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# Exploration of the Benefits of Kusam as a Complementary Effort in Reducing the Intensity of Menstrual Pain in Adolescent Girls

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**Abstract**

*Many adolescent girls suffer from menstrual pain (dysmenorrhea), which can interfere with daily functioning, academic performance, and overall quality of life. While pharmacological treatments are commonly used, complementary therapies using natural ingredients such as turmeric and tamarind (known locally as kusam) have gained attention due to their safety and fewer side effects . The aim of this study was to assess how dullness can function as a supportive therapy to reduce the level of menstrual pain experienced by female adolescents at SMA Negeri 1 Batu Engau. A quantitative method was applied in this study, with a quasi-experimental design and pretest–posttest with a control group. Fifty eligible participants were divided into two groups: the intervention group received kusam (a turmeric and tamarind herbal drink) for three consecutive days at the beginning of menstruation, while the control group received no intervention. Pain intensity was measured using a Visual Analogue Scale (VAS), and the Wilcoxon test and the Mann–Whitney U test were applied to analyze the data. This study revealed a significant reduction in menstrual pain levels among the intervention group compared to the control group. The Wilcoxon test showed that the intervention group experienced significant improvement after consuming kusam ($p < 0.05$). Similarly, the Mann–Whitney U test showed a significant difference between the groups at post-test, with the intervention group achieving a higher mean score. Turmeric has been shown to be effective as a complementary treatment for reducing menstrual pain. intensity in adolescent girls.*

## Introduction

In women of reproductive age, menstruation is a natural process in the reproductive cycle. Although normal, menstruation is often accompanied by symptoms that disrupt daily activities, one of which is dysmenorrhea, or menstrual pain (Silaban et al., 2021; Shandily et al., 2024; Serrahima & Martínez, 2023). Dysmenorrhea is a common health problem that affects many girls during adolescence and can cause physical, psychological, and social problems, such as difficulty concentrating, school absences, and emotional stress (Saragih et al., 2024; Keyes & Plat, 2024; Hagen et al., 2023; Nhampoca & Maritz, 2024).

While pain relievers like mefenamic acid or ibuprofen can help relieve menstrual pain, these medications are not free from side effects with long-term use, such as digestive disorders, kidney damage, and drug dependence (Kesehatan Medika Saintika et al., 2020; Jaber et al., 2022). Therefore, safer, more natural, and affordable non-pharmacological alternatives are

needed, especially for adolescents (Pangestu & Fatmarizka, 2023; Sibley et al., 2023; Genovesi et al., 2024; Ibitoye et al., 2025).

Global data shows that dysmenorrhea affects approximately 75%–90% of adolescent girls, and severe pain occurs in approximately 20% of these cases, preventing them from carrying out normal activities (Barir et al., 2024). In Indonesia, according to data from the Basic Health Research (Riskesdas), more than 64.25% of adolescent girls reported experiencing menstrual pain (Ilmiah Keperawatan Altruistik et al., 2024). This condition makes dysmenorrhea a significant reproductive health problem and requires effective, accessible treatment for adolescents (Hizkia et al., 2021; Gutman et al., 2022; Waghmare & Jajoo, 2024).

In East Kalimantan, the incidence of dysmenorrhea is quite high. According to one study, the incidence of dysmenorrhea in East Kalimantan was recorded at 56%, with the incidence in Samarinda reaching 68.4%. Although generally harmless, menstrual pain is often considered bothersome by adolescent girls who experience it, and the level of pain and discomfort varies from girl to girl.

One approach that is beginning to be considered is complementary therapy based on traditional natural ingredients, one of which is the herbal mixture kusam (turmeric and tamarind) (Shabanian Boroujeni et al., 2024). Kusam is a traditional medicine that has been used for generations by Indonesians to treat various complaints, including menstrual pain. Turmeric (Curcuma longa) is known to contain active substances, particularly curcumin, which exhibits analgesic and anti-inflammatory activity (Amelia et al., 2020; Razavi et al., 2021; Koroljević et al., 2023; Khatun et al., 2021). Meanwhile, tamarind (Tamarindus indica) has pain-relieving properties and helps reduce muscle contractions. The combination of the two is believed to have a relaxing effect and also help reduce the severity of menstrual pain (Lisani & Hudaya, 2021). Based on the results of a preliminary survey conducted at SMA Negeri 1 Batu Engau, of 50 female students interviewed, 75% admitted to experiencing menstrual pain every month, and more than 40% stated that the pain was severe enough to interfere with learning activities and concentration in class. Most of them only relied on over-the-counter pain relievers without a prescription, while some used traditional methods such as drinking warm water or resting.

