



The Effect of Yoga Exercise and Cinnamon Aromatherapy to Reduction of Menstrual Pain Among Adolescent Girls at Azza Wajalla Health Vocational School, Bandar Lampung

Soraya Putria Ningsih¹, Dewi Yuliana¹, Yuli Lestari¹

¹Mitra Indonesia Univercity, Bandar Lampung, Indonesia

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Correspondence

E-mail :

sorayaputrianingsih2022.student@umitra.ac.id

ABSTRACT

The effect of giving yoga exercise and cinnamon aromatherapy (*Cinnamomum burmannii*) on reducing menstrual pain in female adolescents at Azza Wajalla Health Vocational School, Bandar Lampung in 2025 is known. This study is a quantitative study with a pre-experimental one group pretest–posttest design. The study population was all 45 female adolescents in grades X–XI who experienced primary dysmenorrhea, with a sample of 32 students selected using a purposive sampling technique. The study was conducted at Azza Wajalla Health Vocational School, Bandar Lampung on December 10, 2025, to January 9, 2026. The analysis used the Wilcoxon test. The results of the analysis showed a p-value = 0.001 (<0.05), which means there is an effect of giving yoga exercise and cinnamon aromatherapy on reducing menstrual pain in female adolescents at Azza Wajalla Health Vocational School, Bandar Lampung in 2025.

INTRODUCTION

Reproductive health is a crucial component of improving public health. According to the World Health Organization (WHO, 2022), reproductive health is a state of complete physical, mental, and social well-being, not merely the absence of disease or disorders, but encompassing all matters related to the reproductive system, functions, and processes. Globally, attention to reproductive health is a focus of the Sustainable Development Goals (SDGs), particularly Goal 3: Ensure healthy lives and promote well-being for all at all ages (Good Health and Well-being). One of its main targets is "Ensure universal access to sexual and reproductive health services, including family planning, information, and education, and the integration of reproductive health into national strategies and programs by 2030."

Adolescence is the transition from childhood to adulthood, typically occurring between the ages of 10 and 24. Simply put, adolescence means growing into adulthood. According to the World Health Organization (WHO), puberty, or pre-adulthood, occurs between the ages of 10 and 19. Meanwhile, the United Nations (UN) defines youth as occurring between the ages of 15 and 24. Based on its developmental stages, puberty is divided into three stages: early adolescence (10–12 years), middle adolescence (13–15 years), and late adolescence (16–19 years). These age ranges are then combined and referred to as the youth age group, namely 10 to 24 years. (Laksmi Puspa Sari et al., 2024) Adolescence is a transitional period marked by the maturation of reproductive organs and the ability to reproduce. One sign of

puberty in girls is the onset of menstruation. Menstruation is the process of shedding the endometrium lining along with blood from the uterus, which occurs regularly and is influenced by reproductive hormones. Generally, menstrual bleeding lasts for 5 to 7 days with a cycle of about 28 days. Menstruation can cause discomfort for some women. One common disorder is dysmenorrhea, which is pain in the lower abdomen before or during menstruation. Dysmenorrhea is caused by increased levels of prostaglandins, which trigger excessive contractions in the uterus, causing pain. (Evi Wulandari & Busman, 2025).

Most women experience pain during menstruation, known as dysmenorrhea or menstrual cramps. The level of pain experienced varies from person to person, but this condition can still impact women's health. Dysmenorrhea is not considered a serious problem if a person can recognize it and manage it appropriately. (Husnah et al., 2024) Dysmenorrhea is divided into two types: primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is menstrual pain that occurs without any abnormalities in the pelvic organs. This condition usually appears at menarche or shortly thereafter. Dysmenorrhea is characterized by cramp-like pain that occurs before or shortly after menstrual bleeding and can last between 48 and 72 hours. The pain occurs due to continuous uterine muscle contractions during the menstrual flow. (Evi Wulandari & Busman, 2025) Adolescent girls experience primary dysmenorrhea more frequently because their hormonal cycles are not yet stable and the uterine muscles are not yet accustomed to contracting like those of adult women. Many adolescents experience difficulties in learning due to

