VOLUME 13 NOMOR 1 JUNE 2026 ISSN 2548 – 611X

JURNAL
BIOTEKNOLOGI & BIOSAINS INDONESIA

Homepage Jurnal: http://ejournal.brin.go.id/JBBI/index

EFFECTIVENESS OF DYSMENORRHEA THERAPY EXERCISE AND TURMERIC-TAMARIND HERBAL DRINK ON REDUCING DYSMENORRHEA LEVELS IN STIKES TULUNGAGUNG STUDENTS

Efektivitas Senam Dismenore dan Minuman Herbal Kunyit-Asam Jawa dalam Mengurangi Tingkat Dismenore pada Mahasiswa STIKES Tulungagung

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ABSTRACT

Dysmenorrhea is a stabbing pain in the lower abdomen and thighs, commonly affecting women aged 18–21 years, often due to immature reproductive organs. Many young women are unaware of effective pain reduction methods. This study aimed to examine the effectiveness of dysmenorrhea therapy exercise and turmeric-tamarind herbal drink in reducing menstrual pain among STIKES Tulungagung students. A quasi-experimental design with two intervention groups using a pretest–posttest approach, involving 30 female students aged 18–23 years with regular cycles and pain scores of 1–10 on the NRS. Interventions included dysmenorrhea exercise or turmeric-tamarind drink for three days. Pain levels were measured using the Numeric Rating Scale, and data were analyzed using the Wilcoxon test ($p < 0.05$). Both groups showed significant reductions in pain ($p < 0.001$). These results support the adoption of non-pharmacological methods such as exercise and herbal drinks for dysmenorrhea management in educational health promotion programs.

Keywords: *Dysmenorrhea, Women, Dysmenorrhea exercises, Tumeric-tamarind*

ABSTRAK

Dismenore adalah nyeri menusuk yang dirasakan di perut bagian bawah dan paha, dialami hampir semua wanita dengan tingkat keparahan bervariasi. Mayoritas terjadi pada usia 18–21 tahun, di mana pada usia 18 tahun organ reproduksi belum sepenuhnya matang sehingga memengaruhi timbulnya nyeri. Sebagian besar remaja putri belum mengetahui cara mengurangi nyeri haid. Salah satu alternatif penanganan adalah senam dismenore, teknik relaksasi yang dapat meredakan nyeri saat menstruasi. Selain itu, jamu kunyit asam merupakan metode nonfarmakologis sederhana, mudah didapat, dan terjangkau untuk mengurangi nyeri haid. Penelitian ini bertujuan mengetahui efektivitas senam dismenore dan konsumsi jamu kunyit asam terhadap penurunan tingkat dismenore pada mahasiswi STIKES Tulungagung. Desain penelitian adalah quasi-eksperimental pre–post test dengan dua kelompok intervensi, melibatkan 15 partisipan berusia 18–23 tahun yang mengalami dismenore skala 1–10 dan siklus menstruasi teratur. Intervensi dilakukan selama tiga hari. Tingkat nyeri diukur menggunakan Numeric Rating Scale (NRS) dan dianalisis dengan uji Wilcoxon ($p < 0,05$). Hasil menunjukkan penurunan signifikan pada kedua kelompok, senam dismenore ($p < 0,001$) dan jamu kunyit asam ($p < 0,001$). Disimpulkan bahwa kedua metode efektif mengurangi nyeri haid. Disarankan

Received: *19 August 2025* ***Accepted***: *09 March 2026* ***Published***: *05 June 2026*

penerapan metode nonfarmakologis ini sebagai bagian dari promosi kesehatan di institusi pendidikan.

