

RESEARCH STUDY

English Version

OPEN ACCESS

The Effects of Warm Compress and Coconut Water Administration on the Primary Dysmenorrhea in Teenage Girls of the Al Ikhlah Putri Modern Boarding School, Kuningan Regency

Efek Kompres Hangat dan Pemberian Air Kelapa terhadap Dismenore Primer pada Remaja Putri Pondok Pesantren Modern Al Ikhlah Putri Kuningan

Oya Siti Rukoyah^{1*}, Ria Yulianti Triwahyuningsih¹, Diyanah Kumalasary¹, Nisa Rizki Nurfiti¹¹Midwifery Study Program, Muhammadiyah-Ahmad Dahlan University, Cirebon, Indonesia**ARTICLE INFO****Received:** 13-11-2023**Accepted:** 26-08-2024**Published online:** 30-08-2024***Correspondent:**

Oya Siti Rukoyah

oyasitirukoyah01@gmail.com**DOI:**

10.20473/amnt.v8i1SP.2024.76-82

Available online at:[https://e-](https://e-journal.unair.ac.id/AMNT)[journal.unair.ac.id/AMNT](https://e-journal.unair.ac.id/AMNT)**Keywords:**

Warm Compress, Coconut Water, Primary Dysmenorrhea, Teenage Girl

ABSTRACT

Background: The menstruating teenage girls show a high primary dysmenorrhea incidence which is very discomforting, in form of abdominal cramps or pain spread to the back, headache, nausea and vomiting, as well as diarrhea, so they have to take a rest in a certain period of time and stop carrying out their activities and works.

Objectives: This research aims to identify the effects of warm compress and coconut water administration towards the primary dysmenorrhea in teenage girls of Al-Ikhlah Putri Modern Boarding School, Kuningan Regency.

Methods: This research was the pre-experimental research with one group pretest-posttest design. Total 83 teenage girls from classes 1 to 3 in Senior High School at the age of 14-18 years were selected as population. Instrument used was the Standard Operating Procedure (SOP) and the checklist sheet (observation and interview). Data processing was carried out using the SPSS program. The purposive sampling was applied in taking the sample, so 26 teenagers, relevant to the inclusion and exclusion criteria, were obtained. Data collected were primary data. Univariate and bivariate analyses were utilized with the paired t-test in testing effects and chi-square test in testing correlation of every variable.

Results: There was a difference test with p-value 0.000, while the significant effect was found in menstrual pain before and after warm compress and coconut water administration in teenage girls.

Conclusions: Warm compress and regularly consuming coconut water can minimize the menstrual pain in teenage girls.

INTRODUCTION

Teenage girls as the future mothers need to get special attention, on their health in particular, to be able to give contribution in the future as a good generation, in giving a birth to healthy, smart offspring as the successors of nation's purpose and hope which are noble. Teenage is a period of transition towards the adult, characterized with cognitive, psychosocial, and biological changes. Biological changes are marked with puberty, characterized with the menstruation¹.

The term menstruation is a period when endometrium contains a number of blood vessels. Because of the ruptured blood vessel, blood flows outside the vagina. When menstruation starts because estrogen is secreted by ovary, the uterus layer grows back². A number of women had cramps on the lower stomach (dysmenorrhea)³. Complaint generally perceived by women is menstrual pain⁴. Dysmenorrhea

or menstrual pain is a sickness generally perceived by teenagers, so the case reached the number 60%-90%⁵.

Based on the WHO data in 2020, the dysmenorrhea cases reached 1,769,425 (90%) with severe category up to 10-16%. Over 50% of women worldwide had dysmenorrhea⁶. In the United States of America, almost 90% of women had dysmenorrhea and approximately 10-15% were classified as severe, thus leading to the inability in carrying out activities. According to Peditomaternal Journal in 2021, 85,4% of teenage girls in Africa had primary dysmenorrhea⁷.

The dysmenorrhea cases in Indonesia reached a percentage of 60-70%, 107,673 (64.25%) to be exact, including primary dysmenorrhea in 59,671 people (54.89%) and secondary dysmenorrhea in 9,496 people (9.36%). In the least 50 years, 75% of women had the menstrual pain. Primary dysmenorrhea is usually perceived by potentially pregnant women or those who

have never been pregnant before. This symptom usually occurs in women at the age of 20-24 years or 25 years. Incidence in single women reached 61%⁸.

