

The Effect Of Giving Warm Compress On Reducing Menstrual Pain In Adolescents Princess At Sinar Husni Senior High School Medan In 2026

Mayang Wulan¹, Aida Fitria², Indah Dewi Sari³, Ferlin Laia⁴

Faculty of Pharmacy and Health, Helvetia Health Institute, Medan, Indonesia

mayangwulan@helvetia.ac.id

ABSTRACT

Dysmenorrhea is the most common menstrual pain complaint experienced by adolescent girls worldwide, with a global prevalence of 50–90% in 2022 and around 60–70% in Indonesia in 2021. Data from Medan even recorded that 85.9% of adolescent girls aged 15–17 years experienced menstrual pain that interfered with their learning activities. The purpose of this study was to determine the effect of providing warm compresses on reducing menstrual pain in adolescent girls at Sinar Husni High School 2026. This research method used a quasi-experimental design with a one-group pre-test post-test design, conducted in January–July 2026 with a sample of 15 respondents. Before the intervention, pain measurements were taken (pre-test), then warm compresses were given using a jar filled with water at a temperature of 38–40°C for 15–20 minutes, and after that, measurements were taken again (post-test). The data were analyzed using the Shapiro–Wilk normality test which showed a non-normal distribution, so bivariate analysis was continued using the Wilcoxon Signed Rank Test. The results of a study of 15 female adolescent respondents at Sinar Husni High School in Medan showed that before the warm water compress intervention, the majority experienced moderate pain, while after the intervention, the majority experienced mild pain. The Wilcoxon test showed that 13 respondents experienced a decrease in pain category with a significance value of 0.001, thus warm water compresses were proven effective in reducing the intensity of menstrual pain. The conclusion of this study is that warm water compresses have been proven to be effective in reducing the intensity of dysmenorrhea. It is recommended that female adolescents utilize warm water compresses as one way to reduce menstrual pain.

Keywords: Warm Compress, Menstruation, Pain

INTRODUCTION

Pain (dysmenorrhea) is a common complaint among adolescent girls during their menstrual cycle, which not only causes physical pain but also impacts their activity and quality of life, including concentration and enthusiasm for daily activities. The decreased quality of menstruation caused by dysmenorrhea is a significant issue in adolescent reproductive health because it can disrupt the ongoing physical and mental development of adolescence.

Teenagers aged 10-19 years will experience puberty, where a child experiences physical, hormonal, and sexual changes and is able to reproduce. This is marked by the start of menstruation in adolescent girls. Menstruation is the process of blood coming out of the uterus, which contains many blood vessels and unfertilized eggs. Menstruation occurs every month during reproductive age. Many women and adolescents experience physical discomfort before or during menstruation, one of which is menstrual pain or dysmenorrhea.(1).

Menstrual pain without other organic diseases is most often experienced by adolescent girls, pain due to other conditions (such as endometriosis). Menstrual pain can affect adolescents' sleep patterns, making it difficult to fall asleep or sleep poorly. In addition to abdominal pain, uterine muscle compression can cause lower back discomfort, weakness, or mood swings during menstrual pain. Severe menstrual pain can cause adolescent girls to reduce their daily activities.(2).

The impact of menstrual pain on adolescent girls can cause disruption to physical activity. A further consequence of this pain is decreased concentration, which can interfere with learning activities. Therefore, menstrual pain in adolescent girls must be managed appropriately to avoid negative impacts that will arise. Menstrual pain can be treated in many ways, one of which is with warm compresses. Menstruation is a physiological process experienced by every woman of reproductive age. However, the majority of adolescent girls experience complaints of menstrual pain (dysmenorrhea), which can interfere with daily activities, concentration in learning, and quality of life.(3).

Warm compress treatment is a non-pharmacological therapy that can be done independently. The warm effect of the compress can cause vasodilation in the blood vessels which will then increase blood flow to the tissue, the distribution of acid and food substances to the cells is enlarged and the disposal of substances is improved. This will reduce menstrual pain caused by the blood supply to the endometrium, reducing menstrual pain in adolescent girls.(4).