Kata kunci: *Dysmenorea, Wanita, Senam Dismenore, Kunyit-Asam Jawa*

INTRODUCTION

Dysmenorrhea, commonly referred to as menstrual pain, is characterized by lower abdominal discomfort that occurs shortly before or during menstruation and often disrupts a woman's daily functioning. Individuals experiencing dysmenorrhea may require rest or experience reduced productivity in performing routine activities. The pain is typically described as sharp, dull, throbbing, burning, or stabbing, and is frequently accompanied by heavy menstrual bleeding, nausea, fatigue, and mood disturbances (Hasrawati, 2022). Globally, dysmenorrhea remains one of the most prevalent gynecological complaints among women of reproductive age. The World Health Organization (WHO) reports that approximately 90% of women—equivalent to 1,769,425 individuals—experience dysmenorrhea, with 10–15% suffering from severe forms that significantly impair quality of life. The global prevalence exceeds 50% (Mariza & Lazary, 2022). In Tulungagung, the incidence of dysmenorrhea is also notably high. A survey conducted at MAN 3 Tulungagung found that among 550 students, 328 were female, and of 92 Grade XI female students, 57 (62%) experienced primary dysmenorrhea (Hasrawati, 2022). Additionally, preliminary interviews with 15 nursing students at STIKES Hutama Abdi Husada Tulungagung revealed that menstruation frequently interfered with academic performance by reducing concentration, increasing stress, and elevating emotional sensitivity. Ten of these students reported experiencing menstrual pain consistent with dysmenorrhea. The severity of dysmenorrhea varies considerably between individuals, ranging from mild discomfort to severe, debilitating pain (Lina, 2017).

There are several approaches to prevent and manage dysmenorrhea, which can be categorized into pharmacological and non-pharmacological methods. Pharmacologically, menstrual pain can be alleviated using analgesic drugs such as acetaminophen, diclofenac, and ketoprofen, as well as prostaglandin inhibitors like aspirin and ibuprofen. Non-pharmacological interventions include the application of warm compresses, massage, distraction techniques, adequate sleep, a low-sodium diet, increased intake of natural diuretics, and specific physical exercises such as dysmenorrhea exercise (Agustini et al., 2023).

Non-pharmacological approaches have gained attention as effective and low-risk options. Among these, traditional herbal remedies and therapeutic exercises have demonstrated promising outcomes. One widely used traditional preparation is the turmeric-tamarind drink (Curcuma longa and Tamarindus indica), which contains curcumin and tartaric acid compounds known for their anti-inflammatory and antispasmodic properties (Putri, 2020). This herbal drink helps relax uterine muscles and reduce pain intensity during menstruation. Another effective non-pharmacological intervention is dysmenorrhea therapy exercise, a targeted physical routine designed to stretch the abdominal, pelvic, and lower back muscles. This form of exercise promotes blood circulation, reduces muscle tension, and stimulates the release of endorphins—natural pain-relieving hormones that enhance comfort and relaxation (Maharani & Hartutik, 2023). The exercise is simple, low-cost, and free from adverse effects. Regular practice for approximately 30 minutes per day or at least three to five times per week has been shown to significantly decrease menstrual pain intensity (Aningsih et al., 2018).

According to the Health Belief Model (HBM), people are more likely to take action to promote their health when they believe that taking action will improve their condition, believe that taking action would benefit them, and have access to cues to take action (N. C. H. Putri et al., 2024). In this regard, students' perceived vulnerability, perceived advantages, and cultural acceptance of traditional medicine all have an impact on

their adoption of dysmenorrhea exercises and herbal therapies.

This study intends to offer a thorough, evidence-based approach to controlling menstrual discomfort in young women by examining the relationship between dysmenorrhea exercises and the use of turmeric-tamarind herbal drinks. The conceptual framework postulates that by addressing both the physiological and psychological aspects of pain, these two therapies, either separately, can considerably lessen the severity of dysmenorrhea.

This study sought to ascertain if students at STIKES Tulungagung experienced less dysmenorrhea as a result of engaging in therapeutic activity and drinking a herbal drink made from turmeric and tamarind).