Around 60-75% of teenage girls in Indonesia had primary dysmenorrhea, including light, moderate, and severe pain⁹. Many women felt pain in their period, but they choose not to report it and see doctor because of feeling embarrassed and considering it not important. This condition makes data concerning the primary dysmenorrhea cannot be confirmed completely. Around 90% of Indonesian women had primary dysmenorrhea¹⁰.

According to Sirait, Hiswani & Jemadi (2014), a number of factors are predicted to be related to primary dysmenorrhea, including alcohol consumption, age of menarche, nutrient status, family history, menstruation duration, smoking, and the exercise habit¹¹. Primary dysmenorrhea have negative effects in teenagers, namely the reduced capability to study, being absent in school, inability to carry out household work, difficulty to focus during study, and the minimized social interaction. Polycystic ovary syndrome and endometriosis are long-term effects appearing when dysmenorrhea is not immediately managed. A number of factors are capable of reducing the pain, including nutrient food consumption, enough rest, family support, being not anxious, regular exercise, relaxation, pharmacological and non-pharmacological consumption for pain reliever, and entertainment¹². According to Bonde & Moningka (2014), menstrual pain is managed through the non-pharmacological therapy for dysmenorrhea prevention, through warm compress and coconut water administration. This therapy is believed to minimize pain during period¹³⁻¹⁴.

Warm compress is a measure to put small towel which has been soaked in warm water at a temperature of 40-46°C on stomach area in pain for at least 20 minutes, and the fabric is soaked again every five minutes. Warm compress with the principle of heat transmission is conducted through the conduction step, by putting warm water bag on symphysis to ease the blood circulation and relieve muscle tension, until the pain felt by primary dysmenorrhea patients is relieved¹⁵.

The widening of blood vessels by the heat is capable of increasing the blood circulation. The physiological response of body to the heat leads to the widening of blood vessel, minimizes the thick blood, minimizes the muscle tension, and improves capillary permeability and tissue metabolism. Response from the heat is used in the therapy need in a number of situations in body. The widening of blood vessel because of the heat occurs in 15-20 minutes. Compress longer than 20 minutes will lead to the burns in patients and tissue congestion because the blood vessel contraction is not capable of relieving the heat well through blood circulation¹⁶. According to a research by Maidartati, Hayati & Hasanah (2018), the warm compress technique with fabric or towel at a temperature of 40-46°C was carried out on the lower stomach of teenage girls during menstrual pain. For 20 minutes, hot water is replaced every 10 minutes to maintain the temperature. Thus, warm compress is capable of relieving the menstrual pain¹⁷.

In non-pharmacological therapy, menstrual pain relief is not through warm compress only on lower stomach, but also coconut water administration to cure dysmenorrhea. The use of coconut water is capable of solving a number of medical issues. This efficacy is obtained from important substance to preserve body's health¹⁸. One of the benefits of coconut is its efficacious water for curing a number of medical issues, namely menstrual pain, hypertension, diarrhea, kidney stones, metabolism issues, constipation, and fatigue. Coconut water has been processed into isotonic drink for having mineral, natural sugar, the balanced electrolyte similar to blood, and approximately 280 mOsm/kg H₂O¹⁹. Its mineral content includes potassium, sodium, folic acid, magnesium, calcium, iron, manganese, zinc, and selenium, with calcium as the most mineral content, followed by sodium²⁰.

Body produces blood and liquid during menstruation. Electrolyte in coconut water is capable of hindering dehydration, while folic acid is capable of increasing blood. Nutrient required in the red blood cell production is folic acid, capable of expediting blood flow and meeting the need for nutrient and oxygen, when produced in adequate amount. Its effect is the improvement on body resistance on pain felt during primary dysmenorrhea²¹.

Primary dysmenorrhea is a physical disorder in the menstruating women, in pain/cramps on stomach, followed by the spread of pain to back, nausea and vomiting, diarrhea, and headache. This condition is caused early menarche, physical activities, stress, dysmenorrhea history in family and nutrient intake. Primary dysmenorrhea can be prevented by reducing stress, consistent dietary habit followed with nutrient intake, avoiding spicy and acid foods when anticipating menstruation, taking care of body to not feel tired and the depleted energy, taking a rest, sleep as needed, and regular light exercise²². The effort of dysmenorrhea management can be in pharmacology and analgesic, but they can bring side effect for a long period of time, while non-pharmacological measure, through warm compress and coconut water administration, does not lead to any side effect. It is required to take a rest and stop activities for some time because of high menstrual pain rate. Thus, a problem is formulated, "Are There Any Effects of Warm Compress and Coconut Water Administration towards the Primary Dysmenorrhea in Teenage Girls of Al-Ikhlash Putri Modern Boarding School, Kuningan Regency.

