Initiation (IMD) for mothers who gave birth at the Wuluhan Health Center, Jember Regency.

IMD	Frequency	Percent %
Are not done	6	20.0
Done	24	80.0

Frequency distribution of Newborn Body Temperature at the Wuluhan Health Center, Jember Regency.

Table 5

Frequency distribution of newborn body temperature at the Wuluhan Health Center, Jember Regency.

Body Temperature	Frequency	Percent %
Still	4	13.3
Up	26	86.7

Shows that the majority of respondents Sutu Body Increase 26 respondents (86.7%)

Frequency distribution of the relationship between Early Breastfeeding Initiation (IMD) and Changes in Body Temperature of Newborns at the Wuluhan Health Center, Jember Regency.

Shows that 24 respondents (100%) did IMD with a temperature rise of 21 (87.7%).

Table 6

Frequency distribution of the relationship between early initiation of breastfeeding (IMD) and changes in body temperature of newborns at the Wuluhan Health Center, Jember Regency.

Implementation of IMD	Body temperature BBL				Σ	%	P Value
	Still		Up				
	f	%	f	%			
Are done	3	12,5	21	87,7	24	100.0	0,002
Not Done	5	83.3	1	16,7	6	100.0	



Picture 1. Campus

## DISCUSSION

The results of the study in table 5 showed that the majority of respondents did IMD as many as 24 respondents (80%). According to (Jenny J.S, 2016) Early initiation of breastfeeding or early initiation of breastfeeding is when the baby begins to breastfeed on his own immediately after birth. Early initiation of breastfeeding must be done immediately when born, without being delayed by weighing or measuring the baby. Babies also shouldn't be cleaned, only dried except for their hands. This process must take place skin to skin between baby and mother (Dzakiyyah Wildan & Febriana, 2017)

Babies who are given the opportunity for IMD are not given clothes, so that their skin sticks to the mother's skin. IMD is also useful for the bonding of mother and baby affection and makes the baby feel calm. IMD is beneficial for mothers because it can help speed up the postpartum recovery process. Within the first 1 hour of life a baby is born into the world, it is certain that the baby will get the opportunity to do IMD (RI Ministry of Health, 2017). Newborns cannot regulate body temperature properly, so it is easy to experience stress with changes in temperature from inside the uterus to the temperature outside the uterus / ambient temperature. The result of an imbalance between heat production and heat loss results in hypothermia.

The condition for doing IMD is that the condition of the mother and baby must be in good health.

### Changes in Body Temperature of Newborns at the Wuluhan Health Center, Jember Regency.

The results of the research in table 5.6 show that most of the respondents' Sutu Body has increased by 26 respondents (86.7%). Normal body temperature in newborns is between 36.5°C – 37.5°C.

Newborns are not yet able to regulate their body temperature properly, from inside the womb to the temperature outside the uterus/environmental temperature. In a cold environment, the formation of temperature without a shivering mechanism is the baby's main effort to regain body heat. The formation of temperature without shivering is the result of using brown fat for heat production, whereas to burn brown fat babies must use glucose to get energy which will turn fat into heat. Shortly after the baby is born he will be in a place where the temperature is lower than in the womb and in a wet state. If the baby is left at room temperature 25°C, the baby will lose heat through evaporation, convection, conduction and radiation of 200 calories/kg/min (Jenny J.S, 2016).

Newborns lose heat four times more than adults, resulting in a decrease in temperature. In the first 30 minutes a baby can experience a temperature drop of 3-4°C. In a room with a temperature of 20-25°C, the baby's skin temperature drops by about 0.3°C per minute. The newborn's temperature can drop several degrees because the external environment is colder than the environment inside the uterus (Jenny J.S, 2016)

In the first 30 minutes a baby can experience a temperature drop of 3-4°C. In a room with a temperature of 20-25°C, the baby's skin temperature drops by about 0.3°C per minute. The decrease in temperature is caused by heat loss by convection, evaporation, radiation and conduction. The baby's immature ability to produce heat causes the baby to be prone to hypothermia. Decreased thermal stability has long-term physiological effects leading to death from hypoxia and hypotension. Although the mother's body temperature will stabilize the baby's temperature automatically. Because the mother's body temperature is 1°C higher than the baby's temperature, if the baby feels hot, the mother's temperature will also drop by 1°C.

### Relationship between Early Breastfeeding Initiation (IMD) and Changes in Body Temperature of Newborns at the Wuluhan Health Center, Jember Regency.

Those who did IMD were 24 respondents with temperatures rising 21 (87.7%). So Based on the statistical test results, Pvalue = 0.002 (probability value  $(p) < \alpha(0.05)$  )  $H_a$  is accepted so that it can be concluded that there is a relationship between Early Breastfeeding Initiation (IMD) and Changes in body temperature of newborns at UPT Puskesmas Wuluhan, Jember Regency. Mothers who do IMD correctly, the baby's temperature is normal. This is due to the baby's contact with the



mother. Early initiation of breastfeeding (IMD) has many benefits, not only for newborns, but also for mothers who give birth. The benefits for newborns with IMD are lowering the risk of hypothermia, speeding up the heart rate, and breathing becomes more stable, and the baby more quickly obtain colostrum as antibodies. The baby is at a safe temperature if it makes skin contact with the mother. The temperature of the mother's breast increases 0.5 degrees in 2 minutes if the baby is placed on the mother's chest. That the chest temperature of mothers who give birth is 1 0 C hotter than the temperature of mothers who do not give birth. If the baby placed on the mother's chest is hot, the mother's chest temperature will drop by 10 C. If the baby is cold, the mother's chest temperature will increase by 20 C.

Mothers who get more family support can do IMD compared to mothers who do not get support from their families. This illustrates that the implementation of IMD really needs support from the husband or family where this support is really needed. by breastfeeding mothers. A stable emotional condition determines a positive attitude from the mother. This emotional stability can be achieved if the husband or family provides maximum support and motivation. Support gives an impression that he is loved and cared for, has self-esteem and is valued. So that by itself it will affect the mother's emotions where she is more calm, comfortable, confident in carrying out the IMD process on her baby. The involvement of a husband in implementing IMD will motivate the mother to breastfeed and through implementing IMD correctly can cause the baby's body temperature to become more stable so that hypothermia does not occur.

## CONCLUSION

Initiation of early breastfeeding for newborns at UPT health center wuluhan as many as 24 people (80%). Changes in the body temperature of newborns at UPT health center wuluhan as many as 26 people (86.7%). There is a relationship between early initiation of breastfeeding and changes in the body temperature of newborns at the UPT health center wuluhan.

## SUGGESTION

There are a lot of suggestion that need to share for develop further research especially The researcher expected that they would like to convey to various parties and hoped that it can be used as research material for next research. and then for Health Service Institutions is expected to be able to provide education to pregnant women patients

regarding the relationship between IMD and changes in body temperature at BBL.

Then forr the Midwifery Profession is hope that can provide comprehensive early initiation of breastfeeding care so as to improve the quality of care.

Also for society this study are expected to be used as a source of information by the public, especially pregnant womb.

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## RELATIONSHIP BETWEEN PARENTING PATTERN AND STUNTING

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### ABSTRAK HUBUNGAN POLA ASUH ORANG TUA DENGAN STUNTING

Latar belakang: Stunting merupakan kondisi gagal tumbuh anak berusia di bawah lima tahun (balita) akibat kekurangan gizi kronis yang ditandai dengan nilai *z-score* tinggi badan menurut umur (TB/U) kurang dari -2SD / standar deviasi (*stunted*) dan kurang dari -3SD (*severely stunted*) (Kemenkes RI, 2021). Kasus stunting dunia mencapai 22% dengan jumlah mencapai 149,2 juta anak (Unicef, 2020). Indonesia menduduki peringkat kelima dunia untuk jumlah anak dengan stunting (Permenkes Nomor 2, 2020). Berdasarkan Profil Kementerian Kesehatan RI, 2021 Indonesia persentasi balita stunting usia 0-59 bulan sebesar 2,5% balita sangat pendek dan sebesar 7% balita pendek. Lampung menunjukkan prevalensi balita stunting sebanyak 15,2% sedangkan Kabupaten Lampung Utara (24,7%) (SSGI Provinsi Lampung). Data Profil UPTD Puskesmas Ogan Lima jumlah anak stunting 92 anak, dimana stunting usia 0-23 bulan berjumlah 38 anak dan yang berusia 24-59 bulan lebih banyak yaitu 54 anak.

Tujuan: diketahui hubungan pola asuh orang tua dengan stunting di UPTD Puskesmas Ogan Lima tahun 2023.

Metode: Jenis penelitian ini kuantitatif dengan rancangan penelitian *cross sectional*. Teknik Pengumpulan data menggunakan kuesioner. Populasi dan sample dalam penelitian ini adalah 54 balita stunting usia 24-59 bulan di wilayah kerja UPTD Puskesmas Ogan Lima tahun 2023. Dengan menggunakan Teknik *Total Sampling*. Analisa data secara univariat dan bivariat dengan menggunakan *chi-square*.

Hasil: menunjukan bahwa distribusi frekuensi balita stunting kategori pendek berjumlah 43 (79,6%) dan balita stunting kategori sangat pendek berjumlah 11 (20,4%). Distribusi frekuensi pola asuh orang tua positif berjumlah 25 (46,3%) dan pola asuh orang tua negatif berjumlah 29 (53,7%). Uji hipotesis menunjukkan ada hubungan pola asuh orang tua dengan stunting di UPTD Puskesmas Ogan Lima ( $p=0.021$ ,  $OR=0,132$ ,  $CI\ 95\% = 0,25-0,687$ )

Kesimpulan: Ada hubungan pola asuh orang tua dengan stunting di UPTD Puskesmas Ogan Lima.

Saran: Tenaga kesehatan melakukan advokasi dengan pemegang kebijakan, bekerjasama dengan lintas program dan lintas sektor untuk melakukan penyuluhan kesehatan tentang cara mencuci tangan dengan sabun, imunisasi dasar lengkap dan sanitasi lingkungan yang bersih melalui leaflet atau brosur dengan mengikutsertakan tokoh masyarakat (TOMA), tokoh agama (TOGA) dan perangkat desa dan melakukan penyuluhan tentang praktek pemberian makanan di posyandu dengan cara pengolahan bahan makan bergizi yang murah dan mudah didapat di lingkungan sekitar.

Kata Kunci: Pola Asuh Orang Tua, Stunting.

### ABSTRACT

Background: Stunting is a condition of failure to thrive in children under five years old (toddlers) due to chronic malnutrition which is characterized by a *z-score* for height for age (TB/U) less than -2SD / standard deviation (*stunted*) and less than -3SD (*severely stunted*) (RI Ministry of Health, 2021). World stunting cases have reached 22% with a total of 149.2 million children (Unicef, 2020). Indonesia is ranked fifth in the world for the number of children with stunting (Permenkes Number 2, 2020). Based on the profile of the Indonesian Ministry of Health, in 2021 Indonesia the percentage of stunted toddlers aged 0-59 months is 2.5% very short toddlers and 7% stunted toddlers. Lampung shows the prevalence of stunting under five is 15.2%, while North Lampung Regency (24.7%) (SSGI Lampung Province). UPTD Profile Data of the Puskesmas Ogan Lima, the number of stunted children is 92, of which 38 children are stunted aged 0-23 months and those aged 24-59 months are more, namely 54 children.

Purpose: The aim of the study was to find out the relationship between parenting and stunting at the UPTD Puskesmas Ogan Lima in 2023.

Methods: This type of research is quantitative with a cross sectional research design. Data collection techniques using a questionnaire. The population and sample in this study were 54 stunted toddlers aged 24-59

months in the working area of the Ogan Lima Health Center UPTD in 2023. Using the Total Sampling technique. Univariate and bivariate data analysis using chi-square.

**Result:** The results showed that the distribution of the frequency of stunting toddlers in the short category was 43 (79.6%) and the toddlers in the very short category were 11 (20.4%). The frequency distribution of positive parenting styles is 25 (46.3%) and negative parenting styles is 29 (53.7%). The hypothesis test showed that there was a relationship between parenting style and stunting at UPTD Puskesmas Ogan Lima ( $p=0.021$ ,  $OR=0.132$ ,  $95\% CI = 0.25-0.687$ )

**Conclusion:** There is a relationship between parenting style and stunting at the UPTD Puskesmas Ogan Lima

**Suggestion:** to reduce the stunting rate for health workers, carry out advocacy with policy makers, collaborate with cross-programs and cross-sectors to conduct health education on how to wash hands with soap, complete basic immunization and clean environmental sanitation through leaflets or brochures involving community leaders (TOMA), religious leaders (TOGA) and village officials and conduct counseling on the practice of providing food at posyandu by processing nutritious food ingredients that are cheap and easily available in the surrounding environment.

**Keywords:** Parenting Pattern, Stunting

## **INTRODUCTION**

Indonesia as a developing country still faces various nutritional problems. The incidence of stunting under five is a major nutritional problem faced by Indonesia. Based on Nutrition Status Monitoring (PSG) data for the last three years, stunting nutritional status has the highest prevalence compared to other nutritional problems such as malnutrition, wasting, and obesity. Stunting is a condition of failure to thrive in children under five years old (toddlers) due to chronic malnutrition which is characterized by a z-score for height for age (TB/U) less than -2SD / standard deviation (stunted) and less than -3SD (severely stunted) (RI Ministry of Health, 2021).

According to data from Unicef 2020, world stunting cases have reached 22% with a total of 149.2 million children. Countries with a very high prevalence of stunting are West Africa and Central Africa 32.5 percent, East Africa and South Africa 32.3 percent, and South Asia 31.8 percent. WHO requires 20% as a non-public health problem limit for stunting problems. Europe, Central Asia and North America, have a low prevalence of stunting, where Asia and Central Europe is 5.7%. Furthermore, North American countries as much as 3.2%, and finally Western European countries with a presentation of 2.8%.

Based on the Minister of Health Regulation Number 2 of 2020, Indonesia is ranked fifth in the world for the number of children with stunting. The prevalence of stunting in Indonesia is higher than other countries in Southeast Asia, such as Vietnam (23%) and Thailand (16%). The trend of stunting prevalence in Indonesia shows a decrease (Simanjuntak, 2022)

Based on the profile of the Indonesian Ministry of Health, in 2021 Indonesia the percentage of stunted toddlers aged 0-59 months is 2.5% very short toddlers and 7% stunted toddlers. The province with the highest percentage of very short toddlers, 6.3% and 18.7%, was West Sulawesi. Whereas for the province of Lampung, toddlers are very short at 1.4% and short at 4% (Directorate General of Public Health, Ministry of Health RI, 2021)

Based on data from SSGI Lampung Province, the prevalence of stunting under five is 15.2%. Where the districts with a high prevalence are in Pesawaran Regency (25.1%), North Lampung Regency (24.7%), and Mesuji Regency 22.5% (Lampung Provincial Health Office, 2022).

Based on data from the Regional Government of North Lampung Regency in 2022 in determining integrated stunting focus locations (locus) it was found that there were 244 very short toddlers, 1,059 short toddlers to 1,303 stunted toddlers. Of the 27 sub-districts, the highest was in the UPTD Puskesmas Semuli Raya work area, totaling 217 stunted toddlers and the lowest was in the UPTD Puskesmas Kotabumi udik work area, with 3 stunted toddlers (North Lampung District Health Office, 2022).

Based on the Nutrition report of the EPPGBM UPTD Puskesmas Ogan Lima, 2022, even though the UPTD Puskesmas Ogan Lima is not the highest area for stunting toddlers. However, a problem was found, namely a drastic increase in the incidence of stunting under five from 2021 totaling 19 stunted children, an increase in 2022 totaling 92 stunted children where stunting aged 0-23 months totaled 38 children and those aged 24-59 months more, namely 54 children. Toddlers aged 24-59 months are

included in the nutritionally vulnerable group of people (a group of people who are the easiest to suffer from nutritional disorders), whereas at that time they were experiencing a relatively rapid growth process (Azriful, 2018).

In the National Strategy (Stranas) 2018-2024 prevention of stunting problems focuses on addressing the causes of nutritional problems, namely four factors that indirectly cause stunting, namely factors related to food security, especially access to nutritious food (food), social environment related to feeding practices infants and children (parental parenting), access to health services for prevention and treatment (health) and environmental health which includes the availability of clean water and sanitation facilities (environment).

Parenting patterns and nutritional status are strongly influenced by parents' understanding of managing the health and nutrition of their families (RI Ministry of Health, 2021). According to Dharma I, 2022 parenting style is very important in the process of child development and growth, both physically and psychologically. Parenting also plays an important role in the occurrence of growth disorders in toddlers because food intake, care and health in toddlers are fully regulated by parents. Parents with good parenting tend to have toddlers with better nutritional status than parents with poor parenting (Dharma I, 2022).

According to Buddhathoki, in 2020 parents will still be a determining factor for stunting in Nepal, because parents are the main caregivers who will influence parents' awareness of the importance of parenting a varied diet and good infant and child feeding practices. Meanwhile, according to research by Budjana, 2022 with the title "Analysis of Stunting Risk Factors in Menggala District, Tulang Bawang Regency in 2022". The mother's factor is known as the percentage of poor knowledge and poor parenting patterns. Where negative parenting factors are known to be around 63.6% of stunting toddlers.

Based on research conducted by Rahmawati, 2020 shows that there is a significant relationship between stunting and parenting with a p value = 0.004. Research conducted by Noorhasanah, 2021, found a correlation between the occurrence of stunting and maternal parenting with a p value = 0.01. This fact provides evidence that the category of poor parenting, especially when providing nutrition, can provide care regarding how to feed, so that it will affect the child's stunting condition.

Based on the data above, the authors are interested in conducting research entitled "The Relationship between Parenting Parents and Stunting at UPTD Puskesmas Ogan Lima in 2023".

## RESEARCH METHODS

This type of research is quantitative research to determine the relationship between parenting parents and the incidence of stunting at UPTD Puskesmas Ogan Lima in 2023, which was carried out in May-June 2023, this study used a cross sectional approach. The research population, namely parents or caregivers of stunted toddlers aged 24-59 months in the working area of the UPTD Puskesmas Ogan Lima in 2023 totaling 54 respondents, the researchers took a sample of 54 respondents using total sampling. parenting style independent variable. The dependent variable in this study is stunting. Researchers used a measuring tool in the form of a questionnaire. Data processing includes editing, coding, tabulating, processing, and cleaning. Data analysis used univariate and bivariate methods using Chi-square

## RESEARCH RESULT

### Univariate analysis

**Table 1**  
**Stunting Frequency Distribution at UPTD Puskesmas Ogan Lima**

Stunting	N	%
Short (TB/U -3SD to -2SD)	43	79,6
Very short (TB/U <-3SD)	11	20,4

Based on table 1 it is known that 43 (79.6%) respondents were in the short category and 11 (20.4%) respondents were in the very short category.

**Table 2**  
**Parenting Frequency Distribution of Parents at UPTD Puskesmas Ogan Lima**

Parenting Style	N	%
Positive Parenting	25	46,3
Negative Parenting	29	53,7

Based on table 2 it is known that 25 (46.3%) respondents were in the positive parenting category and 29 (53.7%) respondents were in the negative parenting category.

### Bivariate analysis

Table 3 shows that of the 25 respondents whose parenting style was positive, 16 (64%) were in the short category and 9 (36%) were in the very short category. Meanwhile, out of 29 respondents whose parenting style was negative, 27 (93.1%) were in the short category and 2 (6.9%) were in the very short category. The statistical test results obtained p = 0.021 <0.05, meaning that there is a relationship

between parenting parents and stunting at the UPTD Puskesmas Ogan Lima in 2023. OR = 0.132 (0.25-0.687) which indicates that respondents who have

negative parenting styles has a 0.1 times chance of causing stunting in toddlers compared to respondents who have positive parenting styles.

**Table 3**  
**The Relationship between Parenting Style and Stunting at UPTD Puskesmas Ogan Lima**

Parenting Style	Stunting				Total		P value	OR 95% CI
	Short		Very short					
	N	%	N	%	N	%		
Positive	16	64	9	36	25	100	0,021	0,132
Negative	27	93.1	2	6.9	29	100		(0.25-0.687)

## DISCUSSION

The results of the univariate analysis showed that 43 (79.6%) of toddlers were stunted in the UPTD Puskesmas Ogan Lima in the short category and 11 (20.4%) of them were in the very short category. This finding is in line with Budjana's research (2022) which shows a picture of the still high incidence of stunting in the Menggala District, Tulang Bawang Regency, with 88 toddlers. Likewise in Noorhasanah's research (2021) at the Cempaka Banjarbaru Health Center, South Kalimantan, which showed that there were 88 stunting toddlers with 41 (46.6%) short and 47 (53.4%) very short.

Theoretically according to the Indonesian Ministry of Health (2021) stunting is a condition of failure to thrive in children under five years old (toddlers) due to chronic malnutrition which is characterized by a z-score for height for age (TB/U) less than -2SD/standard deviation (stunted) and less than -3SD (severely stunted).

The author is of the opinion that the incidence of stunting at UPTD Puskesmas Ogan Lima has not yet reached the target. There were still around 54 stunted toddlers aged 24-59 months with 43 (79.6%) short categories and 11 (20.4%) stunted toddlers with very short categories. The majority of stunting toddlers aged 42-59 months 31 (57.4%) while from the sex characteristics of stunting toddlers at UPTD Puskesmas Ogan Lima the majority were male 35 (64.8%). While the description of the characteristics of parents/caregivers of stunting toddlers at UPTD Puskesmas Ogan Lima the majority were mothers 48 (88.9%), with an age range of 25-34 years 26 (48.1%), most educational history in SMA 21 (38.9 %), the majority work as housewives 44 (81.5%). The high incidence of stunting under five aged 24-59 months at UPTD Puskesmas Ogan Lima, totaling 54 under five, is the number of stunting risk factors with anthropometric measurement results obtained from -2SD to <-3 SD. To be declared a stunted toddler, validation is needed from the central Indonesian Ministry of Health team. From a total of 54 toddlers,

these stunting risk factors need to be monitored intensively and become a joint task so that they are not validated as stunting toddlers.

The description of parenting parents is also distributed in that parents or caregivers who have positive parenting patterns are 25 (46.3%) and negative parenting patterns are 29 (53.7%). This finding is in line with the results of Budjana's research, 2022 which shows that the distribution of the frequency of parenting styles for stunting toddlers in Menggala District, Tulang Bawang Regency shows that 56 (63.6%) negative parenting styles and 32 (36.4%) are in the positive parenting category. . Comparable with Rahmayana's research (2014) showing a significant relationship between feeding practices ( $p=0.007$ ), psychosocial stimulation ( $p=0.000$ ), hygiene/hygiene practices ( $p=0.000$ ), environmental sanitation ( $p=0.000$ ) and service utilization health ( $p=0.016$ ) with the incidence of stunting in children aged 24-59 months at Posyandu Asoka II in the Coastal area of Barombang Village.

Theoretically parenting is a pattern or system that is applied in educating, looking after and caring for a child that is relatively consistent from time to time (Munawaroh, 2015). Factors that influence parenting patterns: feeding practices (ASI and MP-ASI), utilization of health services, environmental hygiene and sanitation practices (Pakpahan, 2021).

The author argues that the results of the positive parenting questionnaire for 54 stunted toddlers in the working area of the Ogan Lima Health Center UPTD consisted of 42 questions, divided into 4 factors, namely good feeding practices 55%, utilization of health services 69%, maintaining cleanliness 53% and healthy environmental sanitation 60%. The parenting style at UPTD Puskesmas Ogan Lima for toddlers was mostly cared for by 48 mothers (88.9%).

The results of the bivariate analysis showed that of the 25 respondents whose parents had positive parenting styles, 16 (64%) were in the short stunting category and 9 (36%) were in the very short

stunting category. Meanwhile, of the 29 respondents whose parenting style was negative, 27 (93.1%) were in the short category and 2 (6.9%) were in the very short stunting category. The results of the statistical test obtained  $p = 0.021 < 0.05$ , meaning that there is a relationship between parenting parents and stunting at the UPTD Puskesmas Ogan Lima in 2023. OR = 0.132 (0.25-0.687) which indicates that respondents who have negative parenting styles has a 0.1 times chance of causing stunting in toddlers compared to respondents who have positive parenting styles.

The results of this study are in line with the research conducted by Rachmawati et al, 2020 with the type of cross-sectional study obtained a significant correlation between parenting styles and stunting with a p-value = 0.004, the research conducted (Noorhasanah, 2021) found a correlation between stunting and maternal parenting with a p-value of 0.01. According to Budhathoki, 2020 this research method used datasets from the 2001, 2006, 2011 and 2016 Nepal Demographic Health Survey to describe trends in stunting in children under 5 years. Multiple logistic regression analysis was performed to assess risk factors for stunting at the time of the four surveys. Results The nutritional status of children under 5 years of age improved between 2001 and 2016. Babies born to poor families have a higher risk of stunting than babies born to rich families (AOR 1.51, 95% CI 1.23–1.87 ). Families living in hilly districts have a lower risk of stunting than families in the Terai plains (AOR 0.75, 95% CI 0.61–0.94). Babies born to mothers who are not educated have a higher risk of stunting than babies born to mothers who are educated (AOR 1.57, 95% CI 1.28–1.92). Parents remain a determining factor for stunting in Nepal, because parents are the main caregivers and influence parents' awareness of the importance of a varied parenting style and good infant and child feeding practices.

According to the National Strategy (Stranas) 2018-2024 adopted a framework that causes nutritional problems, namely "The Conceptual Framework of Child Undernutrition", "The Underlying Drivers of Malnutrition" and "Factors Causing Nutrition Problems in the Indonesian Context". Prevention of the problem of stunting focuses on addressing the causes of nutritional problems, namely factors related to food security, especially access to nutritious food (food), the social environment related to the practice of feeding infants and children (parental parenting), access to health services for prevention and treatment (health) as well as environmental health which includes the availability of clean water and sanitation

(environmental) facilities. These four factors indirectly affect nutritional intake and the health status of mothers and children.

The author is of the opinion that parenting style in the working area of UPTD Puskesmas Ogan Lima has a significant relationship with stunting. Even though the educational characteristics of mothers or caregivers of toddlers on average have high school education with a productive age range (24-34 years) it turns out that there are still children with very short stunting risk factors, this is because there are still parents or caregivers who have little knowledge about parenting. good practices in food delivery, hygiene, utilization of health services and environmental sanitation.

The work of a mother or caregiver as a housewife should have a lot of time with her children, but due to low economic factors in the community, the dominant income of the head of the family is a farmer. In practice, most caregivers provide simple food, as long as the children are full, without regard to nutritional intake and nutritional needs. child. In the utilization of health services, parents still do not utilize health services optimally, so that the treatment of diseases is not detected early. This is also indicated by the presence of children who are not fully immunized to get self-protection from various infectious diseases.

The incidence of infectious diseases (morbidity) is also closely related to environmental hygiene and sanitation. Parents who practice personal hygiene and healthy home and environmental conditions, for example washing hands with soap before eating and after defecating, disposing of trash in its place, providing healthy latrines, SPAL and available sources of clean water can prevent infectious and digestive diseases such as diarrhea and worms. Infectious diseases will affect nutrition in children, food absorption is not maximally absorbed so that they are susceptible to diseases that will affect children's growth and development.

Health intervention steps that can be carried out are advocating with policy holders so that it is hoped that the results of validation to declare stunting under-fives do not take long so that the reduction in the number of stunting incidents can be handled quickly. Collaborating with cross-programs and cross-sectors, especially midwives, nutrition officers, sanitarians, posyandu cadres to conduct health education on how to wash hands with soap, complete basic immunization and clean environmental sanitation through leaflets or brochures involving community leaders (TOMA), religious leaders (TOGA) and village officials. Conduct counseling on feeding practices at posyandu by processing



nutritious food ingredients that are cheap and easily available in the surrounding environment.

## CONCLUSION

The frequency distribution of toddler stunting in the short category was 43 (79.6%) and the toddler stunting in the very short category was 11 (20.4%). The frequency distribution of positive parenting styles is 25 (46.3%) and negative parenting styles is 29 (53.7%). There is a relationship between parenting style and stunting at UPTD Puskesmas Ogan Lima ( $p=0.021$ ,  $OR=0.132$ ,  $95\% CI = 0.25-0.687$ ).

## SUGGESTION

At UPTD Puskesmas Ogan Lima they can advocate with policy holders to work together so that it is hoped that the validation results to declare stunting toddlers do not take long so that the reduction in the incidence of stunting can be handled quickly. Collaborating with cross-programs and cross-sectors, especially midwives, nutrition officers, sanitarians, posyandu cadres to conduct health education on how to wash hands with soap, complete basic immunization and clean environmental sanitation through leaflets or brochures involving community leaders (TOMA), religious leaders (TOGA) and village officials. Conduct counseling on feeding practices at posyandu by processing nutritious food ingredients that are cheap and easily available in the surrounding environment. For respondents it is hoped that parents, especially mothers or caregivers, will be more intensive in providing care, compassion and care by improving feeding practices, utilization of health services, hygiene practices and paying attention to environmental sanitation. For further researchers, it is hoped that the results of this study can be used as a reference or comparative study in further student research by adding other stunting risk variables such as parental knowledge, level of education and family income.

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## THE ANALYSIS OF PARENTING STYLE TOWARDS ADOLESCENT PREMARITAL SEXUAL BEHAVIOR AT PUBLIC SENIOR HIGH SCHOOL 9 BANDAR LAMPUNG

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### ABSTRAK ANALISIS GAYA ORANG TUA TERHADAP PERILAKU SEKSUAL PRANINIH REMAJA DI SMAN 9 BANDAR LAMPUNG

Latar Belakang Penelitian: Perilaku seksual pranikah remaja merupakan suatu perilaku yang dapat menimbulkan hal-hal negatif apabila tidak diungkapkan dengan cara yang tidak sehat dan bertentangan dengan norma yang berlaku. Data Riset Kesehatan Dasar Indonesia (2018) menunjukkan bahwa 4,5% remaja laki-laki dan 0,7% remaja perempuan mengaku melakukan hubungan seks pranikah. Di Provinsi Lampung terdapat data 20,9% remaja melakukan perilaku seksual berisiko dan 5,1% diantaranya melakukan hubungan seksual.

Tujuan Penelitian: Penelitian ini dilakukan untuk mengetahui hubungan antara pola asuh orang tua (demokratis, permisif, dan otoriter) dengan persepsi remaja terhadap perilaku seksual pranikah di SMA Negeri 9 Bandar Lampung.

Metode Penelitian: Sampel penelitian adalah 200 siswa berusia 16-18 tahun. Pemilihan peserta melalui teknik kombinasi Accidental Sampling dan Purposive Sampling yang dilakukan secara langsung. Seluruh variabel dalam penelitian pola asuh demokratis, permisif, dan otoriter diukur dengan metode self-report menggunakan instrumen kuesioner.

Hasil Penelitian: Analisis statistik menunjukkan terdapat hubungan positif antara pola asuh permisif dan demokratis terhadap perilaku seks pranikah remaja ( $p\text{-value} = 0,006$  dan  $p\text{-value} = 0,000$ ) dan tidak terdapat hubungan signifikan dengan pola asuh otoriter ( $p\text{-value} = 0,006$ ).

Kesimpulan: Hasil penelitian ini menunjukkan bahwa bagi orang tua siswa dalam mengasuh anak akan disertai dengan motivasi yang tinggi untuk menghindari perilaku seksual pranikah.

Saran: Hasil penelitian ini dapat dijadikan sebagai saran pendekatan pendidikan seks bagi remaja yang tepat yaitu melalui keterlibatan langsung orang tua dalam pengasuhan anak seperti berdiskusi bersama, berlibur bersama, berolahraga bersama, agar dapat mendekatkan hubungan dan untuk menciptakan ruang bagi anak-anak untuk bercerita.

Kata Kunci: Perilaku seksual pranikah, pola asuh demokratis, pola asuh permisif, pola asuh otoriter.

### ABSTRACT

Background of Study: Adolescent premarital sexual behavior was a behavior which was able to lead to negative things when it was not expressed in an unhealthy manner and contrary to prevailing norms. The Indonesian Basic Health Research (2018) data showed that 4.5% of male adolescents and 0.7% of female adolescents admitted to have premarital sex. In Lampung Province there was data that 20.9% of adolescents had risky sexual behavior and 5.1% of them had sexual intercourse.

Purpose of Study: This study was conducted to determine the correlation between parenting style (democratic, permissive, and authoritarian) and adolescents' perceptions of pre-marital sexual behavior at Public Senior High School 9 Bandar Lampung.

Method of Study: The sample of study was 200 students aged 16-18 years. Selection of participants through a combination technique of accidental sampling and purposive sampling which was carried out directly. All variables in the study were democratic, permissive, and authoritarian parenting measured by the self-report method using a questionnaire instrument.

Result of Study: Statistical analysis showed there was a positive correlation between permissive and democratic parenting styles on adolescent premarital sex behavior ( $p\text{-value} = 0.006$  and  $p\text{-value} = 0.000$ ) and there

was not significant correlation with authoritarian parenting (p-value = 0006).

Conclusion: This results of study showed that for students of parents in parenting would be accompanied by a high motivation to avoid premarital sexual behavior.

Suggestions: These results of study could be used as suggestions for an appropriate approach to sex education for adolescents that was through direct parental involvements in child care such as having discussion time together, vacationing together, playing sports together, in order to draw closer relationships and to create space for children to tell their stories.

Keywords: Premarital sexual behaviour, democratic parenting, permissive parenting, authoritarian parenting.

## INTRODUCTION

Adolescence is a stage in growth of children where a person experiences significant changes from asexual to sexual. These changes are mainly marked by the growth of primary and secondary sex characteristics. The development of sexual characteristics then causes the development of sexual behavior such as being attracted to the opposite sex and the desire to have sex. Sexual behavior in adolescents is able to tend to serious problems when the behavior is expressed unhealthy or it is not in accordance with prevailing norms. Adolescence is a transitional period which can lead to a crisis period which is usually marked by tendency for deviant behaviors to emerge. One of these deviant behaviors is premarital sex (Maternity, 2016)

Related to adolescent sexuality, the Indonesian Health Demographic Survey (2017) stated that every adolescent, woman or men agree to have premarital sex. This survey was conducted by giving some questions to some teenagers (Ministry of Health of Republic of Indonesia, 2018). Attitudes toward premarital sex has variant perceptions according to age, area of residence and level of education. The percentage of young men aged 20 - 24 who agree that men have premarital sex is 11%. It is higher than the young women reaches 7% (Syafitriani et al., 2022).

The incompatibility of parenting styles with the demands of adolescent developmental arrangements can lead to conflicts and crises in adolescents and families. There are three types of parenting styles usually applied by parents, those are authoritarian type which has the following characteristics such as parents dictate and control children hard and rigid, always demanding child obedience; permissive type, which has characteristics such as parents never punish; and democratic type which has characteristics such as parents control and demand but with a warm attitude, there is correlation between parents and children on rational aspect. Each parenting style has different characteristics with different impacts on children's

development. The three types of parenting styles are universal types of parenting and can be found in every family which carries out the functions and achieves the goals of forming the family (Handayani & Lestari, 2021).

Bandar Lampung city is becoming one of very strategic cities in Indonesia. Based on its geographical location, Lampung Province is at the entrance to Java island and Sumatra island. Adolescent premarital sex behavior is a behavior which leads to negative things when it is expressed in an unhealthy manner and contrary to prevailing norms. The Indonesian Basic Health Research (2018) data shows that 4.5% of male adolescents and 0.7% of female adolescents admit to have had premarital sex. In Lampung Province there is data shows that 20.9% of adolescents have risky sexual behavior and 5.1% of them have had sexual intercourse. Based on Bandar Lampung Health Department data (2021), it was found that there are 28,981 people at risk of being infected with HIV, from the data has 77.9% could be referred as key populations. There are many places of entertainment which are easily entered by teenagers and it is very easy for teenagers to adopt various bad and negative cultures that come from outside and finally change into negative lifestyles in their daily lives.

## RESEARCH METHODS

This study used an analytic observational method with a cross sectional design. This study was conducted to determine the relationship between parenting style (democratic, permissive, authoritarian) and adolescents' perceptions of premarital sexual behavior at Public Senior High School 9 Bandar Lampung.

## RESEARCH RESULTS

Based on the table above, it can be explained that there are 129 students (64.5%) do not have authoritarian parenting, while there are 71 students (35.5%) have authoritarian parenting. Thus, most students at Public Senior High School 9 Bandar Lampung do not have authoritarian parenting.

Public Senior High School 9 Bandar Lampung have democratic parenting.

**Table 1**  
**The Frequency Distribution of Authoritarian Parenting**

Authoritarian Parenting	Total	Percentage (%)
Yes	71	35.5
No	129	64.5

**Table 2**  
**The Frequency Distribution of Permissive Parenting**

Permissive Parenting	Total	Percentage (%)
Yes	84	42.0
No	116	58.0

Based on the table above, it can be explained that there are 116 students (58.0%) do not have permissive parenting, while there are 84 students (42.0%) have permissive parenting. Therefore, most students at Public Senior High School 9 Bandar Lampung do not have permissive parenting.

Based on the table above, it can be seen that there are 104 students (52.0%) have democratic parenting, while there are 96 students (48.0%) do not democratic parenting. Therefore, most students at

**Table 3**  
**The Frequency Distribution of Democratic Parenting**

Democratic Parenting	Total	Percentage (%)
Yes	104	52.0
No	96	48.0

**Table 4**  
**The Frequency Distribution of Premarital Sexual Behavior**

Premarital Sex Behavior	Total	Percentage (%)
Good	128	64.0
Bad	72	36.0

Based on the table above, it can be seen that there are 128 students (64.0%) have a good behavior on premarital sex, while there are 72 students (36.0%) have a bad behavior on premarital sex. Therefore, most students at Public Senior High School 9 Bandar Lampung have a good behavior on premarital sex.