MATERIALS AND METHODS

Participants

Accidental sampling, the sample method used in this study, in which participants were selected based on their availability and willingness to participate at the time of data collection. A total of 30 eligible female students were recruited and subsequently allocated into two intervention groups—15 participants in the dysmenorrhea exercise group and 15 participants in the turmeric-tamarind herbal drink group. The allocation was conducted alternately based on the order of recruitment to ensure a balanced number of participants in each group. The research sample was 30 respondents.

The overall traits of research participants drawn from a target community are known as inclusion criteria. The study's inclusion criteria included undergraduate nursing students at STIKES Hutama Abdi Husada Tulungagung who were willing to participate and cooperative, who were experiencing dysmenorrhea on a scale of 1–10 (mild to severe pain), who were between the ages of 18 and 21, who were menstruating from day 1 to day 3, and who were not on analgesic medication. Subjects who do not fit the requirements for a variety of reasons might be eliminated or removed using exclusion criteria. Students who have never had a period or who are ill are excluded from this study.

Ethical approval for this study was obtained from the Health Research Ethics Committee of STIKES Hutama Abdi Husada Tulungagung (Approval No: 260/KEPK-STIKesHAH/EC/V/2025). All participants were provided with information regarding the study's purpose, procedures, potential risks, and benefits, and each provided written informed consent prior to participation. Confidentiality and anonymity were maintained throughout the research process in accordance with ethical research standards.

Instrument

NRS (Numeric Rating Scale) pain scale observation sheet, with a scale of 1 to 10, was the tool utilized in this investigation. The observation sheet was delivered to the responders, who were then asked to rate their level of menstrual pain.

Methods

This study uses a quasi-experimental design with two intervention groups using a pretest-posttest approach and is pre-experimental. By comparing the pre-test and post-test results without comparing the influence in the control group, this design was used to demonstrate the causal relationship in the group.

Intervention

All female students who match the inclusion criteria and were enrolled in the Bachelor of Nursing Study Program at STIKES Hutama Abdi Husada Tulungagung were selected using an accidental sampling technique. In order to determine the degree of menstruation pain, students are asked to complete a checklist. The intervention involved two non-pharmacological treatments: dysmenorrhea exercise and turmeric-tamarind herbal drink. Gymnastics and sour turmeric herbs are then used to treat dysmenorrhea, and it is determined whether or not the treatment has an impact.

The dysmenorrhea exercise was implemented based on the Menstrual Pain Relief Exercise Protocol (Maharani & Hartutik, 2023). The exercise was carried out for 30 minutes per day, performed for a maximum of three consecutive days during menstruation. The exercise included gentle stretching movements focusing on the pelvic area,

lower abdomen, and lower back, combined with deep abdominal breathing and pelvic tilting techniques. The sessions were conducted under supervision during the first day to ensure correct movement execution, while participants continued independently on the following days. The main purpose of the exercise was to promote relaxation, improve uterine blood flow, and stimulate endorphin release to reduce menstrual pain intensity.

The turmeric-tamarind (Curcuma longa and Tamarindus indica) herbal drink was prepared according to the formulation by Safitri & Gustina (2022). The composition consisted of 100 grams of turmeric, 30 grams of tamarind, 50 grams of white sugar, 75 grams of palm sugar, and a small amount of salt, all boiled together until the volume was reduced to approximately 150 milliliters. Participants consumed one glass (150 cc) per day for four consecutive days during menstruation.

Both interventions were administered during the menstruation period. However, the absence of a control group and limited supervision during home implementation are acknowledged as limitations that may affect the consistency of the intervention.

Data Collection

The practice of addressing the subject and gathering information about their features is known as data collection. Researchers used provided observation sheets to record general information and pain levels as part of the data gathering process for this investigation. Following the administration of sour turmeric herbal medicine and gymnastics for the treatment of dysmenorrhea, the researcher will first record the respondents and gauge the degree of pain they experience. Then, the pain level will be measured once more and documentation will be completed.

Data Analysis

Both univariate and bivariate data analysis were employed in this investigation. Each research variable's distribution and percentage will be generated via univariate analysis. However, when pretest and posttest data are gathered and then examined for Wilcoxon statistics using SPSS, bivariate analysis is employed.

