JUKEKE Jurnal Kesehatan dan Kedokteran
OPEN ACCESS
JUKEKE Vol 4 No. 2 | Juni 2025 | ISSN: 2829-0437 (print), ISSN: 2829-050X (online), Page 186-196

Effectiveness of Warm Compress Therapy in Reducing Menstrual Pain Among Adolescent Girls at Sehati Senior High School, Karawang

Ade Krisna Ginting[1*], Euis Atikah[2], Rina Dwi Anggraeni[3], Anisa Sekar Kedaton[4], Delcy Regiana Putri[5]
[1,2,3,4,5] Kebidanan, Universitas Sehati Indonesia Karawang, Indonesia

Article History
Received : May 25, 2025
Revised : June 23, 2025
Accepted : June 27, 2025
Publication : June 29, 2025

Corresponding author*:
krisnaade7777@gmail.com

Cite This Article:
Ginting, A. K. ., Atikah, E., Anggraeni, R. D., Kedaton, A. S., & Putri, D. R. (2025). Effectiveness of Warm Compress Therapy in Reducing Menstrual Pain Among Adolescent Girls at Sehati Senior High School, Karawang. *Jurnal Kesehatan Dan Kedokteran*, *4*(2), 186–196.

DOI:
https://doi.org/10.56127/jukeke.v4i2.2767

Abstract: Dysmenorrhea is one of the most common reproductive health problems experienced by adolescent girls and frequently interferes with daily activities, academic performance, and overall quality of life. Although pharmacological treatments are commonly used to manage menstrual pain, non-pharmacological approaches are increasingly recommended due to their safety, affordability, and minimal side effects. Warm compress therapy is a simple intervention that may reduce menstrual pain by improving blood circulation, relaxing muscles, and decreasing uterine spasms. This study aimed to analyze the effect of warm compress therapy on menstrual pain among adolescent girls at Sehati Senior High School, Karawang. This study employed a quantitative approach using a quasi-experimental one-group pretest–posttest design. A total of 30 adolescent girls experiencing dysmenorrhea participated in the study. Menstrual pain intensity was assessed before and after the administration of warm compress therapy using a standardized pain measurement scale. Data were analyzed using descriptive statistics and a Paired Sample t-Test with a significance level of 0.05. The results showed that the mean menstrual pain score decreased from 6.8 before the intervention to 3.2 after the administration of warm compress therapy. Statistical analysis revealed a significant difference between pretest and posttest pain scores ($p = 0.000$), indicating that warm compress therapy effectively reduced menstrual pain among adolescent girls. The reduction in pain intensity is associated with improved local blood circulation, muscle relaxation, and decreased uterine contractions. The findings imply that warm compress therapy can be implemented as a safe, simple, inexpensive, and easily accessible intervention for managing dysmenorrhea among adolescents. The originality of this study lies in its evaluation of warm compress therapy within a secondary school setting using a quasi-experimental pretest–posttest approach and direct measurement of pain intensity. The study provides additional empirical evidence supporting the integration of non-pharmacological pain management strategies into adolescent reproductive health programs and school health services.

Keywords: dysmenorrhea; warm compress therapy; menstrual pain; adolescent girls; non-pharmacological intervention.

INTRODUCTION

Dysmenorrhea is one of the most common reproductive health problems experienced by adolescent girls worldwide. It is defined as menstrual pain that occurs before or during menstruation due to excessive uterine contractions and is generally associated with increased prostaglandin production in the endometrium (Prawirohardjo, 2020). Menstrual

pain is typically felt in the lower abdomen and may radiate to the lower back and thighs. It is often accompanied by additional symptoms such as nausea, vomiting, fatigue, headaches, and emotional disturbances. This condition can interfere with daily activities, reduce academic concentration, increase school absenteeism, and negatively affect the quality of life of adolescent girls. According to the World Health Organization (WHO), more than half of women of reproductive age experience dysmenorrhea, and a considerable proportion suffer from moderate to severe pain requiring appropriate management (World Health Organization [WHO], 2023). In Indonesia, dysmenorrhea remains highly prevalent and is recognized as one of the most frequently reported reproductive health complaints among adolescent girls.