**Table 5**  
**The Correlation between Authoritarian Parenting and Premarital Sexual Behavior**

Authoritarian Parenting	Premarital Sexual Behavior				Total		P -value	OR (CI 95%)
	Good		Bad					
	N	%	N	%	N	%		
Yes	36	50.7	35	49.3	71	100	0.006	0.414 (0.227-0.755)
No	92	71.3	37	28.7	129	100		

Based on the table above, it is known that there are 37 students (28.7%) from 129 students not having authoritarian parenting but having a bad behavior on premarital sex while there are 35 students (49.3%) from 71 students having authoritarian parenting but having a bad behavior on premarital sex. Based on the results of the Chi-Square test, the p-value = 0.006, which means that p-value < 0.05), therefore it can be concluded that there is a correlation between authoritarian parenting and premarital sexual behavior at Public Senior High School 9 Bandar Lampung in 2023.

Based on the table above, it is known that there are 32 students (27.6%) from 116 students not having permissive parenting but having a bad behavior on premarital sex while there are 40 students (47.6%) from 84 students having permissive parenting but having a bad behavior on premarital sex. Based on the results of the Chi-Square test, the p-value = 0.006, which means that p-value < 0.05), therefore it can be concluded that there is a correlation between permissive parenting and premarital sexual behavior at Public Senior High School 9 Bandar Lampung in 2023.

**Table 6**  
**The Relationship between Permissive Parenting and Premarital Sexual Behavior**

Permissive Parenting	Premarital Sexual Behavior				Total		P-value	OR (CI 95%)
	Good		Bad					
	N	%	N	%	N	%		
Yes	44	52.4	40	47.6	84	100	0.006	0.419 (0.232-0.757)
No	84	72.4	32	27.6	116	100		

**Table 7**  
**The Relationship between Democratic Parenting and Premarital Sexual Behavior**

Democratic Parenting	Premarital Sexual Behavior				Total		P-value	OR (CI 95%)
	Good		Bad					
	N	%	N	%	N	%		
Yes	81	77.9	23	22.1	104	100	0.000	3.672
No	47	49.0	49	51.0	96	100		(1.991-6771)

Based on the table above, it is known that there are 23 students (22.1%) from 104 students having democratic parenting but having a bad behavior on premarital sex while there are 49 students (51.0%) from 96 students not having democratic parenting but having a bad behavior on premarital sex. Based on the results of the Chi-Square test, the p-value = 0.006, which means that p-value < 0.05), therefore it can be concluded that there is a correlation between democratic parenting and premarital sexual behavior at Public Senior High School 9 Bandar Lampung in 2023.

## DISCUSSION

### The Correlation of Authoritarian Parenting on Premarital Sexual Behavior

Based on the results of this research has been known that there are 37 students (28.7%) from 129 students not having authoritarian parenting but having a bad behavior on premarital sex while there are 35 students (49.3%) from 71 students having authoritarian parenting but having a bad behavior on premarital sex. Based on the results of the Chi-Square test, the p-value = 0.006, which means that p-value < 0.05), therefore it can be concluded that there is a correlation between authoritarian parenting and premarital sexual behavior at Public Senior High School 9 Bandar Lampung in 2023. The degree of tightness of variable correlation between the authoritarian parenting variable and premarital sexual behavior variable can be seen from the value of OR = 0.414, which means that students with authoritarian parenting have a risk of 0.414 times to have premarital sexual behavior.

This research is in accordance with the previous research conducted by Linda Amalia (2019) stating that from the Pearson Product Moment statistical test results obtained a p-value of 0.025 (p < 0.05). It showed that there was a relationship between parental authoritarian parenting and adolescent sexual behavior.

The authoritarian parenting has the characteristics such as parents dictate and control children hard and rigidly, parents are firm to the children, parents always demand obedience from children, and parents' relationship to the children is less warm, parents do not encourage children to be independent, children's rights are limited but attributed with the responsibilities of an adult. This authoritarian parenting tends to set standards that absolutely must be done and followed, accompanied by threats commonly. Parents applying this authoritarian parenting tend to force, order, punish, hold the highest authority and require children to obey the orders as their parents. When the child doesn't do what the parents say, then the parent also doesn't compromise in communication, the parent only use one-way communication commonly does. This authoritarian parenting does not need feedback from children to understand them (Ayunqurootu, 2017).

According to the opinion of author, parents with authoritarian parenting will control all activities carried out by children and they will even apply rules that limit their association. In the case of dating, parents will set boundary signs for children, therefore that even though the children are dating, the children can keep it and act appropriately. Parents applying authoritarian parenting usually hesitate to curse and beat the children when the rules made are violated.

### **The Correlation of Permissive Parenting on Premarital Sexual Behavior**

Based on the results of this research has been known that there are 32 students (27.6%) from 116 students not having permissive parenting but having a bad behavior on premarital sex while there are 40 students (47.6%) from 84 students having permissive parenting but having a bad behavior on premarital sex. Based on the results of the Chi-Square test, the  $p\text{-value} = 0.006$ , which means that  $p\text{-value} < 0.05$ , therefore it can be concluded that there is a correlation between permissive parenting and premarital sexual behavior at Public Senior High School 9 Bandar Lampung in 2023. The degree of tightness of variable correlation between the permissive parenting variable and premarital sexual behavior variable can be seen from the value of  $OR = 0.419$ , which means that students with permissive parenting have a risk of 0.419 times to have premarital sexual behavior.

This research is in accordance with the previous research conducted by Linda Amalia (2019) stating that from the Pearson Product Moment statistical test results obtained a  $p\text{-value}$  of 0.005 ( $p < 0.05$ ) it showed that there was a correlation between permissive parenting and adolescent sexual behavior.

Permissive parenting (*Laissiez faire*), has characteristics such as parents never punish, the wishes and attitudes and behavior of children are always accepted and approved by parents, parents do not demand children to be responsible for household affairs, the presence of parents is a symbol for achieving the wishes of children, parents do not help or train children to obey the rules applied, parents are not active and responsible figures for the current and future behavior of children. Permissive parenting provides loose supervision. Parents give the children an opportunity to do something without sufficient supervision from them. Parents tend not to reprimand or warn children when children are in danger and very little guidance given by them. However, parents of this type are usually warm, therefore children often like them (Ayunqurootu, 2017).

According to author, permissive parenting greatly influences adolescent premarital sexual behavior because there is no parental control over on behavior to the children. Children will be free to do all their activities without knowing whether what they are doing is good or bad. When children are able to manage all their thoughts, attitudes and actions well, parents will give freedom which can be used to

develop their creativity and talents, thus, they become mature, initiative and creative individuals. However, it is rarely found, because most children most children are not able to use of this opportunity given, moreover they abuse the opportunity, therefore they tend to take actions that violate values, norms and rules of social culture, thus the children's self-development tends to be negative. This is the reason why permissive parenting is closely related to premarital sexual behavior in adolescents.

### **The Correlation of Democratic Parenting on Premarital Sexual Behavior**

Based on the results of this research has been known that there are 23 students (22.1%) from 104 students having democratic parenting but having a bad behavior on premarital sex while there are 49 students (51.0%) from 96 students not having democratic parenting but having a bad behavior on premarital sex. Based on the results of the Chi-Square test, the  $p\text{-value} = 0.006$ , which means that  $p\text{-value} < 0.05$ , therefore it can be concluded that there is a correlation between democratic parenting and premarital sexual behavior at Public Senior High School 9 Bandar Lampung in 2023. The degree of tightness of variable correlation between the democratic parenting variable and premarital sexual behavior variable can be seen from the value of  $OR = 3.672$ , which means that students with democratic parenting have a risk of 3.672 times to have premarital sexual behavior.

This research is in accordance with the previous research conducted by Linda Amalia (2019), it explained that from the Pearson Product Moment statistical test results obtained a  $p\text{-value}$  of 0.002 ( $p < 0.05$ ) it shows that there is a relationship between democratic parenting parents and adolescent sexual behavior.

Democratic parenting has the following characteristics, such as parents control and demand but with a warm attitude, there is reciprocity between parents and children which is done rationally, a parenting which prioritizes children's interests, but it does not hesitate to control them. Parents applying democratic parenting are rational, always basing their actions on ratios or thoughts. Parents are also realistic about their children's abilities, they are not expecting too much that goes beyond their children's abilities. The parents are warm to close and approach the children (Ayunqurootu, 2017).

The results of this study are also consistent with the results of previous research conducted by Wulandari in 2010 stating that there was a relationship between democratic parenting and sexual behavior and parental supervision which is an

important factor influencing adolescent sexual behavior. Adolescents supervised by their parents will delay and even avoid sexual behavior, while adolescents without parental supervision will engage in sexual behavior earlier.

Social Learning Theory explains that individual behavior is the result of observations about the social world and individual cognitive interpretations of that world. Based on this theory, parents applying democratic parenting in the family will cause children to tend to imitate their behavior. Using two-way communication is one of the main characteristics of democratic parenting.

The results of this study are also consistent with the results of study conducted Wulandari (2010) which states that there is a relationship between democratic parenting and sexual behavior, while parental supervision is an important factor influencing adolescent sexual behavior. Adolescents who are supervised by their parents will delay or even avoid sexual behavior, whereas adolescents without parental supervision will engage in sexual behavior earlier.

Social learning theory explains that individual behavior is the result of observations about the social world and individual cognitive interpretations of that world. Based on this theory, parents who apply democratic parenting in the family will cause children to tend to imitate their behavior. Using two-way communication is one of the main characteristics of democratic parenting.

Meanwhile, there are some students who are treated by democratic parenting but they still have unfavorable premarital sex behavior, most likely there are other factors such as environmental factors, peers who contributed to influencing premarital sex in adolescents.

### **The Variables Influencing Premarital Sexual Behavior**

The multivariate modeling which has been done shows that there are two variables left of three variables having  $p\text{-value} < 0.05$ , those are democratic parenting with  $p\text{-value} = 0.000$ ,  $OR=3.272$  and permissive parenting with  $p\text{-value} = 0.035$ ,  $OR= 0.513$ . Based on these results, it can be seen that the most dominant variable influencing premarital sex behavior is democratic parenting.

Permissive parenting has characteristics such as parents never punish. The wishes, attitudes and behavior of children are always accepted and approved by parents. Parents do not demand children to be responsible for household affairs. Whereas democratic parenting has the following characteristics such as parents control and demand

but with a warm attitude, there is reciprocity between parents and children which is done rationally. On the other hand, in democratic parenting, parents prioritize children's interests but they do not hesitate to control them (Ayunqurootu 2017).

In the opinion of the author, parents who apply permissive parenting greatly influence premarital sexual behavior because there is no parental control over the behavior of their children. Children will be free to do all their activities without knowing whether they are doing well or bad. There are several reasons why parents adopt this permissive parenting, one of which is that parents are too busy with their work therefore they don't have the opportunity to pay attention to their children. However, in democratic parenting, parents apply sufficient attention to their children thus it has a positive impact on adolescents. Nevertheless democratic parenting has negative impacts too. The negative impact of this democratic parenting can cause the teenagers to become dependent on their parents and unable to make the right decisions or selves action for themselves therefore children are easily influenced. These teenagers have a lot of advice about adolescent behaviors which deviate from sex. They are curious to know more about what their parents explained thus they are more willing to have premarital sex.

Based on the previous research conducted by Nursal in 2008 stated that adolescents who experience early puberty have the opportunity to engage in serious risky sexual behavior 4.65 times compared to adolescents with normal pubertal age (95% CI = 1.99 - 10.85). Another research showed that there was correlation between adolescent age and premarital sexual behavior. Then, the previous research conducted by Taufik and Anganthi in 2005 stated that courtship behavior seemed to be inseparable from the world of adolescents. The age of first dating was 15 to 17 years old and it can be said that most of the subjects in his study started dating when they were still in high school.

Meanwhile, in this study, most of the respondents are 16 years old, those are 98 people (49.0%) and 17 years old they are 74 people (37.0%). In addition, most of the respondents in this study are male, those are 124 people (62.0%), it has possibility as a trigger for premarital sex behavior too.

### **Variables which have no Effect on Premarital Sexual Behavior from Multivariate Modeling**

Authoritarian parenting in multivariate modeling is excluded in the second stage because the  $p\text{-value}$  is 0.642 therefore it is greater than the



alpha value (0.05) and the p-value is the highest. This study is in accordance with the previous research conducted by Marsito & Yudha in 2011 about the influence of parenting (authoritarian, democratic and permissive) on the perception of adolescent free sexual behavior. From the results of that study was found that authoritarian parenting had no effect on the perception of adolescent free sexual behavior, where authoritarian parenting was needed to be applied to adolescents in certain matters. Especially in relation to the application of values which must be instilled in adolescents as early as possible consistently with commitment by parents. In addition, there is previous research conducted by Dika in 2013 about authoritarian parenting, self-control and free sexual behavior in vocational high school adolescents, which obtained a p-value of 0.178 ( $p > 0.05$ ), therefore authoritarian parenting and self-control did not correlate with the variable adolescent free sexual behavior, thus the hypothesis in this study was rejected.

Authoritarian parenting has the following characteristics such as parents dictate and control children with a strict and rigid attitude, always demand obedience from children, and the relationship with children is less warm, parents do not encourage children to be independent, children's rights are limited but they are required to be responsibilities like adults. This parenting tends to set standards which must be followed, usually accompanied by threats absolutely (Ayunqurootu 2017) in the opinion of Yo in 2005 stating that parenting in adolescents who apply rules which are too strict and full of discipline will cause problems for adolescent development, in this case adolescents will behave aggressively, tend to be disobedient, free to do anything such as smoking and free sex. Likewise, when adolescents are given freedom without proper control and supervision, it can result in premature freedom in adolescents, such as unequal freedom, therefore adolescents depend on their parents. Thus, according to the author authoritarian parenting tend to behave in premarital sex.

## CONCLUSION

Democratic parenting with p-value = 0.000 and OR = 3.272 is the dominant variable which influences premarital sexual behavior in adolescents.

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## THE DEVELOPMENT OF A PLANT-BASED DIET AS MIDWIFERY CARE MANAGEMENT FOR FIRST-TRIMESTER PREGNANT WOMEN WITH HYPEREMESIS GRAVIDARUM

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### ABSTRAK PENGEMBANGAN PLAN BASED DIET SEBAGAI MANAJEMEN ASUHAN KEBIDANAN PADA IBU HAMIL TRIMESTER I DENGAN HIPEREMESIS GRAVIDARUM

Latar Belakang: Kehamilan merupakan suatu perubahan yang dialami oleh ibu selama kehamilannya. Oleh karena itu, asuhan yang diberikan kepada ibu hamil harus asuhan yang bisa meminimalkan intervensi. Bidan harus bisa memfasilitasi asuhan kepada ibu hamil yang bisa memberikan kenyamanan terhadap ibu hamil. Dimana peristiwa yang terjadi pada seorang wanita, dimulai dari proses fertilisasi (konsepsi) sampai bayi lahir. Proses ini menyebabkan perubahan fisik, mental, dan sosial yang memberikan efek maupun dampak yang berbeda pada setiap wanita hamil. Hiperemesis gravidarum merupakan suatu keadaan terjadinya mual muntah yang berlebihan, berlangsung kurang lebih 10 kali dalam 24 jam sehingga pekerjaan sehari-hari terganggu dan keadaan umum menjadi buruk. Hiperemesis gravidarum yang merupakan komplikasi ibu hamil muda bila terjadi terus menerus dapat mengakibatkan dehidrasi, ketidakseimbangan elektrolit, serta dapat mengakibatkan cadangan, karbohidrat dan lemak habis terpakai untuk keperluan energi. Sehingga untuk memenuhi kebutuhan energi maka ibu hamil memerlukan Plan Based Diet, dimana diet ini harus memenuhi nutrisi yang dibutuhkan oleh tubuh seperti : Asam folat, Kalsium, Zat besi, Protein, kacang – kacangan, menghindari makanan yang mengandung tinggi merkuri, dan harus mengetahui makanan apa yang harus dihindari / tidak boleh dikonsumsi Ibu hamil

Tujuan : Penelitian ini bertujuan untuk menganalisis Pengembangan Plan Based Diet sebagai Manajemen Asuhan Kebidanan pada ibu hamil trimester satu dengan Hiperemesis di Wilayah Kerja Puskesmas Paspan Kabupaten Banyuwangi.

Metode: Jenis penelitian yang digunakan dalam penelitian ini adalah quasi experimental dengan pendekatan post test only non equivalent control group dimana kelompok intervensi dan kelompok kontrol tidak dipilih secara random dan pengukuran dilakukan pada pre dan post intervensi dengan Jumlah sampel 60 responden ibu hamil di Wilayah Kerja Puskesmas Paspan. Metode Penelitian yang digunakan dalam penelitian ini adalah quasi experimental dengan pendekatan post test only non equivalent control group dimana kelompok intervensi dan kelompok kontrol tidak dipilih secara random dan pengukuran dilakukan pada pre dan post intervensi. Analisis yang digunakan univariate dan bivariate, dengan uji statistik menggunakan Uji Paired Sampel T Test /Uji Wilcoxon dengan SPSS versi 25.

Hasil: Hasil analisis dari Post Test Control didapatkan skor Hiperemesis Ringan 70%, Sedang 20% dan Berat 10% sedangkan hasil dari Post Test Intervensi didapatkan skor Hiperemesis Ringan 33%, Sedang 30% dan Berat 11%. Dengan nilai analisis dari Post Control nilai  $Z = 3,162$  dengan tingkat signifikan 0,002 dan Post Intervensi nilai  $Z = 4.443$  dengan tingkat signifikan 0,000. Sehingga dari data yang sudah diperoleh maka terdapat pengaruh Pengembangan Plan Based Diet sebagai Manajemen Asuhan Kebidanan pada ibu hamil trimester I dengan Hiperemesis.

Kesimpulan : Terdapat hubungan yang signifikan antara Pengembangan Plan Based Diet sebagai Manajemen Asuhan Kebidanan pada ibu hamil trimester I dengan Hiperemesis Sehingga diharapkan ibu hamil dengan hiperemesis dapat memahami kebutuhan nutrisinya dan untuk memenuhi kebutuhan nutrisi maka ibu hamil memerlukan Plan Based Diet, dimana diet ini harus memenuhi nutrisi yang dibutuhkan oleh tubuh seperti : Asam folat, Kalsium, Zat besi, Protein, kacang – kacangan, menghindari makanan yang mengandung tinggi merkuri, dan harus mengetahui makanan apa yang harus dihindari / tidak boleh dikonsumsi Ibu hamil.

Saran : Melakukan Kerjasama dengan Puskesmas – Puskesmas dalam melakukan Sosialisasi tentang Plan Based Diet guna untuk memenuhi kebutuhan nutrisi ibu hamil yang mengalami Hiperemesis, sehingga ibu hamil dapat menjalani kehamilannya dengan sehat tanpa adanya keluhan mual dan muntah.

Kata Kunci : *Trimester I, Hiperemesis ,Diet*

## ABSTRACT

**Background:** Pregnancy is a change experienced by the mother during her pregnancy. Therefore, care given to pregnant women must be taken to minimize intervention. Midwives must be able to facilitate care for pregnant women who can provide comfort to pregnant women. Where events occur in a woman, starting from fertilization (conception) until the baby is born. This process causes physical, mental and social changes that affect and impact every pregnant woman. Hyperemesis gravidarum is a condition where excessive nausea and vomiting occur approximately 10 times in 24 hours so that daily work is disrupted and the general condition worsens. Hyperemesis gravidarum, a complication for young pregnant women, if it occurs continuously, can result in dehydration, electrolyte imbalance, and carbohydrate and fat reserves being used up for energy needs. So to meet energy needs, pregnant women need a Plan Based Diet, where this diet must meet the nutrients needed by the body such as Folic acid, calcium, iron, protein, and nuts, avoid foods that contain high levels of mercury and know what foods to eat, what should be avoided / should not be consumed by pregnant women.

**Objective:** This study aimed to analyze the development of a Plan Based Diet as Management of Midwifery Care for first-trimester pregnant women with Hyperemesis in the Paspan Community Health Center Working Area, Banyuwangi Regency.

**Methods:** The type of research used in this study was quasi-experimental with a post-test-only non-equivalent control group approach where the intervention group and control group were not randomly selected, and measurements were carried out at pre and post-intervention with a total sample of 60 pregnant women respondents in the Working Area of Paspan Community Health Center. The research method used in this study was quasi-experimental with a post-test-only non-equivalent control group approach where the intervention group and control group were not randomly selected, and measurements were made pre and post-intervention. The analysis was univariate and bivariate, with statistical tests using the Paired Samples T Test / Wilcoxon Test with SPSS version 25.

**Results:** The results of the analysis from the Post Test Control obtained a Mild Hyperemesis score of 70%, Moderate 20% and Severe 10%, while the results of the Post Test Intervention obtained a Mild Hyperemesis score of 33%, Moderate 30% and Severe 11%. The analysis value of Post Control Z value = 3.162 with a significant level of 0.002 and Post Intervention Z value = 4.443 with a significant level of 0.000. So, from the data obtained, there is an influence on the Development of a Plan Based Diet as Midwifery Care Management for pregnant women in the first trimester with hyperemesis.

**Conclusion:** There is a significant correlation between developing a Plan Based Diet as Midwifery Care Management for pregnant women in the first trimester and hyperemesis. So it is hoped that pregnant women with hyperemesis can understand their nutritional needs and to meet nutritional needs, pregnant women need a Plan Based Diet, where this diet must meet nutrients needed by the body such as Folic acid, calcium, iron, protein, nuts, avoiding foods that contain high levels of mercury, and you must know what foods pregnant women should avoid/not consume.

**Suggestion:** Collaborate with Community Health Centers in outreach about Plan Based Diet to meet the nutritional needs of pregnant women who experience hyperemesis so they can carry out their pregnancies healthily without complaints of nausea and vomiting.

**Keywords:** *first-trimester, hyperemesis, diet*

## INTRODUCTION

Pregnancy is an event that occurs in a woman, starting from the process of fertilization (conception) until the baby is born. This process causes physical, mental, and social changes that affect each pregnant woman differently. Discomfort often experienced by pregnant women, especially in the first trimester of pregnancy, ranges from nausea and vomiting (Emesis Gravidarum) to excessive nausea and vomiting (Hyperemesis Gravidarum). Hyperemesis gravidarum is a condition where excessive nausea and vomiting occur more than 10

times in 24 hours, disrupting daily activities and deteriorating general health (Runiari, 2010). Hyperemesis gravidarum, a complication in early pregnancy, if it continues, can lead to dehydration, electrolyte imbalance, and the depletion of carbohydrate and fat reserves for energy needs. Therefore, to meet energy needs, pregnant women require a Plant-Based Diet. This diet must meet the body's nutrients, such as Folic acid, Calcium, Iron, Protein, and Legumes. It should also avoid foods that contain high levels of mercury and know what foods should be avoided / not consumed (Almatsier, 2011).

A characteristic of the hyperemesis diet is an emphasis on providing complex carbohydrates, especially in the morning and avoiding fatty foods and fried foods to suppress nausea and vomiting. It is best to space out meals and drinks (Almatsier, 2011). The diet in hyperemesis gravidarum aims to replace the body's glycogen stores and gradually provide energy-rich food and adequate nutrients. The hyperemesis gravidarum diet has levels corresponding to the severity of the hyperemesis (Almatsier, 2011). A study shows that only 2% of pregnant women feel nauseous in the morning, while 80% have continuous complaints throughout the day. 8.6 million pregnant women lose work hours due to excessive nausea and vomiting. In 2011, the incidence of hyperemesis gravidarum in East Java Province reached 10-15% of the total number of pregnant women, as many as 182,8154 people. Data from WHO (World Health Organization) estimates that there are 210 million pregnancies worldwide each year. In 2020, the number of pregnant women in Indonesia increased to about 271,066,000 people. Data from Banyuwangi Regency in 2020 shows that K1 service coverage was as many as 22,799 (93.8%) out of a target of about 4,3111 (DinKes, 2020). A study was also conducted at NU Mangir Hospital with 44 pregnant women who experienced hyperemesis gravidarum. It was found that more than half of the sample, 23 people (52.3%), had fluid balance disorders, 14 people (31.8%) had nutritional disorders, and 7 people (15.9%) had hyperthermia (Raharjo & Hakim, 2021). Hyperemesis gravidarum can endanger health, causing weight loss of more than 5%, metabolic disorders, and other complications such as dehydration, weakness, and malnutrition. Nausea results from increased estrogen levels; the rise in estrogen hormones causes the smooth muscles in the digestive tract to decrease their activity, reducing gastric motility and slowing gastric emptying. Oesophageal reflexes, decreased gastric motility and high hydrochloric acid secretion also contribute to nausea and vomiting (Latifah, Setiawati, & Hapsari, 2017). Hyperemesis gravidarum is caused by the bacterium *Helicobacter pylori*, so a test for the presence of *Helicobacter pylori* should be conducted. If the result is positive, treatment can be given with an H2 blocker (cimetidine) or an inhibitor (omeprazole) (Fauziah, 2012). Pregnant women who experience nausea and vomiting can be given education about nutrition and diet planning, such as regulating food and drink intake in small but frequent portions (throughout the day). The food should be high in carbohydrates and low in fat and acid (Proverawati & Asfuah, 2009). It is recommended to frequently eat snacks, nuts, and

biscuits. In addition, electrolyte replacement drinks and nutritional supplements are advised to maintain electrolyte balance and adequate calorie intake (Damayanti, 2021). Nausea and vomiting are common disturbances in the first trimester of pregnancy. There are several ways to reduce nausea and vomiting, such as consuming sugarcane water (Wardani, 2020). If the smell of freshly cooked (hot) food can trigger vomiting, it is advisable to always have cold food available. Education about lifestyle can also help prevent stress, and rest can reduce vomiting. Emotional support is also important to prevent hyperemesis gravidarum from worsening, and the mother should follow a hyperemesis gravidarum diet to fulfil her nutritional status (Sharoon & Reeder, 2011). It is also supported by (Evayanti, 2015), who stated that the knowledge of pregnant women will also affect Antenatal Care (ANC) visits, so if the mother's knowledge is lacking, information related to the complaints felt about nutrition in pregnant women and the current nutritional status of the mother will also be limited. One way to determine the nutritional status of pregnant women is by measuring Body Mass Index (BMI), which provides an understanding of a person's nutritional status obtained from comparing weight and height. (Sharoon & Reeder, 2011). Diet planning for pregnant women experiencing hyperemesis is expected to mitigate the impact of this condition, namely the decrease in Body Mass Index (BMI) in pregnant women (Sharoon & Reeder, 2011).

## RESEARCH METHODS

The type of research used in this study is quasi-experimental with a pre-post test only non-equivalent control group approach, where the intervention and control groups are not chosen randomly. Measurements are taken pre and post-intervention (Wood & Haber, 2010). The target population in this study was all 62 pregnant women in the first trimester in the Paspan Community Health Center working area. The sample in this study was 60 pregnant women in the first trimester who experienced hyperemesis gravidarum, where the sample would be divided into 2 groups, namely 30 people in the control group and 30 people in the intervention group. In this research, non-probability sampling techniques were used with purposive sampling (Nursalam, 2013). This research instrument uses [1] the PUQE (Pregnancy-Unique Quantification of emesis and nausea) observation sheet to measure the level of nausea and vomiting of pregnant women which consists of 6 questions and a reliability validity test has been carried out with results  $r > 0.4$  on all question items which means all

valid question, [2] plan based diet development module. This instrument was used during data collection on July 14-24 in the control group and intervention group. After data collection, the questionnaire was analyzed as initial data for data grouping. After that, the researcher intervened in the intervention group and the final step in this questionnaire was to collect post-intervention data in the intervention group and control group on August 14. Data analysis in this study used the Wilcoxon statistical test, because the results of the data normality test were 0.000, so it was concluded that the data was not normally distributed.

## RESULTS AND DISCUSSION

### Univariate Analysis

Table 1 mentions that most respondents are in their mid-adulthood (20-35 years old), which is 62% or 37 respondents. Regarding parity, most occur in the second pregnancy, which is 46% or 28 respondents. As for occupation, it was found that most respondents work as private employees, 50% or 30 respondents. Regarding education, most of the respondents have a high school education, accounting for 33% or about 20 people.

**Table 1**  
**Respondent Characteristics Data (N=60)**

Characteristic	Total	Percentage (%)
<b>Respondent's Age</b>		
<20 Years	17	28
20 - 35 Years	37	62
≥ 35 Years	6	10
<b>Parity</b>		
The First Pregnancy	25	42
The Second Pregnancy	28	46
≥ 3 Third Pregnancy	7	12
<b>Occupation</b>		
Housewives	18	30
Civil Servants	3	5
Private Employees	30	50
Merchants	9	15
Farmers	0	0
<b>Education</b>		
Not completed in primary school	3	5
Elementary School	16	27
Junior High School	12	20
Senior High School	20	33
University	9	15

Source: primary data 2023

### Bivariate Analysis

**Table 2**  
**Respondent data before and after intervention in the control group and intervention group**

Intervention Group		
Indicator	Pre	Post
Mild	3	21
Moderate	9	6
Severe	18	3

Source: primary data 2023

Table 2 mentions that the majority of the intervention group, before treatment, experienced

severe hyperemesis with a total of 18 people, and after treatment, this number decreased to 3 people. Meanwhile, in the control group before treatment, most respondents experienced severe hyperemesis with 17 people. The condition after analysis was not much different, with 11 people.

Control Group		
Indicator	Pre	Post
Mild	6	10
Moderate	7	9
Severe	17	11

Source: primary data 2023

**Table 3**  
**Results of Statistical Analysis on the Development of Plan-Based Diet as Midwifery Care Management for first-trimester pregnant women with hyperemesis in the Working Area of Paspan Banyuwangi Community Health Center**

	<b>Post Test Control – Pre Test Control</b>	<b>Post Test Intervensi – Pre Test Intervensi</b>
Z	-3.162 <sup>a</sup>	-4.443 <sup>a</sup>
Asymp. Sig. (2-tailed)	.002	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

From the research results, the post-test results in the control group showed that 70% of respondents experienced mild hyperemesis, 20% moderate, and 10% severe. Meanwhile, the post-test results in the intervention group showed that 33% of respondents experienced mild hyperemesis, 30% moderate, and 11% severe. The data analysis results using the Wilcoxon test found significant values of 0.002 in the control group and 0.000 in the intervention group. The interpretation of these research results shows a significant effect of developing a plan-based diet as Midwifery Care Management for first-trimester pregnant women with Hyperemesis Gravidarum.

## DISCUSSION

### **Plan-Based Diet as Management of Midwifery Care for First Trimester Pregnant Women with Hyperemesis in the Control Group.**

The results of this study show that in the pre-test condition of the control group, 10% of respondents had mild hyperemesis, 30% moderate, and 60% severe hyperemesis. Meanwhile, in the post-test condition of the control group, 70% of respondents had mild hyperemesis, 20% moderate and 10% severe hyperemesis.

Hyperemesis gravidarum is a condition where there is excessive nausea and vomiting, occurring more than 10 times in a 24-hour period so that daily activities are disrupted and general conditions become poor. Discomfort often occurs in pregnant women, especially in the first trimester of pregnancy, ranging from nausea and vomiting (Emesis Gravidarum) to excessive nausea and vomiting (Hyperemesis gravidarum).

Based on the research by (Hasibuan, et al., 2021) stated that hyperemesis gravidarum requires immediate action, which includes: providing health education about a diet consuming high-protein, low-fat foods, and eating food in small portions but often increasing the consumption of mineral water, advising mothers to get enough rest, and consuming

vitamin B6 to prevent nausea and vomiting. According to (Umaroh, Kumalasari, & Wigati, 2023) nausea and vomiting can be addressed by using the ginger oil therapy method, where this ginger oil can also reduce the consistency and frequency of nausea and vomiting experienced by pregnant women.

### **Plan-Based Diet as Management of Midwifery Care for First Trimester Pregnant Women with Hyperemesis in the Intervention Group.**

The results of this study show that in the pre-test condition of the intervention group, 20% of respondents experienced mild hyperemesis, 23% moderate, and 57% severe hyperemesis. Meanwhile, in the post-test condition of the intervention group, 33% of respondents experienced mild hyperemesis, 30% moderate and 11% severe hyperemesis.

Hyperemesis gravidarum is a complication in early pregnant women that can lead to dehydration and electrolyte imbalance if it continues. It can also result in reserves of carbohydrates and fats being used up for energy. Therefore, to meet energy needs, pregnant women require a Plan Based Diet. This diet must meet the nutrients the body needs, such as Folic acid, Calcium, Iron, Protein, and Legumes - avoiding foods high in mercury - and knowing what foods should be avoided / not consumed.

Research by (Susanti, Firdayanti, & Haruna, 2019) showed that mothers who experience hyperemesis gravidarum will experience vomiting approximately 10 times a day, so the mother's activities and general condition will be disturbed, the mother will be in a state of nausea and vomiting if given food then the mother will vomit all the food that has been eaten so that the mother will feel lazy, weak and also feel heartburn. According to (Safitri & Triana, 2021), a subjective examination is required, and objective data is also required so that after the data is collected, you can determine a diagnosis according to the patient's condition. Patients who



have received the examination will be able to understand their condition and will accept and implement the recommendations and information given. According to (Rahma & Safura, 2016), hyperemesis gravidarum is a pregnancy complication requiring direct handling, both systematically and based on evidence. Midwifery care carried out through the Varney management approach can be considered systematic care. Patients will be able to feel if the care performed every day is a necessity, not just a routine. (Terengganu, Azrida M, & Thamrin, 2021) Stated that nausea and vomiting can be overcome by providing appropriate treatment, one of which is by giving light medication to treat nausea and vomiting, carrying out regular ANC checks, and recommending a diet. (Sebastiani, et al., 2019) Diet is one of the factors related to lifestyle that is most significant in determining a person's condition and can also influence offspring to develop disease. Meanwhile, pregnancy is a very important window in the diet process, which will benefit the fetus's health later. During pregnancy, pregnant women choose to follow a vegetarian diet due to certain reasons. During the preconception period, nutrition in pregnant women must be adjusted properly because this is very important for creating a healthy pregnancy. (Attini, et al., 2017) A plant-based diet limited to protein and supplemented with supplements will prevent pregnant women from experiencing complications, such as proteinuria. (Zulyniak, et al., 2017) Pregnant women who eat a plant-based diet during pregnancy are also related to the baby's birth weight.

#### **The Development of Plan Based Diet as Management of Midwifery Care for First Trimester Pregnant Women with Hyperemesis.**

The statistical analysis results using the Wilcoxon test showed a significant value of 0.002 in the control group and 0.000 in the intervention group. The interpretation of the results of this research is that there is a significant influence of the development of a plan-based diet as Midwifery Care Management for pregnant women in the first trimester on Hyperemesis Gravidarum.

Pregnant women who experience nausea and vomiting can be given education about nutrition and diet planning, such as regulating food and drink intake in small portions but frequently (throughout the day). Food should be rich in carbohydrates and low in fat and acid (Walyani, 2015). Frequent snacks, nuts and biscuits, electrolyte replacement drinks, and nutritional supplements are recommended to maintain electrolyte balance and adequate calorie intake. If the smell of freshly cooked (hot) food can

trigger vomiting, it is recommended to always provide cold food. Education about lifestyle can also help prevent stress, and rest can reduce vomiting. Emotional support is also important to prevent hyperemesis gravidarum from getting worse, and the mother must undergo a hyperemesis gravidarum diet so that the mother's nutritional status remains met. According to the research result by (Attini, et al., 2022) states that a mother's diet that uses a diet with protein can be used by mothers who experience high-risk pregnancies. According to (Meulenbroeks, et al., 2021), nutritionists counsel pregnant women about a strict plant-based diet so they can have a healthy pregnancy. According to (wang et al., 2021), Pregnant women who eat plant-based foods during pregnancy will be beneficial for the condition of pregnant women, especially if it is done starting in mid-pregnancy. A diet that has been planned will ensure maximum results, and the mother's pregnancy will proceed healthily. (Jayedi, et al., 2023) Pregnant women should adhere more to a plant-based diet during the first trimester because the first trimester is likely to be associated with a lower risk of inadequate GWG. According to (MD, et al., 2023), if pregnant women adhere more to a planned plant-based diet, they will have a lower risk of experiencing hypertensive disorders during pregnancy. Most have a benefit related to improved weight control. And according to (Piccoli, et al.) A healthy diet for pregnant women during their pregnancy has been known for many years as a key to the well-being of both the mother and her fetus. Over time, an ideal dietary pattern is increasingly shifting from a low-risk eating pattern, and nutrient deficiencies will also reduce the risk of diseases associated with overeating. The rediscovery of vegetarian dietary patterns has received attention, especially as this diet can protect against chronic diseases or what can be called "overeating" in developed and developing countries, including cardiovascular disease, diabetes or obesity.

#### **CONCLUSION**

This research aimed to analyze the development of a Plan Based Diet as a management strategy for midwifery care in first-trimester pregnant women with hyperemesis in the Paspan Community Health Center, Banyuwangi Regency working area. To determine the influence of developing a Plan Based Diet as a management strategy for midwifery care in first-trimester pregnant women with hyperemesis, it can be concluded that there is a lack of understanding about nutrition consumed by pregnant women, as long as the mother still

experiences hyperemesis and what foods can reduce nausea.

Efforts to overcome this condition include providing care to pregnant women by implementing a Plan Based Diet for 2 weeks, where pregnant women carry out a healthy diet by consuming high plant and animal proteins. In its implementation, there will be assistance from health workers.

## SUGGESTION

Cooperating with Community Health Centers to socialize the Plan Based Diet to meet the nutritional needs of pregnant women experiencing hyperemesis so they can undergo their pregnancy healthily without hyperemesis complaints. By undergoing a healthy pregnancy, the delivery process is expected to go smoothly with both mother and baby in good health.