Menstruation is one of the disorders related to the menstrual cycle, is the most common gynecological disorder experienced by adolescent girls. Dysmenorrhea, or menstrual pain can affect the activities and activities of women, especially adolescent girls. Dysmenorrhea according to its cause is classified into 2, namely primary dysmenorrhea which occurs naturally due to hormonal changes in the body and secondary dysmenorrhea is a complaint of menstrual pain caused by the body and secondary dysmenorrhea is a complaint of menstrual pain caused by pathological conditions.(5).

According to data from the World Health Organization (WHO), in 2022, 1,769,425 (90%) women experienced menstrual pain, with 10-16% experiencing severe menstrual pain. The prevalence of menstrual pain worldwide is very high, with an average of more than 50% of women experiencing it. Over the past 50 years, 75% of women have experienced menstrual cramps. Symptoms of primary dysmenorrhea typically occur in women of childbearing age and women who have never been pregnant. Globally, menstrual pain is widespread, with incidence rates varying from 16% to 89%. For example, in Bangladesh, the incidence of menstrual pain is reported to be around 60%, in Egypt it is 35%, and in South Korea it is 0.9%. A study in Italy showed a prevalence of menstrual pain of around 84%, with approximately 55% of the pain requiring treatment, 32% requiring rest from work or school, and 25% requiring both.(6).

The incidence of menstrual pain in Indonesia in 2021 was quite high, indicating that 60-70% of women in Indonesia suffered from menstrual pain. The incidence of primary menstrual pain in Indonesia was 54.89%. Based on data from Medan City, menstrual pain affected 85.9% of adolescent girls aged 15-17 years, according to a study at SMA Negeri 2 Medan in 2024, indicating a high incidence of menstrual pain that disrupted daily activities.(7).

Research conducted by Napisah, Pipih Hernawati, (2024) with the topic of The Effect of Giving Warm Compresses on Reducing Menstrual Pain obtained results that before giving warm compresses (pre-test), respondents experienced moderate and severe menstrual pain after giving warm compresses (post-test), respondents experienced a decrease in menstrual pain with mild and moderate degrees of pain. It was concluded that there was a significant effect of giving warm compresses on reducing menstrual pain in adolescent girls who experience primary dysmenorrhea.(8).

Based on a preliminary survey conducted at Sinar Husni High School in Medan on January 24, 2026, through interviews with eight tenth-grade female students, it was found that four students, or approximately 50%, experienced menstrual pain every time they menstruated. The pain experienced by some students was quite disruptive to learning activities, reduced concentration, and some even missed school on the first day of menstruation due to severe pain. Most respondents did not know or had never tried simple methods such as warm compresses to reduce pain, and more often chose to endure the pain or take painkillers without the guidance of a health professional. These results indicate that menstrual pain remains a significant problem among adolescent girls, mainly due to a lack of knowledge and

application of safe and easy-to-do non-pharmacological treatment methods. Therefore, research on the effect of warm compresses on reducing menstrual pain is important.

Based on this background, the researcher is interested in raising the topic of the Effect of Giving Warm Compresses on Reducing Menstrual Pain in Adolescent Girls at Sinar Husni High School, Medan 2026.

RESEARCH METHODS

This study used a quasi-experimental design with a one-group pre-test post-test design to examine the effect of warm compresses on reducing menstrual pain in female adolescents at Sinar Husni High School, Medan in 2026. The study location was at Sinar Husni High School, Labuhan Deli District, Deli Serdang Regency, North Sumatra, and was conducted in January–July 2026 with a population of all 15 female students in grade X who experienced dysmenorrhea. The sample was selected using a purposive sampling technique based on the inclusion and exclusion criteria that had been determined.(9).

The independent variable was the application of warm compresses using a jar filled with water at a temperature of 38–40°C for 15–20 minutes on the first day of menstruation, while the dependent variable was the intensity of menstrual pain as measured by the Numerical Rating Scale (NRS) 0–10. The pain scale was classified from no pain (0), mild pain (1–3), moderate pain (4–6), severe pain controlled (7–9), to very severe/uncontrolled pain (10). Data collection was carried out through observation, interviews, documentation, and supporting literature from journals and official sources (Iriani et al., 2022).