The first group of studies focuses on the causes and consequences of dysmenorrhea among adolescents and young women. Proverawati and Misaroh (2019) explained that elevated prostaglandin levels during menstruation stimulate excessive uterine contractions, leading to pain. Anurogo and Wulandari (2019) reported that dysmenorrhea may adversely affect physical, psychological, and social functioning. Kusmiran (2018) further found that menstrual pain is frequently associated with reduced academic productivity and limitations in daily activities. In addition, Latthe et al. (2006) demonstrated that dysmenorrhea is significantly associated with decreased quality of life and psychological well-being among young women. These findings indicate that dysmenorrhea is not merely a physiological condition but also a public health concern that requires effective management.

The second group of studies examines various approaches to dysmenorrhea management, including both pharmacological and non-pharmacological interventions. Nonsteroidal anti-inflammatory drugs (NSAIDs) are among the most commonly prescribed treatments because they inhibit prostaglandin synthesis and reduce pain intensity (Dawood, 2006). However, long-term use of analgesic medications may lead to adverse effects, including gastrointestinal disturbances, nausea, and medication dependence (French, 2005). Consequently, researchers have increasingly explored non-pharmacological alternatives such as physical exercise, yoga, relaxation techniques, music therapy, acupressure, and heat therapy as safer and more accessible options (Armour et al., 2019; Fernández-Martínez et al., 2018). These approaches are generally considered cost-effective, easy to implement, and associated with minimal side effects.

The third group of studies specifically investigates the effectiveness of warm compress therapy in reducing menstrual pain. Warm compresses work through several physiological

mechanisms, including vasodilation, improved local blood circulation, muscle relaxation, and reduction of uterine spasms, which are among the primary causes of menstrual pain (Potter & Perry, 2021). Akin et al. (2001) reported that heat therapy demonstrated effectiveness comparable to certain analgesic medications in relieving primary dysmenorrhea. Similarly, Jo and Lee (2018) found that local heat application significantly reduced pain intensity among women with primary dysmenorrhea. Comparable results were reported by Armour et al. (2019), Safitri et al. (2023), and Anggriani and Fitriani (2023), who concluded that warm compress therapy provides a relaxing effect and contributes to significant reductions in menstrual pain intensity. These findings suggest that heat therapy represents a promising non-pharmacological intervention for dysmenorrhea management.

Despite the growing evidence supporting the effectiveness of warm compress therapy, several research gaps remain. Most previous studies have focused on university students or adult women, while research involving adolescent girls in secondary school settings remains relatively limited. Furthermore, some studies have relied primarily on descriptive assessments rather than employing pretest–posttest measurements capable of directly capturing changes in pain intensity following intervention. At the local level, empirical evidence regarding the effectiveness of warm compress therapy among high school students is still scarce. Therefore, further research is needed to strengthen the scientific evidence supporting the use of warm compresses as a practical intervention in adolescent reproductive health programs.

Based on these considerations, this study aims to analyze the effect of warm compress therapy on menstrual pain among adolescent girls at Sehati Senior High School, Karawang. The study is expected to provide scientific evidence regarding the effectiveness of warm compresses as a safe, simple, affordable, and easily applicable non-pharmacological intervention for reducing menstrual pain among adolescents.

This study is based on the argument that warm compress therapy can reduce menstrual pain by increasing local blood circulation, promoting muscle relaxation, and decreasing uterine spasms caused by excessive contractions. As uterine tension decreases and physical comfort improves, the perception of pain experienced by adolescent girls is expected to decline. Therefore, the research hypothesis is that warm compress therapy has a significant effect on reducing menstrual pain among adolescent girls.