However, research gaps remain evident in the context of the use of herbal concoctions to relieve menstrual pain, particularly among adolescent girls. Most studies have focused solely on the use of turmeric or tamarind alone, with very few specifically evaluating the combination of these two ingredients in a traditional beverage. Research conducted in school settings, particularly those focusing on local wisdom and complementary therapies, is also very limited (Triningsih & Mas'udah, 2023; Artiyasa & Nashrul, 2025; Meristin & Supriatna, 2023).

Therefore, this research is crucial. In addition to adding to the scientific literature on alternative medicine, it will also open up opportunities for implementing natural solutions that are more accessible to young people, especially in areas where the tradition of using medicinal plants remains strong. Furthermore, reviving traditional remedies such as kusam can be part of efforts to preserve the culture of traditional Indonesian medicine.

In the context of this study, the administration of a turmeric-tamarind mixture serves as the independent variable, while the dependent variable refers to the level of menstrual pain experienced by adolescent girls. This study will also consider supporting factors such as age, menstrual patterns, nutritional status, and physical activity as intermediary variables that may influence the observed results. This study was conducted using an exploratory approach to understand subjective experiences, perceptions, and how turmeric consumption affects dysmenorrhea.

Given the high prevalence of dysmenorrhea, the limitations of pharmacological interventions due to potential side effects, and the potential benefits of natural ingredients such as turmeric and tamarind, it is important to explore the potential use of temulawak as a complementary

strategy to reduce menstrual pain. In addition to encouraging adolescents' independence in maintaining their health, the findings of this study are intended to support the use of herbal therapies based on local wisdom in school and family settings. To explore the benefits of a mixture of kusam (turmeric and tamarind) as a complementary therapy to reduce the intensity of dysmenorrhea in adolescent girls at SMA Negeri 1 Batu Engau, specifically: Assessing how effective the administration of the KUSAM mixture is in reducing dysmenorrhea. Providing evidence-based recommendations for school and adolescent health services.

Research Problem: Taking into account the background that has been described previously, the main problem being researched is: How does a mixture of kusam (turmeric and tamarind) help reduce the intensity of menstrual pain in female adolescents at SMA Negeri 1 Batu Engau?

## Methods

### Research Design

This study used a quasi-experimental design with a pretest–posttest approach and a control group. This design was chosen to evaluate the potential effect of administering a turmeric-tamarind drink (kusam) as a complementary therapy on menstrual pain intensity in adolescent girls, within a school setting with limitations in full randomization.

### Location and Time of Research

The study was conducted at SMA Negeri 1 Batu Engau, Paser Regency, East Kalimantan Province. Data collection took place from April to May 2025, coinciding with the respondents' menstrual periods. The intervention was administered during the early phase of menstruation for each respondent.

### Population and Sample

The population in this study was all female students at SMA Negeri 1 Batu Engau who experienced menstrual pain. The sample consisted of 50 female adolescents selected using purposive sampling based on inclusion and exclusion criteria.

### Inclusion criteria include

Teenage girls aged 15–18 years

Having regular menstruation

Experiencing menstrual pain in the last cycle

Willing to be a research respondent

### Exclusion criteria include

Taking analgesic drugs during the intervention period

Have a history of certain gynecological disorders

Did not follow the entire series of interventions

Respondents were then divided into two groups, each with 25 people in the intervention group and 25 people in the control group.

### Intervention Procedure

The intervention group received a turmeric-tamarind herbal drink (kusam) for three consecutive days during the early phase of menstruation, namely day 1 to day 3 of menstruation, which is physiologically the period with the highest pain intensity for most individuals. The kusam drink was prepared using a traditional recipe commonly used by the local community, with the main ingredients of fresh turmeric and tamarind boiled in water until boiling. Each respondent received one portion of the drink with a volume of ± 200 ml per day,

consumed once a day while warm and at relatively the same time each day. The entire process of preparation of the drink was carried out by researchers with the same procedure to minimize variation between respondents. Although the content of bioactive compounds such as curcumin was not analyzed chemically, this approach was chosen to reflect the use of kusam as a common traditional practice in the community.