Data were analyzed using the Shapiro–Wilk normality test to determine data distribution. If the data were normally distributed, a paired t-test was used; if not, a Wilcoxon test was used. Data processing was carried out through collecting, checking, coding, entering, and processing using SPSS. The analysis results were able to answer the hypothesis regarding the effectiveness of warm compresses in reducing dysmenorrhea intensity.(10).

RESEARCH RESULT

1. Respondent Characteristics

Table 1. Frequency Distribution of Age of Female Adolescents at Sinar Husni High School
Medan

Age	Frequency	Percentage
-----	-----------	------------

15 years	4	26.7
16 years	10	66.7
17 years	1	6.7
Total	15	100

Based on Table 1, the majority of the 15 female respondents at Sinar Husni High School in Medan were 16 years old (66.7%), while 26.7% were 15 years old and only 6.7% were 17 years old. This indicates that most respondents were in their mid-adolescence, a crucial phase when physiological changes related to the menstrual cycle begin to occur, making it relevant to research on the effect of warm compresses on menstrual pain.

2. Univariate Analysis

Table 2. Distribution based on dysmenorrhea scale category before and after giving warm compresses to female adolescents at Sinar Husni High School, Medan in 2026

Pain Scale Categories	Before Applying a Warm		After Applying a Warm	
	Water Compress		Water Compress	
	f	%	f	%
Mild Pain	2	13.3	11	73.3
Moderate Pain	8	53.3	4	26.7
Severe Pain Under Control	4	26.7	0	0.0
Severe Uncontrolled Pain	1	6.7	0	0.0
Total	15	100.0	15	100.0

Based on Table 2, It was explained that before being given a warm compress, most of the young women experienced moderate pain, namely 8 people (53.3%), followed by controlled severe pain as many as 4 people (26.7%), mild pain as many as 2 people (13.3%), and uncontrolled severe pain as many as 1 person (6.7%). After being given a warm compress, there was a significant change, where the majority of respondents experienced mild pain as many as 11 people (73.3%) and the rest experienced moderate pain as many as 4 people (26.7%). There were no more respondents who experienced severe pain, either controlled or uncontrolled.

3. Bivariate Analysis

Table 3. Data Normality Test Using Shapiro-Wilk

Group	Statistics	Df	Sig
<i>Pre-Test</i>	0.865	15	0.028
<i>Post-Test</i>	0.561	15	0.000

Based on Table 3, the results of the Shapiro–Wilk normality test show a p-value of 0.028 in the Pre-Test group and 0.000 in the Post-Test group, both ≤ 0.05 , so the data are not normally distributed. Therefore, the analysis was continued using the non-parametric Wilcoxon Signed Rank Test to assess the effect of providing warm compresses on reducing menstrual pain in female adolescents at Sinar Husni High School, Medan, in 2026.

Table 4. Test *Wilcoxon Signed Rank Test*

		Ranks			
		N	Mean Rank	Sum of Ranks	Asymp. Sig. (2-tailed)
Post Test - Pre Test	Negative Ranks	13a	7.00	91.00	0.001
	Positive Ranks	0b	,00	,00	
	Ties	2c			
	Total	15			

Based on Table 4, of the 15 female adolescent respondents at Sinar Husni High School in Medan, 13 experienced a reduction in menstrual pain after receiving warm compresses, 2 remained at the same level, and none experienced an increase in pain. This indicates that the majority of respondents experienced a reduction in pain intensity after the intervention, although a small number did not experience any change.

Furthermore, the Wilcoxon Signed Rank Test results showed a significance value of 0.001 ($p < 0.05$), thus concluding that there was a significant effect between the level of menstrual pain before and after warm water compresses. Thus, warm water compresses were proven effective in reducing the intensity of dysmenorrhea in adolescent girls at Sinar Husni High School, Medan, in 2026.