RESEARCH METHOD

This study employed adolescent girls experiencing dysmenorrhea at Sehati Senior High School, Karawang, as the unit of analysis. The primary focus of the research was to examine changes in menstrual pain intensity before and after the administration of warm compress therapy. Menstrual pain was selected as the main outcome variable because it is one of the most common reproductive health problems among adolescent girls and frequently interferes with daily activities, academic performance, and overall quality of life. The study aimed to evaluate the effectiveness of warm compress therapy as a non-pharmacological intervention for reducing dysmenorrhea.

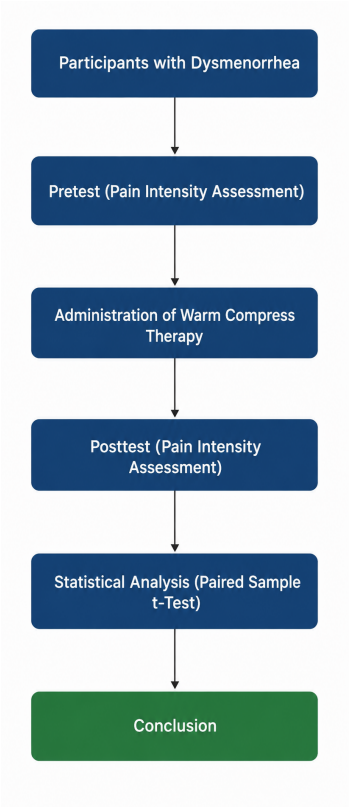

Figure 1. Flowchart Research

A quantitative approach was adopted using a quasi-experimental one-group pretest–posttest design. This design was selected because it allows researchers to assess changes in pain intensity within the same group of participants before and after receiving the intervention. By comparing pretest and posttest scores, the effectiveness of warm compress therapy can be directly evaluated. The quantitative approach was considered appropriate because the study focused on measuring and statistically analyzing numerical changes in menstrual pain intensity following the intervention.

The study utilized both primary and secondary data sources. Primary data were obtained directly from adolescent girls who experienced menstrual pain and participated in the study. Information regarding pain intensity was collected before and after the application of warm compress therapy. Secondary data were gathered from scientific journals, textbooks, research reports, and health-related publications concerning dysmenorrhea, pain management, and non-pharmacological interventions. These sources were used to establish the theoretical foundation of the study and support the interpretation of the findings.

Data collection was conducted through observation and pain assessment using a standardized pain measurement scale. Prior to the intervention, participants were asked to report their menstrual pain intensity, which served as the pretest measurement. Subsequently, warm compress therapy was administered by applying a warm compress to the lower abdominal area for a specified duration according to the established procedure. After the intervention was completed, participants were reassessed using the same pain scale to obtain posttest data. Throughout the data collection process, participant safety, comfort, confidentiality, and informed consent were carefully maintained.

Data analysis consisted of descriptive and inferential statistical procedures. Descriptive statistics were used to summarize participant characteristics and present the mean pain scores before and after the intervention. Prior to hypothesis testing, the data were examined to ensure compliance with the assumptions required for parametric statistical analysis. A Paired Sample t-Test was then performed to determine whether a significant difference existed between pretest and posttest menstrual pain scores. The level of significance was set at $\alpha = 0.05$. A p-value less than 0.05 was interpreted as evidence that warm compress therapy had a statistically significant effect on reducing menstrual pain among adolescent girls.

RESULT

Participant Characteristics

A total of 30 adolescent girls experiencing dysmenorrhea participated in this study. Participant characteristics were analyzed to provide a general overview of the study population.

Table 1. Distribution of Participants by Age

Age (Years)	Frequency (n)	Percentage (%)
15	8	26.7
16	12	40.0
17	10	33.3
Total	**30**	**100.0**

As shown in Table 1, the majority of participants were 16 years old (40.0%), followed by 17 years old (33.3%) and 15 years old (26.7%). This finding indicates that most respondents were in middle adolescence, a period during which menstrual pain is commonly reported.