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## THE DOMINANT FACTOR AFFECTING QUALITY OF LIFE IN HIGH-RISK POSTPARTUM MOTHERS

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### ABSTRAK FAKTOR DOMINAN YANG MEMPENGARUHI KUALITAS HIDUP PADA IBU PASCA PERSALINAN RISIKO TINGGI

Pendahuluan: Angka kematian ibu mengalami kenaikan dibandingkan tahun 2020 yaitu dari 115 kasus menjadi 187 kasus. Angka kematian bayi di Provinsi Lampung tahun 2019 sebesar 10,25%/1.000 kelahiran hidup, angka kematian ini meningkat bila dibandingkan dengan tahun 2017 sebesar 9,17%/1.000 kelahiran hidup.

Tujuan: Diketahui faktor dominan yang mempengaruhi kualitas hidup ibu *postpartum* berisiko tinggi di rumah sakit Pertamina bintang amin tahun 2023.

Metode: Jenis penelitian yang digunakan dalam penelitian ini adalah *kuantitatif* dengan rancangan *survei analitik* dengan menggunakan pendekatan *cross sectional*. Teknik sampling yang digunakan adalah total sampling dengan jumlah sampel 48 responden.

Hasil: Hasil penelitian dengan hasil uji statistik *Chi-Square* dan uji *korelasi kendall's tau* membuktikan bahwa ada hubungan antara variabel usia, pendidikan, penghasilan, paritas dan riwayat abortus terhadap kualitas hidup *postpartum* berisiko tinggi dengan *p-value* (0,010), (0,003), (0,040), (0,001) dan (0,005). Faktor yang paling dominan yang mempengaruhi kualitas hidup *postpartum* berisiko tinggi adalah Pendidikan dengan *p-value* 0,011 dan dengan nilai OR 7.512.

Simpulan: Berdasarkan hasil analisis multivariat dapat diambil simpulan bahwa faktor yang paling dominan atau berpengaruh terhadap kualitas hidup ibu *postpartum* di RS Pertamina Bintang Amin Bandar Lampung adalah Pendidikan dengan nilai OR 7.512.

Kata Kunci: Kualitas Hidup, Ibu Postpartum Berisiko Tinggi

### ABSTRACT

Introduction: The maternal mortality rate has increased compared to 2020, namely from 115 cases to 187 cases. The infant mortality rate in Lampung Province in 2019 was 10.25%/1,000 live births, this mortality rate increased when compared to 2017 of 9.17%/1,000 live births.

Purpose: It is known that the dominant factors affecting the quality of life of high-risk postpartum mothers at the Pertamina Bintang Amin Hospital in 2023.

Methods: The type of research used in this research is quantitative with an analytic survey design using a cross sectional approach. In this study the sampling technique used was total sampling with a total sample of 48 respondents.

Results: The results of the study using the results of the Chi-Square statistical test and the Kendall's tau correlation test prove that there is a relationship between the variables age, education, income, parity and history of abortion on the quality of life for high-risk postpartum with a p-value of (0.010), (0.003), (0.040), (0.001) and (0.005). Dominant factor affecting the quality of life at high risk postpartum is Education with a p-value of 0.011 and an OR of 7.512.

Conclusions: Based on the results of multivariate analysis with multivariable logistic regression, it can be concluded that the most dominant factor or influence on the quality of life of postpartum mothers at Pertamina Bintang Amin Hospital Bandar Lampung is Education with an OR value of 7.512.

Keywords: Quality Of Life, Postpartum Mothers are at High Risk

## INTRODUCTION

The World Health Organization (WHO) states that the definition of health is not just the absence of disease, but a set of physical, mental and social conditions of overall well-being, body and mind. In addition, strengthening promotive and preventive efforts is a priority for health services, where the level of client welfare is measured by their quality of life (Lara & Hidajah, 2017).

Quality of life is defined as an individual's perception of life circumstances in order to achieve life goals in accordance with accepted values and culture. The purpose of medical services is to determine the care that medical staff provide to clients. In addition, the provision of comprehensive health services by providing health services based on the results of measuring quality of life (Jacob, 2018).

Poor quality of life during pregnancy can contribute to an increased risk of complications during pregnancy and childbirth. The poor quality of life of the mother after childbirth causes the baby's growth to be stunted due to inadequate care and complications for the mother due to suboptimal postpartum recovery. The quality of life of postpartum mothers was significantly associated with postpartum psychosocial changes, breastfeeding difficulties, multiple births, gestational obesity, and a history of cesarean section (Duhita et al., 2021).

One of the complications that often occurs in pregnant and postpartum women is hypertension during pregnancy, where hypertension during pregnancy accounts for 5-15% of existing pregnancy complications (Sarlis, 2018). In Indonesia, hypertension in pregnancy is still one of the causes of maternal mortality ranging from 15% to 25%, while infant mortality ranges from 45% to 50%. The Maternal Mortality Rate (MMR) increased compared to 2020 from 115 cases to 187 cases (Provil Kesehatan Provinsi Lampung, 2021).

In addition to hypertension, a possible complication in pregnant and postpartum women is gestational diabetes mellitus (GDM), where almost 80% of diabetic patients live in low- and middle-income countries. GDM in Indonesia in 2018 was 1.9% to 3.6% (Mufdillah et al, 2019). The prevalence of DMG in Lampung province has a rate of 0.8% while Bandar Lampung city has the third highest number of DMG sufferers with an incidence rate of 0.9% (Hoirunnisah et al., 2020).

After that, the next possible complication in pregnant and postpartum women is preterm labor, which is the main cause of 60-80% of neonatal morbidity and mortality. The number of births in

Indonesia is estimated at 5,000,000 per year, so the infant mortality rate can be calculated at around 280,000 per year. Infant Mortality Rate (AKB) in Lampung Province in 2019 of 10.25%/1,000 live births, an increase compared to 2017 of 9.17%/1,000 live births. According to data from the Bandar Lampung City Health Office (2019), the Infant Mortality Rate (AKB) increased to 11.86/1000 live births in 2018, or 10.74/1000 live births. Causes of infant death include premature birth (34%), asphyxia (24%), infection (23%), premature birth (11%), and other causes (8%) (Irayani, 2021).

Research from (Wulandari & Mufdillah, 2020), the results of research with chi-square test results prove that there is an influence of demographic factors including age, education and work & income variables. As well as obstetric factors including parity, a history of complications has an influence on postpartum quality of life.

The purpose of this study is to know the dominant factors that affect the quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital Bandar Lampung.

## RESEARCH METHODS

The type of research used in this study is quantitative with an analytical survey design using a cross sectional approach. The sampling technique used is the non-probability sampling method and the selection of samples taken is determined by accidental techniques of 48 respondents.

The data analysis used were univariate analysis, bivariate analysis with chi-square and kendall's tau correlation test, multivariate analysis with multibariabel logistic regression.

## RESULT

### Univariate Analysis

**Table 1**  
**Quality of Life High-risk postpartum mothers**

Quality of Life	N	%
Bad	28	58,3
Good	20	41,7

Table 1. It is known that the quality of life of postpartum mothers who are at high risk at Pertamina Bintang Amin Hospital Bandar Lampung who have a poor quality of life as many as 28 (58.3%) respondents and those who have a good quality of life as many as 20 (41.7%).

### Bivariate Analysis

**Table 2**

**Relationship of Age with Quality of Life Postpartum mothers at high risk**

Age	Quality of Life				Total		p-Value
	Bad		Good		N	%	
	N	%	N	%			
Risk	14	29,2	2	4,2	16	33,3	0,010
No Risk	14	29.2	18	37.5	32	66.7	

Table 2. It is known that the age of postpartum mothers who have a risk age (age <20 years and >35 years) have a poor quality of life as many as 14 (29.2%) clients and good 2 (4.2%) clients. As for clients who have a non-risk age (20-35 years) who

have a poor quality of life as many as 14 (29.2%) clients and good 18 (37.5%) clients.

Based on the results of the chi-squar test, a p-value of 0.010 was obtained, meaning that there is a significant relationship between age and the quality of life of high-risk postpartum mothers.

**Table 3**  
**Ethnic Relationship with Quality of Life High-risk postpartum mothers**

Ethnic	Quality of Life				Total		p-Value
	Bad		Good		N	%	
	N	%	N	%			
Jawa	13	27,1	14	29,2	27	56,3	0,201
Lampung	8	16,7	2	4,2	10	20,8	
Sunda & lainnya	7	14,6	4	8,3	11	22,9	

Table 3. It is known that Javanese clients have a poor quality of life as much as 13 (27.1%) and good 14 (29.2%), clients with Lampung tribe have a bad quality of life as much as 8 (16.7%) and good as much as 2 (4.2%), clients with Sundanese and others

have a bad quality of life as much as 7 (14.6%) and good 4 (8.3%).

From the results of the chi squar test, a p-value of 0.201 was obtained, meaning that there was no significant relationship between ethnicity and the quality of life of high-risk postpartum mothers.

**Table 4**  
**The Relationship of Education with Quality of Life High-risk postpartum mothers**

Education	Quality of Life				Total		p-Value
	Bad		Good				
	N	%	N	%	N	%	
SD & SMP	9	18,8	0	0,0	9	18,8	0,003
SMA & SMK	17	35,4	15	31,3	32	66,7	
P.T	2	4.2	5	110.4	7	14.6	

Table 4. It is known that clients with elementary and junior high school education have a poor quality of life as much as 9 (18.8%), clients with high school / vocational education have a poor quality of life as much as 17 (35.4%) and good 15 (31.3%), and for clients with college education who

have a poor quality of life as much as 2 (4.2%) and good 5 (10.4%).

From the results of Kendall's Tau correlation test, a p-value of 0.003<0.05 was obtained, meaning that there was a significant relationship between the client's level of education and the quality of life of high-risk postpartum mothers.

**Table 5**  
**The Relationship of Work to Quality of Life High-risk postpartum mothers**

Work	Quality of Life				Total		p-Value
	Bad		Good				
	N	%	N	%	N	%	
Not Working	23	47,9	13	27,1	36	75,0	0,310
Working	5	10,4	7	14,6	12	25,0	

Table 5. It was found that non-working clients had a poor quality of life of 23 (47.9%) and a good 13 (27.1%). As for working clients who have a poor quality of life as much as 5 (10.4%) and good 7 (14.6%).

From the results of the chi-squar test, a p-value of 0.310 was obtained, meaning that there was no significant relationship between the client's work and the quality of life of high-risk postpartum mothers.

**Table 6**  
**The Relationship of Income to Quality of Life High-risk postpartum mothers**

Income	Quality of Life				Total		p-Value
	Bad		Good				
	N	%	N	%	N	%	
Under UMR	18	37,5	6	12,5	24	50,0	0,040
Above UMR	10	20,8	14	29,2	24	50,0	

Table 6. It is known that clients who earn below UMR have a poor quality of life as many as 18 (37.5%) respondents and a good quality of life as many as 6 (12.5%) respondents. As for clients who earn above UMR who have a poor quality of life as much as 10 (20.8%) and good 14 (29.2%).

From the results of the chi-squar test, a p-value of 0.040 was obtained, meaning that there was a significant relationship between respondents' income and the quality of life of high-risk postpartum mothers.

**Table 7**  
**The Relationship of Parity with Quality of Life High-risk postpartum mothers**

Parity	Quality of Life				Total		p-Value
	Bad		Good				
	N	%	N	%	N	%	
Primipara	12	25,5	3	6,3	15	31,3	0,001
Multipara.grandemultipara	16	33.3	17	35,4	33	68,8	

Table 7. It is known that respondents with primiparous parity who have a poor quality of life as much as 12 (225.5%) and good 3 (6.3%). Then for clients with multipara parity and grandemultipara who have a poor quality of life as much as 16 (33.3%) and good 17 (35.4%).

From the results of the chi-squar test, a p-value of 0.001 was obtained, meaning that there was a meaningful relationship between client parity and the quality of life of high-risk postpartum mothers.

Table 8. It is known that respondents who had previously experienced abortion had a poor quality of life as much as 9 (18.8%) and good 0 (0.0%). Meanwhile, clients who had never experienced abortion had a poor quality of life of 19 (39.6%) and good 20 (41.7%).

From the results of Kendall's tau correlation test, a p-value of 0.005<0.05 was obtained, meaning that there was a significant relationship between the history of abortion and the quality of life of high-risk postpartum mothers.

**Table 8**  
**The Relationship of Abortion History with Quality of Life High-risk postpartum mothers**

History of Abortion	Quality of Life				Total		p-Value
	Bad		Good				
	N	%	N	%	N	%	
Yes	9	18,8	0	0,0	9	18,8	0,005
No	19	39,6	20	41,7	49	81,7	

### Multivariate Analysis

Bivariate selection

Table 9. The results above can be seen that there is a variable whose p-value is >0.25, namely

the abortion history variable so that the variable cannot be included in the multivariate modeling selection.

**Table 9**  
**Bivariate selection**

Variable	p-value
Age	0,009
Ethnic	0,242
Education	0,011
Work	0,183
Income	0,022
Parity	0,049
History of Abortion	0,999

Selection Multivariate

**Table 10**  
**Multivariable Selection**

Variable	P-Value				
	Model 1	Model 2	Model 3	Model 4	Model 5
Age	0,425	0,221	0,235	-	-
Ethnic	0,839	0,341	-	-	-
Education	0,075	0,192	0,178	0,025	0,011
Work	0,945	-	-	-	-
Income	0,009	0,022	0,021	0,017	0,026
Parity	0,011	0,214	0,130	0,108	-

**Table 11**  
**Multivariate analysis results**

Variable	Coefficients B	p-value	OR 95% CI
Education	2.017	0,011	7.512 1.596-35.356
Income	1.569	0,026	4.802 1.207-19.098

Table 11. It is known based on the results of the analysis, it can be seen that there are 2 variables that have a p-value of <0.05, namely: Education with a p-value (0.011) and income with a p-value (0.026). These results show that these variables have a significant relationship with the quality of life of postpartum mothers who are at high risk at

Pertamina Bintang Amin Hospital Bandar Lampung in 2023.

### DISCUSSION

#### Univariate Analysis

Quality of life of postpartum mothers is a concept of satisfaction and well-being that mothers



experience during the postpartum period with indicators of health status, perception, living conditions, psychology, social, lifestyle and happiness. The quality of life of postpartum mothers is measured by filling out questionnaires to evaluate how the quality of life of postpartum mothers (Anggraini et al., 2021).

Research (Van Den Bosch et al., 2018). which states that complications during pregnancy have an effect on low quality of life scores on measurements at 6 weeks postpartum. A history of complications during pregnancy can affect the mother's labor experience. In addition, a history of complications during pregnancy causes the mother to have limited physical activity during the postpartum period, this has an impact on the assessment of the mother's quality of life.

### **Bivariate Analysis**

There is a relationship between age and quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital. Age is one of the factors that affect the quality of life. Based on the vulnerability of a healthy reproductive age, the process of giving birth at the age of 21-35 years is a minimal condition for the occurrence of risk compared to the age of less than 21 years and more than 35 years. At the age of 21-35 years there has been maturity of the reproductive organs, followed by maturity of emotional, and social conditions. Productive age increases physical and mental readiness in child care so that this affects the quality of life (Van Den Bosch et al., 2018).

Statistical analysis found a p-value of  $0.003 < 0.05$  there was a relationship between age and postpartum quality of life. Readiness to be a mother also affects the quality of life postpartum. Lack of readiness to have children, anxiety pressure about her ability to provide care for her baby, as well as risks that can be experienced by mothers during pregnancy, childbirth and postpartum, can occur in women aged  $< 20$  years, affecting the quality of life postpartum (Wulandari & Mufdlilah, 2020).

There was no relationship between ethnicity and the quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital. According to Bond & Corner (2004), Tribes or ethnicities will determine the quality of life through traditions owned by these ethnicities, ethnicities that have the habit of accepting the circumstances that occur in their lives will affect the improvement of the quality of life of individuals with that ethnicity (Bunga-Kiling & Kiling, 2015).

Research (Wardani & Prihantini, n.d., 2015). Statistical analysis found a p-value of  $0.165 > 0.05$  no

ethnic relationship to postpartum quality of life. Socio-culturally, a mother who gets positive support from family, husband and close friends will feel calmer in facing the labor process. In certain areas there are cultures that do not develop anxiety reactions allowing the husband to be near the wife during childbirth for unethical reasons, conditions that have been experienced before and these reactions can be learned from experience.

There is a relationship between education and the quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital. According to Notoatmodjo, 2016 the level of education is one of the factors that can affect a person's level of knowledge. Education level affects how a person acts and seeks solutions in his life. The higher a person's education, the more attention will be paid to his health problems (Suparmi, 2022).

In line with research (Murbiah, 2016). Statistical analysis found a p-value of  $0.033 < 0.05$  there was a relationship between education and the quality of life of postpartum mothers. Positive behavior changes are increasing, education will provide knowledge so that there is a change in behavior and the level of knowledge increases. Education is the foundation for efforts to improve welfare, progress and prosperity, because with education a person can capture and convey the information needed to carry on life.

There was no relationship between work and quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital. Work is a task or routine that is done every day where the tasks performed are also used as a livelihood and are done to earn a living. The type of employment has a close relationship with the economic status of individuals, families and communities (Notoatmodjo, 2003 ; (Murbiah, 2016).

In line with research (Wulandari & Mufdlilah, 2020). Statistical analysis found a p value of  $0.0594 < 0.05$  no relationship between work and postpartum quality of life. Any work done by mothers either in government agencies, private institutions or as housewives tends to have no effect on psychological conditions during childbirth or after childbirth.

There is a relationship between income and quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital. That low economic status increases the risk of various kinds of health problems after childbirth and also postpartum health services. Various problems during the postpartum period due to economic problems often affect the mother's concern about the future of her child (Baghirzada et al, 2013 ; Suparmi, 2022).

In line with research (Wulandari & Muftililah, 2020). About demographic and obstetric factors in influencing postpartum quality of life. It shows that good quality of life was obtained by respondents with household income above UMR as many as 15 respondents (25%) and respondents with income below UMR as many as 10 respondents (16.7%). The results of the Chi-Square test, namely the p-value shows a result of 0.028, it can be concluded that the p-values of  $0.028 < 0.05$ , meaning that there is an effect of income on the quality of life postpartum. The value of the contingency coefficient is obtained that  $C = 0.273$ , that is, the strength of the level of the contingency coefficient relationship is low (0.20-0.399).

There is a relationship between parity and quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital. Parity is the number of children born to a female. Pregnant women and husbands who have had children before tend to have more experience and knowledge compared to those who have children for the first time. Parity can be divided into nullipara (Women who have never given birth to live children), primipara (Women who have given birth to one child), multipara (Women who have given birth to their second to fourth children), grandemultipara (Women who have given birth to more than four children) (Haspindori, 2019 ; Suparmi, 2022).

Research (Carlander et al., 2015). States that parity is related to postpartum quality of life. The process of pregnancy always gives a different experience to each mother. For Multigravida, her quality of life can be based on experiences in past pregnancy history, triggering an ongoing perception of future pregnancies.

In line with research (Wulandari & Muftililah, 2020). Statistical analysis found a p value of  $0.003 < 0.05$  there was a parity relationship with postpartum quality of life. The process of pregnancy always gives a different experience to each mother. In primiparous, quality of life is more indicative of the readiness of the mother to give birth and care for children. Mothers who have not had childbirth experience will undergo a transition in their new role as a mother, thus demanding an adaptation process that affects the quality of life of postpartum mothers. For Multipara, her quality of life can be based on experiences in past pregnancy history, triggering an ongoing perception of future pregnancies. Whereas grandemultipara mothers may not feel as happy as when giving birth to their first child, mothers who have given birth more than 3 times have experience in childbirth and child care but mothers with

grandemultipara have many risks and complications during pregnancy and delivery.

There is a relationship between the history of abortion and the quality of life of high-risk postpartum mothers at Pertamina Bintang Amin Hospital. History of abortion negatively affects the quality of life, mothers who have experienced a history of abortion or infant death have different experiences of pregnancy and childbirth. The mother will be more anxious and worried about the period of pregnancy, childbirth, and care for her child (Baghirzada et al, 2013 ; Suparmi, 2022).

In line with research (Wulandari & Muftililah, 2020). showed that respondents who had never experienced a history of abortion or infant death received a good quality of life score of 25 respondents (41.67%), in contrast to respondents who had experienced a history of abortion, none of whom obtained a quality of life score. The result of the Chi-Square test is p-value showing a result of 0.000, It can be concluded that the p-values of  $0.000 < 0.05$  mean that  $H_a$  is accepted i.e. there is an influence of abortion history or infant mortality on postpartum quality of life. The value of the contingency coefficient is obtained that  $C = 0.423$ , namely the strength of the level of the contingency coefficient relationship is medium (0.40-0.599).

#### Multivariate Analysis

The level of education also determines whether someone easily absorbs and understands something (knowledge) they get. As for how a person acts and behaves seen from the level of education is very influential in finding causes and solutions in his life. Usually higher education is very influential on the rationale or action of a person in thinking who will be easier to accept new ideas ( Walyani, 2017 ; Suparmi, 2022).

Research (Duhita et al., 2021). Shows that education is meaningfully related to all four domains of quality of life. The higher the level of education, the higher the average quality of life score across all domains. The level of education is also related to health through three mechanisms, namely psychosocial environment, work and healthy living behavior. The psychosocial environment or the scope of one's association affects the ability to control themselves (sense of control), survive various circumstances around (social standing) and the support of people around (social support).

The results of research at Pertamina Bintang Amin Hospital found that education is a very influential factor on the quality of life of postpartum mothers. This can be seen from the value of Coefficients B and OR (Odds Ratio), where

Education is a variable that has coefficient values B (2.017) and OR (7.512) higher than the income variable, namely with the value of the coefficient (1.569) and OR (4.802). The OR score on Education shows that respondents with low education are 7,512 times more likely to experience a poor quality of life than respondents with higher education levels.

## CONCLUSION

Based on the results of multivariate analysis with multivariable logistic regression, the following conclusions can be drawn:

The most dominant factor or influence on the quality of life of postpartum mothers at Pertamina Bintang Amin Hospital Bandar Lampung is Education with an OR value of 7,512.

## SUGGESTION

For researchers who will conduct similar research is expected to be able to Develop demographic data questionnaires to be even more specific so that Later it can provide better and precise results in assessing quality The life of postpartum mothers is at high risk.

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## THE EFFECT OF GIVING LAVENDER AROMATHERAPY ON DYMNORRHEA IN WOMEN STUDENTS

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### ABSTRAK PENGARUH PEMBERIAN AROMATERAPI LAVENDER TERHADAP DISMENOREAL PADA REMAJA PUTRI

Angka kejadian nyeri haid di seluruh dunia masih sangat besar, persentase kejadian nyeri haid di dunia rata-rata lebih dari 50% atau berkisar 15,8-89,5% wanita di setiap negara mengalami nyeri haid. Prevalensi nyeri haid di Amerika diperkirakan sebesar 45-90%, kemudian di India sebesar 75% dan di Mesir angka prevalensinya diperkirakan sebesar 75%. MA Muhammadiyah Sukarame dengan melihat data 1 tahun terakhir pada tahun 2021 sebanyak 215 responden, dengan rata-rata nyeri bulanan sebanyak 42 remaja putri. Tujuan penelitian ini adalah untuk mengetahui pengaruh pemberian aromaterapi lavender terhadap dismenore pada siswi MA Muhammadiyah Sukarame Kota Bandar Lampung Tahun 2022.

Jenis penelitian ini adalah kuantitatif. Dengan desain penelitian quasi eksperimen dengan desain nonequivalent control group design. subjeknya adalah siswa MA Muhammadiyah, teknik pengambilan sampel menggunakan purposive sampling. Penelitian dilakukan pada tanggal 28 April sampai dengan 30 Juli 2022. Variabel independennya adalah aromaterapi lavender dan dismenore dependen. Analisis data menggunakan univariat dan bivariat menggunakan uji Man Whitney.

Skala nyeri sebelum dilakukan teknik aromaterapi lavender dengan rata-rata sebesar 7,67 yang berarti sebagian remaja putri mengalami nyeri dismenore dengan kategori berat. Kelompok kontrol dengan rata-rata 8,60 yang berarti sebagian besar remaja putri mengalami nyeri dismenore dengan kategori berat. Skala nyeri setelah dilakukan teknik aromaterapi lavender dengan rata-rata 1,62 yang berarti sebagian remaja putri mengalami nyeri dismenore dalam kategori ringan. Posttest kontrol dengan rata-rata 3,93 yang berarti sebagian remaja putri mengalami nyeri dismenore dengan kategori ringan. Hasil uji statistik Man Whitney diperoleh p-value sebesar 0,000 (<0,05) yang berarti terdapat pengaruh pemberian aromaterapi lavender terhadap dismenore pada remaja putri.

Kata Kunci : Aromaterapi Lavender, Dismenore, Remaja Putri

### ABSTRACT

The incidence of pain throughout the world is still very large, the percentage of pain incidence in the world is on average more than 50% or around 15.8-89.5% women in every country experience menstrual pain. The prevalence of pain in the United States is estimated at 45-90%, then in India it is 75% and in Egypt the prevalence rate has been estimated at 75%. MA Muhammadiyah Sukarame by looking at data for the last 1 year in 2021 as many as 215 respondents, with an average monthly pain of 42 young women. The purpose of this study was to determine the effect of giving lavender aromatherapy on dysmenorrhea in female students at MA Muhammadiyah Sukarame, Bandar Lampung City in 2022.

This type of research is quantitative. With a quasi-experimental research design with a nonequivalent control group design. the subject is a female student at MA Muhammadiyah, the sampling technique uses purposive sampling. The study was carried out on April 28 to July 30, 2022. The independent variables were lavender aromatherapy and the dependent dysmenorrhea. Data analysis used univariate and bivariate using Man Whitney test.

The pain scale before the lavender aromatherapy technique was carried out with a mean of 7.67, which means that some young women experience dysmenorrhea pain in the severe category. The control group with a mean of 8.60 which means that most of the young women experience dysmenorrhea pain in the severe category. The pain scale after the lavender aromatherapy technique was carried out with a mean of 1.62, which means that some young women experience dysmenorrhea pain in the mild category. Posttest control with a mean of 3.93, which means that some young women experience dysmenorrhea pain in the mild category. The results of the man Whitney statistical test obtained a p-value of 0.000 (<0.05), which means that there is an effect of giving lavender aromatherapy to dysmenorrhea in adolescent girls. For MA teachers,

Keywords : Lavender Aromatherapy, Dysmenorrhea, Female Students

## INTRODUCTION

Every woman who is biologically mature must experience menstruation. Where generally occurs at the age of 12-16 years or what is called menarche. This menstrual cycle occurs periodically every month with a normal range of 28 days, while the menstrual period is between 3-7 days (Rahayu, Pertiwi, Patimah, & Kunci, 2017), meaning that the menstrual period will occur every 28 days from the beginning of the menstrual cycle. menarche" (first menstruation) and continues until the "menopause" (permanent cessation of menstruation) that is when a person is no longer menstruating due to physiological reasons related to age and fertility of the reproductive system (Cahill, 2019).

Every month, women aged 12–49 years (WUS), not pregnant and not yet menopausal generally experience menstruation. During menstruation, the problem that many women experience is discomfort or intense pain. This is commonly called dysmenorrhea (dysmenorrhea). Menstruation begins at puberty, stops briefly during pregnancy or breastfeeding and stops at menopause when a woman is about 50 years old. Menstruation generally begins at the age of 8-13 years. Individuals who have not experienced menstruation over 17 years are said to have delayed menarche. The distance from one period to the next or what is known as the menstrual cycle is different for each woman. The menstrual cycle usually lasts 21-35 days. Menstruation can be affected by certain conditions such as stress, medication and exercise. At the beginning of menstruation it is usually not regular but within a certain time the cycle will become regular (Widyasih, 2018).

The incidence of menstrual pain throughout the world is still very large, the percentage of the incidence of menstrual pain in the world is on average more than 50% or in the range of 15.8-89.5% women in each country experience menstrual pain. The prevalence of menstrual pain in the United States is estimated at 45-90%, then in India it is 75% and in Egypt the prevalence rate has been estimated at 75%. American Family Physician, 2014; Widiatami, 2018). Especially in Indonesia, the primary type of menstrual pain is 54.8% and the secondary type is 9.36%. Many women who experience dysmenorrhea do not report to health workers so that data collection on dysmenorrhea cannot be classified. The results of a survey from the Indonesian Family Planning Association (PKBI) Lampung in 2020, dysmenorrhea ranks first in complaints experienced by women, which is 23.07% (PKBI Bandar Lampung, 2020).

For MA Muhammadiyah Sukarama, there are as many as 450 female students, and every month approximately 48 young women experience dysmenorrhea complaints, this is reinforced by preliminary observations made by the author and from several reports from the local youth posyandu.

Pain when period cause discomfort in daily physical activity. These complaints relate to repeated absences at school or at work, which can impair productivity. 47% of women in their reproductive years experience menstrual pain, and 10% experience it to interfere with daily activities. Approximately 70-90% of cases of dysmenorrhea occur during adolescence and adolescents who experience dysmenorrhea will be affected by their academic, social and sports activities (Puji, 2010).

Manuaba (2014) explain that Dysmenorrhea is a feeling of pain during menstruation. Feelings of pain during menstruation in the form of mild cramps in the genitals so that there is interference in daily tasks. Dysmenorrhea is divided into 2 types, namely primary dysmenorrhea which is dysmenorrhea without genital anatomical abnormalities and secondary dysmenorrhea is dysmenorrhea accompanied by genital anatomical abnormalities.

Some women who experience menstrual pain overcome and cure it by taking anti-pain medications on a regular basis. However, the nature of the drug only relieves pain and will lead to dependence on the drug. If consumed in the long term can have negative effects on health. The use of drugs will have side effects such as stomach disorders, anemia and what is more severe is the psychological mental impact that makes the sufferer feel overwhelmed and cannot get away from the drug. They assume that in order not to have pain during menstruation, they must take medicine (Anugroho & Wulandari, 2011; Widiatami, 2020).

To overcome menstrual pain (dysmenorrhea) can be done by administering analgesic and anti-inflammatory drugs and herbal medicine therapy that has been believed to have efficacy derived from plant ingredients. Some plant materials are believed to reduce pain, namely turmeric, tamarind, cinnamon, cloves, ginger (Anurogo, 2011; Novariana, 2015). Essential oils that can reduce pain are lavender, rose, jasmine and papermint. One of the aromatherapy that is often used in nursing is lavender, because the ingredients in it such as antidepressants and antibiotics are believed to reduce anxiety and reduce pain sensations (Bakhtshinin, 2015). Research conducted by

Matsumoto (2013), states that lavender aromatherapy can improve the work of the parasympathetic nerves and increase calm within a minimum of 10 minutes. Lavender can increase alpha waves in the brain so that the body becomes relaxed and pain will be reduced (Sharma, 2009).

The application of lavender aromatherapy can reduce cortisol levels and increase estradiol which triggers a decrease in anxiety (Fukui, 2011). The aroma of lavender can also modulate the activity of cyclic adenosine monophosphate (cAMP), which has a sedative effect. Lavender scent What is inhaled and then captured by the olfactory nerves will be forwarded to the central nervous system and limbic system, namely the autonomic function of emotion (Matsumoto, 2013).

Research conducted by Yunianingrum Effect of Warm Compress And (2018) Lavender Aromatherapy Against Primary Dysmenorrhea Pain Reduction In Young Women In As Salafiyah Islamic Boarding School And Ashsholihah Islamic Boarding School Sleman. The results of this study showed that the average primary dysmenorrheal pain before and after lavender aromatherapy was given was  $5.95 \pm 1.214$  and  $4.77 \pm 1.232$  with an average decrease of 1.18, meaning that there was an effect of lavender aromatherapy on reducing primary dysmenorrhea pain ( $p = 0.000$ ). The results of the mann whitney test showed  $p = 0.000$ , meaning that there was a difference in reducing dysmenorrhea pain with warm compresses and lavender aromatherapy.

Based on preliminary data conducted at the MA Muhammadiyah Sukarama by looking at the data for the last 1 year in 2021 as many as 215 respondents, with an average monthly pain of 42 young women.

Based on the results of a pre-survey conducted by researchers, on 10 female respondents at MA Muhammadiyah Sukarama, by conducting independent interviews, it was found that out of 8 respondents who had acted comprehensively when they felt dysmenorrhea pain, and let the pain be felt. Meanwhile, 2 respondents stated that they took pain relievers obtained at pharmacies. The use of lavender aromatherapy has not been used for pain management.

## RESEARCH METHODS

This type of research is quantitative. With a quasi-experimental research design with a nonequivalent control group design. The subject is a student of MA Muhammadiyah, the sampling technique uses purposive sampling. The study was conducted on April 28 to July 30, 2022. The independent variables were lavender aromatherapy and dependent dysmenorrhea. Data analysis using univariate and bivariate using Man Witney test.

## RESULTS

### Characteristics of Respondents

Table 1  
Characteristics of Respondents in MA Muhammadiyah Sukarama City of Bandar Lampung in 2022

Characteristics	Intervention		Pretest	Postes	P-value
	f	P (%)			
Age					
15 years	3	20.0	4.54	2.32	0.000
16 years	7	46.7	5.54	1.75	
17 years	5	33.3	6.08	2.77	
Age of Menarche					
9 years	8	53.3	3.02	0.45	0.000
10 years	6	40.0	4.01	3.02	
11 years old	1	6.7	6.54	2.75	
Cycle Menstruation					
27 Days	1	6.7	5.41	2.32	0.014
28 Days	7	46.7	3.62	1.23	
29 Days	4	26.7	4.54	1.13	
30 days	1	6.7	4.2	0.02	
31 Days	1	6.7	5.15	2.02	
32 Days	1	6.7	3.23	1.24	
Characteristics	Intervention		Pretest	Postes	P-value

	f	P (%)			
Age					
15 years	6	40.0	2.53	1.22	0.001
16 years	7	46.7	4.51	2.63	
17 years	2	13.3	5.03	1.50	
Age of Menarche					
9 years	9	60.0	5.42	1.12	0.014
10 years	5	33.3	3.51	1.03	
11 years old	1	6.7	3.52	2.01	
Cycle Menstruation					
27 Days	2	13.3	3.44	1.45	0.023
28 Days	6	26.7	4.55	2.32	
29 Days	3	20.0	5.54	1.75	
30 days	4	40.0	6.03	0.77	
31 Days	2	13.3	3.42	2.45	
32 Days	-	-	-	-	

Based on table 1 above, it is known that the age of the most respondents was 16 years as many as 7 respondents (46.7%), the age of menarche was 9 years as many as 8 respondents (53.3%) in the intervention group and as many as 9 respondents (60.0%). ) in the control group, while the most menstrual cycles were 28 days as many as 7 respondents (46.7%) in the intervention group and 20 days as many as 6 respondents (40.0%) in the control group.

### Univariate Analysis

#### Pain Intervention

From table 23 above, it can be seen that the pain scale before the lavender aromatherapy technique was carried out at MA Muhammadiyah Sukarame, Bandar Lampung City in 2022, with mean 7.67, which means that some young women experience dysmenorrhea pain in the severe category. After doing the lavender aromatherapy technique with mean 1.62 which means that some young women experience dysmenorrhea pain in the mild category.

**Table 2**  
**Pain Scale Before Lavender Aromatherapy Technique Is Done at MA Muhammadiyah Sukarame City of Bandar Lampung in 2022**

Variable	N	Mean	St. Dev	Min-Max
Pretest Intervention	15	7.67	0.816	6-9
Postes Intervention	15	1.62	0.724	1-3

#### Pain Control

From table 3 above, it can be seen that pain in the control group at MA Muhammadiyah Sukarame Bandar Lampung City with mean 8.60, which means that some young women experience

dysmenorrhea pain in the severe category. Furthermore, in the control post with mean 3.93, which means that some young women experience dysmenorrhea pain in the mild category.



**Table 3**  
**Pain Scale Lavender Aromatherapy Technique Has Been Done At MA Muhammadiyah Sukarama Bandar Lampung City in 2022**

Variable	N	Mean	St. Dev	Min-Max
Pretest Control	15	8.60	0.507	8-9
Postes Control	15	3.93	0.704	3-5

Bivariate Analysis

**Table 4**  
**Average Pain Per Day In Young Women In MA Muhammadiyah Sukarama Bandar Lampung Year 2022**

Variable	N	St	Dev	Min-Max
Day 1 Intervention	15	7.67	0.816	6-9
Day 1 Control	15	8.60	0.507	8-9
Day 2 Intervention	15	4.47	0.640	3-5
Day 2 Control	15	5.27	0.704	4-6
Day 3 Intervention	15	1.67	0.724	1-3
Day 3 Control	15	3.93	0.704	3-5

**Table 5**  
**The Effect of Lavender Aromatherapy on Dysmenorrhea in Young Women at MA Muhammadiyah Sukarama City of Bandar Lampung Year 2022**

Variable	N	mean	Rank	P-value
Pretest Intervention	15	7.67	10.80-20,80	0.002
Pretest Control		8.60		
Postes Intervention	15	1.67	8.27-22.73	0.000
Control Posts		3.93		

From table 5, it can be seen that the pain scale before the lavender aromatherapy technique was carried out at MA Muhammadiyah Sukarama, Bandar Lampung City in 2022, with mean 7.67, which means that some young women experience dysmenorrhea pain in the severe category, while for the control group mean 8.60, which means that some young women experience dysmenorrhea pain in the severe category.

Pain scale after lavender aromatherapy technique with mean 1.62 which means that some young women experience dysmenorrhea pain in the mild category. While in the control group with mean 3.93, which means that some young women experience dysmenorrhea pain in the mild category.

Statistical test results with Mann-Whitney U test got p-value 0.000 (<0.05) which means there is influence

gift aroma therapy lavender to dysmenorrhea in adolescent girls at MA Muhammadiyah Sukarama, Bandar Lampung City in 2022.

## DISCUSSION

### Univariate Analysis

#### Characteristics of Respondents

Characteristics Respondent In MA Muhammadiyah Sukarama Bandar Lampung City in 2022 From the results of the study, it was found that the age of the most respondents was 16 years old as many as 7 respondents (46.7%), the most menarche age was 9 years old as many as 8 respondents (53.3%) in the intervention group and as many as 9 respondents (60.0%) in the control group, while the most menstrual cycles were 28 days as many as 7 respondents (46.7%) in the intervention group and 20

days as many as 6 respondents (40.0%) in the control group.