this menstrual pain. This condition makes the body tired quickly, lowers enthusiasm, and interferes with concentration due to discomfort. Overall, this can reduce the quality of life of adolescent girls and affect various aspects of their lives. Dysmenorrhea is caused by an increase in the production of prostaglandin hormones that occurs due to decreased levels of estrogen and progesterone. This decrease causes swelling and peeling of the endometrium lining because fertilization does not occur. High levels of prostaglandin cause contractions in the uterine muscles, resulting in pain. Prostaglandin hormones reach their highest levels at the beginning of menstruation and gradually decrease throughout the menstrual cycle, so pain is usually strongest on the first day and decreases towards the end of menstruation. (Izzatun Nida Ulhaq & Tria Puspita Sari, 2025).

In Indonesia, the incidence of primary dysmenorrhea is approximately 54.89%, while the remainder suffer from secondary dysmenorrhea. Dysmenorrhea occurs in adolescents with a prevalence of between 43% and 93%. 74-80% of adolescents experience mild dysmenorrhea. The incidence of endometriosis in adolescents with pelvic pain is 25-38%. In adolescents who do not respond positively to treatment for menstrual pain, endometriosis is found in 67% of cases. The disorder affects 60-70% of women in Indonesia, with 15% complaining that their activities are limited by dysmenorrhea (Evi Wulandari & Busman, 2025).

Dysmenorrhea can negatively impact adolescent girls, particularly on their physical activity, mental well-being, and daily life. The pain often reduces enthusiasm for activities such as sports,

studying, or working. This can lead to absences from school or other activities, as well as reduced academic performance and social participation. Furthermore, severe pain can also affect eating patterns, as decreased appetite makes adolescents tend to avoid nutritious foods, which are essential during menstruation. According to a report from the Ministry of Health through the Basic Health Research (Riskesdas) in 2021, the prevalence of dysmenorrhea in Indonesia is estimated at 65%, with primary dysmenorrhea accounting for approximately 55% and secondary dysmenorrhea accounting for 45%. This data indicates a high incidence of dysmenorrhea among Indonesian women, which has the potential to significantly impact their quality of life (Widiawati et al., 2025)

The impacts of dysmenorrhea, in addition to disrupting daily activities and reducing performance, include nausea, vomiting, and diarrhea. Many women still consider menstrual pain to be normal, assuming it will subside after a day or two. However, menstrual pain can be a sign or symptom of a medical condition, such as endometritis, which can make it difficult to conceive. Dysmenorrhea is common among menstruating women, but many women often ignore it without seeking proper treatment. This condition can be dangerous to a woman's health if left untreated. Dysmenorrhea can be a symptom of endometriosis or other secondary dysmenorrheal diseases. Therefore, appropriate and correct treatment is necessary for women experiencing dysmenorrhea, especially adolescents (Evi Wulandari & Busman, 2025).

Based on the results of a pre-survey conducted at SMP N Satap 1 Pagar Dewa

West Lampung in April 2024 to find out from the data in the UKS book records there were 16 female students recorded as having treatment at the UKS in May 2024 where as many as 13 (81.2%) complained of pain during menstruation, then unstructured interviews were conducted on 4 adolescents who were experiencing dysmenorrhea to find out as many as 1 (25%) said that during menstruation it felt very painful to the point that sometimes they asked for permission not to go to school. complained of back pain and lower abdominal cramps on the first day of menstruation, all parts of the body felt sore, and tired, so they were less able to participate in activities on the first day of menstruation. Of the 4 female adolescents did not know that warm compresses could help reduce dysmenorrhea, so that so far when they experienced dysmenorrhea they consumed pain relievers. Based on the aforementioned issues, the researcher was interested in further examining the effect of warm compresses on reducing dysmenorrhea pain in adolescent girls at SMP N Satap 1 Pagar Dewa, West Lampung, in 2024. (Wati, 2024).