RESULT AND DISCUSSION

Result

Table 1. Respondent Characteristics by Age

Treatment	Age		The sum
	18-21	22-25	
Gymnastics Treatment	15 (50%)		15 (50%)
Tamarind and Turmeric Herb	3 (10%)	12 (40%)	15 (50%)
The sum	18 (60%)	12 (40%)	30 (100%)

According Table 1, most respondents were aged 18–21 years (60%), while 40% were between 22–25 years old. Indicating that most respondents were within the late adolescent to early adulthood range. This age group is often associated with a higher prevalence of dysmenorrhea due to hormonal instability and ongoing reproductive maturation.

Table 2. Gymnastics Treatment Group for Dysmenorrhea

Level of Dysmenorrhea Pain	Before		After	
	Frequency	Percentage	Frequency	Percentage
No pain	0	0%	10	67%
Mild pain	4	27%	5	33%
Moderate pain	9	60%	0	0%
Severe pain	2	13%	0	0%

Level of Dysmenorrhea Pain	Before		After	
	Frequency	Percentage	Frequency	Percentage
The sum	15	100%	15	100%
Mean ± SD (NRS)	6.40 ± 1.12	—	2.13 ± 0.89	—
Median (IQR)	6 (5–7)	—	2 (1–3)	—

According to Table 2, shows the levels of dysmenorrhea pain before and after the gymnastics intervention among 15 respondents. Before the intervention, most respondents (60%) experienced moderate pain, with a mean pain score of 6.40 ± 1.12 on the Numeric Rating Scale (NRS). After three days of dysmenorrhea exercises, the average pain score decreased to 2.13 ± 0.89, indicating a substantial reduction in menstrual discomfort.

Table 3. Results of the Wilcoxon Statistical Test in the Group Receiving Treatment for Dysmenorrhea Gymnastics

Statistical Test	Z-value	P	α
Wilcoxon Sign Rank	-3,412	,000	0,05

According to Table 3, presents the results of the Wilcoxon signed-rank test used to evaluate the effect of dysmenorrhea gymnastics on menstrual pain among participants. The analysis showed a statistically significant reduction in pain levels after the intervention ($Z = -3.412$, $p = 0.001$, $r = 0.88$), indicating a large effect size according to Cohen's criteria. These findings suggest that performing dysmenorrhea exercises for 30 minutes daily over three consecutive days significantly alleviated menstrual discomfort among nursing students. The inclusion of Z-scores and effect size (r) provides better insight into the strength and magnitude of the observed effect, making the statistical results more robust and interpretable

Table 4. Tamarind and Turmeric Herb Treatment Group

Level of Dysmenorrhea Pain	Before		After	
	Frequency	Percentage	Frequency	Percentage
No pain	0	0%	13	87%
Mild pain	6	40%	2	13%
Moderate pain	9	60%	0	0%
Severe pain	0	0%	0	0%
The sum	15	100%	15	100%
Mean ± SD (Pain Score)	6.13 ± 1.12		1.27 ± 0.45	
Median (Min–Max)	6 (4–8)		1 (0–2)	

According to Table 4, the distribution of dysmenorrhea pain levels before and after consuming the turmeric-tamarind herbal drink. Prior to treatment, the mean pain score was 6.13 ± 1.12, indicating moderate pain intensity. After three consecutive days of consuming 150 mL of turmeric-tamarind drink daily, the mean pain score decreased significantly to 1.27 ± 0.45, corresponding to mild or no pain. The median pain score also decreased from 6 to 1, reflecting a marked reduction in pain intensity among respondents.

Table 5. Results of the Acid Turmeric Herb Treatment Group's Wilcoxon Statistical Test

Statistical Test	Z-value	P	Effect Size (r)	α
Wilcoxon Sign Rank	-3,412	,000	0,62 (large effect)	0,05

According to Table 5, presents the results of the Wilcoxon Signed-Rank Test analyzing the difference in dysmenorrhea pain levels before and after consuming the turmeric-tamarind herbal drink. The test yielded a Z = -3.412 and a p-value = 0.001 (< 0.05), indicating a statistically significant reduction in menstrual pain following treatment. The effect size (r = 0.62) suggests a large practical significance, meaning the intervention had a strong impact on lowering pain intensity.