The results of this respondent's characteristics are in line with Silaen's (2019) research on the prevalence of dysmenorrhea and its characteristics in adolescent girls in Denpasar. A total of 74.42% of adolescent girls experience dysmenorrhea. The highest proportion of dysmenorrhea was found in adolescents aged 14-16 years, had no family history of dysmenorrhea, menarche age range was 11-12 years, and had a menstrual cycle of 7 days or more. In addition, the highest proportion of dysmenorrhea in this study was also found in the group of adolescents with normal nutritional status and groups who rarely exercised. Therefore, it can be concluded that the socialization of dysmenorrhea in adolescent girls needs to be held.

In line with the theory put forward by Zakiyah (2015) which states that the cause of pain can be based on age and gender. Age affects a person's reaction to pain. For example, young children who cannot yet pronounce words have difficulty verbally expressing and expressing their feelings, while the elderly may not report pain because pain is something they have to accept. In general, the sexes of men and women did not differ significantly in response to pain. Some cultures affect gender, for example, there are those who think that a boy must be brave and should not cry while a girl can cry in the same situation.

In the opinion of researchers, the pain experienced by respondents is because at that age, the female reproductive organs are not ready to undergo changes and there is still a narrowing of the cervix, so this condition can cause pain during menstruation. This difference in results could be due to the influence of heredity, nutritional status, and general health of the study population.

The length of menstruation can be caused by psychological or physiological factors. Psychologically, it is usually related to the emotional level of adolescent girls who are unstable when they are menstruating.

Meanwhile, physiologically it is more about excessive uterine muscle contractions or it can be said that they are very sensitive to this hormone due to the endometrium in the secretory phase producing prostaglandin hormones. Prostaglandins are formed from unsaturated fatty acids which are synthesized by all cells in the body (Anurogo, 2011). The longer menstruation occurs, the more often the uterus contracts, so the more prostaglandins are secreted. Due to excessive prostaglandins, pain occurs during menstruation (Nirwana, 2011).

Pain Scale Before Lavender Aromatherapy Technique was performed at MA Muhammadiyah Sukaram, Bandar Lampung City in 2022

Pain scale before the lavender aromatherapy technique was carried out at MA Muhammadiyah Sukaram, Bandar Lampung City in 2022, with mean 7.67, which means that some young women experience dysmenorrhea pain in the severe category. Control group with mean 8.60, which means that some young women experience dysmenorrhea pain in the severe category.

The results of the univariate analysis above are in line with the opinion expressed by Caffery (2010), stating that pain is everything that a person says about the pain and occurs anytime when someone says that he or she feels pain. Pain is a defense mechanism of the body, arises when there is damaged tissue and this will cause the individual to react by moving the painful stimulus.

The results of the univariate analysis are in line with the research conducted by Nikjou (2017) The Effect of Lavender Aromatherapy on Primary Dysmenorrhea Pain Severity: A Triple-blind Randomized Clinical Trial. Results: There was a significant difference in the mean pain severity between the treatment group and the control group after the intervention. However, students in the treatment group reported significantly reduced pain severity 2 months after the intervention ( $P < 0.01$ ).

In this study, all adolescents experienced pain between a score of 7 on the first day of measurement. A score of 7 was mild to moderate pain experienced by adolescent girls on the first day of menstruation. This is influenced by the discharge of blood in the form of clots (tosol) causing unbearable pain in the pelvic area to the symphysis abdomen. Before being given a drink of turmeric and tamarind, some young women can endure pain by staying relaxed, but there are some young women who rest and lie in bed.

Pain Scale After Lavender Aromatherapy Technique was performed at MA Muhammadiyah Sukaram, Bandar Lampung City in 2022

Pain scale after lavender aromatherapy technique was carried out at MA Muhammadiyah Sukaram Bandar Lampung City in 2022 with mean 1.62 which means that some young women experience dysmenorrhea pain in the mild category. Post control with mean 3.93, which means that some young women experience dysmenorrhea pain in the mild category.

The results of the univariate analysis above are in line with the opinion expressed by Sarwono

(2011), dysmenorrhea is pain during menstruation, usually with cramping and centered in the lower abdomen. Complaints of menstrual pain can occur ranging from mild to severe. Menstrual pain in question is heavy menstrual pain that causes the woman to come for treatment to a doctor or treat herself with painkillers.

The results of the univariate analysis are in line with the research conducted by Maharani (2022) The Effect of Lavender Aromatherapy on Reducing Dysmenorrhea Pain. Results: From all articles it is known that there is an effect of giving lavender aromatherapy to decrease the level of dysmenorrhea pain. To reduce the pain of dysmenorrhea, one of the nonpharmacological ways is by giving lavender aromatherapy with inhalation techniques. This technique can stimulate the hypothalamus to secrete enkephalins which It acts as a natural pain reliever and produces a feeling of relaxation.

According to researchers, the meaning of a person's pain will vary greatly depending on the perception of pain itself, in this study some young women experienced a decrease in pain from day II, and III. This can be caused by different levels of pain, so it will affect the pain the next day.

While in this study there were also 3 respondents who experienced a very good reduction in pain so they did not feel pain on a scale of 3.

Pain management is currently very varied, not only by using pharmacological drugs that can have an effect on the kidneys, herbal medicines are currently in great demand because of their natural content and do not cause side effects, herbal medicines also have healing properties that are gradual and continuous. , is not only temporary and momentary.

### **Bivariate Analysis**

The Effect of Lavender Aromatherapy on Dysmenorrhea in Young Women at MA Muhammadiyah Sukarame, Bandar Lampung City in 2022

Statistical test resultsman witneygot value p-value 0.000 ( $<0.05$ ) which means that there is an effect of giving lavender aromatherapy to dysmenorrhea in adolescent girls at MA Muhammadiyah Sukarame, Bandar Lampung City in 2022.

The results of the bivariate analysis above are in line with the opinion of Caffery (2010), stating that pain is everything someone says about the pain and occurs anytime when someone says he feels pain.

Pain is a defense mechanism of the body, arises when there is damaged tissue and this will cause the individual to react by moving the painful

stimulus. Pain is often described in terms of a destructive process, tissue such as being stabbed, burning heat, twisting like emotions, feelings of fear, nausea and drunkenness (Judha, Sudarti, Fauziah, 2012). Pain assessment and management is complex, this is due to the subjective nature of pain so that the response to pain differs from one person to another. Pain is a sensory experience and unpleasant emotional states associated with actual or potential tissue damage, or described in terms of damage, or described with the occurrence of damage (Zakiah, 2015; Yantina., Putri. 2018).

According to Dewi (2013) lavender aromatherapy has advantages, namely simple, easy to use, can be stored and can be reused if experiencing dysmenorrhea. Lavender aromatherapy contains the main ingredients, namely linalyl acetate and linalool, where linalyl acetate functions to relax and relax the nervous and muscle working systems that are experiencing tension, while linalool acts as a relaxation and sedative so that it can reduce dysmenorrhea.

The results of the bivariate analysis are in line with research conducted by Christiana (2020) The Effect of Giving Lavender Aromatherapy on Menstrual Pain Levels (Primary Dysmenorrhea) in the Banyuwangi Stikes Girls Dormitory in 2020. Based on the results of research on 33 respondents before treatment with lavender aroma therapy 58% (19 respondents) experienced moderate dysmenorrhea, and after treatment with lavender aroma therapy, most 58% (19 respondents) experienced mild dysmenorrhea. From the calculation of SPSS 24 for windows with the Wilcoxon test, the value of Asymp.Sig.(2tailed) = 0.000  $< 0.05$ ,  $H_0$  is rejected,  $H_a$  is accepted, which means that there is an effect of giving lavender aromatherapy to the level of menstrual pain (primary dysmenorrhea).

In this study, the pain scale after the lavender aromatherapy technique was carried out at MA Muhammadiyah Sukarame, Bandar Lampung City in 2022, with mean 7.67, which means that some young women experience dysmenorrhea pain in the severe category, while for the control group mean 8.60, which means that some young women experience dysmenorrhea pain in the severe category. While in the control group with mean 5.27 and 3.39, which means that some of the young women experienced moderate pain on the 2<sup>nd</sup> day and 3<sup>rd</sup> day of measurement, they remained in the moderate pain category.

According to the researcher painful experience a significant decrease on day 3 this is due to the length of time experiencing menstruation,

causing bleeding to have decreased and resulting in reduced pain. Dysmenorrhea is rare in women who have irregular menstrual cycles. This increase in prostaglandin levels can reach 3 times, starting from the proliferative phase to the luteal phase, and even increases during menstruation. This symptom comes the day before menstruation and lasts 2 days until the end of the menstrual period

Decrease painful this because The content of lavender oil itself, besides that the pleasant smell will stimulate the thalamus to secrete enkephalins which function as natural pain relievers and

produce a feeling of well-being. Enkephalins are similar to endorphins, which are endogenous chemicals

(produced by the body) that are structurally similar to opioids. Enkephalins are thought to cause presynaptic (neurons that secrete transmitter substances) and postsynaptic (where the transmitter acts) inhibition in the dorsal horn. This process achieves inhibition by enkephalins, namely the inhibition of substances so that pain is not or reduced to be transmitted to the brain. This is in line with research conducted by Indriana Astuti and Lela (2020) that aromatherapy can reduce pain intensity.

Aromatherapy with essential oils Lavender is believed to have a relaxing effect on tense nerves and muscles. Aromatherapy which is applied through inhalation techniques causes receptor cells to enter the nose so that they are stimulated and then impulses are channeled through the olfactory channel, the emotional middle of the brain or the limbic system so that the hypothalamus is stimulated and releases endorphins and serotonin, this causes pain to decrease, because the function of endorphins itself is to kill natural pain, besides the hormone serotonin can also improve mood, become more relaxed and calmer.

The control group also experienced a decrease in dysmenorrhea pain, but it was not significant with the results mean 5.27 and 3.39, which means that some of the young women experienced moderate pain on the 2nd day and 3rd day of measurement, they remained in the moderate pain category. This decrease in dysmenorrhea pain can occur due to the length of the day/time of the menstrual period, so that it will reduce the pain felt by adolescents.

Whereas difference score between respondents with reduced pain 2 or 3 scores in each respondent this could be due to the different characteristics of the respondents, such as age and menstrual cycle. Of the 30 respondents in the intervention and control groups who have moderate pain, the age range is 15-17 years. Women who are

older will experience changes in hormones and reproductive organs and will often experience menstruation, the cervix will widen, so that in old age the incidence of dysmenorrhea rare. Teenagers who just got their period do not always experience regular menstrual bleeding periods every month because hormones are still fluctuating. Some women feel pain like cramps when they menstruate. Usually this pain is not too severe and does not last long.

The incidence of dysmenorrhea is due to not reaching biological maturity. Early menarche age increases the risk of dysmenorrhea, besides early menarche can increase the risk of fibroids. This is in accordance with research by Sopia et al (2013) which states that the ideal age for a woman to experience menarche is between the ages of 13-14 years.

Normal menstrual cycle with a cycle of 28-31 days. The menstrual cycle is the time from the first day of menstruation until the arrival of the next menstrual period. Menstrual cycle disorders are problems that occur in women's menstrual cycle patterns which include polymenorrhea (35 days), and amenorrhea (> 3 months). The longer menstruation occurs, the more often the uterus contracts, as a result, the more prostaglandins are secreted. As a result of excessive production of prostaglandins, pain occurs. In addition, continuous uterine contractions also cause the blood supply to the uterus to stop temporarily, resulting in primary dysmenorrhea.

## CONCLUSION

Pain scale before the lavender aromatherapy technique was carried out at MA Muhammadiyah Sukarama, Bandar Lampung City in 2022, with mean 7.67, which means that some young women experience dysmenorrhea pain with severe category. Control group with mean 8.60, which means that some young women experience dysmenorrhea pain in the severe category. Pain scale after the lavender aromatherapy technique was carried out at MA Muhammadiyah Sukarama, Bandar Lampung City in 2022 with mean 1.62 which means that some young women experience dysmenorrhea pain in the mild category. Post control with mean 3.93, which means that some young women experience dysmenorrhea pain in the mild category. Statistical test results man whitney got value  $p$ -value 0.000 ( $<0.05$ ) which means that there is an effect of giving lavender aromatherapy to dysmenorrhea in adolescent girls at MA Muhammadiyah Sukarama, Bandar Lampung City in 2022.

## **SUGGESTION**

As information material for research institutions to disseminate information massively in providing health promotion regarding the management of dysmenorrheal pain in adolescent girls through IEC, mass media and leaflets. For local MA Muhammadiyah students, they can maximize the use of lavender aromatherapy as an alternative nonpharmacological treatment in reducing dysmenorrhea pain in adolescent girls. This study is expected to be used as a new finding as a management of dysmenorrhea pain in adolescent girls with non-pharmacological treatment. Can add insight into further research and can be used as reference material for the same research by increasing the research time and number of samples so that better research results are obtained.

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## THE EFFECT OF BABY MASSAGE ON THE FREQUENCY AND LONG OF BREASTFEEDING BABIES

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### ABSTRAK PENGARUH PIJAT BAYI TERHADAP FREKUENSI DAN LAMA MENYUSUI BAYI

Latar Belakang: Air Susu Ibu (ASI) merupakan nutrisi yang paling baik untuk bayi. Air susu yang diproduksi secara alami oleh tubuh ini memiliki kandungan nutrisi yang penting bagi tumbuh kembang bayi, seperti vitamin, protein, karbohidrat, dan lemak. Dalam memberikan ASI, ada beberapa hal yang harus ibu perhatikan, diantaranya : frekuensi dan durasi menyusui. Untuk meningkatkan baik frekuensi maupun durasi bayi dalam menyusui, salah satu cara adalah dengan melakukan pijat bayi.

Tujuan: Adapun tujuan dari penelitian ini adalah untuk mengetahui pengaruh pijat bayi terhadap frekuensi dan durasi menyusui Bayi

Metode: Penelitian ini adalah penelitian analitik dengan metode Quasy eksperimen. Penelitian ini menggunakan dua kelompok yaitu kelompok perlakuan yakni bayi yang diberi terapi pijatan sedangkan kelompok kontrol bayi yang tidak diberikan terapi pijat. Sampel pada penelitian ini adalah bayi yang berusia 0-12 bulan yang berjumlah 30 orang. Penelitian dilakukan di wilayah Kerja Puskesmas Kambesko dan wilayah Kerja Puskesmas Sipayung. Penelitian dilakukan pada bulan Desember sampai dengan bulan Februari 2022.

Hasil: Hasil penelitian yang didapat adalah Responden mayoritas memiliki frekuensi menyusui kategori baik (8-12 kali) yaitu 75 %, dan durasi menyusui bayi dalam kategori baik (10-30 menit) sebanyak 81.3%. uji statistik yang dilakukan dengan uji T test di dapat hasil bahwa hubungan pijat bayi dengan frekuensi menyusui bayi dengan nilai  $P > 0.05$  dan hubungan pijat bayi dengan durasi menyusui memiliki nilai  $p$  (0.382).

Kesimpulan: Berdasarkan hasil uji statistik, tidak adanya hubungan yang bermakna antara pijat bayi dengan frekuensi menyusui bayi, dan tidak ada hubungan yang bermakna antara pijat bayi dengan durasi menyusui bayi

Saran: Diharapkan ibu-ibu yang memiliki bayi dan balita agar lebih sering melakukan pijatan pada bayi maupun balita nya.

Kata Kunci : Pijat bayi, Frekuensi, Durasi, Menyusui

### ABSTRACT

Background : Mother's milk (ASI) is the best nutrition for babies. Milk produced naturally by the body contains nutrients that are important for baby's growth and development, such as vitamins, protein, carbohydrates and fat. When breastfeeding, there are several things that mothers must pay attention to, including: frequency and duration of breastfeeding. To increase the frequency and duration of breastfeeding, one way is to do baby massage

Objective: The aim of this research is to determine the effect of baby massage on the frequency and duration of breastfeeding

Method: This research is analytical research with a quasi-experimental method. This study used two groups, namely the treatment group, namely babies who were given massage therapy, while the control group was babies who were not given massage therapy. The sample in this study was 30 babies aged 0-12 months. The research was conducted in the working areas of the Kambesko Community Health Center and the Sipayung Community Health Center. The research was carried out from December to February 2022.

Results: The research results obtained by the majority of respondents had the frequency of breastfeeding in the good category (8-12 times), namely 75%, and the duration of breastfeeding for babies was in the good category (10-30 minutes) as much as 81.3%. Statistical tests are carried out with the T test. The test results showed that the relationship between baby massage and breastfeeding frequency had a  $P$  value  $> 0.05$  and the relationship between baby massage and breastfeeding duration had a  $p$  value (0.382).

Conclusion: Based on the results of statistical tests, there is no significant relationship between baby massage and the frequency of breastfeeding, and there is no significant relationship between baby massage and the duration of breastfeeding.

Suggestion; It is hoped that mothers who have babies and toddlers will massage their babies and toddlers more often,

Key words : Baby massage, Frequency, Duration, Breast-feed

## INTRODUCTION

The health of children, especially babies and toddlers, is something that parents must pay attention to so that the child's growth and development is maintained and the quality of the child's health remains good. To maintain children's growth and development optimally, it is necessary to have the best food or nutrition for children because nutrition can guarantee health, promote good growth and development in children. The best nutrition for children is breast milk (mother's milk). (Qomariah, saraHerlina, & Sartika, 2023)

Breast milk (ASI) is the best nutrition for babies. There is no better food for babies than breast milk. Milk produced naturally by the body contains nutrients that are important for baby's growth and development, such as vitamins, protein, carbohydrates and fat. (Angriani, Sudaryati, & Lubis, 2018) This is also what makes breast milk the main food for babies in the first 6 months of life. Breastfeeding is a physiological process to provide optimal nutrition to babies without adding and/or replacing it with other foods or drinks. (Farida Y, Mardianti, & Komalasari L, 2018) According to Law No. 36 of 2009 Article 128 paragraph (1) states that Every baby has the right to receive exclusive breast milk from birth for six months unless medically indicated. Likewise with Article 6 of Government Regulation no. 33 of 2012 concerning Exclusive Breastfeeding, emphasizes that every mother who gives birth must give exclusive breast milk to the baby she gives birth to, unless there are medical indications, the mother is not present, or the mother is separated from the baby. (Naito, Harismayanti, & Retni, 2023)

In a study, breastfeeding provides many benefits for the development of neonates. (Miftah, Riri, & Utami, 2014). Other sources also say that breastfeeding has many benefits, both for the baby and the mother. However, the figure for exclusive breastfeeding in the first 6 months based on 2017 Indonesian Basic Health Survey (SDKI) data shows exclusive breastfeeding coverage of 61.33%, exceeding the 2017 Strategic Plan target (Tanjung, Ritonga, & (Tanjung, Ritonga, & Ramadayani, 2022).

When breastfeeding, there are several things that mothers must pay attention to, including: the frequency of breastfeeding should be around 8-12 times a day, but it is best to breastfeed the baby

without a schedule, because the baby will determine its own needs. To increase the frequency and duration of breastfeeding, one way is to do baby massage. (Apriani & Putri, 2019) Baby massage is a baby massage that is done by gently stroking the feet, chest, hands, face and back. Other sources also say that baby massage is a form of movement play for babies, to stimulate growth and development and the baby's ability to move optimally. (Budiarti & Yunadi, 2020)

By giving baby massage, the activity of the vagus nerve affects the mechanism of food absorption in babies who are massaged, experiencing an increase in the tone of the vagus nerve which will cause an increase in gastrin and insulin absorption enzymes so that food absorption is better and the baby's weight increases. Vagus nerve activity increases the volume of breast milk, food absorption becomes better because increased vagus nerve activity causes the baby to get hungry quickly and will breastfeed more often from the mother so that more breast milk is produced. Research also states that baby massage can increase the frequency and duration of breastfeeding for babies with a p-value of 0.03, which means that there is an influence of baby massage on the frequency and duration of baby feeding. (Nasution, 2018; Prasetyo, 2017)

In Indonesia, baby massage has been done for a long time. Baby massage has been done for generations without knowing its positive impact. The part that is touched is the skin, which is the widest part of the human body. Baby massage is also said to be touch therapy, this is due to the massage and communication that exists between mother and baby. This touch provides a light massage, so that the baby feels safe and comfortable (Saputri, 2019). Many mothers do baby massage at a dukun or traditional massage. In fact, mothers, fathers or other relatives can do their own massage on babies, which is the best massage because of the loving touch of the parents. This maternal ignorance could be caused by the mother's lack of knowledge about the benefits of baby massage. (Imron & Wardarita, 2018) Various sources say the benefits of baby massage include making babies calm, helping growth, making babies healthier, strengthening muscles, and feeling affection. (Pemayun, Winangsih, & Pratiwi, 2021)



Based on the above, researchers want to conduct research with the aim of finding out the effect of baby massage on the frequency and duration of baby breastfeeding.

## RESEARCH METHODS

This research is analytical research with a quasi-experimental method. This study used two groups, namely the treatment group and the control group. The treatment group in this study were babies who were given massage therapy while the control group was not given massage therapy. This research was conducted in Rengat District, namely the working area of the Kambesko Community Health Center and the Sipayung Community Health Center working area. The research was carried out from December to February 2022.

The population in this study were all mothers who had babies aged 0-12 months in Rengat District. Sampling was carried out using the accidental sampling method, namely taking samples unintentionally by taking respondents who happened to be in a place appropriate to the research location. The number of samples in this study was 30 people. In this study the sample was divided into 2 groups, namely the control group and the treatment group, each group numbering 15 people. The treatment group in this study were babies who were given massage therapy while the control group was not given massage therapy. Instruments in research are tools that will be used in data collection. The instruments used in this research were

questionnaires and observation sheets. The type of data in this research is quantitative data, namely primary data to find out how often the baby is breastfed during 24 hours. The frequency of breastfeeding is categorized as: (1) Poor: <8x/day, (2) Good: (8-12x/day), (3) : Very good (> 12x/day). The duration of breastfeeding is categorized as: (1) Poor: < 10 minutes, (2): Good: 10-30 minutes, (3): Very good: > 30 minutes. Meanwhile, for data analysis using the T test statistical test. If the p.value <0.05 then the test states there is a significant correlation between the independent variable and the dependent variable, but if the p.value ≥0.05 then the test states there is no significant correlation between independent variable with dependent variable. . depends .

Permission for research is carried out by sending a research letter to the Rengat sub-district office and to the Kambesko Community Health Center and Sipayung Community Health Center.

## RESEARCH RESULT

The variables in this research consist of independent variables and dependent variables. The independent variable in this study is baby massage while the dependent variables are breastfeeding frequency and duration of breastfeeding. The results of data processing in this study were analyzed using the T test. Data processing and analysis used the Statistical Package for Social Science (SPSS) software version 17.0. Based on the data obtained in the 2 groups, the following results were obtained:

**Table 1**  
**Distribution of frequency of breastfeeding for babies**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not good	2	6.3	6.3	6.3
	Good	24	75.0	75.0	81.3
	Very good	6	18.8	18.8	100.0

From the table above, it can be seen that of the 32 respondents, the majority had a good breastfeeding frequency of 24 people (75%).

Based on table 2, it can be seen that the duration of breastfeeding was mostly good, namely 26 people (81.3%).

**Table 2**  
**Distribution of duration of breastfeeding for babies**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not good	6	18.8	18.8	18.8
	Good	26	81.3	81.3	100.0

**Table 3**

**Statistical test results of the relationship between baby massage and frequency of baby feeding**

Variable 1	Variable 2	Matter
Massage Baby	Frequency Breast-feed	1,000

Based on table 3, it can be seen that there is no relationship between baby massage and the frequency of breastfeeding for babies. This is proven by the p value (1,000) > 0.05. based on the T Test, if the calculated p is > 0.05, it means there is no relationship between the independent variable and the dependent variable.

**Table 4**  
**Statistical test results of the relationship between baby massage and duration of breastfeeding**

Variable 1	Variable 2	Matter
Massage Baby	Duration Breast-feed	0.382

Based on table 4, it can be seen that there is no relationship between baby massage and the duration of breastfeeding for babies. This is proven by the p value (0.382) > 0.05. Based on the T test, if  $p > 0.05$ , it means there is no relationship between the independent variable and the dependent variable.

## DISCUSSION

In table 1 above, it can be seen that the majority of breastfed babies have a good frequency category, namely 24 people (75%), where the good category is that babies breastfeed around 8-12 times per day. The quality of a baby's health is influenced by the frequency of breastfeeding. The fewer the number of babies who receive breast milk and breast milk, the worse the quality of the baby's health. Breast milk is produced as a result of hormones and reflexes. There are several things that influence breast milk production, one of which is the frequency of giving breast milk to babies. (Erlinawati, Amir, & Puteri, 2019)Based on the results of data analysis, it can be seen that the frequency of giving breast milk to babies is in the good category, namely 8-12 times per day, this shows the high frequency of giving breast milk to babies. breastfeed in one day, because the baby's sucking reflex to swallow breast milk is also good. (Kartinazahri, Yusraini, & Ampera, 2023; Purwani & Darti, 2012)Giving breast milk to babies fulfills the nutrition needed by babies. Breastfeeding

is the optimal choice for babies because breast milk contains excellent nutrients, hormones, immune and growth and anti-inflammatory properties. (Fitri, Chundrayetti, & Semiarty, 2014). In other research, it is stated that breast milk given exclusively to babies shows better brain nerve development than babies who do not receive exclusive breast milk. Therefore, the benefits of breastfeeding apart from the nutritional value of breast milk itself are also found in the interaction between mother and baby which can later help the development of the baby's nervous system and brain to increase the intelligence of the baby's brain. (Ida, Nugroho, & Arysanthi, 2016; Lubis & Setiari, 2022)Meanwhile, body weight and height/length are parameters used to measure baby growth. There is a significant increase in weight if the baby feels satisfied and full after breastfeeding, one of the factors is that the baby breastfeeds at least six times a day. (Rini & Nadhiroh, 2015)

Table 2 shows that the duration of breastfeeding is mostly in the good category, namely around 10-30 minutes at a time for 26 people (81.3%). This can be explained by the fact that each baby has a lot of time to breastfeed, this is because each baby has a different duration of breastfeeding according to the baby's sucking pattern. Arief (2009) in Nur et al's research stated that the duration of breastfeeding varies according to the baby's sucking pattern. Babies should breastfeed for 10 minutes on the first breast, because the suction power is still strong. And 20 minutes on the sore breast because the baby's suction power begins to weaken. (Purwani & Darti, 2012) We know that the perfect food for babies in the world is breast milk because breast milk is able to fulfill all elements of a baby's needs. In one study, the average duration of breastfeeding was 13.3 minutes in babies who were exclusively breastfed and 9 minutes in non-exclusive babies. This is still in the low category of good breastfeeding, namely 15 to 25 minutes. If breast milk is still low, it will have an impact on the baby's growth and development, namely it will not be optimal. (Fitri et al., 2014; Sutiyah, 2018)

From the data analysis in table 3, it was found that there was no relationship between baby massage and the frequency of breastfeeding for babies. This can be seen from the results of statistical tests, namely the p value (1,000) > 0.05. The research conducted was not in line with the results of research by Farida D et al which stated that there was a difference in the increase in frequency of breastfeeding in the treatment group given baby massage and the control group without baby massage. (Farida Y et al., 2018)There is no effect of baby massage on the frequency of breastfeeding,

this can be caused by several shortcomings and limitations in the research, including: the respondents in this study were babies whose age range was quite far and varied, namely 0- 12 months, where the respondent babies were still given exclusive breast milk. (< 6 months) and there are also those who have consumed complementary foods for breast milk (> 6 months). The next factor is that in the treatment group, the researchers only gave massage therapy to the babies once. In research conducted by Simanungkalit, the research method states that for the intervention group, babies were massaged twice a week for 15 minutes. (Simanungkalit, 2019) Based on research in 2019, it is stated that effective infant massage therapy can significantly increase the frequency of breastfeeding in neonates, where the results of statistical tests show  $p(0.000) < 0.05$ . This is also because providing infant massage therapy causes changes in the frequency of breastfeeding in neonates. Massage causes an increase in the levels of gastrin and insulin absorption enzymes so that food absorption is better. This activity causes babies to get hungry quickly so they will breastfeed their mothers more often than babies who are not massaged. (Apriani & Putri, 2019; Situmorang, Dewi, & Kristina, 2022)

Baby massage is a traditional art that combines nurturing touches on babies by parents, caregivers, or therapists. Baby massage includes movements and massage techniques. (Simanungkalit, 2019). The optimal breastfeeding frequency is between 8-12 times per day. However, it is best to breastfeed your baby without a schedule, because the baby will determine its own needs. Mothers must breastfeed their babies if the baby cries for no other reason (urination, being bitten by ants/mosquitoes, defecating) or the mother feels like breastfeeding her baby. The frequency of giving breast milk to a baby will greatly affect the baby's physical and emotional condition, so that the baby's calm condition will increase and the baby's weight will increase. (Fitriahadi, 2016; Sukmawati & Imanah, 2020)

Based on table 4, the results of the nilap statistical test show  $p(0.382) > 0.05$ , which means there is no relationship between baby massage and the duration of breastfeeding for babies. This is not in line with several studies which state that baby massage has an effect on the duration of the baby's breastfeeding at each feeding. This can be caused by several limitations in this study, including: (1) the age of the babies as respondents in this study has a fairly wide age range, namely 0-12 months, (2) the baby massage therapy carried out by researchers in the treatment group was only carried out only once,

different from previous research. In previous research, the treatment group massaged the baby several times. (Falikhah & Hidayat, 2015; Tanjung et al., 2022). In one study, the treatment group, namely babies aged 0-6 months, received massage 3 times a week for 4 weeks. (Widiani & Chania, 2023). Based on research in 2019, it was stated that effective infant massage therapy can significantly increase the frequency of breastfeeding in neonates, where the results of statistical tests show  $p(0.000) < 0.05$ . This is also because providing infant massage therapy causes changes in the frequency of breastfeeding in neonates. Massage causes an increase in the levels of gastrin and insulin absorption enzymes so that food absorption is better. This activity causes babies to get hungry quickly so their mothers will breastfeed more often than babies who are not massaged. Another study stated that baby massage had an effect on the duration of breastfeeding at the Wanasari Medika Clinic, Karawang. The average increase in breastfeeding duration for the group of babies who were not given massage was 1.48 minutes, while the group of babies who were given massage experienced an increase in breastfeeding duration of 4.84 minutes. From this research, campaigning for baby massage needs to be carried out by maternity clinics in order to improve the quality of breastfeeding in babies. (Natalia & Khairiah, 2022) Niluh's research in 2020 stated that after massage with intensity twice a day, the duration and frequency of the baby's breastfeeding increased, from the previous duration of <15 minutes to more than 15 minutes and a frequency of only 6-8 times a day has reached 8-12 times a day so that the mother's breast milk production has also increased. The final result was that the baby's weight increased by 3200 grams. (Dewi, 2016; Sari, 2020). Likewise, other research states that baby massage has an effect on the frequency and duration of breastfeeding. Baby massage is done at least 3 times a week so that the baby's nutritional intake increases and the baby's nutritional status is good. (Fitriahadi, 2016; Widiani & Chania, 2023)

## CONCLUSION

Based on the results of statistical tests, there is no significant relationship between baby massage and the frequency of breastfeeding, where the P-value is  $> 0.05$  ( $P=1.000$ ) and there is no significant relationship between baby massage and the duration of breastfeeding, where the P-value is  $> 0.05$  ( $P=0.382$ )

## SUGGESTION

It is hoped that mothers who have babies and toddlers will continue to massage their babies and toddlers. Meanwhile, for further research that will carry out the same study, it can develop the research objectives to be researched and focus more on what is being researched and can further increase accuracy in terms of completeness of the data obtained.

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## THE EFFECT OF GIVING RED GUAVA JUICE ON INCREASING HB LEVELS IN ADOLESCENT WOMEN AGED 13 - 15 YEARS OLD

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### ABSTRAK PENGARUH PEMBERIAN JUS JAMBU BIJI MERAH TERHADAP PENINGKATAN KADAR HB PADA REMAJA PUTRI USIA 13-15 TAHUN

Latar Belakang: Anemia terjadi ketika sel darah merah (hemoglobin) atau protein pembawa oksigen didalam sel darah merah berada dibawah kategori normal. Kejadian anemia pada remaja putri di Provinsi Lampung terdapat 69,7% dan kejadian anemia di Pondok Pesantren Nidaul Islam terdapat 30,8%. Jambu biji mengandung zat besi yang dapat menggantikan fe dalam pembentukan hemoglobin sehingga dapat mengatasi anemia.

Tujuan: Untuk mengetahui pengaruh pemberian jus jambu biji merah terhadap peningkatan kadar Hb pada remaja putri usia 13-15 tahun di Pondok Pesantren Nidaul Islam Kecamatan Karya Penggawa Kabupaten Pesisir Barat tahun 2022.

Metode: Jenis penelitian ini adalah kuantitatif dengan rancangan *pre eksperiment* dan desain *one group pretest and posttest*. Populasi dalam penelitian ini adalah seluruh remaja putri usia 13-15 tahun yang mengalami anemia di Pondok Pesantren Nidaul Islam Kecamatan Karya Penggawa Kabupaten Pesisir Barat berjumlah 30 orang. Teknik sampel yang digunakan yaitu *total sampling*. Analisis data dalam penelitian ini menggunakan *paired sample t-test*.

Hasil: Rata-rata kadar Hb pada remaja putri usia 13-15 tahun sebelum diberikan jus jambu biji merah adalah 10,47 g/dl dan sesudah diberikan jus jambu biji merah meningkat menjadi 12,387 g/dl.

Kesimpulan: Ada pengaruh pemberian jus jambu biji merah terhadap peningkatan kadar Hb pada remaja putri usia 13-15 tahun di Pondok Pesantren Nidaul Islam Kecamatan Karya Penggawa Kabupaten Pesisir Barat tahun 2022 dengan p value 0,000.

Saran Diharapkan setelah dilakukannya penelitian ini dapat menambah pengetahuan remaja putri tentang cara mengatasi anemia yaitu dengan mengkonsumsi jus jambu biji merah. Selain itu diharapkan para remaja putri yang menjadi sampel dalam penelitian ini dapat berbagi informasi kepada teman, saudara, dan kerabat lainnya mengenai manfaat jus jambu biji merah untuk meningkatkan kadar hemoglobin.

Kata Kunci : Jus Jambu Biji Merah, Kadar Hb, Remaja putri

### ABSTRACT

Background: Anemia occurred when the red blood cells (hemoglobin) or the oxygen-carrying protein in red blood cells fell below the normal category. The incidence of anemia in adolescent girls in Lampung Province was 69.7% while the incidence of anemia at Nidaul Islamic Boarding School was 30,8%. Guava contained substance of Fe in forming Hb therefore it could overcome anemia.

Purpose: To determine the effect of giving red guava juice to increase Hb levels in adolescent women aged 13 - 15 years at the Nidaul Islamic Boarding School, Karya Penggawa District, West Pesisir Regency in 2022.

Methods: This study was quantitative research with a pre-experimental design and one group pre-test and post-test design. The population in this study were all adolescence women aged 13-15 years who had anemia at the Nidaul Islamic Boarding School, Karya Penggawa District, West Pesisir Regency, totaling to 30 people. The sampling technique used was total sampling. Data analysis in this study used paired sample t-test.

Results: The average Hb level in adolescent women aged 13 - 15 years before being given red guava juice was 10.47 g/dl and after being given red guava juice it increased to 12.387 g/dl.

Conclution: an effect of giving red guava juice on increasing Hb levels in adolescent women aged 13 - 15 years at the Nidaul Islamic Boarding School, Karya Penggawa District, West Pesisir Regency in 2022 with a p-value of 0.000.

Suggestion it is hoped that after doing this research, it can increase the knowledge of young women about how to overcome anemia, namely by consuming red guava juice. In addition, it is hoped that the young women who

were sampled in this study can share information with friends, relatives, and other relatives about the benefits of red guava juice to increase hemoglobin levels.

Keywords : Red Guava Juice, Hb Level, Adolescence Women

## **INTRODUCTION**

Anemia is a disease that is often suffered by the community, both children, adolescents, pregnant women and the elderly. Anemia occurs when red blood cells (hemoglobin) or the oxygen-carrying protein in red blood cells are below the normal category. Anemia is mostly caused by iron deficiency factors which are characterized by low hemoglobin levels and a decrease in ferritin levels. Normal hemoglobin levels in adolescents are 12 g% (Rusdi, 2020).

Data from the World Health Organization (WHO) shows that the incidence of anemia in 2019 was 29.9% cases in women aged 15-49 years (WHO, 2019). Based on Riskesdas data in 2018, the prevalence of anemia in Indonesia was 21.7%. Based on age group, patients with anemia aged 5-14 years were 26.4% and 18.4% were in the age group 15-24 years. And based on gender, there are 23.9% women with anemia and 18.4% men (Kemenkes RI, 2019).

The incidence of anemia in adolescent girls in Lampung Province is 69.7% with iron deficiency anemia. However, in terms of the proportion of adolescent girls aged 10-19 years who received blood supplement tablets (TTD) in Lampung Province, it was found that 20.85% of female adolescents had received iron tablets and 69.82% of female adolescents had received iron tablets in the last 12 months. Meanwhile, in Pesisir Barat Regency, there were only 25.78% of young women who had received iron tablets and 87.46% of young women who had received iron tablets in the last 12 months (Kemenkes RI, 2019).

The incidence of anemia at the Nidaul Islam Islamic Boarding School in 2019 there were 29.1% of young women who had anemia, in 2020 there were 29.9% of young women who had anemia, and in 2021 there were 30.8% of young women who had anemia (Puskesmas Report) Penggawa's work, 2020).