Based on the results of a preliminary study conducted at the UKS of 23 female students experiencing dysmenorrhea (35 students). The study was then stratified according to inclusion and exclusion criteria to obtain the sample for the study. The study, conducted in June-July 2024, found that before the dysmenorrhea exercises, 15 of the 26 respondents (57.3%) experienced moderate pain (5 on a scale of 5), 4 respondents (15.4%) experienced pain on a scale of 6, and 4 respondents (15.3%) experienced pain on a scale of 4, and 7 respondents (24.5%) experienced pain on a scale of 4. After the exercises, information was obtained that the pain scale decreased

to mild pain (1 on a scale of 1) in 17 respondents (67.3%). Of all the female students experiencing dysmenorrhea, the authors found that some had experienced more than three episodes but did not know how to manage their pain. This led the researchers to conduct (Augustus et al., 2024).

Meanwhile, a preliminary study conducted on October 6, 2025, using interviews conducted by researchers at the Azza Wajalla Health Vocational School in Bandar Lampung, revealed that 10 female students had a history of menstrual pain. Three reported hip pain, four experienced weakness, and three experienced nausea and vomiting. Data also revealed that treatments used to reduce or eliminate menstrual pain included drinking water or lying down in the health center. Yoga exercises and cinnamon aromatherapy were never used to reduce menstrual pain. Based on preliminary studies, many female students have never tried yoga exercises or cinnamon aromatherapy as a way to reduce menstrual pain. This indicates a gap in the implementation of non-pharmacological therapy among school adolescents. Based on this phenomenon, researchers are interested in conducting a study entitled "The Effect of Yoga Exercise and Cinnamon Aromatherapy (*Cinnamomum burmannii*) on Reducing Menstrual Pain in Female Adolescents at Azza Wajalla Health Vocational School, Bandar Lampung in 2025."

METHOD

Research participants

The population in this study was 45 female students of Azza Wajalla Health Vocational School, grades X and XI. The sample size considered adequate for

research is generally in the range of 30 to 500 respondents. In this study, the sample size was 32 respondents. Research procedure Researchers conducted a pre-test using a peak flow meter to assess pulmonary ventilation function. Respondents were asked to inhale as deeply as possible, then exhale as forcefully and quickly as possible using the peak flow meter. Measurements were taken three times, and the highest value was recorded as the initial peak expiratory flow (PEF) value.

Instrument

The instruments used in data collection were observation sheets using a

Numeric Rating Scale (NRS) measuring tool and SOP for Yoga Exercise Techniques and Cinnamon Aromatherapy, to see the accuracy of the data by conducting periodic pain scale measurements or comparing the highest level of pain scale ever experienced by each respondent during dysmenorrhea.

Data Analysis

In this study, the researchers used the Wilcoxon test, a statistical test used to compare two groups of paired or related data. This test was applied to analyze.

RESULTS AND DISCUSSION

Table 1. Respondent Characteristics of Azza Wajalla Health Vocational School, Bandar Lampung in 2025

Age	Frequency (f)	Percentage (%)
14	1	3.1%
15	23	71.9%
16	7	21.9%
17	1	3.1%
Menstrual Period		
4	8	25.0%
5	13	40.6%
6	6	18.8%
7	2	6.3%
8	1	3.1%
9	1	3.1%
11	1	3.1%
Menstrual Cycle		
18-20	2	6.3%
21-35	27	84.4%
36-40	3	9.4%
Class		
X	24	75.0%
XI	8	25.0%
Total	32	100,0 %

Based on the data, it can be seen that most respondents (71.9%) are 15 years old. With a total of 23 people out of 32 respondents, 1 person is 14 years old (3.1%). 7 people are 16 years old (21.9%). 1 person is 17 years old (3.1%). Most

respondents (40.6%) have a menstrual period of 5 days. With a total of 13 people out of 32 respondents, the menstrual period lasts for 4 days for 8 people (25%). The menstrual period lasts for 6 days for 6 people (18.8%). The menstrual period lasts

for 7 days for 2 people (6.3%). The menstrual period lasts for 8 days for 1 person (3.1%). The menstrual period lasts for 9 days for 1 person (3.1%). The menstrual period lasts for 11 days for 1 person (3.1%). Most respondents (84.4%) have a menstrual cycle of 21-35 days. Of

the 32 respondents, 2 (6.3%) had a menstrual cycle of 18-20 days. 3 (9.4%) had a menstrual cycle of 36-40 days. It can be seen that 24 out of 32 respondents in class X experienced menstrual pain. And 8 out of 32 respondents in class XI experienced menstrual pain.