Menstrual Pain Intensity Before and After Warm Compress Therapy

The effectiveness of warm compress therapy was assessed by comparing menstrual pain scores before and after the intervention.

Table 2. Mean Menstrual Pain Scores Before and After Warm Compress Therapy

Variable	Mean Score	Standard Deviation
Pretest	6.8	1.12
Posttest	3.2	1.05

Table 2 demonstrates that the mean menstrual pain score before the administration of warm compress therapy was 6.8, indicating a moderate-to-severe level of pain. Following the intervention, the mean pain score decreased to 3.2, representing a mild level of pain.

The results indicate a reduction of 3.6 points in the average pain score after the application of warm compress therapy. This finding suggests that participants experienced substantial pain relief following the intervention. The decrease in pain intensity reflects the potential effectiveness of warm compress therapy as a non-pharmacological approach for managing dysmenorrhea among adolescent girls.

Effect of Warm Compress Therapy on Menstrual Pain

To determine whether the observed reduction in pain intensity was statistically significant, a Paired Sample t-Test was conducted.

Table 3. Paired Sample t-Test Results for Menstrual Pain Intensity

Variable	Mean	SD	t-value	p-value
Pretest	6.8	1.12		

Variable	Mean	SD	t-value	p-value
Posttest	3.2	1.05	11.537	0.000

As presented in Table 3, the Paired Sample t-Test yielded a p-value of 0.000 ($p < 0.05$), indicating a statistically significant difference between menstrual pain scores before and after the administration of warm compress therapy.

The findings demonstrate that warm compress therapy significantly reduced menstrual pain among adolescent girls. The substantial decline in pain scores supports the hypothesis that warm compress therapy is an effective intervention for alleviating dysmenorrhea. These results further suggest that heat application may improve physical comfort and help adolescent girls cope more effectively with menstrual pain.

Overall, three major findings emerged from this study. First, the majority of participants were within the middle adolescent age group. Second, menstrual pain intensity decreased considerably following the administration of warm compress therapy. Third, statistical analysis confirmed that the reduction in pain intensity was significant, providing empirical evidence that warm compress therapy is an effective non-pharmacological intervention for reducing dysmenorrhea among adolescent girls.

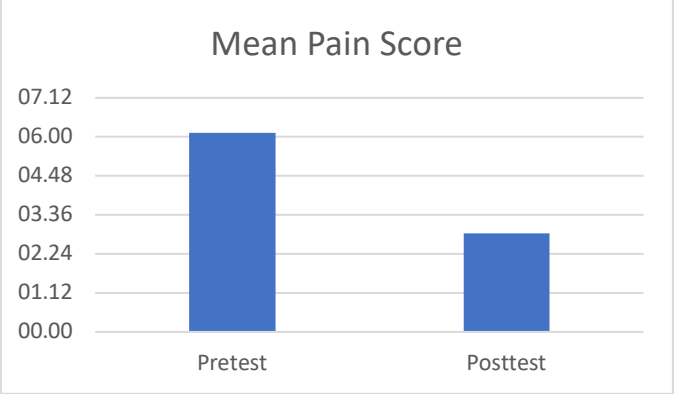

Figure 2. Comparison of Mean Menstrual Pain Scores Before and After Warm Compress Therapy

Table 4. Comparison of Mean Menstrual Pain Scores Before and After Warm Compress Therapy

Measurement	Mean Pain Score
Pretest	6.8
Posttest	3.2

DISCUSSION

The present study demonstrated that warm compress therapy significantly reduced menstrual pain among adolescent girls at Sehati Senior High School, Karawang. The mean pain score decreased from 6.8 before the intervention to 3.2 after the application of warm compress therapy, representing a reduction of 3.6 points. Furthermore, the Paired Sample t-Test revealed a statistically significant difference between pretest and posttest pain scores ($p = 0.000$). These findings indicate that warm compress therapy is an effective non-pharmacological intervention for alleviating dysmenorrhea among adolescent girls.