Based on the elaborated background of occurrence, this research is intended to identify the effects of warm compress and coconut water administration towards the primary dysmenorrhea in teenage girls of Al-Ikhlash Putri Modern Boarding School in Kuningan Regency. This research is expected to be beneficial for teenage girls with the non-pharmacological therapy method which is independent and easy to be carried out everywhere, through warm compress and coconut water administration towards primary dysmenorrhea.

METHODS

This research was pre-experimental with one group pretest-posttest design and conducted from 1st of

June to 14th of July 2023 in Al-Ikhlash Putri Modern Boarding School, Kuningan Regency. This research has obtained the permission No.384-54/Ket/III.3-AUM/D/2023 from the Muhammadiyah Institute of Health Science in Cirebon. Population in this research was 83 respondents from classes 1-3 of Senior High School. Teenage girls at the age of 14-18 years were made the research sample. The samples were selected with the purposive sampling technique, so 26 teenage girls matching inclusion and exclusion criteria were gathered. Inclusion criteria were teenage girls with willingness to be respondents, to follow the research until completion, studying in Al-Ikhlash Putri Modern Boarding School in Kuningan Regency, having primary dysmenorrhea, not having allergy to the green and hot coconut water, feeling pain after blood flowing until 48-72 hours, light and moderate pain intensity. Exclusion criteria were respondents not following the stages of research from screening, pretest, intervention, and posttest, having secondary dysmenorrhea, the uncontrolled severe pain intensity, getting sick or unable to attend during the research, being absent in school with permission, not following one of the activities and unable to catching up, and consuming certain medicine.

This research included the bound variable and free variable, with primary dysmenorrhea as the bound variable, while warm compress and coconut water administration were the free variables. Instrument used in warm compress were operational standard of warm compress and coconut water administration. Data processing included editing, coding, tabulating, and entry. Data analysis included univariate and bivariate analyses with chi-square testing, normality testing with kolmogorov smirnov test and the paired sample t-test with Sig. = 0.000 on SPSS application.

RESULTS AND DISCUSSIONS

Characteristics of teenage girls in the research result included age, education, year of first menstruation, first year of menstrual pain, height, weight, and hemoglobin (Hb), while 26 teenage girls had primary dysmenorrhea from 1st of June to 14th of July 2023 in Al-Ikhlash Putri Modern Boarding School, Kuningan Regency. All variables were presented in categorization. Distribution and frequency of every variable are detailed as follows:

Table 1. Frequency Distribution of Characteristics in Teenage Girls of Al-Ikhlash Putri Modern Boarding School, Kuningan Regency with the Primary Dysmenorrhea Condition

Characteristics	n (N=26)	%
Age (year)		
14	1	3.8
15	3	11.5
16	9	34.6
17	10	38.6
18	3	11.5
Education		
Junior High School	3	11.5
Senior High School	23	88.5
First Year of Menstruation		
2015	2	7.7
2017	3	11.5
2018	4	15.4
2019	8	30.8
2020	9	34.6
Age of Menarche		
10	1	3.8
11	3	11.5
12	10	38.6
13	7	26.9
14	5	19.2
First Year of Menstrual Pain		
2017	1	3.8
2019	2	7.7
2020	5	19.2
2021	4	15.4
2022	2	7.7
2023	12	46.2
Body Height		
<150 cm	7	26.9
≥150 cm	19	73.1
Body Weight		
40-58 kg	22	84.6
59-78 kg	4	15.4
Hemoglobin Level		

Characteristics	n (N=26)	%
<12 gr%	5	19.2
≥12 gr%	21	80.8
Before Warm Compress and Coconut Water (pre-test)		
Light Pain	16	61.6
Moderate Pain	9	34.6
The Controlled Severe Pain	1	3.8
After Warm Compress and Coconut Water (post-test)		
No pain	12	46.2
Light Pain	13	50.0
Moderate Pain	1	3.8
Hemoglobin Level		