Table 6. Baseline Comparison of Dysmenorrhea Pain Levels Between Groups Before Intervention

Statistical Test	Group	N	Mean Rank	Sum of Rank	Test Statistic (U)	Z-score	α
Mann-Whitney U Test	Gymnastics Treatment	15	14,27	214,0	100,00	-0,49	0,05
	Turmeric-Tamarind Herb	15	16,73	251,0			

According to Table 6, There was no statistically significant difference in baseline pain levels between the gymnastics and turmeric-tamarind groups (p = 0.624; p > 0.05). This indicates that both groups had comparable dysmenorrhea severity before the intervention, ensuring that subsequent changes in pain scores can be attributed to the treatment effects rather than pre-existing differences

Discussion

The findings of this study demonstrated that both interventions—dysmenorrhea exercise and the turmeric-tamarind herbal drink—effectively reduced menstrual pain among nursing students. This improvement aligns with previous evidence suggesting that dysmenorrhea can be alleviated through non-pharmacological interventions that promote relaxation and hormonal balance (Agustini et al., 2023). Dysmenorrhea itself is one of the most prevalent gynecological complaints among women of reproductive age and is characterized by painful uterine contractions during menstruation (Ammar, 2016).

The occurrence and severity of dysmenorrhea can be influenced by several factors, including psychological conditions such as stress, depression, and anxiety (Mantolas et al., 2019), as well as lifestyle aspects like low body mass index, smoking habits, caffeine intake, and nutritional status (Zuhkrina & Martina, 2023). Dysmenorrhea can also be caused by nutritional status, specifically in those who are overweight (Nuraini et al., 2021). Among students, dysmenorrhea is often reported to vary in intensity—from mild discomfort to severe pain—likely due to psychological stress and physical fatigue associated with academic demands (Agustini et al., 2023). These findings highlight the importance of implementing simple, accessible, and culturally acceptable interventions, such as exercise and herbal remedies, to manage menstrual pain in young women.

Dimenorrhea exercises are one method that students can use to get over their menstrual pain. In addition to relieving menstruation discomfort, this relaxation practice promotes comfort (Rachmawati & Safriana, 2020). Exercise therapy for dysmenorrhea is administered three times per week for a total of thirty minutes (Nursafa & Adyani, 2019). Pain levels can be decreased by these actions. Because exercise causes the body to release endorphin chemicals, gymnastics can help people with dysmenorrhea feel less pain. A person's amount of this hormone can lower their level of pain. where the muscles receive more oxygen (K. N. D. P. Putri et al., 2022). The brain and spinal cord manufacture the endorphin hormone, which is the mechanism for dysmenorrhea gymnastics. Additionally, the hormone will provide a feeling of comfort by acting as a natural sedative for the brain (Prastika et al., 2019).

The present finding— that dysmenorrhea gymnastics markedly reduced pain, increasing the number of painless participants after intervention—is consistent with prior reports of exercise-based improvements in menstrual pain. Nurjanah et al. (2019)

observed a substantial rise in painless participants following a gymnastics program, and Aningsih et al. (2018) similarly reported significant reductions in pain intensity after structured stretching and breathing exercises. Maharani & Hartutik (2023) confirmed these effects, noting that exercises which combine pelvic tilts, deep diaphragmatic breathing, and targeted stretching improve uterine blood flow and promote endorphin release. Reduced noci-ception is a plausible explanation for these physiological processes. In addition to gymnastics, menstrual discomfort can be lessened by administering a sour turmeric herbal remedy.