Table 2. The average pain scale before and after doing Yoga exercise and Cinnamon (Cinnamomum burnannii) aromatherapy in female students of Azza Wajalla Health Vocational School, Bandar Lampung in 2025

Variabel	N	Min	Max	Mean	Std. Deviation
Pain Scale (Pre-Test)	32	4	9	5.91	1.254
Pain Scale (Post-Test)	32	1	5	2.38	.833

Based on the data in Table above it can be seen that the administration of yoga exercises and cinnamon aromatherapy to 32 respondents resulted in an average pre-test pain scale of 5.91, with a minimum pain score of 4, a maximum pain score of 9, and a standard deviation of 1.254.

Based on the data in Table 4.5, it can be seen that the administration of yoga exercises and cinnamon aromatherapy to 32 respondents resulted in an average post-test pain score of 2.38, with a minimum pain score of 1, a maximum pain score of 5, and a standard deviation of 0.833.

Table 3. The Effect of Yoga Exercise and Cinnamon Aromatherapy (Cinnamomum burnannii) on Reducing Menstrual Pain in Female Adolescents at Azza WaJalla Health Vocational School, Bandar Lampung

Variabel	N	Mean	Std. Deviation	p-value
Pain Scale (Pre-Test)	32	5.91	1.254	0.001
Pain Scale (Post-Test)	32	2.38	.833	

Based on the results of the Wilcoxon Signed Rank Test above, the results of the average difference in pain levels before (pretest) were 5.91 with a standard deviation of 1.254 and after the intervention, the pain level after (posttest) was 2.38 with a standard deviation of 0.833. The results of the Wilcoxon Signed Rank Test obtained a p-value of 0.001 < 0.005 where there was a significant difference before (pretest) and after (posttest) the level of dysmenorrhea pain in respondents who were given yoga exercise and cinnamon aromatherapy interventions.

Research results on the effect of yoga exercise and cinnamon aromatherapy given to female students at the Azza Wa Jalla' Health Vocational School in Bandar Lampung in 2025 on reducing menstrual pain (primary dysmenorrhea). The

Wilcoxon Signed Ranks Test showed a p-value of $0.001 \leq \alpha (0.05)$. Therefore, H_a was accepted and H_o was rejected, indicating that yoga exercise and cinnamon aromatherapy were effective in reducing menstrual pain in the study population.

Cat stretch exercise is a stretching exercise for the abdominal and pelvic muscles that functions to distribute oxygen to all parts of the muscles for faster muscle recovery. Cat stretch exercise is a type of light exercise that can be done by female students, among others. Cat stretch exercise is a stretching movement that can improve blood circulation and relax the uterine muscles, thereby reducing pain during menstruation. (Apipah & Yuliana, 2023) Cat Stretch Exercise is an exercise whose main purpose is to improve blood circulation and strengthen muscles and

joints. Cat Stretch Exercise can increase endorphin levels four to fivefold in the blood, thereby reducing menstrual pain (Aprilina et al., 2023).

Cinnamon's main components, cinnamaldehyde and eugenol, play a crucial role in reducing menstrual pain (dysmenorrhea) by reducing pain and inhibiting prostaglandin biosynthesis, which is known to cause pain during menstruation due to increased prostaglandin levels. Furthermore, cinnamon essential oil is also beneficial for relaxing tense muscles and reducing joint pain. Cinnamon aromatherapy, in addition to its pleasant aroma, is also beneficial for easing tense muscles, improving circulation, and alleviating menstrual cramps. Cinnamon aromatherapy used by inhalation works through the body's circulation and olfactory system. When cinnamon aromatherapy is inhaled into the nasal cavity through the respiratory system, it is then interpreted by the brain as an olfactory process. The aromatherapy molecules are then received by the nervous system, which then transmits them as messages to the olfactory center located at the back of the nose (Evi Wulandari & Busman, 2025).