DISCUSSION

1. Menstrual Pain in Adolescent Girls Before Applying Warm Water Compresses

A study of 15 female adolescent respondents at Sinar Husni High School in Medan showed that before the warm water compress intervention, the majority experienced moderate to severe menstrual pain. Eight experienced moderate pain, four experienced controlled severe pain, one experienced uncontrolled severe pain, and only two experienced mild pain. This confirms that dysmenorrhea significantly disrupts the daily activities of female adolescents.

This finding is in line with research by Ramandhani et al. (2026) which reported that the majority of respondents experienced moderate to severe pain before warm compresses.(1), as well as research by Nuryanti et al. (2023) which stated that the intensity of menstrual pain was generally in the moderate to severe category before non-pharmacological intervention.(11).Research by Veronika et al. (2025) also supports these results by showing that most respondents experienced moderate pain before being given warm compresses.(12).These three studies confirm that dysmenorrhea is a common gynecological problem that requires intervention to reduce pain intensity.

Physiologically, dysmenorrhea occurs due to increased prostaglandins which trigger excessive myometrial contractions, vasoconstriction, and tissue hypoxia, thus causing significant pain.(13).This condition is in accordance with Dawood's opinion which states that primary dysmenorrhea is generally experienced from the start of menstruation and can disrupt the quality of life of adolescent girls.(14).Researchers assume that the moderate to severe pain experienced by the majority of respondents before the intervention was influenced by dominant physiological mechanisms as well as psychological factors such as stress and anxiety, so that warm compress intervention was needed to reduce pain intensity.

2. Menstrual Pain in Adolescent Girls After Warm Water Compresses

A study of 15 female adolescents at Sinar Husni High School in Medan showed that after warm compresses, menstrual pain significantly decreased. Eleven respondents moved to the mild pain category, while four remained in the moderate pain category, with none experiencing severe pain. This confirms the effectiveness of warm compresses in reducing the intensity of dysmenorrhea.

This finding is consistent with research by Ramandhani et al. (2026) who reported that the majority of respondents moved from moderate to severe pain to mild pain after warm compresses.(1)Nuryanti et al. (2023) confirmed that warm compresses are effective through

the mechanisms of vasodilation and muscle relaxation.(11), while Veronika et al. (2025) added that the warm effect also provides psychological comfort in the form of relaxation and reduced stress.(12).

Physiologically, heat causes vasodilation, increases blood flow, reduces ischemia, and decreases myometrial contractions and muscle spasms. Psychologically, the sensation of warmth provides a sense of comfort and reduces tension.(13).Heat also works through a conduction mechanism that improves tissue metabolism and blocks pain impulses.(14). Researchers assume that pain reduction is not only due to local effects on the uterus, but also a combination of systemic effects such as muscle relaxation and modulation of pain perception, so that warm compresses can be a simple, safe, and effective non-pharmacological strategy.

3. The Effects of Applying Warm Compresses To Reducing Menstrual Pain in Adolescent Girls at Sinar Husni High School, Medan, in 2026

Before the warm water compress intervention, the majority of the 15 female adolescent respondents at Sinar Husni High School Medan experienced menstrual pain with moderate to severe intensity, namely 8 people had moderate pain, 4 people had controlled severe pain, 1 person had uncontrolled severe pain, and only 2 people had mild pain. This indicates that dysmenorrhea is quite disruptive to the daily activities of the female adolescents. After two warm water compresses, there was a significant decrease, with 11 respondents moving to the mild pain category and 4 respondents remaining in the moderate pain category, with no further severe pain. The Wilcoxon Signed Rank Test showed a significance value of 0.001, confirming a significant difference before and after the intervention.

Research by Ramandhani et al. (2026) supports these results by showing that the majority of respondents moved from moderate to severe pain to mild pain after warm compresses.(1)Nuryanti et al. (2023) emphasized that warm compresses are effective through the mechanisms of vasodilation, increased tissue metabolism, and muscle relaxation which reduces spasms.(11)Veronika et al. (2025) also stated that warm compresses not only reduce pain physiologically, but also provide psychological effects in the form of comfort and relaxation.(12).