In keeping with previous studies, the respondents' menstrual pain subsided to zero on the fourth day of the study. The way that tamarind turmeric herbal medication works is by increasing the amount of curcumin, which raises the activity of the enzyme cholesterol 7a-hydroxylase and increases the breakdown of cholesterol. Lipid peroxidase is inhibited by demethoxycurcumin, bidemethoxycurcumin, and acetylcurcumin. The anthocyanins in tamarind can suppress the cyclooxygenase process, which lowers the nerves that trigger uterine contractions, and turmeric ethanol extract has analgesic qualities that lessen the discomfort of dysmenorrhea (Iryani et al., 2022).

In addition to exercise, pain reduction was also evident in the turmeric-tamarind herbal group. In keeping with previous studies, the respondents' menstrual pain subsided to zero on the fourth day of the study. According to Safitri & Gustina (2022) research, eating sour turmeric herbs can also lessen discomfort. While 75.4% of the 57 responders reported mild discomfort, 45 (78.9%) reported moderate pain.

This herbal remedy is sour turmeric, a herb that has been used for centuries to treat acne, ease menstruation, improve digestion, and lower stomach acid (Amanda & Nurhalimah, 2024). Tamarind turmeric herbal can be utilized to lessen the severity of menstrual pain because sour turmeric herbs contain curcuminoid chemicals as hepatotoxic, anti-inflammatory, antirheumatic, and antioxidant phytochemicals. Curcuminoids are vital to the body (Safitri & Gustina, 2022). These herbal effects are attributed to curcumin's anti-inflammatory and antispasmodic properties, which may decrease prostaglandin-mediated uterine contractions. The findings for the turmeric–tamarind drink group (with a high proportion reporting no pain post-treatment) therefore align with this biochemical rationale.

The studies of non-pharmacological interventions (exercise, herbal remedies, heat therapy, and relaxation techniques) generally report moderate to large reductions in dysmenorrhea intensity, although effect sizes and duration of benefits vary across protocols and populations (Aningsih et al., 2018; Maharani & Hartutik, 2023; Putri, 2020). Nonetheless, heterogeneity in study design, small sample sizes, and variations in intervention timing and dosing limit direct comparisons. Contributes to the evidence base by using a standardized exercise protocol and a clearly described herbal formulation (Safitri & Gustina, 2022), and demonstrating clinically meaningful within-group improvements.

Despite these positive outcomes, several limitations must be acknowledged. The small sample size (n = 30) restricts the generalizability of the findings, and the absence of randomization or a control group introduces potential selection bias. The reliance on self-reported pain scores may also introduce subjective bias. Furthermore, the short duration of intervention (three to four days) limits conclusions regarding long-term effects. Future studies should incorporate random assignment, larger samples, control groups, and follow-up measurements to strengthen causal inference and assess sustained benefits.

Clinically, these findings are significant because both dysmenorrhea exercise and the turmeric-tamarind drink are low-cost, accessible, and culturally appropriate interventions that can be incorporated into school and community health programs. The reduction from moderate to mild or no pain not only reflects statistical significance but also clinical relevance, as it translates into improved daily functioning, concentration, and emotional well-being among students.

Comparatively, while both methods effectively reduced pain ($p < 0.001$), the turmeric-tamarind herbal drink yielded a higher percentage of pain-free participants (87%)

compared to the exercise group (67%). This suggests that the herbal intervention may offer faster relief, while exercise provides longer-term physiological benefits such as improved blood flow and muscle relaxation. Integrating both methods could produce complementary effects, maximizing pain reduction and supporting menstrual health holistically.

CONCLUSION

According to the findings of the study, STIKES Hutama Abdi Husada Tulungagung students' menstrual discomfort was impacted by both the provision of sour turmeric herbal medicine and dysmenorrhea gymnastics. The study's recommendations are anticipated to be taken into account when organizing the nursing care that will be given.

ACKNOWLEDGMENTS

The STIKES Hutama Abdi Husada Tulungagung nursing students' cooperation and participation in this study are much appreciated by the researchers. Furthermore, appreciation is extended to the academic staff who enabled this study.

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