Result of the research in Table 1 shows the characteristics of teenage girl, namely age, education, first year of menstruation, the age of menarche, first year of menstrual pain, height and weight, hemoglobin level. Univariate data were the pain scale before treatment with warm compress and coconut water (pre-test) and after warm compress and coconut water (post-test). Based on the research result, from 26 respondents, most of them (10 people or 38.6%) were 17 years. This research shows the teenage girls in class 3 of Junior High School, classes 1 and 2 of Senior High School in Al-Ikhlash Putri Modern Boarding School, with the age range of 14-18 years. It is in line with the definition of WHO, in which teenage girls are individuals with the age range from 10 to 19 years. As stated in the Regulation of Minister of Health of the Republic of Indonesia No. 25 Year 2014, teenage girls are individuals with age range of 10-18 years. According to National Population and Family Planning Board, the age range of teenage girls is 10-24 years before getting married²³.

According to the research result, most of them (23 people or 88.5%) studied in Senior High School. This finding was in line with a theory by Alimin (2023), in which the education of respondents was dominated by Senior High School because students were enthusiastic and motivated, based on the result of observation during activities in filling questionnaires directly given and filled by students²⁴. From the aforementioned explanation, the characteristics of respondents based on majority education level in Senior High School represented the variable in this research.

Based on the characteristics of respondents, most of them (34.6%) had menstruation for the first time in 2020 and the age of menarche at 10-14 years was dominated by the age of 12 years in 10 people (38.6%). The result of research was in line with theory of Prawiroharjo (2014), in which the range of menarche was 10-15 years. Menstruation before 10 years indicated early menarche, while late menarche was when menstruation after 15 years²⁵. Respondents with the later menarche were related to other factors affecting the physical growth²⁵. Minister of Health of the Republic of Indonesia (2018) revealed that the age of 12.4 was the average age of menarche. It was in line with the obtained finding because most of the respondents were 12 years when having the first menstruation.

This finding was in line with theory by Suwarnisih, Agustin, & Cahyaningtyas (2017), in which ideal menarche age was 13-15 years, while the age of <13 years for menarche was considered early²⁶. According to a

finding by Wulandari & Ungsianik (2013), the age of <12 years was considered too early in menarche and made teenagers unready to feel pain because of the optimal development of reproductive organ, cervical stenosis, and maturity of the reproductive organ²⁷. Age <12 years led to the short-term effect, dysmenorrhea occurrence, thus requiring serious attention²⁸.

Based on the research result, most of the respondents, in 12 people (46.2%), had the menstrual pain for the first time in 2023. In the age of 10-14 years, menarche occurred in 10 respondents (38.6%), particularly at age of 12 years. This research was in line with a theory, in two and three years after the menarche, dysmenorrhea occurs. If ideal age of menarche is 13-14 years, age of 15-17 years is common for dysmenorrhea²⁹. That age is a stage of reproductive organ development and significant hormonal change²⁹. Teenage girls in Senior High School are recommended to get reproductive health education, on dysmenorrhea in particular.

Height measurement using microtoise on 26 respondents show the lowest height at 13 cm, while the highest was 168 cm. The average height was 153.27 cm. In line with the finding from Fivi Arnia Sofiyani (2017), average height in students of boarding school was 154.9 cm³⁰. The lowest height was 140 cm, while the highest was 165 cm³⁰.

Height measured on 26 respondents resulted in the lowest weight at 40 kg, while the highest was 70 kg. The average weight was 50.42 kg. In line with a finding by Fivi Arnia Sofiyani (2017), the lowest weight of respondents was 32 kg, while the highest was 71 kg. Average weight was 51.28 kg³⁰.

Hemoglobin level, using the measuring instrument of EasyTouch GCHB, was grouped into normal and abnormal. It was categorized normal for ≥12 mg/dL, while the abnormal result was <12 mg/dL. Most of the hemoglobin levels were higher than 12 gr/dL, in 21 people (80.8%). In line with a finding by Fera, Merissa, and Sri Ratna (2023), hemoglobin level in teenage girls was mostly in ≥12 mg/dL with normal category³¹. For the finding in Palangka Raya, there was a correlation between hemoglobin level and dysmenorrhea occurrence ($p < 0.05$)³².