The emergence of anemia can be caused by a lack of food sources that contain iron, because iron is an important compound as a constituent of hemoglobin and this occurs because of the wrong, irregular diet and does not balance the adequacy of the nutritional sources needed by the body (Kompasiana, 2014). With the occurrence of anemia in adolescents can have an impact on decreasing

work productivity or academic ability at school, because there is no passion for learning and concentration. Anemia can also interfere with growth where height and weight become imperfect. In addition, the body's resistance will decrease so that it is easy to get sick (Depkes RI, 2013).

Some of the effects of anemia on adolescent girls are quite concerning, such as a decline in health and school achievement. In adulthood, the condition of anemia is exacerbated during pregnancy which causes non-optimal growth and development of the fetus, complications during pregnancy and childbirth, and results in maternal and child mortality (Permata, 2021).

Management of anemia can be done in various ways, such as taking Fe tablets. Fe tablets are mineral tablets that are needed to form red blood cells (hemoglobin). One of the important elements in the process of formation of red blood cells is the content of Fe tablets. However, the relatively minimal knowledge about anemia by young women leads to minimal prevention of the incidence of anemia, therefore young women need to be equipped with knowledge about anemia and food intake patterns as therapy for people with anemia (Tarwoto in Sari, 2020).

There are two ways to treat anemia, namely pharmacologically and non-pharmacologically. The pharmacological method is to consume 1 tablet of Fe every day. However, many teenagers refuse to take Fe tablets because of the side effects of Fe tablets, namely nausea and vomiting and hard black stools. The second way is non-pharmacological, namely by consuming foods rich in iron and foods that can help the process of iron absorption. Foods that contain lots of iron from animal foods such as meat, fish, chicken, liver, eggs, while plant foods that contain lots of iron are dark green vegetables, nuts, and tempeh.

Absorption of iron is strongly influenced by the presence of vitamin C in the body of adolescents. Vitamin C can help reduce ferric iron ( $\text{Fe}^{3+}$ ) to ferrous ( $\text{Fe}^{2+}$ ) in the small intestine so that it is easily absorbed by the body, the reduction process will be even greater if the pH in the stomach becomes more acidic. Vitamin C can increase the pH in the stomach so that it can increase the process of iron absorption by up to 30%. The highest content of vitamin C is found in guava fruit. In Latin this guava is known as

Psidium Guajava, and in English it is called Guava. The content of vitamin C in guava is higher than citrus fruit, 100 grams of guava fruit contains 183.5 mg of vitamin C, while 100 grams of citrus fruit contains 50-70 mg of vitamin C (Rusdi, 2020).

In accordance with Tunnisa's research (2018) which states that there is a difference between before and after giving guava juice on hemoglobin levels with a P value of 0.000 where P value <0.005, it is concluded that there is an effect of giving guava juice on hemoglobin levels in adolescent girls at MAN 1 Bantul.

Based on the results of a pre-survey at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022, there were 10 young women who had anemia. After conducting interviews, it was found that young women did not know that red guava can increase Hb levels.

## RESEARCH METHODS

In this research, the writer uses quantitative research. The research design used pre-experimental designs (pre-experimental) with a one-group pretest posttest design. The population in this study was taken from the total number of young women aged 13-15 years who were anemic at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency, amounting to 30 people and the sample in this study was 30 people using total sampling technique. Analysis of univariate and bivariate data using paired sample t-test.

## RESEARCH RESULTS

### Univariate Analysis

Based on the table above, it is known that from 30 respondents before being given red guava juice, the average hemoglobin level was 10,470 g/dL with a standard deviation of 0.6983 g/dL, a minimum of 9.5 g/dL and a maximum of 11.9 g/dL.

Table 1

Average Hb levels in adolescent girls aged 13-15 years before being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

Hb . level	N	Mean	Standard deviation	Min – Max
Before being given red guava juice	30	10,470	0.6983	9.5 – 11.9

Table 2

Average Hb levels in adolescent girls aged 13-15 years after being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District West Coast District in 2022

Hb . level	N	mean	Standard deviation	Min-Max
Aftergiven red guava juice	30	12,387	0.6559	11.2 – 13.9

Based on the table above, it is known that from 30 respondents after being given red guava juice, the average hemoglobin level was 12,387 g/dL with a standard deviation of 0.6559 g/dL, a minimum of 11.2 g/dL and a maximum of 13.9 g/dL.

### Bivariate Analysis

Table 3

The effect of giving red guava juice on increasing Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency year 2022

Hb . level	N	Mean	P value
Pretest	30	10,470	0.000
Posttest	30	12,387	

Based on the table above, it is known that from 30 respondents the average hemoglobin level before being given red guava juice was 10,470 g/dL and after being given red guava juice it increased to 12,387 g/dL. Based on the results of the paired t-test, the P value of 0.000 <0.05 means that there is an effect of giving red guava juice to increase Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022.

## DISCUSSION

### Univariate Analysis

Average Hb levels in adolescent girls aged 13-15 years before being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

The results showed that from 30 respondents before being given red guava juice, the average



hemoglobin level was 10,470 g/dL with a standard deviation of 0.6983 g/dL, a minimum of 9.5 g/dL and a maximum of 11.9 g/dL.

The high incidence of anemia in adolescent girls is caused by an unbalanced dietary intake with the required nutritional sources including energy, carbohydrates, fat, protein, vitamin C, especially the lack of food sources containing iron and folic acid. Another reason is because in this study the majority of respondents were late teens who menstruate every month. Iron expenditure must also be balanced with nutritional intake. Anemia in adolescents is related to the lack of intake of foods containing iron (Handayani, 2021).

Anemia that occurs in adolescents causes fatigue, decreased concentration in learning so that learning achievement is low and can reduce work productivity for teenagers who are already working. In addition, it also lowers the body's resistance so that it is easy to get infections. The high incidence of anemia in adolescents, especially young women, if not handled properly will continue into adulthood and contribute greatly to maternal mortality, premature babies, and babies with low birth weight (Robertus, 2014).

This study is in line with research by Restipa (2018) which states that the average Hb level before being given Fe plus vitamin C tablets with a mean of 9.93, standard deviation of 1.035 with the lowest value being 8 and the highest value being 11.

According to the researcher's assumptions, adolescent girls who experience anemia can be overcome by regularly eating foods that contain lots of vitamin C and iron, in addition to helping lower blood pressure, adolescent girls who have anemia must adopt a healthy lifestyle such as diligently exercising and consuming healthy foods.

Average Hb levels in adolescent girls aged 13-15 years after being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

The results showed that from 30 respondents after being given red guava juice, the average hemoglobin level was 12,387 g/dL with a standard deviation of 0.6559 g/dL, a minimum of 11.2 g/dL and a maximum of 13.9 g/dL.

Anemia is a condition where the hemoglobin (Hb) level in the blood is less than normal which differs according to age group, gender and physiological conditions (Kemenkes RI, 2015). Anemia is also defined as a condition in which a low concentration of hemoglobin (Hb) or hematocrit based on a threshold value (reference) is caused by

low production of red blood cells and Hb, increased erythrocyte breakdown or excessive blood loss.

Treatment of anemia is done by consuming foods rich in iron and foods that can help the process of iron absorption. Foods that contain lots of iron from animal foods such as meat, fish and others. Food ingredients that can help the process of iron absorption such as vegetables and fruits that contain lots of vitamin C such as katuk leaves, cassava leaves, spinach, guava, tomatoes, oranges and pineapples. Absorption of iron is strongly influenced by the presence of vitamin C in the body of adolescents because vitamin C can help reduce ferric iron to ferrous in the small intestine, so it is easily absorbed by the body. The highest vitamin C content is found in red guava fruit (Rusdi, 2018).

This is in line with the research of Mahmudah (2018) which suggests that before being given guava juice intervention, researchers conducted a Hb examination (pretest) on adolescents at the Muhammadiyah 2 Yogyakarta High School Girls Dormitory. ,9%), while moderate Hb levels were 9 respondents (31.1%) and none of the respondents experienced the category of low Hb levels in adolescent girls. Meanwhile, after being given the intervention, the results of the frequency distribution of Hb levels after being given an intervention for 7 days, the criteria for normal Hb levels were 29 respondents (100%), after being given the intervention, none of the teenage girls experienced the criteria for moderate and low Hb levels.

According to the researcher's assumption, red guava juice can be used as an alternative to help overcome anemia in adolescent girls. Because the content in red guava juice can help increase Hb levels. In addition, red guava juice is also a plant that is easily obtained around the research environment by consuming red guava, besides being able to help increase Hb levels, young women also get other benefits such as vitamins contained in guava.

However, in this study there were 8 respondents who had consumed red guava juice experienced an increase in Hb levels but still experienced anemia. This can be caused by unhealthy habits of teenagers such as not being used to breakfast and having a habit of consuming low-nutrient foods such as fast food. In addition, there are teenagers who have a habit of drinking tea, so the iron content in red guava juice is not absorbed properly. But apart from that, there are some teenagers who still experience anemia because the Hb level before the intervention is relatively low.

## Bivariate

The effect of giving red guava juice on increasing Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

The results of this study showed that from 30 respondents the average hemoglobin level before being given red guava juice was 10,470 g/dL and after being given red guava juice it increased to 12,387 g/dL. Based on the results of the paired t-test, the P value of 0.000 <0.05 means that there is an effect of giving red guava juice to increase Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022.

Several nutrients are needed in the formation of red blood cells. Iron or Fe, vitamin B12 and folic acid are the most important substances. In addition, the body also requires small amounts of vitamin C, riboflavin and copper as well as a balance of hormones, especially erythropoietin (a hormone that stimulates the formation of red blood cells). Without these nutrients and hormones, the formation of red blood cells will be slow and insufficient, and the cells may have deformities and be unable to transport oxygen properly, causing anemia (Yusnaini, 2014).

Pharmacological iron can be replaced with natural ingredients, one of which comes from red guava. Red guava fruit contains compounds that can increase hemoglobin levels in the blood, including: iron, vitamin C, vitamin A, copper and phosphorus. Iron is a mineral needed to transport oxygen throughout the body (Sianturi, 2012).

Iron with vitamin C forms an iron ascorbate complex that is soluble and easily absorbed by organs in the human body. The conversion of non-heme iron in the form of ferric metabolizing compounds to ferrous will be greater when the pH in the stomach becomes more acidic. Vitamin C can increase acidity so that it helps increase iron absorption by as much as 30% (Sianturi, 2012).

This study is in line with research conducted by Hardimarta (2016) that guava juice can increase hemoglobin levels in young women where P value = 0.000 (P value <0.05) which indicates that there is a significant difference between hemoglobin levels before and after consuming guava juice. red seeds.

Supported by Sulistyoningtyas (2022) which shows that there is a difference between before and after being given guava juice with a significance value of 0.000 or <0.05. This means that the provision of guava juice has an effect on the increase in HB levels of adolescent girls in the female dormitory of SMA Muhammadiyah 2 Yogyakarta.

In addition, according to Rusdi's research (2018) which shows that there is an effect of giving red guava juice on hemoglobin levels of anemic adolescent girls with p value = <0.001. This is in line with Handayani's (2021) study which showed that guava juice had an effect on increasing hemoglobin levels in adolescent girls.

According to the assumption of researchers, red guava juice can be used as an alternative in increasing hemoglobin levels in anemic adolescents. Red guava juice can increase hemoglobin levels because the folic acid content of guava helps the body increase the production of red blood cells, thereby helping to improve the functioning of the nervous system, especially the brain, and also prevent anemia. Iron is absorbed in the duodenum and upper jejunum by a complex process. The folic acid content of guava helps the body increase the production of red blood cells, thereby helping to improve the functioning of the nervous system, especially the brain, and also prevent anemia. The increase in hemoglobin levels in adolescents can also be influenced by the food consumed by adolescents is always the same.

## CONCLUSION

The average Hb level in adolescent girls aged 13-15 years before being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022 was 10.47 g/dl. The average Hb level in adolescent girls aged 13-15 years after being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022 was 12,387 g/dl. There is an effect of giving red guava juice on increasing Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022 with a p value of 0.000.

## SUGGESTION

It is hoped that after doing this research, it can increase the knowledge of young women about how to overcome anemia, namely by consuming red guava juice. In addition, it is hoped that the young women who were sampled in this study can share information with friends, relatives, and other relatives about the benefits of red guava juice to increase hemoglobin levels.

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## THE EFFECT OF HYPNO-BREASTFEEDING AND OXYTOCIN MASSAGE ON BREAST MILK PRODUCTION IN POSTPARTUM MOTHERS

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### ABSTRAK PENGARUH HYPNO-BRASTFEEDING DAN OXYTOCIN MASSAGE TERHADAP PRODUKSI ASI PADA IBU PASCA PARTUM

Latar Belakang ASI merupakan sumber makanan utama pada bayi dan memiliki banyak manfaat untuk tumbuh dan berkembang secara optimal namun terlihat data capaian ASI di Kabupaten Lampung Tengah tahun 2021 sebanyak 71,83% dan di Puskesmas Seputih Banyak sebesar 69,2% belum memenuhi standar capaian ASI Provinsi Lampung sebesar 80%. Hal ini dikarenakan produksi ASI ibu kurang, Upaya yang dapat dilakukan untuk meningkatkan produksi ASI dengan cara *hypnobreastfeeding* dan pijat oksitosin.

Tujuan penelitian untuk diketahui pengaruh *hypnobreastfeeding* dan pijat oksitosin terhadap pengeluaran ASI pada ibu *post partum* di Wilayah Kerja Puskesmas Seputih Banyak Kabupaten Lampung Tengah Tahun 2023.

Metode Jenis penelitian kuantitatif, rancangan pra eksperimental dengan pendekatan *one group pretest – posttest design*. Populasi seluruh ibu nifas sebanyak 38 orang dengan sampel sebanyak 20 orang. Teknik sampling menggunakan *purposive sampling*. diberikan *hypnobreastfeeding* dan pijat oksitosin selama 4 hari berturut-turut dalam waktu 30 menit. Penelitian ini telah dilakukan di Wilayah Kerja Puskesmas Seputih Banyak pada bulan Januari s/d Juli 2023. Analisa univariat dan bivariat menggunakan uji *t-test dependen*.

Hasil Rata-rata pengeluaran ASI ibu *post partum* sebelum diberi pijat *hypnobreastfeeding* sebanyak 39,15ml dan sesudah diberi *hypnobreastfeeding* dan pijat oksitosin sebanyak 100,60ml. Hasil uji statistik menggunakan *tes-dependen* didapat nilai *p-value* 0,000 ( $\alpha < 0.05$ ).

Kesimpulan dapat disimpulkan terdapat pengaruh *hypno-breastfeeding* dan *oxytocin massage* terhadap produksi ASI pada ibu nifas di wilayah kerja Puskesmas Seputih Banyak Kabupaten Lampung Tengah Tahun 2023.

Saran Diharapkan ibu nifas mendapatkan pengetahuan dan informasi yang tepat mengenai ASI Eksklusif serta dapat menerapkan kombinasi *hypno-breastfeeding* dan *oxytocin massage* untuk meningkatkan produksi ASI.

Kata Kunci : *Hypnobreastfeeding*, Pijat Oksitosin, Pengeluaran ASI ibu *Post Partum*

### ABSTRACT

Background Breast milk is the main source of food for babies and has many benefits for their optimal growth and development. However, the data of the coverage achievement for exclusive breastfeeding in Central Lampung Regency in 2021 was 71.83% and in the Seputih Banyak Public Health Center, it was 69.2% which did not meet the coverage achievement standards of exclusive breastfeeding in Lampung Province by 80%. This is because the production of breast milk is lacking. The efforts that can be made to increase milk production are by using *hypno-breastfeeding* and *oxytocin massage*.

This study aimed to determine the effect of *hypno-breastfeeding* and *oxytocin massage* on breast milk production in postpartum mothers in the work area of Seputih Banyak Public Health Center, Central Lampung Regency in 2023.

Methods This study was quantitative research. A pre-experimental method with one group pretest–posttest design approach was used in this study. The population in this study were 38 postpartum mothers. The sample in this study were 20 postpartum mothers chosen using a *purposive sampling* technique. *Hypno-breastfeeding* and *oxytocin massage* were applied for 30 minutes for 4 consecutive days. This study was conducted in the work area of Seputih Banyak Public Health Center from January to July 2023. Univariate and bivariate analyses using the dependent *t-test* were applied to analyze the data.

Result The mean score of breast milk production before being given *hypno-breastfeeding* and *oxytocin massage* was 39.15 ml. The mean score of breast milk production after being given *hypno-breastfeeding* and *oxytocin*

massage was 100.60 ml. The results of the statistical test using the dependent t-test obtained a p-value of 0.000 ( $\alpha < 0.05$ ).

Conclusion it can be concluded that there was an effect of hypno-breastfeeding and oxytocin massage on breast milk production in postpartum mothers in the work area of Seputih Banyak Public Health Center, Central Lampung Regency in 2023

Suggestion It is hoped that postpartum mothers gain proper knowledge and information about exclusive breastfeeding and can apply the combination of hypno-breastfeeding and oxytocin massage to increase their breast milk production.

Keywords: Hypno-breastfeeding, Oxytocin Massage, Breast Milk Production, Postpartum Mothers

## INTRODUCTION

The lactation interaction or breastfeeding is a means for the production of breast milk which contains chemical substances of prolactin and oxytocin. During pregnancy, prolactin will increase but the breast milk will not come out because it is still hampered by the high estrogen hormone. Breastfeeding is a unique and beneficial interaction for a child's development and progress. (Prawiroharjdo, 2019).

Data from the World Health Organization showed that globally the rate of exclusive breastfeeding is 40% in which only in 23 countries 60% of babies get exclusive breastfeeding. The target coverage for exclusive breastfeeding in 2030 is at least 60%. Data from the International Baby Food Action Network (IBFAN) showed that exclusive breastfeeding coverage in Indonesia is in the third lowest rank out of 51 countries in the world (WHO, 2021).

Based on the 2030 Sustainable Development Goals (SDGs), breastfeeding can be one of the first steps for infants to be able to obtain a healthy and prosperous life. If the Indonesian government can achieve the target of exclusive breastfeeding coverage, it means that Indonesia can help the world achieve the goals of the SDGs. The coverage of babies receiving exclusive breastfeeding in Indonesia in 2020 was 66.06%. This has exceeded the 2021 Strategic Plan target of 40% (Kementerian Kesehatan RI, 2021).

The coverage achievement of exclusive breastfeeding in Lampung Province in 2021 was 73.4%, which it increased compared to 2020 which was only 70.08%. (Profil Dinkes Lampung, 2021). Exclusive breastfeeding in Lampung Province in 2020 was 59.4%, and in Bandar Lampung City in 2021 was 61.93%. In Central Lampung Province, the coverage achievement of exclusive breastfeeding was 60.2% (Profil Dinkes Lampung, 2021)

The data on breastfeeding coverage achievement in Central Lampung Regency in 2021 were 71.83%, which means that it still does not meet

the standards for breastfeeding coverage achievement in Lampung Province (Profil Dinkes Lampung Tengah, 2021). In Seputih Banyak Public Health Center, most of the infants have been given exclusive breastfeeding and continued until the age of 2 years. The estimated percentage of exclusive breastfeeding coverage in Seputih Banyak Public Health Center was 69.2%, which means that it is still behind the percentage of breastfeeding coverage in Central Lampung Regency (Data Puskesmas Seputih Banyak, 2021).

The process of breastfeeding is a natural process in which mothers must prepare themselves thoroughly (body, mind, and soul) to be able to breastfeed their babies comfortably. Preparation in terms of physic (body) includes intake of balanced nutritious food and studying breastfeeding management. Preparation in terms of mind includes peace of mind so that mothers are confident that they can breastfeed and produce quality and quantity breast milk to meet the growth and development of the baby. Preparation in terms of the soul includes a sincere intention, sincere to provide the best for the baby. These three preparations must be prepared early on during pregnancy, childbirth, and afterward to get positive and more beneficial results. (Witari, 2021).

The challenge frequently faced by breastfeeding mothers is that mothers feel that their milk production is insufficient, which hinders breastfeeding activities. The main reason for mothers not being able to breastfeed is because emotional factors and the mother's attitude will affect the quality of the amount of breast milk produced and the lack of stimulation of the hormones prolactin and oxytocin can cause a decrease in milk production and expenditure in the first days after giving birth. These hormones play a very important role in the production and expenditure of breast milk. The postpartum period is a critical period for both the mother and the baby because during this time the mother experiences fatigue after giving birth so that it can reduce breast milk production (Witari, 2021).

A study conducted by Sari & Eliyawati (2022) on increasing breast milk production in postpartum mothers using hypno-breastfeeding showed a p-value of  $0.000 < 0.05$  meaning that there was a significant difference between milk production on day 4 and day 8. The data were tested using the Wilcoxon and Mann-Whitney tests. The results of the study showed that there was the effectiveness of Hypno-breastfeeding on breast milk production in postpartum mothers in the work area of the Kendit Public Health Center. Thus, it is necessary to carry out further studies on the adequacy of breast milk for babies using hypno-breastfeeding.

Based on the results of a pre-survey conducted at Seputih Banyak Public Health Center on February 11, 2023, of the 10 postpartum mothers, 7 mothers complained that their breast milk did not come out smoothly for 1-3 days during the postpartum period and 3 mothers said they were worried and afraid that breastfeeding would not run smoothly during the 3-day postpartum period in which it would have an impact on further breastfeeding. Based on the results of the survey, the researchers were interested in conducting a study on

the Effect of Hypno-breastfeeding and Oxytocin Massage on Breast Milk Production in Postpartum Mothers in the Work Area of the Seputih Banyak Public Health Center, Central Lampung Regency in 2023

## RESEARCH METHODS

This study was quantitative research. This study was conducted in the work area of Seputih Banyak Public Health Center from January to July 2023. A pre-experimental method with one group pretest-posttest design approach was used in this study. The population in this study were all postpartum mothers in the work area of Seputih Banyak Public Health Center as many as 38 people per month. The sample in this study was 20 people chosen using a purposive sampling technique. The independent variables in this study were hypno-breastfeeding and oxytocin massage. The dependent variable was breastfeeding production.

## RESEARCH RESULTS

### Characteristics of Respondents

**Table 1**  
**Characteristics of Respondents**

Characteristics	Frequency	Percentage (%)
Age		
At risk (20-35 years old)	18	90,0
Not at risk (<20 and >30 years old)	2	10,0
Education		
Associate's Degree	3	15,0
Bachelor Degree	1	5,0
Senior High School	14	70,0
Junior High School	2	10,0
Occupation		
Blue-collar worker	1	5,0
Housewife	14	70,0
Civil servant	2	10,0
Employee	1	5,0
Entrepreneur	2	10,0
Number of Children		
1 Child	10	50,0
2 Children	10	50,0

Table 1 above shows that based on the highest percentage, respondents whose age is not at risk (20-35 years) were 18 people (90.0%), who have high school education were 14 people (70.0%), and who were housewives were 14 people (70.0%). Then, respondents who have only a child were 10 people (50%) and respondents who had 2 children were 10 people (50%).

Table 2 above shows that the Shapiro-Wilk score in the pretest-posttest intervention group was  $0.372-0.324 > 0.05$ , which means that the data was normally distributed. Thus, it can be concluded that the data of the two groups in this study were normally distributed and further experimental tests were carried out using the dependent t-test

**Table 2**  
**The Results of the Normality Test**

	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest Intervention	0,950	20	0,372
Posttest Intervention	0,947	20	0,324

Table 3 above shows that the mean score of breast milk production of postpartum mothers before being given hypno-breastfeeding and oxytocin massage was 39.15 ml.

#### Univariate Analysis

**Table 3**  
**The Average of Breast Milk Production in Postpartum Mothers Before Being Given Hypno-breastfeeding and Oxytocin Massage in the Work Area of Seputih Banyak Public Health Center in 2023**

Variable	N	Mean	SD	SE	CI-95%
Breast milk production	20	39,15	8,665	1,938	35,09-43,21

**Table 4**  
**The Average of Breast Milk Production in Postpartum Mothers After Being Given Hypno-breastfeeding and Oxytocin Massage in the Work Area of Seputih Banyak Public Health Center in 2023**

Variable	N	Mean	SD	SE	CI-95%
Breast milk production	20	100,60	12,655	2,830	94,68-106,52

Table 4 above shows that the mean score of breast milk production of postpartum mothers after being given hypno-breastfeeding and oxytocin massage was 100,60ml.

mothers after and before being given hypno-breastfeeding and oxytocin massage. The mean score of breast milk production before being given hypno-breastfeeding and oxytocin massage was 39.15 ml, and after being given hypno-breastfeeding and oxytocin massage was 100.60 ml. It means that the average of breast milk production in all respondents has increased.

#### Bivariate Analysis

Table 5 above shows the difference in the mean score of breast milk production in postpartum

**Table 5**  
**The Effect of Hypno-breastfeeding and Oxytocin Massage on Breast Milk Production in Postpartum Mothers in the Work Area of Seputih Banyak Public Health Center in 2023**

Breast milk production	N	Mean	Std. Dev	P-Value	CI-95%
Pretest	20	39,15	8,665	0,000	66,709-56,191
Posttest	20	100,60	12,655		

#### DISCUSSION

##### **The Average of Breast Milk Production in Postpartum Mothers Before Being Given Hypno-breastfeeding and Oxytocin Massage in the Work Area of Seputih Banyak Public Health Center in 2023**

Based on the results of this study, the mean score of breast milk production of postpartum mothers before being given hypno-breastfeeding and oxytocin massage was 39.15 ml. According to Fikawati (2015), approximately 88% of breast milk consists of water. Water is useful for dissolving the substances contained in it and contributes to the mechanism of body temperature regulation, which in

infants there is a 25% loss of body temperature due to water loss through the kidneys and skin. Breast milk is a safe source of water. The relatively high water content in breast milk will relieve thirst stimulation in the baby.

The results of this present study are in line with a study conducted by Ruslinawati, Darmayanti & Lydiani (2020) on the effect of hypno-breastfeeding on increased breast milk production in the work area of 09 November Banjarmasin Public Health Center. In the study, the data analysis using paired simple t-test and independent t-test showed the effect of hypno-breastfeeding on breast milk production with a p-value of 0.000. Hypno-breastfeeding can increase



breast milk production because it stimulates the release of the hormones prolactin and oxytocin.

The success of a breastfeeding mother is largely determined by a comfortable environment and the support of her husband or family during the breastfeeding process. In dealing with the problem, the efforts that can be made to reduce the anxiety and fear of mothers are to provide hypno-breastfeeding therapy in which this treatment can provide a sense of comfort and relaxation so that breastfeeding processes run smoothly and to provide oxytocin massage which is carried out by massaging along the back bones (vertebrae) to the 5<sup>th</sup> - 6<sup>th</sup> of *costae* bones so that it can help stimulate the release of oxytocin hormone and the breast milk comes out quickly.

#### **The Average of Breast Milk Production in Postpartum Mothers After Being Given Hypno-breastfeeding and Oxytocin Massage in the Work Area of Seputih Banyak Public Health Center in 2023**

Based on the results of this study, the mean score of breast milk production of postpartum mothers after being given hypno-breastfeeding and oxytocin massage was 100.60 ml. According to Fikawati (2015), breast milk is the best food for babies in the first 6 months of their life. All nutritional needs such as protein, carbohydrates, fat, vitamins, and minerals are fulfilled from breast milk. Early breast milk contains immune substances which can protect babies from diseases that cause infant mortality worldwide such as diarrhea, ARI, and pneumonia. In adulthood, it is proven that babies who are breastfed have a lower risk of developing degenerative diseases, such as high blood pressure, type 2 diabetes, and obesity. Therefore, since 2001, WHO has recommended that babies get exclusive breastfeeding until the age of 6 months.

The hypno-breastfeeding technique is a natural effort carried out by giving positive suggestions so that during the breastfeeding process, there are no obstacles in the release of breast milk. By using positive and motivating suggestive sentences when mothers breastfeed their babies, mothers will be in a calm state and focused on breastfeeding/hypnotic state so that the breast milk produced will be able to meet the needs of their babies.

#### **Bivariate Analysis**

##### **The Effect of Hypno-breastfeeding and Oxytocin Massage on Breast Milk Production in Postpartum Mothers in the Work Area of Seputih Banyak Public Health Center in 2023**

The results of the statistical test using the dependent t-test obtained a p-value of 0.000 ( $\alpha < 0.05$ ) meaning that there was an effect of hypno-breastfeeding and oxytocin massage on breast milk production in postpartum mothers in the work area of Seputih Banyak Public Health Center, Central Lampung Regency in 2023.

The results of this study are in line with a study conducted by Pratiwi (2018) stating that hypno-breastfeeding is a natural effort to use subconscious energy so that the breastfeeding process runs comfortably and smoothly, and the mother can produce breast milk that is sufficient for the baby's needs. The principle of hypno-breastfeeding is by giving positive affirmation sentences for the breastfeeding process when the mother is very relaxed or very concentrated.

The results of this study are also in line with a study carried out by Ningsih & Lestari (2019) on the effectiveness of oxytocin massage and hypno-breastfeeding combinations in optimizing breast milk production in postpartum mothers. The study using the Chi-Square statistical test obtained a p-value of 0.020 ( $< \alpha = 0.05$ ) meaning that the combination of oxytocin massage and hypno-breastfeeding was very effective for optimizing breast milk production in postpartum mothers. Then, the OR value was 7.4 (CI 1.226-45.005) meaning that the combination of oxytocin massage and hypno-breastfeeding was 7.4 more likely to optimize breast milk production.

The results of this present study showed the difference in the mean score of breast milk production in postpartum mothers after and before being given hypno-breastfeeding and oxytocin massage. The mean score of breast milk production before being given hypno-breastfeeding and oxytocin massage was 39.15 ml, and after being given hypno-breastfeeding and oxytocin massage was 100.60 ml. It means that the average of breast milk production in all respondents increased.

Based on Table 1 in this study, the respondents whose age was not at risk (20-35 years) were 18 people (90.0%). The respondents in the age range of 20-35 years are adults. Mothers at this age can solve problems well, one of which is to seek accurate information regarding exclusive breastfeeding. The 35-year-old mother is starting to experience changes in her hormonal system so that breast milk production is reduced and this will become an obstacle for mothers to exclusively breastfeed.

Then, the results of this study showed that 14 (70.0%) respondents had a high school education level. A study conducted by Afriyani et al. (2018) showed that mothers who had higher education were able to receive information about exclusive

breastfeeding well and had broader knowledge about exclusive breastfeeding compared to respondents with low education. While, a study showed that education did not affect exclusive breastfeeding because other factors could affect exclusive breastfeeding such as the beliefs and culture of the surrounding community ( $p = 0.009$ ), so the information obtained regarding exclusive breastfeeding could not be practiced properly by mothers.

Regarding occupation, 14 respondents (70.0%) were housewives. Type of occupation is not the reason to stop exclusive breastfeeding. The results of a study showed that there was a relationship between types of occupation and exclusive breastfeeding in which working mothers had a tendency not to give exclusive breastfeeding.

Regarding the number of children, 10 respondents (50.0 %) had only a child and 10 respondents (50.0%) had 2 children. The number of children provides experience in actively breastfeeding. The results of this study indicate that the hypno-breastfeeding technique can make mothers calmer and more relaxed to increase the hormone oxytocin and produce breast milk in postpartum mothers. Hypno-breastfeeding techniques should be performed before breastfeeding.

Based on the results of this study, the preparation for breastfeeding includes physical aspects, mind, and soul. All of those cannot be separated. This is because the mindset of a mother plays a major role in the breastfeeding process. If the mother is pessimistic and feels that she is unable to provide breast milk for her baby, the amount of her breast milk will also be affected. Hypno-breastfeeding gives positive suggestions for breastfeeding mothers, so they can breastfeed their babies properly.

## CONCLUSION

The mean score of breast milk production before being given hypno-breastfeeding and oxytocin massage was 39.15 ml. The mean score of breast milk production after being given hypno-breastfeeding and oxytocin massage was 100.60 ml. The results of the statistical test using the dependent t-test obtained a p-value of 0.000 ( $\alpha < 0.05$ ) meaning that there was an effect of hypno-breastfeeding and oxytocin massage on breast milk production in postpartum mothers in the work area of Seputih Banyak Public Health Center, Central Lampung Regency in 2023.

## SUGGESTIONS

It is hoped that postpartum mothers gain proper knowledge and information about exclusive breastfeeding and can apply the combination of hypno-breastfeeding and oxytocin massage to increase their breast milk production. Then, Seputih Banyak Public Health Center is hoped to provide health education to mothers who have infants, under the government program in supporting the exclusive breastfeeding program by providing counseling for families/husbands to apply the combination of hypno-breastfeeding and oxytocin massage to breastfeeding mothers to stimulate the production of breast milk. For future researchers, this study can be used as a reference and as an additional reference related to studies with non-pharmacological alternative topics to increase breast milk production. In addition, future researchers are hoped to conduct studies with a model comparing more groups, and food control is carried out in the postpartum mothers group.

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## THE EFFECT OF WARM WATER FOOT SOAK ON BACK PAIN IN THIRD TRIMESTER PREGNANT WOMEN

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### ABSTRAK PENGARUH RENDAM KAKI AIR HANGAT TERHADAP NYERI PUNGGUNG PADA IBU HAMIL TRIMESTER III

Latar Belakang: Rasa nyeri pada bagian punggung atau low back pain dialami oleh 20%-25% ibu hamil. Keluhan ini dimulai pada usia 12 minggu dan akan meningkat pada saat usia kehamilan 24 minggu hingga menjelang persalinan di akibatkan pembesaran uterus sehingga beban tarukan tulang punggung ke arah depan akan bertambah dan menyebabkan lordosis fisiologis. Dampaknya pada ibu akan mengalami gangguan tidur, kelelahan serta ketidaknyamanan dalam melakukan aktivitas sehari-hari akan membuat janin menjadi fetal distress. Terapi rendam kaki air hangat salah satu upaya untuk mengurangi nyeri punggung.

Tujuan: untuk mengetahui pengaruh terapi rendam kaki air hangat terhadap nyeri punggung pada ibu hamil trimester III.

Metode: penelitian ini merupakan penelitian kuantitatif menggunakan desain Pra Eksperiment dengan rancangan one group pretest posttest design. Populasi semua ibu hamil trimester III dengan jumlah sampel berdasar perhitungan besar sampel diperoleh sebanyak 34 responden menggunakan teknik pengambilan sampel Quota sampling. Pengukuran nyeri punggung menggunakan NRS (Numeric Rating Scale) dengan tingkat nyeri skala 0-10. Pengukuran nyeri dilakukan sebelum dan sesudah pemberian intervensi. Perendaman kaki dengan air hangat dilakukan sebanyak 2,5 L atau lebih dari 15 cm dengan suhu air 37-39°C yang diukur menggunakan termometer air dalam waktu 15 menit selama 7x pemberian. Analisis menggunakan univariat dan bivariat dengan uji wilcoxon.

Hasil: didapatkan rata-rata intensitas nyeri punggung sebelum dilakukan intervensi adalah 5,06 sedangkan rata-rata intensitas nyeri punggung sesudah dilakukan intervensi adalah 0,35. Hasil uji wilcoxon didapatkan nilai p value = 0,000 ( $\leq 0,05$ ).

Simpulan: terapi rendam kaki air hangat berpengaruh dalam penurunan nyeri punggung pada ibu hamil trimester III. Selain praktis dan mudah dilaksanakan oleh ibu hamil sendiri

Saran: terapi rendam kaki dengan air hangat dapat dijadikan salah satu alternatif dalam penanganan nyeri punggung pada ibu hamil.

Kata kunci: Nyeri punggung, Rendam Air Hangat

### ABSTRACT

Background: Back pain or low back pain is experienced by 20%-25% of pregnant women. This complaint begins at the age of 12 weeks and will increase at 24 weeks gestation until before delivery due to enlargement of the uterus so that the burden of the spine to the front will increase and cause physiological lordosis. The impact on the mother will experience sleep disorders, fatigue and discomfort in carrying out daily activities will make the fetus become fetal distress. Warm water foot soak therapy is one of the efforts to reduce back pain. Objective: to determine the effect of warm water foot soak therapy on back pain in III trimester pregnant women.

Methods: This research is a quantitative research using Pre-Experimental design with one group pretest posttest design. The population of all III trimester pregnant women with the number of samples based on the calculation of sample size was obtained as many as 34 respondents using the Quota sampling technique. The analysis used univariate and bivariate with the Wilcoxon test.

Results: It was found that the average intensity of back pain before the intervention was 5.06 while the average intensity of back pain after the intervention was 0.35. Wilcoxon test results obtained p value = 0.000 ( $\leq 0.05$ ), meaning that there is an effect of warm water foot soak therapy on reducing back pain in III trimester pregnant women.

Conclusion: Warm water foot soak therapy has an effect in reducing back pain in III trimester pregnant women. Besides being practical and easy to implement by pregnant women themselves

Suggestions: foot soak therapy with warm water can be used as an alternative in the treatment of back pain in pregnant women.

Kata kunci: Back pain, warm water soak

## INTRODUCION

These changes are the basis for complaints of physiological discomfort in pregnant women. The discomfort felt by pregnant women usually varies in each trimester of pregnancy. Changes that occur during pregnancy often become complaints for pregnant women, including nausea, vomiting in early pregnancy, constipation, varicose veins (veins), urinary disorders, hemorrhoids, and cramps and edema in the legs and back pain (Varney, 2006).

Pain in the back or low back pain is experienced by 20% -25% of pregnant women. These complaints begin at 12 weeks of age and will increase at 24 weeks of gestation until delivery. Mothers often feel pain at night, this is caused by increasing gestational age and fetal development which causes the load in the uterus to increase, causing the uterus to continue to enlarge. This enlargement of the uterus will force the ligaments, muscles, nerve fibers, so that the load of pulling the spine forward will increase and cause physiological lordosis. This is what causes back pain in pregnant women (Irianti et al, 2013).