The reduction in menstrual pain observed in this study can be explained through several physiological mechanisms. Heat application promotes vasodilation of blood vessels, resulting in improved local blood circulation and increased oxygen supply to tissues. Enhanced blood flow helps reduce ischemia and muscle tension in the uterine region, thereby decreasing pain perception. In addition, warm compress therapy relaxes smooth muscles and reduces uterine spasms caused by excessive prostaglandin production during menstruation. Since prostaglandins are considered the primary mediators of dysmenorrhea, reducing uterine contractions through heat therapy may significantly alleviate menstrual pain. These physiological responses explain the substantial decline in pain intensity observed among participants after the intervention.

The findings of this study are consistent with previous research on the effectiveness of heat therapy for dysmenorrhea management. Akin et al. (2001) reported that continuous low-level heat therapy provided pain relief comparable to ibuprofen in women with primary dysmenorrhea. Similarly, Jo and Lee (2018) found that local heat application significantly reduced menstrual pain intensity and improved physical comfort. Armour et al. (2019) also emphasized that non-pharmacological interventions, including heat therapy, can effectively reduce dysmenorrhea symptoms while minimizing the potential side effects associated with medication use. The consistency between the present findings and previous studies strengthens the evidence supporting warm compress therapy as a reliable approach to menstrual pain management.

Beyond its physiological effects, warm compress therapy may also contribute to psychological comfort. Menstrual pain is often accompanied by anxiety, irritability, emotional distress, and decreased concentration. The sensation of warmth may induce relaxation and create a calming effect that helps reduce stress and discomfort. As physical tension decreases, participants may experience improved emotional well-being and a lower

perception of pain. This interaction between physiological and psychological responses highlights the holistic benefits of warm compress therapy in managing dysmenorrhea among adolescents.

The findings have important implications for adolescent reproductive health programs. Dysmenorrhea is a major cause of school absenteeism and reduced academic performance among female students. Therefore, accessible and affordable interventions are needed to help adolescents manage menstrual pain effectively. Warm compress therapy offers several advantages, including simplicity, low cost, safety, and ease of application without requiring medical supervision. Schools, healthcare providers, and parents can promote the use of warm compresses as part of menstrual health education programs to improve students' well-being and daily functioning during menstruation.

The novelty of this study lies in its evaluation of warm compress therapy among adolescent girls in a secondary school setting using a quasi-experimental pretest–posttest design. While previous studies have primarily focused on university students or adult women, this research provides additional evidence regarding the effectiveness of warm compress therapy among younger adolescents. Furthermore, the direct measurement of pain intensity before and after the intervention provides objective evidence of the therapeutic benefits of heat application for dysmenorrhea management.

Despite its positive findings, this study has several limitations. The use of a one-group pretest–posttest design without a control group limits the ability to establish causality with complete certainty. In addition, the relatively small sample size may affect the generalizability of the results to broader populations. The study also focused exclusively on short-term changes in pain intensity and did not evaluate other relevant outcomes such as quality of life, emotional well-being, school attendance, or long-term pain management behaviors. Future research should employ randomized controlled trial designs, include larger and more diverse samples, and examine additional physical and psychological outcomes associated with dysmenorrhea.

Overall, the results of this study suggest that warm compress therapy is an effective, safe, and practical intervention for reducing menstrual pain among adolescent girls. The integration of warm compress therapy into school health programs and adolescent reproductive health services may contribute to improved menstrual well-being and better quality of life among young women.

CONCLUSION

This study demonstrated that warm compress therapy significantly reduced menstrual pain among adolescent girls at Sehati Senior High School, Karawang. The findings showed that the mean pain score decreased from 6.8 before the intervention to 3.2 after the application of warm compress therapy. Statistical analysis further confirmed that the reduction was significant ($p = 0.000$), indicating that warm compress therapy is an effective non-pharmacological intervention for alleviating dysmenorrhea. The results suggest that the application of heat can reduce pain intensity by improving local blood circulation, promoting muscle relaxation, and decreasing uterine spasms associated with menstruation.