Before and After Warm Compress and Coconut Water (pre-test and post-test)

Primary dysmenorrhea level before coconut water administration was 61.5%, belonging to light pain in 16 people, characterized by hissing, grin, capability to point the area in pain, describing what is being felt, and

obeying instruction. Afterwards, 9 people (34.6%) with a scale of 4-6 had moderate pain, followed with 1 person (3.8%) at scale of 7 having a controlled severe pain. After given coconut water, primary dysmenorrhea level in teenage girls showed that 12 people (46.2%) were not in pain, 13 people (50.0%) had light pain at scale 1-3, and the rest 1 person (3.8%) had moderate pain, as characterized by good communication capability. In 26 teenagers having the decrease of primary dysmenorrhea level, 12 people (46.2%) were not in pain with scale 0, 13 people (50.0%) had light pain with scale 1-3, and 1 person (3.8%) had moderate pain at scale 4. It means that the pain intensity scale decreased after warm compress and coconut water administration.

The cause was that pain was assessed subjectively, so individuals with the related situation were capable of describing the pain scale, thus affecting the decrease in the pain intensity scale in every respondent³³. This finding was in line with a theory of Asmita Dahlan and Tri Veni (2017), in which pain after warm compress decreased³⁴. In line with the finding of Nuryanih & Suhatika (2020), coconut water was capable

of relieving menstrual pain, because of having high nutrient⁸.

The finding was in line with that of Rahmadhayanti (2017), in which warm compress affected the menstrual pain relief³⁵. In other findings, menstrual pain was relieved after warm compress³⁶. Average decrease of pain intensity before and after intervention was found. This finding was in line with the research showing that warm compress was capable of expediting the blood flow and causing vasodilation, resulting in the muscle relaxation for obtaining more nutrition from blood. Warm compress caused vasodilation in pubic symphysis capable of opening the blood flow, so the muscle contraction got reduced after relaxation. After prolonged pain was relieved, the respondents felt comfortable, capable to carry out minimum activities, and to control psychological response, leading to the controlled emotion. This compress was efficacious to expand blood vessel, stimulate the stiff joint, and minimize the pain³⁷. In other words, warm compress affected the decrease in pain intensity during period³⁸.

Table 2. Relation between Warm Compress and Coconut Water Administration (Before and After Intervention) in Teenage Girls of Al-Ikhlash Putri Modern Boarding School, Kuningan Regency, with the Primary Dysmenorrhea

Before treatment Warm Compress and Coconut Water (pre- test)	After Warm Compress and Coconut Water (post-test)						Total	p-value	α
	No pain		Light Pain		Moderate Pain				
	F	%	F	%	F	%			
Light Pain	11	7.4	5	8.0	0	0.6	16	0.049	0.028
Moderate Pain	1	4.2	7	4.5	1	0.3	9		
The Controlled Severe Pain	0	0.5	1	0.5	0	0	1		

Pre-test (before intervention); post-test (after intervention)

Based on the analysis result in 26 samples, 12 respondents (46.2%) had no pain, 13 (50.0%) had light pain, and 1 person (3.8%) had moderate pain. Result in chi-square testing was p-value at 0.049, meaning that p-value < α. Number 0.05 means correlation was found in warm compress and coconut water administration

towards the primary dysmenorrhea in teenage girls. This research was also in line with that of Shopia (2013), with p-value resulted at 0.019, meaning that correlation was found in warm compress and coconut water administration towards primary dysmenorrhea³⁹.

Table 3. Normality Test of Primary Dysmenorrhea before and after Warm Compress and Coconut Water Administration in Teenage Girls of Al-Ikhlash Putri Modern Boarding School, Kuningan Regency

Normality Test	pre-test and post-test			Explanation
	t-statistic	Sig	df	
Shapiro-Wilk	0.944	0.163	26	Normal
One Sample Kolmogorow-Smirnov Test	0.238	0.001	26	Normal

Sig (Significance); DF (Degrees of Freedom)

In identifying the data distribution, normality testing was carried out with Shapiro-Wilk in pre-test and post-test, while Sig. level in pre-test and post-test variables was 0.163 > 0.05. It means that data distribution was normal. In testing normality with One Sample

Kolmogorov Smirnov Test, the result was 0.238 > 0.001 = 0.05. It was concluded that probability t-statistic > Level of Significant = 0.05, meaning that data met the normality assumption and data distribution in every variable was considered normal.