The results of Kurniasih's research (2019) showed that pregnant women from 14 respondents in the control group experienced mild pain as much as 1 respondent (7.1%), and moderate pain from 11 respondents (78.6%) to 7 respondents (50%), and pain 2 respondents (14.3%) became 6 respondents (42.9%).

The incidence of back pain during pregnancy is 48-90%. As many as 50% of pregnant women surveyed in the UK and Scandinavia reported suffering from back pain, in Australia as many as 70% (WHO, 2011). In Indonesia, it was found that 68% of pregnant women experience moderate intensity back pain, and 32% of pregnant women experience mild intensity back pain (Sinclair, 2010). In Indonesia, there are 373,000 pregnant women, 107,000 of whom experience back pain during childbirth (28.7%) (Maharani, Isabella, 2019).

Based on data from the Profile of the Ministry of Health of the Republic of Indonesia in 2019, the estimated number of pregnant women in Indonesia in the last year was 5,256,483 people and in the Lampung region in the last year there were 165,269 people (Ministry of Health of the Republic of Indonesia, 2019). And in the last 1 year at PMB Ari

Saptuti as many as 780 pregnant women visited, including 143 pregnant women in the third trimester.

In pregnant women, it can be treated with warm water foot soak therapy because this is a therapy that is useful for dilating blood vessels, improving blood circulation and triggering the nerves in the soles of the feet to work (Meikha, 2015) deeply (Alviani, 2019). The feet are soaked in warm water, this warm water targets the blood vessels. The working principle of warm water is by conduction where there is movement of warm water into the body (Dilianti et al, 2017) in (Alviani, 2019). Using warm water will increase blood flow and relieve pain by removing inflammatory causes such as bradykinin, histamine and prostaglandins which cause local pain. When the feet are soaked in warm water, the warm water will stimulate the receptor nerves to close the gates so that the transmission of pain to the spinal cord and to the brain is blocked. After warm water therapy is given, the body will send a signal to the hypothalamus via the spinal cord (Trianipurna, 2017) in (Alviani, 2019).

Warm water foot soak therapy is a non-pharmacological intervention that can be used by pregnant women. The working principle of this therapy is that the client is asked to sit on a chair and put his feet in a bucket or basin containing 1 L or more than 15 cm of warm water with a water temperature of 37-39°C as measured using a thermometer within 15 minutes. (Taghavi, et al. 2015).

Based on the results of a preliminary study conducted by Indriani et al, the application showed that after being given a warm water soak, there was a decrease in the scale of leg cramp pain. Mrs. Pain Scale N experienced a decrease from a pain scale of 6 to a pain scale of 1 and Mrs. N's pain scale. A also experienced a decrease from a pain scale of 7 to a pain scale of 1. (Indri Ani et al, 2019).

This study analyzed the effectiveness of giving warm water soaks to reduce back pain in pregnant women at PMB Ari Saptuti Banyumas, Pringsewu Regency, Central Lampung.

## RESEARCH METHODS

This research is a quantitative research using a pre-experimental design with a one group pretest posttest design. The population of all third trimester pregnant women. The sample size was calculated

based on the limited population proportion formula taking into account the confidence level of 95%, margin of error of 5%, resulting in a sample size of 30 people. To anticipate the possibility of samples dropping out or being disobedient, 10% was added so that the required sample size was 34 respondents in the intervention group. Data collection using quota sampling technique. Back pain is measured using the NRS (Numeric Rating Scale) with a pain level on a scale of 0-10. Pain measurements were carried out before and after the intervention. Soaking the feet in warm water is done in 2.5 L or more than 15 cm with a water temperature of 37-39°C as measured using a water thermometer within 15 minutes for 7 times.

Research data analysis used univariate analysis to describe and analyze the average level of pain before the intervention was given and after the intervention was given. Bivariate analysis used the t test with the Wilcoxon Signed-Rank Test. If the p value <  $\alpha$  (0.05) then  $H_a$  is accepted and  $H_o$  is rejected, which means "There is an effect of giving warm water foot soaks on back pain in pregnant women in the third trimester."

Ethical approval was obtained from the Tanjungkarang Ministry of Health Health Polytechnic Ethics Commission number No.030/KEPK-TJK/II/2021. The official letter for conducting the research was obtained from the Pringsewu District Health Service number 444/4670/D02/2021. Letter from UPTD Puskesmas Jatidatar Bandar Mataram Central Lampung 800/028/10.122.188/XI/2021. Consent to participate was obtained from respondents. Previously given an explanation of the purpose of the research, and confirmed willingness to participate. Proof of willingness by including the signature of the willing respondent.

#### Description of the age of pregnant women and the third trimester of pregnancy of mothers

Respondent Characteristics	N = 34	%
Pregnant Mother's Age		
18-20	2	5,90
21-35	27	79,40
36-48	5	14,70
Gestational Age		
28-30 weeks	16	47,05
31-35 weeks	16	47,05
36-39 weeks	2	5,90

Table 1 above shows the age of most pregnant women in the 21-35 year age group (27 people / 79.40%) with a gestational age in the range of 28-35 weeks.

Table 2

#### Description of the degree of back pain in pregnant women in the third trimester before and after warm water foot soak therapy

Derajat Nyeri	Sebelum Intervensi		Setelah Intervensi	
	Sum	%	Sum	%
0	0	0	27	79,4
1	0	0	2	5,9
2	0	0	5	14,7
3	0	0	0	0
4	12	35,3	0	0
5	8	23,5	0	0
6	14	41,2	0	0
7	0	0	0	0
8	0	0	0	0

Table 2 shows that of the 34 pregnant women in the third trimester who experienced back pain, before intervention, most were at a pain level of 4-6, most with a pain level of 6 (moderate pain). Meanwhile, after the intervention, the back pain scale decreased until the pain disappeared.

## RESEARCH RESULT

Table 1

Table 3

#### Distribution of back pain intensity in third trimester pregnant women before and after foot soak therapy with warm water

Intensitas Nyeri Punggung	Mean	SD	Minimal - Maksimal
Pengukuran sebelum diberi intervensi	5,06	0,886	4 - 6
Pengukuran nyeri setelah diberi intervensi	0,35	0,734	0 - 2

Table 3 shows that the mean back pain in third trimester pregnant women before being given

the warm water foot soak intervention with a temperature of 37°C was 5.06 and a standard

deviation of 0.886 and after being given the warm water foot soak intervention was 0.35 and a standard deviation of 0.738.

**Table 4**  
**The Effect of Warm Water Foot Soak Therapy on Back Pain In third trimester pregnant women using the Wilcoxon test**

Perbedaan Intensitas nyeri punggung	N	Mean	SD	P value
Pengukuran sebelum diberi intervensi	34	5,06	0,886	0,000
Pengukuran nyeri setelah diberi intervensi	34	0,35	0.734	0,000

Table 4 shows that the average level of pain before being given warm water foot soak therapy was 5.06 with a standard deviation of 0.886. Meanwhile, after being given warm water foot soak therapy, there was an average pain level of 0.35 with a standard deviation of 0.734. the results of statistical tests obtained a p value of 0.000, where the p value <  $\alpha$  (0.05). So it can be concluded that there is an effect of warm water foot soak therapy on the intensity of back pain in third trimester pregnant women.

## DISCUSSION

The results of this research are almost the same as those stated by Kreshnanda (2016) that back pain in Indonesia is more often found in pregnant women and in the 40 year age group. Ikhsania's opinion, Annisa Amalia (2020) also explains that during fetal development at 35 weeks of pregnancy, pregnant women often experience back pain because the baby's head is increasingly pointing downwards to prepare for birth. As a result, there is a feeling of pressure on the bladder, rectum, hips and pelvic bones.

The results of research conducted on 34 pregnant women in the third trimester showed that the average level of pain in pregnant women in the third trimester before being given warm water foot soak therapy intervention was 5.06 (moderate pain) with the lowest pain scale being 4 and the highest being 6 where the mode value was 6 and variant 0.784. This research is almost the same as what Hutagaol, lin Oktaviana et.al (2022) found in his research in Sausu Village, Sausu District, Parigi Moutong Regency from 14 respondents before being given warm water soak relaxation therapy for leg cramp pain in pregnant women. All 14 respondents (100) experienced moderate pain. (%). Suryanti, Yuli, et al (2022). also found almost the same thing in his research on 28 respondents experiencing back pain before applying a warm compress experienced by pregnant women with a score of 5.857 (moderate pain), standard deviation 0.5882. and the lowest degree of pain is 4.7 (moderate pain)

The results of research conducted on 34 pregnant women in the third trimester showed that the average level of pain in pregnant women in the third trimester after being given warm water foot soak therapy intervention was 0.35 (no pain) with the lowest pain scale being 0 and the highest being 2 where the mode value was 0 and variant 0.538. This research is almost the same as what Hutagaol, lin Oktaviana, found. et al (2022) in their research in Sausu Village, Sausu District, Parigi Moutong Regency, after being given the warm water soak relaxation technique, 13 respondents (92.9%) experienced mild cramping pain and 1 (7.1%) respondent experienced moderate pain.

The results of this study are also almost the same as research by Suryanti, Yuli, et al (2022) on 26 respondents who experienced severe back pain in pregnant women that was no longer 0 (0%) with the average score for back pain experienced by pregnant women being 4.513 (moderate pain), with a standard deviation of 0.6301. The lowest degree of pain is 3.3 (mild pain) and the highest degree of pain is 5.7 (moderate pain).

Back pain in pregnant women before intervention occurs due to changes in body posture in pregnant women, the shoulders are pulled back due to the protruding enlarged stomach, and to maintain body balance, the spine curves inwards excessively, causing back pain. This is in accordance with the theory put forward by Fairuz (2011), changes also occur in body posture to compensate for the enlarging uterus. Postural changes increase when accompanied by poor abdominal muscle tone. The lordosis position causes the mother's center of gravity to shift to the back of the leg. Pregnancy also causes increased mobility of the sacroiliac joints and sacroxygeal joints which contributes to changes in the mother's body posture and can cause lower back pain in the final trimester of pregnancy. According to Saragih KM (2021), body posture gradually changes as the fetus grows in the stomach and body weight also increases. This situation will cause the center of body weight to fall forward. If it lasts for a long time it

can cause pain. One of the pains experienced by pregnant women is leg cramps (Sawitry, Ulya Fh, 2020).

Cramps in pregnant women can occur due to lack of blood flow to the lower part of the body which is usually obstructed due to increased weight and pressure in the uterine area. Another cause is a lack of mineral intake in the body during pregnancy such as potassium, magnesium and calcium (Handayani 2019).

After carrying out warm water foot soak therapy on pregnant women, there is a decrease in the intensity scale of back pain due to the warm feeling that directly touches the skin of the feet which can reduce muscle tension so that people who do foot soak therapy with warm water will feel more relaxed, in this case it is appropriate. with Varney's (2006) theory, namely that back pain experienced by pregnant women in the third trimester can be treated with a warm compress (not too hot) on the back (examples are heating pads, warm baths, sitting under warm water). Soaking your feet in warm water is a faster and more efficient way for pregnant women to deal with pain problems, especially back pain in third trimester pregnant women.

Based on the results of research conducted on 34 pregnant women in the third trimester regarding the effect of warm water foot soak therapy on back pain using the Wilcoxon statistical test, a p value of 0.000 was obtained, where the p value <  $\alpha$  (0.05). So it can be concluded that there is an effect of warm water foot soak therapy on reducing back pain in third trimester pregnant women.

This research is almost the same as what Hutagaol, lin Oktaviana et.al (2022) found in their research in Sausu Village, Sausu District, Parigi Moutong Regency on 14 respondents, from the results of the Wilcoxon test for cramp pain in pregnant women before and after administering the warm water immersion relaxation technique, the p value was obtained. = 0.001, which means there is a difference in cramp pain in pregnant women before and after the intervention. The results of this study are also almost the same as research by Suryanti, Yuli, et al (2022), it appears that there is a difference in the average value between the degree of pain before and after treatment. The statistical test results obtained a p value < 0.05, so it can be concluded that there is an influence of warm compresses on the level of back pain in pregnant women in the third trimester.

Damarsanti, P. Anggraini.R, Setianingsih (2018) explains that the warm feeling that directly touches the skin of the feet, which contains many blood vessels and nerves, especially in the flexus

venous skin, from this series, the stimulation is transmitted to the posterior cornus and then continues to the spinal cord. From here it continues to lamina I, II, III of the radixdorsalis, then to the ventro basal thalamus and enters the brain stem, precisely in the raphe area at the bottom of the pons and medulla. This is where the soparific effect (wanting to sleep) occurs, so that people who do foot soak therapy with warm water will become feel more relaxed. Warm water therapy can also be used to treat female reproductive problems such as cramps during menstruation, pain in certain areas such as the abdomen or spine or perineal pain when entering labor (Ancheta, 2005) in (Indri Ani et al, 2019).

Terapi air hangat merupakan bagian dari penatalaksanaan nyeri secara nonfarmakologis. Merendam kaki dengan air hangat merupakan pemberian aplikasi panas pada tubuh untuk mengurangi gejala nyeri akut maupun kronis. Terapi ini efektif untuk mengurangi nyeri yang berhubungan dengan ketegangan otot walaupun dapat juga dipergunakan untuk mengatasi masalah hormonal dan kelancaran peredaran darah. Terapi air hangat didalam penatalaksanaan masalah nyeri bereaksi dengan cara menghambat reseptor nyeri dengan vasodilatasi pembuluh darah sekitar yang diterapi (Nurin K, 2019).

Terapi rendam kaki dengan air hangat merupakan intervensi yang aman, mudah yang dapat membantu mengurangi nyeri punggung yang dialami pada ibu hamil trimester III. Sangat disarankan pada ibu hamil yang mengalami nyeri punggung untuk melakukan terapi rendam kaki air hangat yang tidak menimbulkan efek negative bagi tubuh bila dibandingkan dengan mengonsumsi obat-obatan farmakologi

## CONCLUSION

The research conclusions show that there is an effect of providing warm water foot soak therapy to reduce low back pain in third trimester pregnant women

## SUGGESTION

Applying a warm water foot soak is an alternative non-pharmacological therapy method that is faster and more efficient for pregnant women in dealing with pain problems, especially back pain in third trimester pregnant women.

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## THE INFLUENCE OF HEALTH EDUCATION USING VIDEO EDUCATION MEDIA ON INCREASING ADOLESCENT WOMEN'S KNOWLEDGE ABOUT ANEMIA

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### ABSTRAK PENGARUH PENDIDIKAN KESEHATAN MENGGUNAKAN MEDIA VIDEO EDUCATION TERHADAP PENINGKATAN PENGETAHUAN REMAJA WANITA TENTANG ANEMIA

Pendahuluan: Data WHO (2015) menunjukkan bahwa 41,8% kematian ibu berhubungan dengan anemia pada kehamilan, dimana penyebab anemia adalah kekurangan zat besi sehingga menyebabkan perdarahan akut (Yankes Kementerian Kesehatan, 2022). Upaya pencegahan anemia pada remaja putri sangatlah penting, karena ketika perempuan sudah menderita anemia sejak remaja maka akan banyak resiko yang dihadapi pada saat hamil seperti aborsi, melahirkan bayi dengan berat badan lahir rendah, rahim tidak dapat berkontraksi. benar, pendarahan setelah melahirkan yang dapat mengakibatkan kematian (Alifah safira Amperatmako, 2022).

Tujuan penelitian ini Tujuan penelitian ini untuk mengetahui pengaruh pendidikan kesehatan menggunakan media edukasi video terhadap peningkatan pengetahuan remaja tentang anemia di SMPIT/SMAIT Al-Firdaus Kemiling.

Metode: dimana desain penelitian adalah one group pretest-posttest tanpa kontrol. Populasi dalam penelitian ini adalah seluruh remaja putri SMPIT/SMAIT Al-Firdaus tahun 2023 yang berjumlah 30 responden. Teknik pengambilan sampel dalam penelitian ini adalah total sampling yaitu seluruh populasi yang dijadikan sampel penelitian yaitu 30 responden. Variabel dalam penelitian ini adalah pengetahuan remaja putri tentang anemia. Alat ukur yang digunakan adalah data primer dengan menggunakan angket yang diberikan kepada siswi SMPIT dan SMAIT Al-Firdaus pretest dan posttest. Penelitian ini dilaksanakan pada bulan September sampai dengan Oktober 2023. Analisis data dilakukan dengan menggunakan uji colmogrof-smimof dan hasilnya data tidak berdistribusi normal, selanjutnya dilakukan uji Wilcoxon untuk membuktikan hipotesis penelitian

Hasil: Rata-rata skor pengetahuan remaja putri sebelum diberikan edukasi pencegahan anemia menggunakan media video adalah 66,57 dan setelah diberikan video pengetahuan meningkat menjadi rata-rata 85,63. Dari hasil pengolahan data Asymp Sig (2 tailed) lebih kecil dari 0,05 maka terdapat pengaruh video animasi yang diberikan pada remaja putri terhadap peningkatan pengetahuan tentang pencegahan anemia.

Kesimpulan: Kesimpulan penelitian ini adalah terdapat pengaruh pemberian video animasi pencegahan anemia terhadap pengetahuan remaja. Dengan adanya video, remaja terbantu untuk mendapatkan informasi yang lengkap dan akurat sehingga pengetahuan tentang anemia pada remaja semakin meningkat.

Saran : Diharapkan kepada petugas kesehatan dapat melakukan sosialisasi kepada remaja dengan cara mengunjungi sekolah-sekolah agar seluruh remaja dapat terpapar informasi tentang pencegahan anemia sehingga diharapkan terjadi perubahan perilaku remaja sehari-hari, sehingga dapat membantu mereka. kegiatan menjadi lebih kreatif dan inovatif.

Kata kunci pendidikan kesehatan, pengetahuan remaja, anemia

### ABSTRACT

Introduction: WHO data (2015) shows that 41.8% of maternal deaths are related to anemia in pregnancy, where the cause of anemia is iron deficiency, which causes acute bleeding (Yankes Ministry of Health, 2022). Efforts to prevent anemia in adolescent girls are very important, because when women have suffered from anemia since they were teenagers, they will face many risks during pregnancy such as abortion, giving birth to babies with low birth weight, the uterus not being able to contract properly, bleeding after delivery which can result in death (Alifah safira Amperatmako, 2022).

The purpose of this study The purpose of this study to determine the effect of health education using video educational media on increasing teenagers' knowledge about anemia at SMPIT/SMAIT Al-Firdaus Kemiling.

Method: where the research design is one group pretest-posttest without control. The population in this study were all young women at SMPIT/SMAIT Al-Firdaus in 2023 with a total of 30 respondents. The sampling technique in this research was total sampling of the entire population used as a research sample, namely 30

respondents. The variable in this study is the knowledge of young women about anemia. The measuring instrument used is primary data using a questionnaire given to female students at SMPIT and SMAIT Al-Firdaus pretest and posttest. This research was carried out from September to October 2023. Data analysis was carried out using the colmogrof-smimof test and the results were that the data was not normally distributed, then the Wilcoxon test was carried out to prove the research hypothesis

The results: The average knowledge score of young women before being given anemia prevention education using video media was 66.57 and after being given the video knowledge increased to an average of 85.63. From the data processing results, Asymp Sig (2 tailed) is smaller than 0.05, so there is an influence on the animated video given to young women on increasing knowledge about preventing anemia.

Conclusion: The conclusion of this research is that there is an effect of providing anemia prevention animation videos on teenagers' knowledge. With videos, teenagers are helped to get complete and accurate information so that knowledge about anemia in teenagers improves.

Suggestion: It is hoped that health workers can carry out outreach to teenagers by visiting schools so that all teenagers can be exposed to information about preventing anemia so that it is hoped that there will be changes in the daily behavior of teenagers, which will help their activities to be more creative and innovative.

Keywords health education, adolescent knowledge, anemia

## INTRODUCTION

Based on the 2015 inter-census population survey (SUPAS), the maternal mortality rate/MMR was 305 per 100,000 (City Health Service, 2023), live births and the main cause of maternal death was 20.3% postpartum hemorrhage (City Health Service, 2023). WHO data (2015) also shows that 41.8% of maternal deaths are related to anemia in pregnancy, where the cause of anemia is iron deficiency, which causes acute bleeding (Ministry of Health, 2022).

Anemia is a condition in which the levels of hemoglobin (Hb), hematocrit and red blood cell count decrease below normal values (Jihan Salsabila et al., n.d.). WHO states that individuals can be said to be suffering from anemia if Hb levels are below 12.0 and 13.0 g/dL in both women and men (Fadhilah et al., 2022). The cause of anemia is a lack of macronutrients (protein) and micronutrients, especially iron, which is estimated to be around 50-80% of anemia caused by iron deficiency in global research (Paramashanti, 2021).

Adolescent girls are prone to suffering from anemia because they lose a lot of blood during menstruation (Putri et al., 2021). According to (Novita Sari, 2022) the impact of short-term anemia on adolescent girls is that adolescents can experience symptoms of iron nutritional anemia, namely 5 L (weak, tired, lethargic, fatigued, lethargic), easily drowsy, short of breath, disturbed concentration and reduced appetite. . Meanwhile, the long-term impact is when women have suffered from anemia since they were teenagers, they will face many risks during pregnancy such as abortion, giving birth to babies with low birth weight, the uterus not being able to contract properly, bleeding after delivery which can result in death (Amperatmoko et al., 2022) Therefore,

efforts to prevent anemia in adolescent girls are very important.

In accordance with WHO recommendations in 2011, efforts to overcome anemia in adolescent girls are focused on promotion and prevention activities. To prevent anemia in adolescents by increasing consumption of iron-rich foods, supplementation with blood supplement tablets and increasing fortification of food with iron and folic acid (Muyassaroh et al., 2020). Based on the evaluation of the health and nutrition program of the Lampung Province Health Office in 2022, the coverage of young women who received blood supplement tablets has decreased since 2019, namely from 90.30% to 48.21%. Distribution based on districts or cities, there were 10 districts/cities that did not reach the target. In the field of health promotion, preventing anemia in adolescents is by using learning media as a form of educational activity about anemia. Media that can be used for health promotion include video media, leaflets, booklets, flip sheets. (Fachira Kasmarini & Ratih Kurniasari, 2022). Video is an audiovisual that is increasingly popular in society, one of the advantages of video as a learning tool is that the meaning is clearer so that it can be better understood by students. The counseling method using audiovisual media can provide real stimulation containing moving images and sound elements with a relatively short duration that is shown in video form (Fitriani Dwiana et al., 2019). Audiovisual media in the form of videos can be used to increase teenagers' interest in counseling activities, so it is hoped that after the counseling is carried out it will have a positive impact on teenagers (Sari et al., 2022).

Previous research shows that there are differences in knowledge and attitudes before and

after being given education using animated video media at SMAN 12 Depok City in 2021 (Hastoaji, 2021). Knowledge or cognitive is a very important domain for the formation of a person's actions (Anifah, 2020). Based on previous research, there are differences in the effectiveness of videos on the level of knowledge and attitudes about anemia in the pretest and post-test. (Anggrio, 2020)

Based on this phenomenon, researchers are interested in conducting research on the influence of health education using videos on young women's knowledge about anemia at the Al-Firdaus Kemiling Islamic boarding school.

## RESEARCH METHODS

The design used in this research was one group pretest-posttest without control. The sample was 30 female students of the Al-Firdaus Kemiling Islamic boarding school who were given pretest and posttest questionnaires to measure their knowledge. Data analysis was carried out using the Kolmogorov-smimov test and the results were that the data was not normally distributed, then the Wilcoxon test was carried out to prove the research hypothesis.

## RESEARCH RESULT

### Univariat

**Tabel 1**

**Knowledge of Young Women Before and After being given Anemia Prevention Education Using Animation Video Media**

Pengetahuan	N	Mean	SD
Before being given the video	30	66,57	4,8
After being given the video	30	85,63	3,2

From the results of the table above, it is known that the average knowledge score for young women before being given anemia prevention education using video media was 66.57 and after being given the video, knowledge increased to an average of 85.63.

### Bivariat

From the results of the table above, the Asymp Sig (2 tailed) is smaller than 0.05, so there is an influence on the animated videos given to young women on increasing knowledge about anemia prevention. Table of Effects of Anemia Prevention Education on Young Women's Knowledge of Using Animation Video Media

**Tabel 2**

**Table of Influence of Anemia Prevention Education on Knowledge of Young Women Using Animation Video Media**

Posttest-Pretest	
Z	0,373
Asymp Sig.(2 tailed)	0,000

## DISCUSSION

### Knowledge of adolescent girls about anemia

From the results of the univariate analysis, it is known that the average knowledge score for young women before being given anemia prevention education using video media was 66.57 and after being given the video, knowledge increased to an average of 85.63.

Anemia is a medical condition where the Hb level is less than normal and the normal Hb level in young women is >12gr% (Dr. Vladimir, 2021). Adolescent girls are particularly at risk of developing iron deficiency anemia. This is due to the large amount of nutrients lost during menstruation and also due to the minimal nutritional intake of iron to accelerate growth and development (Kasjono et al., 2021) so balanced nutrition is needed to determine the health quality of women's reproductive organs (Nurcahyani, 2020).

Young Women's knowledge about anemia will influence the incidence of anemia. Knowledge about anemia will influence the behavior of young women in preventing anemia (Permanasari, 2021). Efforts made to prevent anemia in adolescents are by providing anemia education to increase knowledge about anemia (Turnip & Arisman, 2022). One effective educational medium is using video. According to Nur Hawa, video is a tool that is known to be appropriate when used in health education. Providing education to increase knowledge through video is one of the preventive efforts to prevent anemia.

From the research results (Dewi, 2020) it is known that there is a significant difference between knowledge of anemia before and after counseling without video with a value of p.0.000. According to (Hidayah et al., 2022) video media is expected to be able to stimulate the senses of hearing and sight during the education delivery process. Likewise, from research results (ASMAWATI et al., 2021), it is known that counseling using videos has a significant influence on female students' knowledge and attitudes about anemia with knowledge results of p=0.000 (p<0.05).

According to researchers, health knowledge needs to continue to be improved through health education provided by health practitioners on a

regular and planned basis. Having good health education is very necessary to encourage increased health knowledge and behavior.

### **The influence of health education using video educational media on adolescent girls' knowledge about anemia**

From the results of the table above, the Asymp Sig (2 tailed) is smaller than 0.05, so there is an influence on the animated video given to young women on increasing knowledge about preventing anemia.

Anemia in adolescent girls is a problem that is often encountered, especially those who are already menstruating. The impact of anemia on teenagers can reduce academic achievement and make them susceptible to disease. Efforts to increase knowledge of anemia among young women have been carried out through health education. Health education is an effort to develop and increase knowledge, change thought patterns and take action to achieve a healthy life for adolescents (Sianipar et al., 2023).

Health education that is widely used today is still conventional, such as leaflets, booklets, flip sheets, as time goes by, generation 4.0 feels more effective using an audiovisual approach in the form of video (Emergency et al., 2021). By providing health education, namely by using animated videos, the message will be more interesting, more accepted and understood by teenagers (Hutasoit et al., 2022)

Based on the results of an evaluation conducted by (Azzahra et al., 2022), prior knowledge of anemia in the video control group had a low score due to the lack of knowledge of female students because there was no special topic about anemia in the school curriculum while the video treatment received a high score due to previous experience. . With a stimulus in the form of education, it is hoped that there will be a positive change in intentions among young women and generate behavior to prevent anemia (Balgis, 2022). Nutrition education using video media is effective in increasing teenagers' knowledge about anemia in middle and high schools in Bantul district (p.value 0.0000) (Dwiningrum & Fauzia, 2022). In line with research (Noverina et al., 2020), the results showed that there was an influence of explanation videos in preventing anemia in adolescent girls on knowledge and consumption of blood supplement tablets at SMPN 65 North Jakarta. This research is strengthened by research results (Romanti, Yulia; Wahyuni, Elly; Efriani, 2022) where counseling using video media is more effective in increasing teenagers' knowledge about anemia compared to leaflet media.

According to researchers, video media has proven to be significant in increasing the knowledge of young women. The use of video is preferred not only because it is attractive in terms of appearance but also has a more attractive sound so that respondents find it easier to receive and understand the information provided and feel happy during the education process. With the development of science and technology for health workers, it is important to see opportunities from health education videos as an appropriate intervention in increasing public knowledge about health, especially anemic problems.

### **CONCLUSION**

The conclusion of this research is that there is an effect of providing anemia prevention animation videos on teenagers' knowledge. With videos, teenagers are helped to get complete and accurate information so that knowledge about anemia in teenagers improves.

### **SUGGESTION**

It is hoped that health workers can carry out outreach to teenagers by visiting schools so that all teenagers can be exposed to information about preventing anemia so that it is hoped that there will be changes in the daily behavior of teenagers, which will help their activities to be more creative and innovative.

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## THE INFLUENCE OF PRENATAL EXERCISES ON THE DURATION OF SECOND STAGE OF LABOR

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### ABSTRAK PENGARUH LATIHAN PRENATAL TERHADAP LAMA PERSALINAN kala II

Komplikasi yang berlangsung pada persalinan kala II antara lain adalah partus lama. Senam hamil merupakan suatu metode terapi latihan gerak yang diberikan pada ibu hamil untuk mempersiapkan dirinya, baik persiapan fisik maupun mental yang bertujuan untuk mencapai persalinan yang cepat, aman dan spontan. Senam hamil dapat melatih dan mempertahankan kekuatan otot dinding perut dan dasar panggul pada saat persalinan berlangsung. Tujuan penelitian diketahui pengaruh senam hamil terhadap lama kala II persalinan di Puskesmas Tiuh Tohou Kabupaten Tulang Bawang Tahun 2023.

Desain yang digunakan dalam penelitian ini adalah kuantitatif dengan pendekatan *Cross sectional*. Populasi dalam penelitian ini adalah seluruh ibu bersalin di wilayah kerja Puskesmas Tiuh Tohou tahun 2023 berdasarkan jumlah persalinan periode penelitian sebanyak 31 persalinan. Sampel menggunakan total sampling dengan teknik pengambilan sampel secara *accidental sampling*. Analisa data yang digunakan menggunakan uji *chi square*.

Analisis didapatkan distribusi frekuensi persalinan dengan kala II memanjang sebanyak 5 orang (16,1%), dan jumlah persalinan dengan kala II normal sebanyak 26 orang (83,9%). Distribusi frekuensi ibu hamil yang melakukan senam hamil dengan frekuensi tidak teratur sebanyak 11 orang (35,5%), dan jumlah ibu hamil yang melakukan senam hamil dengan frekuensi teratur sebanyak 20 orang (64,5%). Ada hubungan yang bermakna antara senam hamil dengan lama kala II persalinan di wilayah kerja Puskesmas Tiuh Tohou Kabupaten Tulang Bawang tahun 2023 dengan nilai *P-value* = 0,042. Saran penelitian ini yakni Puskesmas agar lebih meningkatkan edukasi akan pentingnya melakukan senam hamil secara teratur di Posyandu ataupun kelas hamil untuk mempersiapkan dan mencegah komplikasi yang dapat terjadi pada saat proses persalinan.

Kata kunci : Senam hamil, kala II

### ABSTRACT

Complications during the second stage of labor included prolonged labor. Prenatal exercises were a therapeutic method of movement exercises provided to pregnant women to prepare themselves physically and mentally, aiming to achieve a fast, safe, and spontaneous delivery. Prenatal exercises could train and maintain the strength of the abdominal wall muscles and pelvic floor during labor. The research aimed to determine the effect of prenatal exercises on the duration of the second stage of labor at Tiuh Tohou Public Health Center, Tulang Bawang Regency, in the year 2023.

The design used in this study was quantitative with a Cross-sectional approach. The population in this study consisted of all delivering mothers in the Tiuh Tohou Public Health Center's working area in the year 2023, based on the total number of deliveries during the study period, which was 31 deliveries. The sample was selected using total sampling with an accidental sampling technique. The data analysis involved using the chi-square test.

Analysis revealed a frequency distribution of prolonged second stage of labor in 5 individuals (16.1%), and the number of deliveries with a normal second stage of labor was 26 individuals (83.9%). The frequency distribution of pregnant women who performed irregular prenatal exercises was 11 individuals (35.5%), while the number of pregnant women who performed regular prenatal exercises was 20 individuals (64.5%). There was a significant relationship between prenatal exercises and the duration of the second stage of labor in the Tiuh Tohou Public Health Center's working area in Tulang Bawang Regency in the year 2023, with a *P-value* of 0.042. Recommendations: The health center was advised to enhance education about the importance of regular prenatal exercises in Integrated Health Services Post or prenatal classes to prepare and prevent complications that might occur during the labor process.

Keywords : Prenatal Exercises, Second Stage of Labor

## INTRODUCTION

Pregnancy and childbirth are natural, normal, and healthy processes. Antenatal care aims to enhance and maintain the physical, mental, and social health of both the mother and the baby. It involves early identification of potential abnormalities or complications that might arise during pregnancy and preparing for a full-term delivery, ensuring a safe birth experience for both the mother and the baby with minimal trauma (Yulizawati, 2017).

According to the WHO, the current global incidence of prolonged labor is estimated to occur in 17% of total deliveries, with nearly 70% resulting in medical interventions such as cesarean sections. About 15% of pregnancies/deliveries experience complications. Every day, 830 mothers worldwide die due to pregnancy and childbirth-related diseases/complications, and approximately 7,000 newborns die daily. Around 75% of maternal deaths due to delivery complications are caused by bleeding, infection, preeclampsia/eclampsia, unsafe abortion, and prolonged or obstructed labor.

The current incidence of prolonged labor in Lampung is estimated to be around 10% of total deliveries. Lampung province is one of the provinces with a high infant mortality rate, even though looking at the trend of infant mortality rates in Lampung, there has been a decrease from 30/1000 live births in the 2012 National Health Survey (SDKI) to 24/1000 live births in the 2017 SDKI. The highest causes of death include neonatal asphyxia resulting from complications during the second stage of labor, namely prolonged labor. Similarly, the neonatal mortality rate in Lampung, although it has decreased from 30/1000 live births in the 2012 SDKI to 15/1000 live births based on the 2017 SDKI, has not yet reached the national target of 12/1000 live births. Lampung province still needs significant efforts to achieve the expected targets under the Sustainable Development Goals (SDGs).

The causes of prolonged labor are multifaceted and depend on factors such as proper prenatal care, adequate delivery assistance, and appropriate management. Factors contributing to prolonged labor include abnormalities in contractions, such as inefficient contractions (uterine inertia), irregular contractions, lack of coordination and synchronization between contraction phases (incoordinate contractions), and contractions that are too strong and frequent, leading to inadequate uterine relaxation (tetanic contractions). These factors can result in labor dystocia, which, if not promptly addressed, can lead to fetal distress and rupture of the maternal uterus (Winkjosastro, 2014).

Prenatal exercise, commonly known as prenatal fitness, is a therapeutic method of physical activity provided to pregnant women to prepare themselves both physically and mentally for childbirth. The primary objective of prenatal exercise is to achieve a fast, safe, and spontaneous delivery (Juita, 2017). The purpose of prenatal exercise is to prepare and train the muscles so that they can function optimally during a normal delivery. Through prenatal exercise, a state of readiness is attained by strengthening the abdominal muscles, pelvic floor muscles, and supportive tissues, enabling them to function effectively during the process of childbirth (Manuaba, 2012).

Furthermore, the findings of a study conducted by Juita (2017) on the impact of prenatal exercise on the duration of labor during both the first and second stages, in BPM Dince Safrina Pekanbaru, also indicate the influence of prenatal exercise on the duration of both stages. The study reveals that pregnant women who engage in prenatal exercise can accelerate the second stage of labor by up to 90%.

The incidence of prolonged labor in Tulang Bawang Regency in the year 2022 was 14% (Tulang Bawang District Health Office, 2022). Tiuh Tohou Public Health Center is one of the health centers in the sub-district of Tulang Bawang that provides maternal and child health services. Several independent midwife practices and integrated health posts (posyandu) in the working area of Tiuh Tohou Public Health Center also offer prenatal exercise classes to aid in the smooth process of childbirth.

Based on the compilation of childbirth data in 2022, there were 16% of cases referred for childbirth, with the highest referral cases being related to prolonged labor. The pre-survey conducted by the researcher also revealed that many pregnant women in the working area of Tiuh Tohou Public Health Center irregularly attended prenatal exercise classes, which were conducted during maternal classes at integrated health posts or organized by independent midwife practices within the working area of Tiuh Tohou Public Health Center. Given the information provided in the background above, the researcher is interested in conducting a study on the influence of prenatal exercise on the duration of the second stage of labor in the working area of Tiuh Tohou Public Health Center, Tulang Bawang Regency, in the year 2023.

## RESEARCH METHODS

The type of research utilized in this study is quantitative research. Quantitative research involves

variables that are calculated and measured in numerical form (Hastono, 2018).

The research took place during the months of May to June 2023. This study employed an analytic survey method with a cross-sectional approach. The cross-sectional survey was a research method used to study the correlation dynamics between risk factors and effects by means of approaching, observing, or collecting data all at one point in time. Each research subject was observed only once, and measurements are taken of the subject's characteristics or variables at the time of examination (Notoadmodjo, 2012).

## RESEARCH RESULT

### Univariate Analysis

**Table 1**  
**Frequency Distribution of Respondents' Characteristics in the Working Area of Tiuh Tohou Public Health Center, Tulang Bawang Regency, Year 2023**

Distribution	Frequency	Percentage
Age		
At risk	12	38,8
Not at risk	19	61,2
Parity		
Primipara	7	22,6
Multipara	24	77,4
Occupation		
Working	17	45,2
Not working	14	54,8

The data presented in Table 1 reveals key characteristics of the respondents. Notably, the majority of respondents, constituting 61.2%, fall into the "Not at Risk" category, indicating a positive trend in health. In terms of parity, a significant portion of the respondents, accounting for 77.4%, are categorized as "Multipara," indicating that they have experienced multiple pregnancies. Furthermore, in the context of occupation, a substantial proportion of respondents, making up 45.2%, are employed. These insights provide valuable information about the demographics of the study participants and their potential influence on the research findings.