Physiologically, dysmenorrhea occurs due to increased prostaglandins which trigger excessive myometrial contractions, vasoconstriction, and tissue ischemia, thus causing pain.(15)Primary dysmenorrhea is generally experienced by adolescent girls from the start of

menstruation without any reproductive organ abnormalities, and can reduce concentration in learning and quality of life.(16) Warm compresses work through heat conduction, which increases blood circulation, decreases uterine smooth muscle contractions, reduces spasms, and blocks the transmission of pain impulses.

Researchers assume that the reduction in menstrual pain after the intervention is not only due to local effects on the uterus, but also a combination of systemic effects such as muscle relaxation, improved tissue metabolism, and modulation of pain perception through the nervous system. Therefore, warm compresses can be a simple, safe, and effective non-pharmacological strategy for managing dysmenorrhea, as evidenced by the majority of respondents' transition from moderate to severe pain to mild pain after the intervention.

CONCLUSION

Research at Sinar Husni High School in Medan in 2026 concluded that giving warm water compresses had a significant effect in reducing dysmenorrhea pain, where before the intervention the majority of respondents experienced moderate to severe pain, whereas after the intervention the majority moved to the mild pain category and none of them experienced severe pain.

BIBLIOGRAPHY

- Ramandhani NG, Sugiharti RK, Simanjuntak H, Widaningsih I. Warm Compresses Reduce Dysmenorrhea in Adolescent Girls. *Borneo Nurs J*. 2026;8(1):1179–84.
- Suryani S, Lismayanti L. Literature Review: The effect of warm compresses on dysmenorrhea in vocational high school students. *J Ilm Penelit Mhs*. 2026;4(1):109–16.
- Fahmiah NA, Huzaimah N, Hannan M. Dysmenorrhea and its Impact on School Activities in Adolescents. 2022;3(1):81–7.
- Puspita DA, Purwanto H, Surabaya PK, Dysmenorrhea P. Overview of knowledge and management of dysmenorrhea in adolescent girls in Ngrayung Village, Plumpang District, Tuban Regency. 2022;6(2):22–32.
- Siregar IS, Handayani I, Cahaya PD. Overview of Female Adolescents' Knowledge about Dysmenorrhea at Ar-Rahman High School, Medan City in 2023. 2024;4(1):86–93.
- Furwasyih D, Hesti N, Regina P. Dysmenorrhea in Adolescent Girls. 2025;1(2):248–52.
- Retni A, Abdullah A. Application of Warm Ginger Compresses to Reduce Menstrual Pain in Grade IX Female Adolescents at SMP Negeri 9 Satu Atap Limboto. *Shine Cahaya*

Dunia Ners. 2025;10(01):17–35.

Napisah P, Hernawati Y. The effect of warm compresses on reducing dysmenorrhea pain in adolescent girls in the Cempaka Arum Community Health Center work area. 2024;XVIII:1–6.

Harlan J, Johan RS. Health Research Methodology. Depok: Gunadarma University; 2018.

Dahlan S. Statistics for Medicine and Health. Yogyakarta: Indonesian Epidemiology; 2016.

Nuryanti RD, Sopiah P, Rosyda R. Effectiveness of warm compresses on dysmenorrhea in adolescent girls: Narrative literature review. TEKNOSAINS J Sains, Teknol dan Inform. 2023;10(2):266–73.

Veronika V, Wulandari R. Effectiveness of Giving Warm Compresses to Reduce Menstrual Pain in Adolescent Girls at Sragen Islamic Boarding School. Al-Insyirah Midwifery J IlmuMidwifery (Journal Midwifery Sci. 2025;14(2):220–7.

Proctor M, Farquhar C. Diagnosis and Management of Dysmenorrhea. London: BMJ Publishing Group; 2006.

Dawood M. Primary Dysmenorrhea: Advances in Pathogenesis and Management. Philadelphia: Wolters Kluwer Health; 2008.

Anurogo D, Wulandari A. Effective Ways to Overcome Menstrual Pain. P. H, editor. Yogyakarta: Andi; 2011.

Hidayah N, Fatmawati R. Textbook of Menstrual Pain Management in Adolescents. Surakarta: Yuma Pressindo; 2020.