Table 3. Effects of Warm Compress and Coconut Water Administration towards the Primary Dysmenorrhea in Teenage Girls of Al-Ikhlash Putri Modern Boarding School, Kuningan Regency

Variable	t-count	Sig	Level of Significance	N
pre-test and post-test	7.939	0.000	0.05	26

Sig (Significance); N (Amount of Valid Observation for Variable)

Result of the difference test with the paired sample t-test was Sig. = 0.000 ($\alpha = 0.05$), thus there was a significant difference between pre-test and post-test. Table t shows positive t-count at 7,939, which means that the average was lower before intervention, compared to the average after intervention. Thus, warm compress and coconut water administration had effect from pre-test to post-test. Significant difference was found in warm compress and green coconut water towards the change of pain scale in primary dysmenorrhea.

This finding was in line with that of Pattiha and Suciawati (2021), in the reaction of 30 teenagers consuming coconut water, in which post-test result showed that 16 respondents (53.3%) did not feel pain⁴⁰. It was proven with p-value 0.000 <math>< 0.05</math>, meaning that green coconut water administration affected primary dysmenorrhea pain⁴⁰. This result was supported by the finding from Lestari (2015), with Asymp. Sign (2-tailed) 0.000 (<math>< 0.05</math>), meaning that coconut water affected the menstrual pain level⁴¹.

Dysmenorrhea treatment using warm compress and coconut water are recommended because they are proven to be effective. This technique does not show any side effect, unlike the treatment with chemical medicine, so it is considered to be efficient because its implementation is independent and affordable. Coconut water is used in general for reducing pain, at 14%. Blood produces blood and fluid during period. Electrolyte content in coconut water is capable of hindering dehydration and bringing analgesic effect because of its vitamin⁴².

As predicted by researchers after conducting research, electrolyte with high nutrient in green coconut serves as analgesic. On the contrary, the use of chemical drugs is costly in terms of economy. Thus, it is recommended to reduce its use, by consuming ingredients which are natural, easy to get, and affordable.

CONCLUSIONS

Based on the result of research related to the effect of warm compress and coconut water administration on the primary dysmenorrhea in teenage girls, there is a relation among warm compress, coconut water administration, and primary dysmenorrhea in teenage girls of Al-Ikhlash Putri Modern Boarding School, Kuningan regency. There is a difference test or significant effect between menstrual pains before and after warm compress and coconut water administration in teenage girls. Thus, it can be concluded that warm compress and coconut water administration has been used as non-pharmacological therapy which is effective in relieving menstrual pain in teenage girls.

ACKNOWLEDGEMENT

Authors express their gratitude to all parties supporting the research, particularly Lecturers of Midwifery Study Program in Muhammadiyah-Ahmad Dahlan University of Cirebon.

CONFLICT OF INTEREST AND FUNDING DISCLOSURE

All authors do not have any conflict of interest in this article. Research is funded independently by the authors.

AUTHOR CONTRIBUTIONS

OSR: conceptualization, investigation, methodology, supervision, writing-review and editing; RY: methodology, writing-original draft; DK: methodology; formal analysis, writing-original draft; NRN: formal analysis, resources; OSR: writing-original draft, writing-review and editing.