**Table 2**  
**Frequency Distribution of the Duration of Second Stage of Labor in the Working Area of Tiuh Tohou Public Health Center, Tulang Bawang Regency, in the year 2023**

The second stage of labor	Frequency	Percentage
Prolonged	5	16,1
Normal	26	83,9

Based on the table 2 above, it can be observed that the number of deliveries with prolonged second stage of labor in the working area of Puskesmas Tiuh Tohou in 2023 is 5 individuals (16.1%), while the number of deliveries with normal second stage of labor in the same area is 26 individuals (83.9%).

**Table 3**  
**Distribution of Frequency of Prenatal Exercises at Tiuh Tohou Public Health Center, Tulang Bawang Regency, in the Year 2023**

Prenatal Exercises	Frequency	Percentage
Irregular	11	35,5
Regular	20	64,5

Based on the table 3 above, it can be observed that the number of pregnant women who engaged in irregular prenatal exercises in the Tiuh Tohou Public Health Center area in 2023 was 11 individuals (35.5%), while the number of pregnant women who engaged in regular prenatal exercises was 20 individuals (64.5%).

### Bivariate Analysis

Based on Table 4, the results of the analysis of the relationship between prenatal exercise and the duration of the second stage of labor in the working area of Tiuh Tohou Public Health Center, Tulang Bawang Regency, in the year 2023 indicate that out of the 11 pregnant women who engaged in irregular prenatal exercise, 4 individuals (36.4%) experienced prolonged second stage of labor during childbirth, while 7 individuals (63.6%) had a normal second stage of labor. On the other hand, out of the 20 pregnant women who regularly practiced prenatal exercise, 1 individual (5.0%) experienced prolonged second stage of labor, and 19 individuals (95.0%) had a normal second stage of labor.

Table. 4

Relationship Between Prenatal Exercise and the Duration of Second Stage of Labor at Tiuh Tohou Public Health Center, Tulang Bawang Regency, 2023

Prenatal Exercises	Labor stage II				Total		P-Value	OR (95% CI)
	Prolonged		Normal					
	n	%	n	%	N	%		
Irregular	4	36,4	7	63,6	11	35,5		10,8
Regular	1	5,0	19	95,0	20	64,5		(1,0-114,5)

## DISCUSSION

### Univariate Analysis

#### Duration of the Second Stage of Labor

Based on the analysis results in this study, it was found that the number of childbirths with prolonged second stage of labor in the working area of Tiuh Tohou Public Health Center in the year 2023 was 5 individuals (16.1%), and the number of childbirths with normal second stage of labor was 26 individuals (83.9%).

These findings are consistent with the study conducted by Tandiono (2017) regarding the relationship between prenatal exercise and the duration of the first and second stage of labor at Sakina Idaman Maternity Hospital in Yogyakarta. The study showed that out of 68 respondents, 38 mothers (55.9%) experienced a normal second stage of labor, while 30 mothers (44.1%) had a prolonged second stage of labor.

According to the researcher, a prolonged second stage of labor is characterized by clinical signs and symptoms of complete cervical dilation, where the mother wants to push but there is no progress in the descent of the baby's head.

### Prenatal Exercise

Based on the analysis results in this study, it was found that the number of pregnant women who engaged in irregular prenatal exercise in the working area of Tiuh Tohou Public Health Center in the year 2023 was 11 individuals (35.5%), and the number of pregnant women who engaged in regular prenatal exercise was 20 individuals (64.5%).

According to the researcher, through prenatal exercise, a prime condition is achieved by training and maintaining the strength of abdominal muscles, pelvic floor muscles, and supportive tissues to function during the course of labor.

### Bivariate Analysis

#### Relationship between Prenatal Exercise and Duration of Second Stage Labor

The analysis results regarding the relationship between prenatal exercise and the duration of second stage labor in the working area of

Tiuh Tohou Public Health Center, Tulang Bawang Regency, in the year 2023 revealed that among the group of 11 pregnant women who engaged in irregular prenatal exercise, 4 individuals (36.4%) experienced prolonged second stage labor during delivery, while 7 individuals (63.6%) had a normal second stage labor. On the other hand, out of the 20 pregnant women who engaged in regular prenatal exercise, 1 individual (5.0%) experienced prolonged second stage labor and 19 individuals (95.0%) had a normal second stage labor.

The statistical test yielded a P-value of 0.042 ( $P < 0.05$ ), indicating a statistically significant relationship between prenatal exercise and the duration of second stage labor in the working area of Tiuh Tohou Public Health Center, Tulang Bawang Regency in the year 2023. The analysis further produced an odds ratio (OR) value of 10.8 (95% CI: 1.0-114.5), implying that pregnant women who did not engage in regular prenatal exercise were 10.8 times more likely to experience prolonged second stage labor during delivery compared to pregnant women who practiced regular prenatal exercise.

These findings are supported by the research conducted by Juita (2017), which demonstrated an influence of prenatal exercise on the duration of both first and second stage labor in the Independent Midwife Practices Dince Safrina Pekanbaru. The statistical results showed a p-value of 0.005 for the first stage of labor and a p-value of 0.002 for the second stage of labor.

According to the researcher, a significant relationship exists between prenatal exercise and the duration of second stage labor in this study. This can be attributed to the fact that prenatal exercise can train muscles, enhance breathing, and increase the elasticity of the birth canal, potentially resulting in a faster normal delivery process. Observing the respondents, it was noted that some regularly practicing prenatal exercise had a prolonged second stage of labor, while others who did not regularly engage in prenatal exercise had a normal or faster second stage of labor. Moreover, the study revealed that 5% of pregnant women experienced prolonged second stage labor even though they engaged in

regular prenatal exercise. The researcher assumes that factors other than prenatal exercise, such as the mother's pushing strength and fetal factors like a short umbilical cord, might also influence the duration of the second stage of labor.

## **CONCLUSION**

Based on the research findings and discussions presented, the conclusions drawn from this study are as follows: There is a significant relationship between prenatal exercises and the duration of the second-stage labor in the working area of Tiuh Tohou Public Health Center, Tulang Bawang Regency, in 2023, with a P-value of 0.042.

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## THE RELATIONSHIP OF COMPLIANCE WITH ASPILET DRINKING IN PREGNANT WOMEN, THE RISK OF PREECLAMPSIA AND THE INCIDENT OF ECLAMPSIA

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### ABSTRAK HUBUNGAN KEPATUHAN MINUM ASPILET PADA IBU HAMIL RESIKO PREEKLAMPSIA TERHADAP KEJADIAN EKLAMPSIA

Latar Belakang Preeklamsia merupakan salah satu kelainan hipertensi pada kehamilan yang meningkatkan morbiditas dan mortalitas ibu hamil secara global. Preeklamsia memiliki definisi dan kriteria diagnostik yang beragam dalam upaya menegakkan diagnosis yang umumnya memiliki kesamaan antara satu dengan yang lain. Perawatan kehamilan merupakan salah satu faktor yang sangat perlu diperhatikan untuk mencegah komplikasi dan kematian saat melahirkan, serta menjaga pertumbuhan dan kesehatan janin. Aspirin dosis rendah sebagai upaya preventif pada ibu yang berisiko tinggi mengalami preeklamsia dengan hasil penelitian bahwa pemberian Aspirin dapat menjadi upaya preventif terhadap kejadian preeklamsia. Tujuan Penelitian ini bertujuan untuk mengetahui hubungan antara kepatuhan minum aspirin pada ibu hamil dan risiko preeklamsia dengan kejadian eklampsia. Metode Penelitian ini memiliki 85 responden dengan menggunakan teknik pengambilan sampel yaitu purposive sampling. Desain penelitian ini menggunakan jenis korelasi dengan pendekatan cross sectional. Analisis bivariat pada penelitian ini menggunakan Chi-Square. Hasil penelitian ini sebagian besar ibu hamil patuh minum aspirin 94,1%, sebagian besar tidak terjadi eklampsia sebesar 98,8% dan terdapat hubungan antara kepatuhan ibu hamil terhadap risiko preeklamsia minum aspirin dengan kejadian preeklamsia. kejadian eklampsia di wilayah kerja Puskesmas Ajung tahun 2022 dengan p value -value 0,000 ( $p < 0,05$ ). Saran Penelitian ini diharapkan dapat dijadikan masukan dan tambahan informasi data berbasis teori dalam ilmu penanganan ibu hamil berisiko preeklamsia.

Kata Kunci: kepatuhan, kejadian eklampsia, preeklamsia.

### ABSTRACT

Background\_Preeclampsia is one of the hypertensive disorders in pregnancy that increases the morbidity and mortality of pregnant women globally. Preeclampsia has various definitions and diagnostic criteria in an effort to establish a diagnosis which generally have similarities between one another. Pregnancy care is one of the factors that really need to be considered to prevent complications and death during childbirth, as well as to maintain the growth and health of the fetus. Low-dose aspirin as a preventive effort for mothers who are at high risk of developing preeclampsia with the results of research that giving Aspirin can be a preventive effort against the incidence of preeclampsia. purpose oThis study aims to identify the relationship between adherence to aspirin for pregnant women and the risk of preeclampsia with the incidence of eclampsia. method This study has 85 respondents using a sampling technique that is purposive sampling. The design of this study uses a type of correlation with a cross sectional approach. Bivariate analysis in this study used Chi-Square. The results of this study were that most pregnant women were obedient to taking aspirin 94.1%, most of them did not occur 98.8% of eclampsia and there was a relationship between adherence of pregnant women to the risk of pre-eclampsia taking aspirin with the incidence of eclampsia in the working area of Ajung Public Health Center in 2022 with a p value -value 0.000 ( $p < 0.05$ ). . Conclusion This research is expected to be used as input and additional theory-based data information in the science of handling pregnant women at risk of preeclampsia.

Keyword: compliance, incidence of eclampsia, preeclampsia.

### INTRODUCTION

Preeclampsia is a hypertensive disorder in pregnancy that increases the morbidity and mortality of pregnant women globally. Preeclampsia has

various definitions and diagnostic criteria in efforts to establish a diagnosis which generally have similarities between one another. The International Society For The Study of Hypertension in Pregnancy



(ISSHP) in its publication defines preeclampsia as a condition where de novo hypertension is found at a gestational age of more than 20 weeks, in this case, hypertension is a condition where the systolic blood pressure is  $\geq 140$  mmHg and diastolic pressure  $\geq 90$  mmHg, and can be accompanied by proteinuria, organ dysfunction in pregnant women, such as acute renal failure, impaired liver function, neurological symptoms, hemolysis or thrombocytopenia, and impaired fetal growth. Proteinuria is not necessary for the diagnosis of preeclampsia, but proteinuria can be found in approximately 75% of cases. Most risk factors for preeclampsia have a close relationship with risk factors for heart disease, such as age, previous history of hypertension, diabetes, and obesity (Lumbanraja, 2018). Most risk factors for preeclampsia have a close relationship with risk factors for heart disease, such as age, previous history of hypertension, diabetes, and obesity (Lumbanraja, 2018).

Risk factors that are often found in preeclampsia are a history of preeclampsia, chronic hypertension, diabetes mellitus discovered before pregnancy, antiphospholipid antibodies syndrome (APLs), and obesity. Other risk factors found in preeclampsia are the age of the pregnant woman  $> 35$  years, nullipara, history of chronic kidney disease, and use of technology to assist pregnancy (assisted reproductive technology). Risk factors that are rarely found in preeclampsia are a family history of preeclampsia, and mothers carrying fetuses with trisomy abnormalities. (Rana et al., 2019).

The World Health Organization (WHO) reports that preeclampsia is directly responsible for 70,000 maternal deaths and 500,000 infant deaths every year worldwide (English et al., 2015). Epidemiological data shows that preeclampsia occurs in 10% of pregnant women worldwide. These conditions can include preeclampsia, eclampsia, gestational hypertension, and chronic hypertension. is the most common condition, with an incidence of 2–8% of all pregnancies in the world. The incidence of preeclampsia was found to be higher in nulliparous women (3–7%) than multiparous women (1–3%) (American College of Obstetricians and Gynecologists, 2020). The prevalence of preeclampsia in developing countries ranges from 1.8–16.7% (Osungbade, 2016). The maternal mortality rate in Indonesia in 2020 reached 4,627 people, the causes of maternal death include bleeding (28.29%), hypertension (23%) and circulatory system disorders (4.94%) (Indonesian Health Profile, 2020). Preeclampsia is one of the three highest causes of maternal death in East Java

Province. In 2020, the MMR in East Java was 98.39 / 100,000 KH

(East Java Health Profile, 2020). Meanwhile in Jember district the number of MMR was 174/100,000 KH with 61 deaths (Jember Health Profile, 2020).

A study in several hospitals in Jakarta showed that pregnant women with low and medium education were 1.8 times more at risk of developing preeclampsia than pregnant women with higher education (Indriani, 2015). Apart from that, maternal age is also a risk factor for preeclampsia. Women who become pregnant when they are teenagers ( $< 20$  years) and  $> 30$  years of age are more at risk of developing preeclampsia than women who become pregnant when they are between the ages of 20-30 years (Kumari et al., 2016:57). Another risk factor for preeclampsia is gemelli (twin pregnancy). Mothers with gemelli are 10.3 times more at risk of developing preeclampsia compared to women with single pregnancies (Shen et al., 2017: 7).

A pregnant woman's compliance in having her pregnancy checked is very necessary so that any complaints can be handled as early as possible and important information for pregnant women can be conveyed so that the maternal mortality rate can be reduced to a minimum. Counseling provided by health workers can help mothers monitor their development and health during pregnancy. Information provided by health workers to mothers who are at risk of preeclampsia/eclampsia can take preventive measures by carrying out routine check-ups, avoiding consuming foods that can cause hypertension during pregnancy. The Indonesian Obstetrics and Gynecology Association (POGI) recommends that the first choice of antihypertensives for preeclampsia is short-acting oral nifedipine, hydralazine and parenteral labetalol and other alternative antihypertensives are nitroglycerin, methyldopa and labetalol (POGI, 2016). The choice of drugs used must be safe, effective and rational to produce the desired effect. Drug therapy during pregnancy requires special attention because of the threat of teratogenic effects of drugs and physiological changes in the mother in response to pregnancy. Drugs can penetrate the placental barrier and enter the fetal circulation (Schellack, 2016). The choice of drugs during pregnancy must consider the ratio of benefits and risks for the mother and fetus to produce safe and rational therapy. Therefore, based on a preliminary study carried out in April 2022 at the Ajung Community Health Center, it shows that the number of cases of eclampsia in pregnant women between January - April 2022 was 53 cases. With this

background, researchers are interested in examining whether compliance with taking aspirin in pregnant women at risk of pre-eclampsia has an effect on the incidence of eclampsia in the Ajung Community Health Center area.

## RESEARCH METHODS

Based on the method used, this research uses a cross-sectional approach. The population in this study were 108 pregnant women whose gestational age was more than 20 weeks in the Ajung Community Health Center area (based on EPPGBM data, March 2022)

It is planned that this research will be carried out in the working area of the Ajung Community Health Center, Jember Regency. Data collection for this research was carried out on August 15 2022 to September 15 2022. In this study the instrument used was a questionnaire. Independent Variable Instrument

respondent compliance in taking aspirin. The scale on the instrument uses a nominal scale which consists of two answer options, namely yes and no.

The Dependent Variable is a questionnaire containing about eclampsia. This instrument contains the level of eclamptic convulsions. Scoring measurements for categorization were adapted from Azwar, (2021) with a rating scale technique in the form of a Guttman scale, namely for the answer Yes to questions number 1-4, it is given a weight of one point, while the answer to Yes to questions number 5-10 is given a weight of two points, while for all answers not given a point weight of zero, with the data processing using 1). Editing, 2). Coding, 3). Processing/Entry, 4). Cleaning, 5). Tabulating.

## RESEARCH RESULT

Based on table 1, it can be seen that most of the compliance of pregnant women with the risk of pre-eclampsia in taking Aspilet medication was 80 respondents (94.1%) and 5 respondents (5.9%) were non-compliant.

**Tabel 1**  
**Pregnant women's compliance with the risk of pre-eclampsia in taking Aspilet medication**

Compliance of pregnant women	Total	Percentage
Obedient	80	94,1%
Not obey	5	5,9%

**Tabel 2**  
**Identify the incidence of eclampsia**

Ekalmision event	Total	Percentage
Eclampsia occurred	1	1,2%
No eclampsia occurred	84	98,8%

Based on table 2, it can be seen that the majority of eclampsia did not occur, namely 84 respondents (98.8%) and eclampsia occurred in 1 respondent (1.2%).

## The relationship between the compliance of pregnant women with the risk of pre-eclampsia in taking Aspilet medication and the incidence of eclampsia

Based on table 3, it can be seen that the majority of respondents who were pregnant women at risk of pre-eclampsia adhered to taking Aspilet medication and 80 respondents did not experience eclampsia.

**Table 3**  
**Cross-tabulation of pregnant women's compliance with the risk of pre-eclampsia taking aspirin medication with the incidence of eclampsia**

Obedience	Ekalmision event		Total
	Happen	Not occur	
Obedient	0	80	80
Not obey	1	4	5

**Table 4**  
**Relationship between compliance of pregnant women with the risk of pre-eclampsia in taking Aspilet medication with the incidence of eclampsia**

The relationship between the compliance of pregnant women with the risk of pre-eclampsia in taking Aspilet medication and the incidence of eclampsia	Value	df	Signifikasi
Pearson Chi-Square	16,190	1	0,000



Based on table 4, it can be seen that the calculated Chi-Square value is 16.190 with df being 1 (Chi-Square table 3.841). Chi-Square count > Chi-Square table (16.190>3.841). And the Chi-Square significance result is  $0.000 < \alpha$  ( $\alpha=0.05$ ). So it can be concluded that there is a relationship between pregnant women's compliance with the risk of pre-eclampsia taking aspirin medication and the incidence of eclampsia in the Ajung Community Health Center working area.

## **DISCUSSION**

Based on known data, most of the compliance of pregnant women with the risk of pre-eclampsia in taking Aspilet medication was 80 respondents (94.1%) and 5 respondents (5.9%) were non-compliant. According to researchers' assumptions, a person's compliance in undergoing treatment occurs because the patient knows the risk of disease complications when they do not regularly take medication. This happens because patients have received good education from health workers and pregnant women regularly carry out antenatal care checks. So that midwives can provide regular evaluation and education so that patients continue to regularly take Aspilet medication during pregnancy with indications according to the education provided by the midwife. This is proven by the fact that the majority of patients are aged 21-25 years, which is the ripe age to receive education about health and will trust the education provided by health workers. The older the patient, the easier it will be to accept the information provided by health workers.

In line with research conducted by Sundari (2019), 15 pregnant patients at risk of preeclampsia routinely took aspirin out of a total of 17 pregnant patients at risk of preeclampsia. Research conducted by Nanindah (2019) showed that pregnant women at risk of preeclampsia had good compliance in taking nifedipine at 67.8%. Utami's research (2018) showed that pregnant women with a high risk of preeclampsia had ANC control compliance of 80.4%.

Compliance with taking medication is one of the factors that influences the outcome of seizure sufferers, a disease that requires long-term therapy during pregnancy. Poor medication adherence is a major problem that causes high cases of therapy failure, recurrent seizures, increased rates and time of use of health care facilities and increased medical costs. The mortality rate for patients who do not adhere to taking medication is 3 times higher than for patients who comply. Medication non-compliance can be intentional or unintentional. Several factors influence medication adherence, such as side effects, number of treatment regimens, frequent daily

doses, lack of drug efficacy, public stigma and cost. Non-compliance with taking medication can include not adding medication when the medication runs out, stopping medication yourself, forgetting to take medication and not taking medication according to schedule (Permana & Hardi, 2019).

Motivation of health workers is another factor that can influence compliance. Their motivation is especially useful when the patient realizes that the new healthy behavior is important. Likewise, they can influence patient behavior by conveying their enthusiasm for certain actions from the patient, and continuously providing positive rewards for patients who have been able to orientate themselves with the treatment program (Amperaningsih, 2016). Knowledge is the result of knowing, and occurs after sensing a particular object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Most of it is obtained through the eyes and ears (Notoatmodjo, 2015). Knowledge is obtained from the learning process which can form certain beliefs so that a person behaves based on his beliefs and knowledge is related to obedience because knowledge is a very important domain for the formation of behavior (Kartikasari, 2016).

## **Identification of eclampsia events**

Based on the data, it can be seen that the majority of eclampsia did not occur, namely 84 respondents (98.8%) and eclampsia occurred in 1 respondent (1.2%). According to researchers' assumptions, pregnant women with a previous risk of eclampsia will experience signs during the pregnancy phase such as high blood pressure, high urine protein and swelling in the extremities. If the patient experiences the above complaints, the patient will receive medication to prevent eclampsia during the final phase of pregnancy. When a pregnant woman experiences an increase in blood pressure, the pregnant woman will experience complaints such as dizziness and fatigue which will make the pregnant woman have an examination. Pregnant women will receive medication and education from midwives to ensure that patients receive regular evaluations during their pregnancy. The patient will be seen taking care of the health of the mother and the unborn child

This is proven by the age of most patients being 21-25 years, which is a low risk of preeclampsia. Age is the most important benchmark in human reproduction. As age progresses, there is also an increase or increase in body function and this has an impact on health status. The theory states that teenagers or the end of the reproductive age period,

namely 35 years and above, are prone to preeclampsia. Pregnant women aged under 20 years are susceptible to unstable blood pressure, while those aged over 35 years are susceptible to increased blood pressure. The results of this study prove that age has an influence on the incidence of preeclampsia where mothers are aged between 20 and 35 years and over (Nursal, 2015). Preeclampsia, known as toxemia of pregnancy or pregnancy-induced hypertension, is a complication during pregnancy that appears during pregnancy, childbirth or during the postpartum period and has symptoms such as proteinuria, hypertension, edema which is sometimes accompanied by convulsions, serious conditions like this. need to get medical treatment because it can affect the health and safety of the fetus (Lombo, 2017). Preeclampsia occurs during the 20th week of pregnancy, symptoms include a sudden increase in blood pressure and the presence of protein in the urine (Lombo, 2017).

#### **Relationship between compliance of pregnant women with the risk of pre-eclampsia in taking Aspilet medication with the incidence of eclampsia**

Based on the data, it can be seen that the calculated Chi-Square value is 16.190 with df being 1 (Chi-Square table 3.841). Chi-Square count > Chi-Square table (16.190>3.841). And the Chi-Square significance result is  $0.000 < \alpha$  ( $\alpha=0.05$ ). So it can be concluded that there is a relationship between pregnant women's compliance with the risk of pre-eclampsia taking aspirin medication and the incidence of eclampsia in the Ajung Community Health Center working area. According to the researchers' assumptions, compliance in taking acylet medication will have a good impact on patients who are at risk of experiencing eclampsia in pregnant women with signs of pre-eclampsia. Because when a patient gets aspirin, the patient will also receive education from the midwife about the risks of disease that occur during pregnancy. Aspilet medication is useful for pregnant women in thinning the blood during pregnancy according to indications. Patients at risk of preeclampsia will have thicker blood which will affect the pressure on the blood vessels which will increase the risk of high blood pressure. If you don't get maximum treatment immediately, it will cause miscarriage of pregnancy by building up purines in the blood which will make the patient more at risk of having seizures. With smoother blood flow, the risk of eclampsia will be lower. Pregnant women must do this regularly to comply with control so that they can carry out regular

evaluations regarding aspirin consumption and other antenatal care measures.

In line with Maisarah's (2020) research on Evaluation of the Use of Antihypertensive Drugs in Pregnant Women with Preeclampsia at Abdul Wahab Sjahrani Samarinda Hospital for the January-December 2020 Period, which stated that the results showed that 33 patients (66%) used the antihypertensive drug nifedipine, methyldopa was used in 2 patients. (4%), and combination therapy of nifedipine and methyldopa in 15 patients (30%). Evaluation of the use of antihypertensive drugs based on patient rights (100%), appropriate indication (100%), appropriate drug (100%) and appropriate dose (98%). Research conducted by Arminda (2020) on low dose Aspirin as a preventive measure for mothers who are at high risk of developing preeclampsia with research results that giving Aspirin can be a preventive measure against the incidence of preeclampsia with a dose of 75-150 mg per day, given at night to mothers of gestational age 16-20 weeks, given until 36 weeks of gestation, high risk of preeclampsia. Research conducted by Sholiha (2020) regarding the evaluation of the appropriate use of antihypertensive drugs in pregnant women with preeclampsia at RSUD dr. H. Moh Anwar Sumenep for the period January – September 2019 stated that the antihypertensive drugs used were Calcium Chanel Blocker (CCB) class antihypertensives, namely nifedipine at 98.46% and amlodipine at 1.54%. Evaluation of the accuracy of drug use showed that patient results were correct at 98.46%, correct indications were 98.46%, correct drug use was 98.46% and correct administration intervals were 100%

Research conducted by Nanindah (2019) on the significant relationship between adherence to taking nifedipine medication and the risk of preeclampsia in pregnant women with a Kendall's tau significance value of 0.000. Research conducted by Utami (2018) using the Chi-Square test showed that there was a relationship between pregnant women's control compliance in ANC examinations and the incidence of preeclampsia. Aspilet is a drug that belongs to the antiplatelet drug group, which is a type of blood thinning drug. This drug is used to thin the blood and prevent blood clots. Aspilet or Aspirin is a low dose blood thinning drug used to prevent thromboembolic and cardiovascular diseases such as stroke and is also recommended for diabetes sufferers. In pregnant women, the use of this drug is usually aimed at preventing preeclampsia and babies born prematurely or with low birth weight. Doctors usually recommend this drug for mothers who are pregnant for the first time, are over 35 years old or

have a history of preeclampsia, eclampsia, hypertension and diabetes. The main ingredient of this drug is acetylsalicylic acid which is able to prevent blood viscosity (Permatasari, 2021). Preeclampsia, known as toxemia of pregnancy or pregnancy-induced hypertension, is a complication during pregnancy that appears during pregnancy, childbirth or during the postpartum period and has symptoms such as proteinuria, hypertension, edema which is sometimes accompanied by convulsions, serious conditions like this. need to get medical treatment because it can affect the health and safety of the fetus (Lombo, 2017). Preeclampsia occurs during the 20th week of pregnancy, symptoms include a sudden increase in blood pressure and the presence of protein in the urine (Lombo, 2017).

## CONCLUSION

Based on the results of the analysis and discussion, it can be concluded as follows: The majority of pregnant women at risk of preeclampsia adhere to taking aspirin, 80 respondents (94.1%). The majority of pregnant women do not experience eclampsia, 84 respondents (98.8%). There is a relationship between the compliance of pregnant women with the risk of pre-eclampsia taking aspirin medication with the incidence of eclampsia in the working area of the Ajung Community Health Center in 2022 with the Chi-Square significance result being  $0.000 < \alpha$  ( $\alpha=0.05$ ). So with the data that has been presented by researchers for further research, the thing that must be paid attention to, especially for future researchers, is that this can be used as a database and theory for future researchers in adding insight into the treatment of pregnant women at risk of preeclampsia in the working area of the Ajung Community Health Center. It can also be used as input and data-based information in efforts to prevent and promote pregnant women at risk of preeclampsia.

## SUGGESTION

It is hoped that this research can be used as input material and additional theory-based data information in the science of treating pregnant women at risk of preeclampsia as well as as a reference in increasing awareness about always consulting with health workers during pregnancy.

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## THE RELATIONSHIP OF MATERNAL KNOWLEDGE AND ATTITUDE TO STUNTING

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### ABSTRAK HUBUNGAN PENGETAHUAN DAN SIKAP IBU TERHADAP STUNTING

Latar belakang: Stunting adalah kondisi dimana anak mengalami gangguan pertumbuhan sehingga menyebabkan tubuhnya lebih pendek dimana penyebab utamanya adalah kekurangan nutrisi. Menurut Kementerian Kesehatan (Kemenkes), defisit stunting adalah anak balita dengan nilai z-scorenya kurang dari -2SD (pendek) dan kurang dari -3SD (sangat pendek) (TNP2K, 2017). Berdasarkan data BPS tahun 2023 angka kejadian stunting tahun 2022 dan 2021 di Kabupaten Kupang adalah 22% dan 20%. Selanjutnya berdasarkan data dinas kabupaten kupang, angka kejadian stunting Kecamatan Nekamese sebesar 26,7% pada periode February 2023. Hal ini menunjukkan bahwa kejadian stunting di kecamatan nekamese masih tinggi berdasarkan cut of Kementerian Kesehatan adalah >20%.

Tujuan: untuk Mengetahui hubungan Hubungan Pengetahuan Dan Sikap Ibu Terhadap Stunting Di Desa Oben Kecamatan Nekamese tahun 2023.

Metode: *cross sectional* yaitu menekankan waktu pengukuran atau observasi data kedua variable pada saat waktu pengkajian data.

Hasil: Hasil dari penelitian ini yaitu nilai signifikansi melalui uji Chi-Square Test untuk variable pengetahuan dengan variabel stunting adalah sebesar (0.004). Nilai signifikansi tersebut lebih kecil dari (0.05), artinya ada hubungan yang signifikan antara pengetahuan dengan kejadian stunting. Untuk variable sikap dengan variabel stunting adalah sebesar (0.018). Nilai signifikansi tersebut lebih kecil dari (0.05), artinya ada hubungan yang signifikan antara sikap dengan kejadian stunting.K

Simpulan: dari penelitan menunjukkan adanya hubungan signifikan pada pengetahuan dan sikap ibu terhadap kejadian stunting di desa oben kecamatan nekamese kabupaten kupang.

Saran: Diharapkan bagi petugas kesehatan untuk bisa memberikan edukasi kepada masyarakat tentang makanan bergizi yang dibutuhkan

Kata kunci: Pengetahuan, Sikap, Stunting

### ABSTRACT

Background: Stunting is a condition where children experience growth disorders that cause their bodies to be shorter where the main cause is nutritional deficiencies. According to the Ministry of Health (Kemenkes), the stunting deficit is children under five with a z-score of less than -2SD (short) and less than -3SD (very short) (TNP2K, 2017). Based on BPS data in 2023, the incidence of stunting in 2022 and 2021 in Kupang Regency is 22% and 20%. Furthermore, based on data from the Kupang Regency Office, the stunting rate of Nekamese District is 26.7% in the February 2023 period. This shows that the incidence of stunting in Nekamese sub-district is still high based on the cut of the Ministry of Health is >20%.

Objective: to determine the relationship between knowledge and maternal attitudes towards stunting in Oben Village, Nekamese District in 2023.

Method: *cross sectional*, which emphasizes the time of measurement or observation of data of both variables at the time of data review.

Results: The result of this study is the significance value through the Chi-Square Test test for knowledge variables with stunting variables is (0.004). The significance value is smaller than (0.05), meaning that there is a significant relationship between knowledge and the incidence of stunting. For the attitude variable with the stunting variable is (0.018). The significance value is smaller than (0.05), meaning that there is a significant relationship between attitudes and the incidence of stunting.K

Conclusion: from research shows a significant relationship on the knowledge and attitudes of mothers towards stunting in Oben Village, Nekamese District, Kupang Regency.

Suggestion: It is expected for health workers to be able to educate the public about the nutritious food needed

Keywords: Knowledge, Attitude, Stunting

## INTRODUCTION

Stunting is a condition in which a child experiences growth disorders that cause his body to be shorter where the main cause is lack of nutrients. According to the Ministry of Health, the definition of stunting is a child under five with a z-score of less than -2SD (short) and less than -3SD (very short) (Tobing et al., 2021). The prevalence of stunted toddlers in the world in 2019 shows that there are about 21.3% or 144 million children under five who are still stunted (WHO, UNICEF, & Group, 2018). Indonesia sendiri, memiliki prevalensi anak dibawah lima tahun yang mengalami stunting sebanyak 27,7% (Kemenkes, 2023); . Although the prevalence of stunting has decreased from the previous year, the stunting prevalence target specified in the National Medium-Term Development Plan (RPJMN) for 2020-2024 is 14% (Presidential Regulation, 2020). the prevalence of stunting in East Nusa Tenggara (NTT) province again occupies the top position with a stunted toddler rate of 35.3% in 2022. Although still at the top position, the prevalence of stunted toddlers in NTT decreased from 2021 which was 37.8%. Based on BPS data in 2023, the stunting incidence rate in 2022 and 2021 in Kupang regency is 22% and 20%. Furthermore, based on data from the Kupang regency office, the incidence of stunting in Nekamese district was 26.7,7% in the February 2023 period. This shows that the incidence of stunting in nekamese district is still high based on the cut of the Ministry of Health is >20%.

One of the keys to the success of stunting prevention is public health behavior itself (Kemenkes RI, 2018). According to the Health Promotion Model theory, a person's behavior is influenced by his characteristics and experiences. Meanwhile, Lawrence Green's theory mentions three factors that have an influence on behavior in health, namely predisposing, supporting and motivating factors. Predisposisi Behavioral predisposition is a factor of knowledge, beliefs, attitudes, values and beliefs (Asmuji & Faridah, 2018). Based on the problems mentioned above, the author is interested to know more about the relationship of knowledge and attitude of mothers with kejadian stunting in oben village, nekamese district, kupang regency.

## RESEARCH METHODS

This type of research is quantitative research using correlative descriptive method with *retrospective cross sectional design* retrospektif. Population Research in this study are all mothers who have children aged 6 months to 3 years in the village of oben nekamese District of 125 people. The number of samples in this study 95 mothers with

sampling technique *is purposive sampling*. The Instrument used in this study is a questionnaire. The questionnaire contains the mother's knowledge and attitudes towards stunting. The analysis was done using bivariate and univariate analysis with ada chi square analysis test.

## RESEARCH RESULTS

### Characteristics Of Respondents

#### General Data

Characteristics of respondents based on the age of the mother

**Table 1**  
**Frequency distribution of respondents based on Mother's age in Oben Village, Nekamese Sub-District**

Maternal Age	Frequency	Percentage (%)
21-25	16	16,8
26-30	34	35,8
31-35	23	24,2
36-40	22	23,2

Source: primary data 2023

Based on Table 1 shows that most of the respondents are aged 26-30 mothers as many as 34 respondents (35.8%).

Characteristics of respondents based on the age of the child

**Table 2**  
**Frequency distribution of respondents by age of children in Oben Village, Nekamese Sub-District**

Child Age	Frequency	Percentage (%)
6 Months-1 Year	33	34.8
1 Year - 2 years	42	44.2
2 years - 3 years	20	21.0

Source: primary data 2023

Based on Table 2 shows that most of the respondents are children aged 1-2 years as many as 42 respondents (35.8%).

Characteristics of respondents by sex of the child

**Table 3**  
**Frequency distribution of respondents by child sex in Oben Village, Nekamese Sub-District**

Gender Child	Frequency	Percentage (%)
Male	54	56.9
Female	41	43.1

Source: primary data 2023

Based on Table 3 shows that most of the respondents are boys, namely as many as 54 respondents (56.9,9%)

Characteristics of respondents by level of Education

**Table 4**  
**frequency distribution of respondents based on education level in Oben Village, Nekamese Sub-District**

Gender Child	Frequency	Percentage (%)
Elementary	12	12.6
Junior	0	0
High School	76	80
College	7	7.4

Source: primary data 2023

Based on Table 4 shows that most respondents are high school level of education as many as 76 respondents (80%)

Characteristics of respondents by occupation

**Table 5**  
**Frequency distribution of respondents by occupation in Oben Village, Nekamese Sub-District**

Child Gender	Frequency	Percentage (%)
IRT	38	40
private	22	23.2
farmers	30	31.5
civil servants	5	5.3

Source: primary data 2023

Based on Table 5 shows that most of the respondents are IRT work as many as 38 respondents (80%)

#### Special Data

Incidence of stunting in toddlers 6 Months-3 years

**Table 6**  
**Frequency distribution of stunting in toddlers 6 Months – 3 years the Oben Village Nekamese District**

Variable	Category	Frequency	Percentage (%)
Stunting	Stunting	54	56.8
	Not Stunting	41	43.2

Source: primary data 2023

Based on Table 6 shows that most of the respondents are stunting as many as 54 respondents (56.8,8%).

#### Mother's Knowledge

Based on Table 7 shows that the majority of respondents maternal knowledge is less as many as 54 respondents (56.8,8%).

**Table 7**  
**Frequency distribution of respondents based on maternal knowledge in Oben Village, Nekamese Sub-District**

Variable	Category	Frequency	Percentage (%)
Knowledge (X1)	Good	12	12.6
	Enough	29	30.6
	Less	54	56.8

Source: primary data 2023



## Mother's Attitude

**Table 8**  
**Frequency distribution of respondents based on maternal attitudes in Oben Village, Nekamese Sub-District**

Variable	Category	Frequency	Percentage (%)
Attitude (X2)	Agree	41	43.2
	Disagree	54	56.8

Source: primary data 2023

Based on Table 8 shows that the majority of respondents agree with the attitude of mothers as many as 54 respondents (56.8,8%).

The results of the analysis of the relationship of knowledge, and the attitude of the mother terhadap stunting performed using *chi square test* are as follows

Relationship of maternal knowledge and maternal attitude towards stunting

**Table 9**  
**Relationship between maternal knowledge and maternal attitudes towards stunting in Oben Village, Nekamese Sub-District**

Variable	Category	Stunting		not Stunting		Total		p value
		n	%	n	%	n	%	
knowledge	good	4	50	4	50	8	100	0,004
	enough	14	78	4	22	18	100	
	less	24	35	45	65	69	100	
attitude	agree	21	35	39	65	60	100	0,018
	disagree	21	60	14	60	35	100	

The table above shows that the significance value through The Chi Square Test for knowledge variables with stunting variables is equal to (0.004). The significance value is smaller than (0.05), so it can be concluded that knowledge has a relationship with stunting.

The table above shows that the value of significance through The Chi Square Test for attitude variables with stunting variables is equal to (0.018). The significance value is less than (0.05), so it can be concluded that the attitude has a relationship with stunting.