The scientific contribution of this study lies in providing empirical evidence regarding the effectiveness of warm compress therapy among adolescent girls in a school setting. The findings strengthen existing knowledge on the benefits of heat therapy as a simple and accessible method for managing menstrual pain. In addition, this study highlights the potential integration of warm compress therapy into adolescent reproductive health programs, school health services, and menstrual health education initiatives. As a low-cost, safe, and easy-to-implement intervention, warm compress therapy may help improve the physical comfort, daily functioning, and overall well-being of adolescent girls during menstruation.

Despite these positive findings, several limitations should be acknowledged. The study employed a one-group pretest–posttest design without a control group, which limits the ability to establish a definitive causal relationship between the intervention and the observed outcomes. Furthermore, the relatively small sample size may affect the generalizability of the findings to broader populations. Future studies are recommended to utilize randomized controlled trial designs, include larger and more diverse samples, and examine additional outcomes such as quality of life, psychological well-being, school attendance, and academic performance. Such investigations would provide a more comprehensive understanding of the long-term effectiveness of warm compress therapy in the management of dysmenorrhea among adolescents.

REFERENCES

Akin, M. D., Weingand, K. W., Hengehold, D. A., Goodale, M. B., Hinkle, R. T., & Smith, R. P. (2001). Continuous low-level topical heat in the treatment of dysmenorrhea.

Obstetrics & Gynecology, 97(3), 343–349. https://doi.org/10.1016/S0029-7844(00)01173-1

Anurogo, D., & Wulandari, A. (2019). *Cara jitu mengatasi nyeri haid*. Andi Publisher.

Armour, M., Parry, K., Manohar, N., Holmes, K., Ferfolja, T., Curry, C., MacMillan, F., & Smith, C. A. (2019). The prevalence and academic impact of dysmenorrhea in 21,573 young women: A systematic review and meta-analysis. *Journal of Women's Health, 28*(8), 1161–1171. https://doi.org/10.1089/jwh.2018.7615

Dawood, M. Y. (2006). Primary dysmenorrhea: Advances in pathogenesis and management. *Obstetrics and Gynecology, 108*(2), 428–441. https://doi.org/10.1097/01.AOG.0000230214.26638.0c

Fernández-Martínez, E., Onieva-Zafra, M. D., & Parra-Fernández, M. L. (2018). Lifestyle and prevalence of dysmenorrhea among Spanish female university students. *PLoS ONE, 13*(8), e0201894. https://doi.org/10.1371/journal.pone.0201894

French, L. (2005). Dysmenorrhea. *American Family Physician, 71*(2), 285–291.

Jo, J., & Lee, S. H. (2018). Heat therapy for primary dysmenorrhea: A systematic review and meta-analysis. *Complementary Therapies in Medicine, 39*, 81–88.

Kusmiran, E. (2018). *Kesehatan reproduksi remaja dan wanita*. Salemba Medika.

Latthe, P., Latthe, M., Say, L., Gülmezoglu, M., & Khan, K. S. (2006). WHO systematic review of prevalence of chronic pelvic pain: A neglected reproductive health morbidity. *BMC Public Health, 6*, 177. https://doi.org/10.1186/1471-2458-6-177

Potter, P. A., & Perry, A. G. (2021). *Fundamentals of nursing* (10th ed.). Elsevier.

Prawirohardjo, S. (2020). *Ilmu kandungan* (4th ed.). PT Bina Pustaka Sarwono Prawirohardjo.

Proverawati, A., & Misaroh, S. (2019). *Menarche menstruasi pertama penuh makna*. Nuha Medika.

Safitri, N., Wulandari, D., & Rahmawati, I. (2023). Effectiveness of warm compress therapy in reducing dysmenorrhea among adolescent girls. *Jurnal Kebidanan Indonesia, 14*(2), 102–110.

World Health Organization. (2023). *Adolescent and reproductive health*. World Health Organization. https://www.who.int