REFERENCES

1. Kusmiran, E. *Kesehatan Reproduksi Remaja dan Wanita*. in (Bandung: Salemba Medika, 2014).
2. H Hasdianah, S. S. *Kesehatan Reproduksi*. in (Yogyakarta: Nuha Medika., 2013).
3. *Kementrian Kesehatan Republik Indonesia. Buku Ajar Kesehatan Ibu Dan Anak*. (2015).
4. Wiknjastro, H. *Ilmu Kebidanan*. (Jakarta: Yayasan Bina Pustaka Sarwono Prawirohardjo, 2014).
5. Umi. *Gambaran Pengetahuan tentang Dismenore dan Penanganan Dismenore*. in (Semarang, program sarjana, Naskah Publikasi. Universitas Muhammadiyah, 2016).
6. Herawati, R. *Faktor-Faktor yang Mempengaruhi Kejadian Nyeri Haid (Dismenore) pada Siswi Madrasah Aliyah Negeri Pasir Pengaraian. Matern. Neonatal J. Kebidanan* **2**, 161–172 (2017).
7. Umami, D. A., Nurjanah, N. A. L. & Iswari, I. *Efektifitas Promosi Kesehatan terhadap Penanganan Dismenore pada Remaja Putri. Genitri J. Pengabd. Masy. Bid. Kesehat.* **3**, 64–68 (2024).
8. Ns.Nuryanih & Suhatika. *Pengaruh Konsumsi Air Kelapa Terhadap Pengurangan Nyeri Haid (Dismenore)*. *J. Kesehat.* **9**, 33–42 (2020).
9. Ulya et al. *Comparison of Effects of Massage Therapy Alone And in Combination With Green Coconut Water Therapy on Bendorphin Level in Teenage Girls With Dysmenorrhea*. *Belitung Nurs. J.* **3**, 412–419 (2017).
10. Anugroho, D. & Wulandari, A. *Cara Jitu Mengatasi Nyeri Haid*. (ANDI, Yogyakarta, 2015).
11. Sirait, Hiswani & Jemadi. *Faktor-faktor yang berhubungan dengan kejadian dismenore pada siswi SMA Negeri 2 Medan*. in vol. 1 1–10 (Departemen Epidemiologi FKM USU, 2014).
12. Harahap, M. H. *Efektivitas Kelapa Hijau Terhadap Penurunan Nyeri Haid Pada Remaja Putri*. *MJ (Midwifery journal)* **1**, 194–199 (2021).
13. Bonde, F. M. P. & Moningka, M. *Pengaruh Kompres Panas Terhadap Penurunan Derajat Nyeri Haid Pada Siswi SMA Dan SMK Yadika Kopandakan II. J. E-Biomedik* **2**, 2–6 (2014).
14. Idhayanti, R. I., Munayarokh & Mundarti. *Terapi Dalam Mengatasi Dismenore Primer pada Remaja Putri*. *J. Jendela Inov. Drh.* **2**, 32– 42 (2019).
15. Vaidya A & Carey. *Evolution of the Primary Aldosteronism Syndrome: Updating the Approach*. *J Clin Endocrinol Metab* **105**, 3771–83 (2020).
16. Dahlan A, T. . S. *Pengaruh Terapi Kompres Hangat Terhadap Nyeri Haid (Dismenore) Pada Siswi SMK Perbankan Simpang Haru Padang*. *J Endur Kaji Ilm*