## DISCUSSION

The relationship of maternal knowledge with Stunting

The results of statistical tests with *Spearman rho* showed the value of  $\rho = 0.04,04$  with a significant level of 0.01 ( $\rho < 0.05$ ) which means there is a relationship between maternal knowledge with stunting in Oben Village, Nekamese District. Based on the results of the questionnaire, there are several questions on the maternal knowledge questionnaire about stunting that cannot be answered correctly by mothers. The majority of mothers are still mistaken in answering the grating question about nutritional status. Mothers do not

know the definition of malnutrition and normal height of children aged four to five years. On the grid about maternal stunting also can not be answered correctly, mothers do not know the meaning of the first 1000 days of child birth and what happens to children when stunting. In addition, the mother could not answer the grid of questions about balanced nutrition, namely the definition of balanced nutrition, the benefits of a healthy towards card and three types of nutrients. Judging from the questionnaire score of maternal knowledge about stunting is the middle value of eight (less than the minimum score for the good category so that it can describe the mother's understanding is very lacking. Stunting cases are said to be influenced by one factor, namely knowledge. (Handayani et al., 2019) Knowledge of parents can help improve nutritional status in children to reach maturity growth. Inadequate knowledge, lack of understanding of good eating habits, and lack of understanding of stunting determine the attitude and behavior of mothers in providing food for their children, including the right type and amount so that children can grow and develop optimally.

Knowledge related to parenting such as the importance of coming to monitor children's growth and development to the posyandu, if they do not

come to the posyandu, mothers lack knowledge about their children (Paramita et al., 2021) Stunting in children can affect their intelligence level and health status as adults (Kemenkes RI, 2018). Children who suffer from stunting can suffer physical and cognitive damage and cause stunted growth (WHO, UNICEF, & Group, 2018) This condition that continues to reduce the quality and future productivity of Indonesian citizens (Harikatang et al., 2020). Therefore, in an effort to prevent this, efforts are needed to overcome the problem of stunting. Stunting mitigation includes prevention and handling efforts.

#### The relationship of maternal attitudes to Stunting

The results of statistical tests with *Spearman rho* showed a meanness of 0.018 with a significant level of 0.01 ( $\textcircled{3} > 0.05$ ) which means there is a relationship between maternal attitudes with stunting in Oben Village, Nekamese District. Attitude is a form of readiness or willingness to act and is not the implementation of a particular motive. The Output of attitudes in each individual can be different, if you like or agree with an object, you will approach, find out and join, on the contrary, if you don't like or disagree, you will avoid or stay away. Azwar (2011) (Kamilia, 2019) said that there are several factors that influence the formation of a person's attitude, including personal experience, the influence of others, culture, mass media and emotional factors.

Human attitudes are not formed from the moment man is born. Human attitudes are formed through social processes that occur during life, where individuals get information and experience. The process can take place within the family, school or community. When social processes occur, there is a mutual connection between the individual and his surroundings. The interaction and relationship then forms a pattern of individual attitudes with the surrounding. (Ayu, D., Rosyida, C., & Latifah, 2020) Azwar (2010) describes the attitude-forming factors are : strong experience, the influence of others who are considered important, the influence of culture, mass media, educational institutions and religious institutions, the influence of emotional factors. The results of this study are in line with the research of Ikhwah Mu'minah with the title the relationship of knowledge and attitudes of parents about early weaning to the incidence of stunting in toddlers at the Kedung Banteng District Health Center. Banyumas. The results of knowledge of respondents who have high knowledge as many as 87 mothers (87%) and a positive attitude as many as 49 (49%). The p-values are 0.001 and 0.035. This shows that the p-value is less than the significant level of 0.05 so it can be

concluded that there is a relationship between knowledge and attitudes of parents about early weaning to the incidence of stunting in toddlers. (Ayu, D., Rosyida, C., & Latifah, 2020) The results of this study indicate that knowledge can affect changes in attitudes in mothers towards the incidence of stunting in toddlers.

Good knowledge will change the attitude of mothers in overcoming stunting in toddlers. Attitude is a reaction or response of someone who is still closed to a certain stimulus or object, which already involves factors of opinion and emotion concerned (happy-not happy, agree-disagree, good-not good, like-do not like, and so on. (Notoatmodjo, 2010). Attitudes are formed because of the social interaction experienced by individuals. Where in the interaction in social interaction, individuals react to form a certain pattern of attitude towards the object they face. According to Anwar (2013) there are several factors that can influence the formation of attitudes such as personal experience, the influence of others who are considered important, the mass media, educational institutions and religious institutions.

#### CONCLUSION

The research showed a significant relationship between knowledge and attitudes towards stunting in Oben Village, nekamese sub-district, upaten kupang district.

#### SUGGESTIONS

It is expected for health workers to be able to educate the public about the nutritious food needed and It is hoped that there will be further improvement in health promotion in the form of education related to the causes and prevention of stunting in order to increase maternal knowledge regarding stunting and prevention related to infectious diseases in reducing morbidity rates which can result in stunting

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## THE RELATIONSHIP OF MOTHER'S STIMULATION WITH THE DEVELOPMENT OF CHILDREN AGED 3-5 YEARS

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### ABSTRAK HUBUNGAN STIMULASI IBU DENGAN PERKEMBANGAN ANAK USIA 3-5 TAHUN

Latar Belakang Anak merupakan generasi penerus bangsa. Salah satu upaya pengembangan kualitas sumber daya manusia dapat dilakukan dengan mengoptimalkan potensi perkembangan anak secara merata. Pemberian stimulasi akan lebih efektif apabila memperhatikan kebutuhan anak yang telah disesuaikan dengan tahapan perkembangannya.

Tujuan penelitian ini adalah menganalisis hubungan stimulasi ibu dengan tumbuh kembang anak usia 3-5 tahun di PMB Aisyah Amd Keb Wuluhan Jember.

Metode Desain penelitian ini adalah penelitian korelatif dengan pendekatan cross-sectional. Populasi dalam penelitian ini adalah seluruh anak prasekolah usia 3-5 tahun di PMB Aisyah Amd Keb sebanyak 57 orang. Besar sampel pada penelitian ini adalah 57 orang yang diambil jenuh. Pengumpulan data menggunakan kuesioner kemudian data diolah menggunakan SPSS dengan menggunakan uji rank spearman.

Hasil analisis data menunjukkan bahwa stimulasi yang diberikan ibu cukup sebanyak 28 orang (49,1%) dan perkembangan anak usia 3-5 tahun normal sebanyak 28 orang (49,1%). Berdasarkan uji rank spearman diperoleh nilai signifikansi (Asymp. Sig) sebesar  $0,000 < 0,05$  artinya  $H_0$  ditolak dan  $H_a$  diterima

Kesimpulan ada hubungan antara stimulasi ibu dengan tumbuh kembang anak usia 3-5 tahun di PMB Aisyah Amd, Keb Wuluhan Jember. Kekuatan hubungan berada pada kategori kuat. Saran agar ibu dapat memberikan stimulasi yang maksimal sesuai usia anak agar tumbuh kembang anak maksimal.

Kata Kunci : Stimulasi, Tumbuh Kembang Anak, Perkembangan

### ABSTRACT

Background Children are the next generation of the nation. One of the efforts to develop the quality of human resources can be done by optimizing the development potential of children evenly. The provision of stimulation will be more effective if it pays attention to the needs of children who have been adapted to the stages of development. The purpose of this study was to analyze the relationship between maternal stimulation and the development of children aged 3-5 years at PMB Aisyah Amd, Keb Wuluhan Jember.

method The design of this study is a correlative study with a cross-sectional approach. The population in this study were all preschool children 3-5 years old in PMB Aisyah Amd, Keb as many as 57 people. The sample size in this study was 57 people who were taken saturated. Collecting data using a questionnaire then the data is processed using SPSS using the Spearman rank test.

The results of data analysis showed that the stimulation given by the mother was sufficient as many as 28 people (49.1%) and the development of children aged 3-5 years was normal as many as 28 people (49.1%). Based on the Spearman rank test, a significance value (Asymp. Sig) of  $0.000 < 0.05$  was obtained

Conclusion rejected and  $H_a$  was accepted

Suggestion that there was a relationship between maternal stimulation and the development of children aged 3-5 years in PMB Aisyah Amd, Keb Wuluhan Jember. The strength of the relationship is in

the strong category. It is recommended that mothers can provide maximum stimulation according to the child's age so that the child's development is maximized.

Keyword : Stimulation, Child Development, development

## INTRODUCTION

Children are the nation's next generation. Apart from that, every family also hopes that their children will grow optimally (physically, mentally/cognitively and socially healthy), be proud of them, and be useful for the country and the nation. One effort to develop the quality of human resources can be done by optimizing the potential for children's development evenly. Child development is all the changes that occur in children which include all aspects, including physical motor development, cognitive development, language development, social development of children as well as moral and religious development of children (Sentruk, 2021). All aspects of development play an important role in subsequent developmental tasks, where 80% of children's cognitive development has been achieved at preschool age. Development in preschool children includes motoric, personal, social and language development (Septiani et al., 2016)

*World Health Organization* (WHO) In 2018, it was reported that more than 200 million children under 5 years old in the world do not fulfill their development potential and most of them are children living on the continents of Asia and Africa. The incidence of developmental delays in the United States ranges from 12-16%, Thailand 24%, and Argentina 22%, while in Indonesia it is between 29.9%. According to UNICEF, in 2015, data was obtained that there was still a high incidence of growth and development disorders in children under five, especially motor development disorders (27.5%) or 3 million children experienced disorders. Based on data from IDAI (2015), in Indonesia it is estimated that around 5% to 10% of children experience developmental delays. The exact incidence of developmental delays is not yet known, but it is estimated that 1-3% of children under 5 years of age experience general developmental delays. According to the East Java Province Minimum Service Standards, the

coverage rate for early detection of growth and development of children under five and preschool level in East Java in 2014 was 54.8% (Dinkes, 2016). Based on an initial study conducted on April 15 2022 on 13 children aged 3-5 years, it was found that 61.5% of children experienced developmental delays, especially in language and motor skills. Information obtained from respondent parents provides information that children rarely receive stimulation because they do not understand how, so children only get stimulation from educational institutions (PAUD/TK).

Development during childhood is the key to survival in generations and progress for a child. Developmental delays experienced by children not only have an impact on the child but can also impact the family, community, and also in terms of costs for providing health services, educational support and national care services (Makrufiyani, 2018)

Delays and problems in children's growth and development can be influenced by several factors. In general, these factors can be divided into 2 groups, namely internal factors and external factors (Qurrotul et al., 2018). External factors include parental education, parental employment, developmental stimulation provided by parents, and environmental factors around the child. (Ardita et al, 2012; Alam et al, 2016:48). Specifically, referring to the opinion of Grover D and Partnering in Rfidulloh, (2020), Lack of stimulation can cause developmental delays in children. Most children who experience developmental delays are not identified until pre-school or school age, making it difficult for them to develop the hidden potential that each child has.

Soetjningsih, (2016) stated that providing stimulation will be more effective if it pays attention to the child's needs which have been adapted to the stages of development. In this case, the most important figures in providing stimulation to children are parents, because

parents have greater influence and spend most of their time with parents than with other people in providing stimulation for children's development. If there is a lack of stimulation, it will have a very bad impact on the child's developmental stages. Stimulation of growth and development for children aged 3-5 years plays an important role in improving sensory functions (hear, touch, see, taste, smell), motor (gross, fine movements), emotional-social, speech, cognitive, independent, and creative (moral, leadership). Apart from that, stimulation can also stimulate brain cells (Yunita et al., 2020). Developmental stimulation for children must be in accordance with their developmental tasks. In accordance with the instructions contained in the Children's Development Card, parents can monitor and stimulate development according to their age (Kusuma & Fauziah, 2021).

The results of research conducted by Perdani et al., (2021) show that the majority of parents, especially mothers, have provided good stimulation for children's development. The stimulation provided is related to the child's development, including language development, gross motor skills, fine motor skills and social personality. Research by Sumiyati & Yuliani, (2016) shows that the description of gross motor and fine motor development abilities corresponds to the developmental age of 4-5 years, 33 children aged 4-5 years (80.5%) have developmentally appropriate abilities and as many as 8 children (19.5%) experienced developmental deviations, there was a significant relationship between stimulation and the development of children aged 4-5 years. Research (Handayani, 2021) shows that the determinants that influence a baby's developmental status include nutritional status, stimulation, parenting patterns and maternal anxiety. The research design used in this study was a Systematic Literature Review with children aged 0-12 months with a sample size of 53 respondents. The difference between the previous study and the current research lies in the characteristics of the respondents or the age of the children, namely 3-5 years, differences in the research variables observed, namely general child development, differences in data collection methods, data analysis, research time

and research objects. This research has something in common, namely that the design used is quantitative and examines stimulation and child development.

Considering the importance of stimulation for children, parents must always provide encouragement or stimulation to children in all aspects of development, both gross and fine motor skills, language and social personality. This stimulation must be provided regularly and continuously with affection, play methods and so on. So that the child's development will run optimally. Lack of stimulation from parents can result in delays in children's development, therefore parents or caregivers must be given an explanation of how to stimulate children (Nursyamsi N. L., 2019).

Based on the background above, researchers are interested in conducting research on "The relationship between maternal stimulation and the development of children aged 3-5 years at PMB Aisyah Amd, Keb Wuluhan Jember".

## RESEARCH METHODS

This research uses a correlational design with a cross sectional approach. Nursalam (2017) explains that correlation research is research that examines the relationship between variables and aims to find, explain a relationship, estimate and test based on existing theory. Based on this concept, this research was conducted with the aim of finding out the relationship between maternal stimulation and the growth and development of children aged 3-5 years. year at PMB Aisyah Amd, Keb Wuluhan Jember. Apart from that, Notoadmodjo (2017) explains that cross sectional is a research approach that studies the dynamics of the correlation between risk factors and their impacts, by approaching, observing or collecting data at one time. In this research, the focus was on preschool children aged 3-5 years in PMB Aisyah Amd, Wuluhan District, Jember Regency, totaling 57 children using the Accidental Sampling method. According to Nursalam (2017) Accidental sampling is a sampling technique that is based on chance, that is, consumers who coincidentally/accidentally meet researchers can be used as samples, if it is felt

that the person they met by chance is suitable as a data source. In this research, two variables are used, namely the independent variable and the dependent variable. The independent variable or variable X is a variable (influence) that is thought to change according to changes in the independent variable.

(Sugiyono, 2017). This research was carried out at PMB Aisyah Amd, Wuluhan District, Jember Regency on 3 August – 3 September 2022. Data sources used in this research.

This is significantly related to child growth and development. Based on the things described above, we are interested in conducting research on the relationship between maternal stimulation and the growth and development of children aged 3-5 years.

## RESEARCH RESULT

### Frequency Distribution of Respondents based on Maternal Stimulation at PMB Aisyah Amd,.keb Wuluhan Jember

Based on table 1, it was found that the majority of stimulation given by mothers was sufficient for 28 people (49.1%).

**Tabel 1**  
**Frequency Distribution of Respondents based on Maternal Stimulation at PMB Aisyah Amd,.keb Wuluhan Jember**

Maternal Stimulation	Frekuensi	Persentase (%)
Good	12	21.1
Enough	28	49.1
Not enough	17	29.8

### Frequency Distribution of Respondents based on the Development of Children aged 3-5 years at PMB Aisyah Amd,.keb Wuluhan Jember

**Table 2**  
**Frequency Distribution of Respondents based on the Development of Children aged 3-5 years at PMB Aisyah Amd,.keb Wuluhan Jember**

Development	Frekuensi	Persentase (%)
More	17	29.8
Normal	28	49.1
Lateness	12	21.1

Based on table 2, it can be seen that most of the development of children aged 3-5 years is normal, as many as 28 people (49.1%).

### Cross tabulation of maternal stimulation with the development of children aged 3-5 years at PMB Aisyah Amd,.keb Wuluhan Jember

**Table 3**  
**Cross-tabulation of maternal stimulation with the development of children aged 3-5 years at PMB Aisyah Amd,.keb Wuluhan Jember**

Stimulasi	Child development						Total	
	More		Normal		Latenes			
	F	%	f	%	F	%	f	%
Good	5	8.8	7	12.3	0	0.0	12	21.1
Enough	12	21.1	16	28.1	0	0.0	28	49.1
Not enough	0	0.0	5	8.8	12	21.1	17	29.8

Based on table 3, it is found that the majority of mothers who provide stimulation in the good category have a tendency for normal child development (12.3%), mothers who provide stimulation in the adequate category

have a tendency for normal child development (28.1%), mothers who provide stimulation with the less likely category has a tendency for children's development to be delayed (21.1%).

### Data analysis

Based on the Spearman rank test analyzed using SPSS, the significance value (Asymp. Sig) between maternal stimulation and the development of children aged 3-5 years at

PMB Aisyah Amd, Wuluhan Jember is  $0.000 < 0.05$ , meaning  $H_0$  is rejected and  $H_a$  is accepted. , so there is a relationship between maternal stimulation and the development of children aged 3-5 years at PMB Aisyah Amd,keb Wuluhan Jember. The strength of the relationship is in the strong category.

**Table 6**  
**Spearman Rank Test Results**

		Stimulasi	Child development
Stimulasi	Pearson Correlation	1	0.611**
	Sig. (2-tailed)		0.000
	N	57	57
Child development	Pearson Correlation	0.611**	1
	Sig. (2-tailed)	0.000	
	N	57	57

### CONCLUSION

Implementation of maternal stimulation at PMB Aisyah Amd,keb. Most of the stimulation given by mothers was sufficient, 28 people (49.1%). Most of the development of children aged 3-5 years at PMB Aisyah Amd,keb was normal, 28 people ( 49.1%).There is a relationship between maternal stimulation and the development of children aged 3-5 years at PMB Aisyah Amd,keb Wuluhan Jember

### SUGGESTION

It is recommended that mothers can provide maximum stimulation according to the child's age so that the child's development is maximized.

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## THE QUALITY OF GROWTH MONITORING IN CHILDREN BY INTEGRATED HEALTHCARE CENTER CADRES

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### ABSTRAK KUALITAS PEMANTAUAN PERTUMBUHAN ANAK SECARA TERINTEGRASI KADER PUSAT KESEHATAN

Latar Belakang: Pemantauan tumbuh kembang pada anak merupakan salah satu alat untuk mengetahui status gizi anak. Prevalensi berat badan kurang adalah 19,6% yang terdiri dari 5,7% gizi buruk dan 13,9% gizi kurang. Banyak faktor yang mempengaruhi pemantauan tumbuh kembang anak di tingkat Puskesmas diantaranya adalah anak yang ditimbang, alat penimbangan yang digunakan, cara menimbang, cara mencatat hasil penimbangan ke dalam grafik pertumbuhan, cara menginterpretasikan hasil penimbangan, dan tindakan yang harus dilakukan kader sesuai hasil penimbangan.

Tujuan: Untuk mengetahui kualitas pemantauan tumbuh kembang anak yang dilakukan oleh kader Puskesmas Terpadu Puskesmas Sukaraja Tiga Kecamatan Marga Tiga Kabupaten Lampung Timur.

Metode: Penelitian ini merupakan penelitian kuantitatif dengan desain deskriptif. Populasi penelitian ini adalah kader Puskesmas Sukaraja Tiga yang tercatat berada di wilayah kerja Puskesmas Sukaraja Tiga sebanyak 160 orang dan berasal dari 32 Puskesmas yang berada di wilayah Puskesmas Sukaraja Tiga. Sampel dalam penelitian ini berjumlah 160 kader. Teknik pengambilan sampel yang digunakan dalam penelitian ini adalah total sampling. Analisis data menggunakan analisis data univariat.

Hasil: Penelitian ini menunjukkan bahwa 100 (62,5%) responden melakukan penimbangan dengan baik, 102 (63,8%) responden mencatat hasil penimbangan dengan baik, dan 110 (68,8%) responden kurang mengartikan hasil pemantauan tumbuh kembang pada anak.

Kesimpulan: Kualitas pemantauan tumbuh kembang balita oleh kader posyandu berdasarkan cara menginterpretasikan hasil penimbangan ke KMS didapatkan 110 (68,8%) responden menginterpretasikan hasil pemantauan tumbuh kembang balita di cara yang tidak baik

Saran kepada Puskesmas Sukaraja Tiga untuk dapat melakukan pembinaan lebih rutin seperti melakukan penyuluhan tentang grafik pertumbuhan dan cara pengisiannya untuk meningkatkan keterampilan kader mengenai pemantauan pertumbuhan pada anak.

Kata Kunci : Penimbangan, Pencatatan, Interpretasi Hasil, Kader

### ABSTRACT

Background: Growth monitoring in children is a tool to determine the nutritional status of the children. The prevalence of underweight is 19.6% consisting of 5.7% of malnutrition and 13.9% undernourished. Many factors affect the growth monitoring in children at the integrated healthcare center level including the children who are weighed, the weighing equipment used, the way how to weigh, how to record the weighing results into the growth chart, how to interpret the weighing results, and actions that must be taken by cadres according to the weighing results.

Purpose: To determine the quality of growth monitoring in children by integrated healthcare center cadres at the Sukaraja Tiga public health center, Marga Tiga District, East Lampung Regency.

Methods: This study is a quantitative study with a descriptive design. The population of this study were 160 integrated healthcare center cadres who are recorded as being in the work area of Sukaraja Tiga public health center and are from 32 integrated healthcare centers located in Sukaraja Tiga public health center area. The sample in this study was 160 cadres. The sampling technique used in this study was total sampling. The data analysis used univariate data analysis.

Results: This study showed that 100 (62.5%) respondents carried out the weighing well, 102 (63.8%) respondents recorded the results of weighing well, and 110 (68.8%) respondents poorly interpreted the results of growth monitoring in children.

**Conclusion:** The quality of monitoring the growth of children under five by posyandu cadres based on the way of interpreting the results of weighing to KMS, it was found that 110 (68.8%) respondents interpreted the results of monitoring the growth of children under five in a way that was not good

**Suggestion** that Sukaraja Tiga public health center can provide more routine guidance such as conducting counseling about the growth chart and how to fill it out to improve cadres' skills regarding growth monitoring in children.

**Keywords :** Weighing, Recording, Results Interpretation, Cadres

## INTRODUCTION

Monitoring the growth of children under five is a tool to determine the nutritional status of children under five. The nutritional status of children under five is one indicator of the success of achieving the MDGs (East Lampung Health Office, 2013). Monitoring the growth of children under five is very important to detect growth faltering at an early stage. Children aged 12-59 months receive growth monitoring services every month, at least 8 times a year recorded in the KMS, or other record books (Ministry of Health, 2020).

The Posyandu program is carried out in each village by cadres who have been given knowledge and training by health workers. The purpose of using cadres as Posyandu implementers is to promote knowledge about health, especially child growth and development. In general, Posyandu activities include weighing toddlers and providing nutrition, so that the main target of Posyandu is more focused on the physical growth stage. There are many things that can affect the monitoring of under-five growth at the posyandu level, including: children under five who are weighed, the weighing equipment used, how to do the weighing, how to record the weighing results into the KMS, how to interpret the weighing results, and actions that must be taken by the child. cadres according to the results of the weighing (Joni Iswanto, 2010).

Another posyandu cadre's role is to invite or guide parents to recognize the condition of toddlers, by guiding parents to take their children to the posyandu to weigh and measure their height regularly every month. With increasing age, the child's height also increases. The results of height measurements are used to assess the nutritional status of children (Ministry of Health, 2012). The results of Febry's research (2012) that KMS ownership is still low where KMS is still limited as a toddler's weight recorder, not as a growth monitoring tool. If it is seen from the existing facilities and infrastructure at the posyandu, the ability of cadres to monitor is still low. In fact, in this KMS there is a record of children's growth, which is represented by changes in their weight every month.

Growth monitoring is the regular measurement of a child's weight and height; then the measurement results are plotted onto the growth line. If the plot results show abnormal growth then the health workers and families will take action to improve the nutritional status and health of the child. Sometimes growth monitoring is used as part of health promotion, to discuss feeding, hygiene, and other aspects. This growth monitoring acts as an early signal to impaired child growth, so that malnutrition does not occur and reduces infant mortality rates (Abul Fadl et al, 2010).

Early detection to find out barriers to child development has also not been given, so that preventive measures to overcome developmental disorders in toddlers have not been carried out (Hayati and Fatimaningrum, 2015). Parents are very influential parties in monitoring and fulfilling the needs of children's growth and development, especially in the five years of life which is a golden age for child growth and development. Data from research shows an increase in the prevalence of parents who do not monitor children's growth and development periodically, even though monitoring of toddler growth is in line with early detection of toddler growth disorders so that interventions and simulations can provide optimal results (Simanjuntak et al, 2017).

Early childhood development includes several aspects, one of which is the physical motor aspect. Wiyani (2014) states that physical language is defined as body, body, body. While the motor is defined by the mover. So the physical-motor development of early childhood can be interpreted as a change in body shape in early childhood which affects his body movement skills. According to Yunandi et al (2020) in terms of monitoring the growth and development of toddlers, the role of health workers and health cadres who are warm, helpful, and participate will ensure the success of detecting deviations in the growth and development of toddlers.

Based on the results of Riskesdas (2018), it can be seen that from 82,661 children under five who were weighed nationally, there was a prevalence of

underweight of 19.6%, consisting of 5.7% of malnutrition and 13.9% of undernourished. Based on reports from puskesmas throughout 2013, the number of cases of malnutrition in East Lampung Regency was 18 cases. Malnutrition cases were spread in 14 Puskesmas areas with the most cases of malnutrition in Sukaraja Tiga, Karya Tani, Sribhawono and Purbolingo Health Centers with 2 malnutrition cases each (East Lampung Health Office, 2013).

Based on the facts above, it is very interesting to conduct research on the quality of monitoring the growth of children under five by posyandu cadres in the context of early detection of cases of undernourished or malnourished children under five. This is also very important because the activity of weighing children under five is one of the minimum service standards that must be implemented by a nutrition improvement program.

## RESEARCH METHODS

In this study, the author uses quantitative research and research design using descriptive. The population in this study was taken from the number of all posyandu cadres who were recorded in the working area of the Sukaraja Tiga Health Center totaling 160 people from 32 posyandu located in the Sukaraja 3 Health Center Area and the sample in this study was 160 people using total sampling technique. Data analysis used univariate analysis.

## RESEARCH RESULTS

Based on the table above, it is known that there are 93 (58.1%) respondents aged 20-30 years, 99 (61.9%) respondents with high school education, and 92 (57.5%) respondents with 3-4 years of service.

**Table 1**  
**Characteristics of Respondents**

Characteristics	Frequency	Percentage (%)
<b>Age</b>		
20-30 years old	93	58.1
31-40 years old	66	41.3
41-50 years old	1	0.6
<b>Education</b>		
JUNIOR HIGH SCHOOL	55	34.4
SENIOR HIGH SCHOOL	99	61.9
PT	6	3.8
<b>Years of service</b>		
<1 Year	9	5.6
1-2 Years	52	32.5
3-4 Years	92	57.5
>4 Years	7	4.4

**Table 2**  
**Frequency Distribution of Weighing Toddlers by Posyandu Cadres**

Weighing Method	Frequency	Percentage (%)
Well	100	62.5
Not good	60	37.5

Based on the table above, it is known that from 160 respondents, 100 (62.5%) respondents did the weighing of children under five well.

**Frequency Distribution of Registration Methods by Posyandu Cadres**

How to Record	Frequency	Percentage (%)
Well	102	63.8
Not good	58	36.3

Based on the table above, it is known that from 160 respondents, 102 (63.8%) respondents recorded well.

**Table 3**

**Table 4**

### Frequency Distribution of Interpretation of Toddler Weight Weighing Results by Posyandu Cadres

Result Interpretation	Frequency	Percentage (%)
Well	50	31.3
Not good	110	68.8

Based on the table above, it is known that from 160 respondents, 110 (68.8%) respondents interpreted the results of monitoring the growth of children under five in a way that was not good.

## DISCUSSION

### Quality Monitoring of Toddler Growth by Posyandu Cadres Based on Toddler Weighing Method

The results of this study indicate that from 160 respondents, 100 (62.5%) respondents did the weighing of toddlers well and 60 (37.5%) respondents did the weighing of toddlers in a bad way. Judging from the number of errors in each procedure item, it is known that in the first step 8 (5%) respondents made mistakes, in the second step 16 (10%) respondents made mistakes, in the third step there were 28 (17.5%) respondents who made mistakes. errors, in the 4th step there were 19 (11.9%) respondents made mistakes, in the 5th step there were 22 (13.8%) respondents made mistakes, in the 6th and 7th steps there were 18 (11.3%) respondents made errors, in step 8 there were 20 (12.5%) respondents made mistakes, 26 (16.3%) respondents made mistakes, and 19 (11.9%) respondents made mistakes.

One of the tasks of posyandu cadres is to help weigh toddlers. To obtain good and quality weighing data, it must be carried out in accordance with standard anthropometric data measurement procedures and must pay attention to the precision and accuracy of measurements (Perez, 2015).

The skills of cadres on how to weigh toddlers are very important in producing accurate weight data, because inaccurate weighing results will result in the use of incorrect information to monitor children's growth. In this study, there were 60 (37.5%) respondents who weighed children under five in a way that was not good. The wrong way of weighing can indeed produce inaccurate data, so it cannot be used as good information for monitoring the growth of toddlers. But apart from that, the factor of the weighing equipment used can also cause the resulting data to be inaccurate (Sumardilah, 2013).

Posyandu cadres must know the factors that influence the measurement or weighing. Because the cadres do the weighing and are always monitored or reminded by Puskesmas officers to collect data for Posyandu children. However, if the cadres do not pay attention to the factors that affect weighing, the data collected cannot be ascertained that all of them are free from errors, because in their duties, Puskesmas officers rarely check the skills of Posyandu cadres in weighing (Farichatussoolichah, 2021).

When there is an error during anthropometric measurements, especially weight measurement errors are left alone, the health information system has the possibility of not being able to produce good output so that decisions cannot be taken according to what is happening in the field, inappropriate program planning to overcome existing problems, the community also cannot know the health problems that actually occur in their area (Farichatussoolichah, 2021).

This study is in line with research conducted by Sumardilah (2013) which showed that from 72 cadres, 38 (52.8%) respondents did the weighing correctly and 34 (47.2%) respondents did the weighing in the wrong way.

According to the researcher, the skills of cadres in weighing toddlers must be done correctly, namely paying attention to accuracy and precision. This must be considered because cadres who make mistakes in weighing toddlers will have an impact on inappropriate assessment of toddler development. In addition, the skills of these cadres are influenced by the age of the cadres. The age of cadres in this study were mostly 20-30 years old, namely 93 (58.1%). The age of the cadres, who are relatively young, causes work experience that is not optimal. So there are still mistakes when weighing toddlers. The most errors in weighing toddlers are in step 3 regarding errors in placing the pendulum at zero, if the ends of the two weighing nails are not in a straight position, then the scales need to be checked or replaced with new ones. This is what causes the results of the scales to be inaccurate.

### Quality Monitoring of Toddler Growth by Posyandu Cadres Based on Recording Method

The results of this study indicate that from 160 respondents, 102 (63.8%) respondents recorded well and 58 (36.3%) respondents recorded in a bad way. In terms of errors in recording, it is known that in step 1, 10 (6.3%) respondents made mistakes, in

steps 2 and 3 there were 24 (15%) respondents made mistakes, in step 4 there were 13 (8.1 %) respondents made mistakes, in step 5 there were 21 (13.1%) respondents made mistakes, in step 6 there were 20 (12.5%) respondents made mistakes, in step 7 there were 25 (15.6%) respondents made mistakes, and in step 8 there were 13 (8.1%) respondents made mistakes.

Card Towards Healthy (KMS) is an important tool used to monitor the growth of toddlers, namely by recording or plotting the results of weighing children's weight into a graph in the KMS. From the results of the plotting, a trend line will be made regarding the development of children's weight (Kemenkes RI, 2020).

The results of plotting the child's weight into the KMS graph will affect the shape and direction of the trend of the child's weight development, so that in the end it will have an impact on monitoring the child's weight growth. Due to errors in recording, it is possible that the child's weight that should be recorded and assessed as Increase (N) may be recorded and assessed as Decreased/Fixed (T) or vice versa (Sumardilah, 2013).

Mother's understanding of the weight gain chart is important so that mothers can take action as early as possible if the child's growth is not in accordance with his age. This is where the role of health workers and cadres is to be able to explain to mothers what to do if the child's weight chart goes up, flattens or even goes down, is on the green, yellow or red line. If this can be done properly, the problem of malnutrition will be detected and handled early (Febry, 2012).

The quality of the data recorded and reported is influenced by the knowledge and motivation of cadres (Devi, 2014). One strategy to change behavior is to provide information to increase knowledge so that awareness arises which in the end the individual will behave in accordance with his knowledge (Notoatmodjo, 2012). One way of providing information is by providing training conducted by health workers. Increased knowledge of cadres after training can occur if the material presented is easy to understand by cadres (Lubis & Syahri, 2015).

Another factor that affects the quality of the completeness of the report is the age of the cadres. A cadre will remain a cadre until that person decides to no longer be a cadre, because there is no regulation that mentions the age limit for becoming a

cadre, so many cadres who, even though they are old, remain cadres (Nurayu, 2013).

This study is in line with research conducted by Suhartika (2016) which showed that most of the posyandu cadres were skilled in recording, namely 31 (60.8%) people.

According to the researcher, there were 58 (36.3%) respondents who recorded incorrectly, while the cadres in recording the results of weighing children under five in KMS had to be precise. Because if the interpretation of the weighing results is not correct, then growth disorders cannot be detected early, so toddlers will be late in getting treatment. This is because there are 93 respondents (58.1%) aged 20-30 years. Judging from the age of the respondents who have just entered 20-30 years, this has an impact on the mother's lack of experience in recording weighing results. In addition, when viewed from education, there are 99 (61.9%) respondents with high school education. High school level education is education in the high category where cadres should be able to perform their skills well. however, education is not the only factor that determines the accuracy of taking notes, but there is a period of service for the cadre. In this study there were 52 (32.5%) respondents with a working period of 1-2 years. The period of work that is still relatively short can cause inaccuracies in recording. This is because the skills of the cadres are not very good due to lack of training or being less active in seeking information about monitoring the growth of children under five. In this study, the recording of under-five growth monitoring was mostly incorrect at number 7, namely regarding filling in the breast milk column, immunization and vitamin A when given. The period of work that is still relatively short can cause inaccuracies in recording. This is because the skills of the cadres are not very good due to lack of training or being less active in seeking information about monitoring the growth of children under five. In this study, the recording of under-five growth monitoring was mostly incorrect at number 7, namely regarding filling in the breast milk column, immunization and vitamin A when given. This is because the skills of the cadres are not very good due to lack of training or being less active in seeking information about monitoring the growth of children under five. In this study, the recording of under-five growth monitoring was mostly incorrect at number 7, namely regarding filling in the breast milk column, immunization and vitamin A when given.

### Quality Monitoring of Toddler Growth by Posyandu Cadres Based on Interpretation of Results

The results of this study indicate that from 160 respondents, 50 (31.3%) respondents interpreted the results of monitoring the growth of toddlers well and 110 (68.8%) respondents interpreted the results of monitoring the growth of children under five in a way that was not good.

Card Towards Healthy (KMS) is a card that contains a child's normal growth curve based on the anthropometric index of weight for age. With KMS growth disorders or the risk of excess nutrition can be detected early, so that preventive action can be taken more quickly and precisely before the problem becomes more serious. In posyandu activities, weighing children, filling out KMS and interpreting the results are carried out by cadres, so that in this case the role of cadres is very large in monitoring child growth (Kemenkes RI, 2020).

The ability to interpret the results of weighing in KMS is the basic capital in early detection of growth disorders in children under five. The results of this interpretation are very important because this is where the actions that must be taken by the cadres in relation to the development of children's growth come from. If the child's weight increases (N), then the cadres must give praise, encouragement, encouragement to mothers of toddlers to continue to maintain and improve children's health. If the child's weight is fixed or decreased once (T1), the cadre must provide counseling about healthy food, then if the child's weight has decreased 2 times in a row, the cadre must provide recovery food, and if the child's weight has decreased 3 times in a row then cadres must refer children to health services (Suhartika, 2017).

This study is in line with the research conducted by Nurlisis (2017) which showed 133 (65.5%) respondents did not fill out the KMS correctly and 70 (34.5%) respondents filled the KMS correctly.

According to the researchers, monitoring the growth of toddlers with KMS needs to be done regularly. With KMS children's growth can be monitored properly. In the KMS, the weight of the toddlers from the weighing results will be filled with dots and connected with lines, thus forming a child's growth line. Based on this growth line, it can be judged whether the child's weight has increased or not. With this monitoring, the prevalence of under-fives with growth disorders can be detected earlier.

Judging from the characteristics of the respondents, it was found that errors in data interpretation were made by cadres with new tenures so that they did not have experience.

### CONCLUSION

The quality of monitoring the growth of children under five by posyandu cadres based on the method of weighing children under five, it was found that 100 (62.5%) respondents did the weighing of children under five well. The quality of monitoring the growth of children under five by posyandu cadres based on the recording method, it was found that 102 (63.8%) respondents recorded well. The quality of monitoring the growth of children under five by posyandu cadres based on the way of interpreting the results of weighing to KMS, it was found that 110 (68.8%) respondents interpreted the results of monitoring the growth of children under five in a way that was not good.

### SUGGESTION

To improve the quality of cadres regarding monitoring the growth of children under five, cadres can be more active in asking midwives about proper weighing and recording methods. In addition, cadres can participate in training organized by the puskesmas. It is hoped that the Sukaraja Tiga Health Center can provide more routine assistance and supervision to improve the skills of cadres regarding monitoring the growth of toddlers by conducting training, training all posyandu cadres on KMS and how to fill it out. Further researchers can examine the factors that affect the quality of cadres in monitoring the growth of toddlers such as knowledge, frequency of training, and other factors that can affect the skills of cadres.

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