These results confirm the findings of a previous study (Trust et al., 2025) which applied the Wilcoxon statistical test and obtained a significance value of 0.000 ($p < 0.05$), thus rejecting H_0 . These findings indicate that yoga exercise can affect menstrual pain experienced by adolescent girls at MAS PAB 2 Helvetia in 2025. These findings also align with a study (Harianingsih & Poruwati, 2021) entitled "The Effect of Cinnamon Aromatherapy on Pain Intensity of Primary Dysmenorrhea in Adolescents," which also found a significant relationship between cinnamon aromatherapy and menstrual pain

reduction, as evidenced by a 2-tailed significance level of 0.000 (< 0.05).

Based on these results, the researchers concluded that yoga and cinnamon aromatherapy are non-pharmacological solutions for menstrual pain experienced by female students and can significantly reduce pain levels. This finding is supported by research findings supporting the reduction of menstrual pain. The researchers also concluded that respondents who received the yoga intervention experienced a reduction in menstrual pain levels because yoga stimulates the release of endorphins and serotonin, which play a role in improving mood, providing a relaxing effect, and reducing muscle tension in the abdominal and pelvic areas that contribute to menstrual pain. Regular yoga movements help improve blood circulation and reduce excessive uterine contractions, thus alleviating pain. In addition, cinnamon aromatherapy has a warming and calming effect that can help promote physical and psychological relaxation. Cinnamon aromatherapy works through the olfactory system, which is directly connected to the limbic system in the brain, thereby reducing stress levels, providing a sense of comfort, and reducing the perception of pain. The relaxing effect of cinnamon aromatherapy also contributes to reducing muscle tension and improving blood flow in the abdominal area. Properly and according to instructions, cinnamon aromatherapy yoga can provide optimal effects in reducing menstrual pain. This intervention is a safe, easy-to-do method, requires no special skills, and can be applied at any time, making it an effective solution for adolescent girls to manage menstrual pain while improving their mood during menstruation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

- 1) Respondent characteristics based on age showed that the majority of respondents were 15 years old (23 respondents (71.9%)), indicating that the majority were in their mid-teens.
- 2) Regarding menstrual duration, the majority of respondents (13 respondents (40.6%)) had a menstrual cycle lasting 5 days, which is still within the normal menstrual cycle range. Regarding menstrual cycle, the majority of respondents (84.4%) had a menstrual cycle lasting 21-35 days. This represented 27 out of 32 respondents, indicating that the majority of respondents had a normal menstrual cycle.
- 3) The average menstrual pain scale for respondents before the yoga exercise and cinnamon aromatherapy intervention (pre-test) was 5.91, with a minimum pain scale of 4 and a maximum pain scale of 9, which is considered moderate pain.
- 4) The average menstrual pain scale for respondents after the yoga exercise and cinnamon aromatherapy intervention (post-test) was 2.38, with a minimum pain scale of 1 and a maximum pain scale of 5, which is considered mild pain.
- 5) The Wilcoxon Signed Rank Test results showed a p-value of 0.001 (<0.05), thus concluding that yoga exercise and cinnamon aromatherapy significantly reduced menstrual pain in respondents.

Recommendations

Theory

The results of this study are expected to broaden the knowledge and development of nursing science, particularly regarding the management of menstrual pain using non-pharmacological interventions. This study can also serve as a scientific reference for further research in developing evidence-

based maternity nursing theory and practice.

Application

1. For Education

The results of this study can serve as teaching materials and references for nursing educational institutions in the learning process, particularly in maternity nursing courses. Furthermore, these results can be used as examples of the application of non-pharmacological nursing interventions to reduce menstrual pain in students.

2. For the Community

The results of this study can be used as material during outreach programs to increase public knowledge and awareness, particularly among adolescent girls and women of childbearing age, regarding non-pharmacological methods of managing menstrual pain. The interventions used in this study can be applied independently as a safe and easy way to reduce menstrual pain and improve quality of life.

3. For Future Researchers

Further researchers can expand this study by using a larger sample size, using a different research design, and adding other variables that may influence menstrual pain, such as age, stress level, physical activity, and sleep patterns. Furthermore, future researchers are advised to compare various types of non-pharmacological interventions in menstrual pain management to obtain more optimal and comprehensive results.

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