- Probl Kesehatan* **2**, 37–44 (2017).
17. Maidartati, Hayati, S. & Hasanah, A. P. Efektivitas Terapi Kompres Hangat Terhadap Penurunan Nyeri Dismenore Pada Remaja Di Bandung. *J. Keperawatan BSI VI*, 156–164 (2018).
 18. Lestari, F. Pengaruh pemberian air kelapa hijau terhadap tingkat nyeri haid pada mahasiswi program studi ilmu keperawatan Stikes Aisyiyah Yogyakarta. (2015).
 19. Lazim, M. & Badruzaman. Quantification of Cytokinins in Coconut Water from Different Maturation Stages of Malaysia Coconut (*Cocos nucifera* L.) Varieties. *J Food Process Technol* **6**, 1–6 (2015).
 20. Rana, Kaushik & Kaushal. Physicochemical and Electrochemical Properties of Zinc Fortified Milk. *Food Biosci* 117–124 (2018).
 21. Sumino, Nursanti, F. A. & Dewi Trisnawati. Studi Analisa Pemanfaatan Air Kelapa Sebagai Intervensi Non Farmakologi Dalam Mengurangi Nyeri Haid Pada Remaja Dalam Sudut Pandang Keperawatan. 1–10 (2020).
 22. Paradise, C. P. Relationship Of Calcium Intake With The Level Of Dismenore (Menstrual Pain) Students Of The Faculty Of Medicine, Muhammadiyah University Of Makassar. (*Universitas Muhammadiyah Makassar, 2021*).
 23. Menteri Kesehatan Republik Indonesia. Peraturan Menteri Kesehatan Republik Indonesia Nomor 25 Tahun 2014. 1–88 (2014).
 24. Alimin, Naharia & Hasniah. Peningkatan Hasil Belajar Ppkn Melalui Model Pembelajaran Problem Based Learning. *J. Ilm. Pena* **14**, 42–47 (2023).
 25. Prawiroharjo, S. *Ilmu Kebidanan*. (Jakarta: Yayasan Bina Pustaka Sarwono Prawirohardjo, 2014).
 26. Suwarnisih, K, A. & A.Y., C. Hubungan Usia Menarche dengan Kejadian Dismenore pada Remaja Putri di SMP N 17 Surakarta. *J. Ilm. Matern.* **2**, 46–54 (2017).
 27. Wulandari, S. & Ungsianik, T. Status Gizi, Aktivitas Fisik, Dan Usia Menarche Remaja Putri. *J. Keperawatan Indones.* **16**, 55–59 (2013).
 28. Wahyuni, R., Nurhaeda & Aisyah. Efektifitas Teknik Relaksasi Genggam Jari Terhadap Penurunan Nyeri Dismenore Di Desa Benggaul. *Media Publ. Penelit. Kebidanan* **5**, 16–24 (2022).
 29. Baradero, Dayrit & Maratning. *Seri Asuhan Keperawatan Kesehatan Mental Psikiatri*. (Jakarta: EGC, 2016).
 30. Sovian, F. A. Gambaran Status Gizi Remaja Berdasarkan Indeks Massa Tubuh Dan Lingkar Lengan Atas Di Pondok Pesantren Al-Islam Kota Yogyakarta Tahun 2017. in (*Program Studi Kebidanan (D-3)*). STIKES Jendral Ahmad Yani. Yogyakarta, 2017).
 31. Herwandar, F. R., Heryanto, M. L. & Juita, S. R. Hubungan Kadar Hemoglobin dengan Siklus Menstruasi pada Remaja Putri. *J. Ilmu Kesehatan. Bhakti Husada Heal. Sci. J.* **14**, 99–106 (2023).
 32. Mawaddah, S. & Pratiwi, I. M. Hubungan Kadar Hemoglobin dengan Kejadian Dismenore Pada Remaja. *J. Berk. Kesehatan.* **4**, 61–64 (2018).
 33. Puspitasari, Rumi & Mukarromah. Pengaruh Latihan Senam dan Daya Tahan Tubuh terhadap Respon Nyeri Haid (Dysmenorrhea). *J. Phys. Educ. Sport* **6**, 165–171 (2017).
 34. Dahlan, A. & Syahminan, T. V. Pengaruh Terapi Kompres Hangat Terhadap Nyeri Haid (Dismenore) Pada Siswi SMK Perbankan Simpang Haru Padang. *J. Endur.* **2**, 37–44 (2017).
 35. Rahmadhayanti, E., Afriyani, R. & Wulandari, A. Pengaruh Kompres Hangat terhadap Penurunan Derajat Nyeri Haid pada Remaja Putri di SMA Karya Ibu Palembang. *J. Kesehatan.* **8**, 369–374 (2017).
 36. Oktasari, G., Miraswati & Utami, G. T. Perbandingan Efektivitas Kompres Hangat dan Kompres Dingin Terhadap Penurunan Dismenorea pada Remaja Putri. (2014).
 37. Merdianita & Vonny. Efektivitas kompres hangat dalam menurunkan intensitas nyeri dysmenorrhea pada mahasiswi Stikes RS. Baptis Kediri. *Stikes* **6**, (2013).
 38. Dahliana, Suprida & Yuliana. Penurunan Nyeri Dismenore Menggunakan Kompres Hangat. *J. Complement. Heal.* **1**, 47–53 (2021).
 39. Sophia, dkk. Faktor-faktor yang berhubungan dengan dismenore pada siswi SMK Negeri 10 Medan. (2013).
 40. Pattiha, N. & Suciawati, A. Pengaruh Air Kelapa Muda Hijau Terhadap Nyeri Dismenore Pada Remaja. *Indones. J. Heal. Dev.* **3**, 231–238 (2021).
 41. Fitri L. Pengaruh Pemberian Air Kelapa Hijau Terhadap Tingkat Nyeri Haid Pada Mahasiswi Program Studi Ilmu Keperawatan STIKES 'Aisyiyah Yogyakarta. (STIKES 'Aisyiyah Yogyakarta, 2015).
 42. Realita, F., Susilowati, E. & Sari, R. K. Pengaruh Konsumsi Air Kelapa Hijau Terhadap Penurunan Dismenore. *J. Kesehatan.* **7**, 64–70 (2021).