### Health Education Procedures

Both the intervention and control groups received health education on menstrual pain management. Educational materials included understanding dysmenorrhea, the mechanism of menstrual pain, recommendations for light physical activity, the use of warm compresses, rest patterns, and the safe use of analgesics. Education was delivered in a single 30-minute session using lecture and discussion methods by the researcher, with the same material, duration, and delivery method for both groups. No additional educational sessions or special reinforcement were provided to the intervention group other than the provision of herbal drinks. The control group only received health education without the provision of turmeric-tamarind drinks.

### Pain Intensity Measurement

Menstrual pain intensity was measured using the Visual Analog Scale (VAS), a commonly used subjective measurement tool for assessing pain intensity. This scale ranges from 0 to 10, with 0 indicating no pain and 10 indicating the most severe pain. The pretest was conducted on the first day of menstruation before the intervention was administered, while the posttest was conducted on the third day of menstruation after the intervention was completed. This timing of the measurements was intended to evaluate changes in pain during the acute phase of menstruation, although researchers acknowledged the possibility of a natural decrease in pain over time.

### Data analysis

Data were analyzed using SPSS software. Normality tests were performed using the Shapiro–Wilk test to determine data distribution. Because the data were not normally distributed, the analysis continued with non-parametric statistical tests.

Comparison of pain intensity before and after the intervention in each group was analyzed using the Wilcoxon Signed Rank Test, while the comparison of pain intensity between the intervention group and the control group was analyzed using the Mann–Whitney U Test. The significance value was set at $p < 0.05$.

### Ethical Considerations

This research has received permission from the school and informed consent from the respondents. All respondents were given an explanation of the purpose, procedures, and benefits of the study, and their anonymity was guaranteed. Participation in the study was voluntary, and respondents could withdraw at any time without consequence.

## Result and Discussion

### Validity and Reliability Test

Validity testing aims to examine the extent to which a questionnaire measures what it is supposed to measure. Meanwhile, reliability testing is used to assess the questionnaire's consistency as an indicator of a variable. The test results are presented in the following table:

Table 1. Validity and Reliability of Test Results

| **Dysmenorrhea (n=50)** | **calculated t > t table (1.697)** | | **Alpha Cronbatch > 1,697** | |
|---|---|---|---|---|
| Statement 1 | 0.81 | Legitimate | 0.87 | Reliable |

| | | | | |
|---|---|---|---|---|
| Statement 2 | 0.84 | Legitimate | | |
| Statement 3 | 0.85 | Legitimate | | |
| Statement 4 | 0.83 | Legitimate | | |
| Statement 5 | 0.82 | Legitimate | | |
| Statement 6 | 0.88 | Legitimate | | |
| Statement 7 | 0.86 | Legitimate | | |
| Statement 8 | 0.83 | Legitimate | | |
| Statement 9 | 0.85 | Legitimate | | |
| Statement 10 | 0.89 | Legitimate | | |

Source: Data processed by the author, 2025

This study used a 10-item questionnaire to measure the intensity and management of menstrual pain in adolescent girls. To verify the instrument's accuracy, validity and reliability assessments were conducted for all items.

The validity test results showed that the calculated r values for each instrument ranged from 0.81 to 0.89, all of which were greater than the r-table value (0.60). Thus, all items were declared valid because they met the statistical criteria for item validity, namely calculated r > r-table at the specified significance level. Furthermore, Cronbach's Alpha was used to evaluate reliability, resulting in a score of 0.87. This value is above the commonly used minimum threshold of 0.70, indicating that the instrument has excellent internal consistency. Therefore, the instrument is considered reliable and can be used for data collection in this study. Overall, all the test results above indicate that all the instruments are appropriate and reliable for measuring variables related to menstrual pain and the response of adolescent girls to traditional herbal interventions such as turmeric and tamarind (kusuh).

**Univariate Analysis**

Univariate analysis is a statistical analysis method used to describe or evaluate a single variable separately. In the context of research, this analysis aims to describe the characteristics of respondents, as presented below :

Table 2. Results of Characteristics Distribution Based on Age

| Age | Intervention (n) | Intervention (%) | Control (n) | Control (%) |
|---|---|---|---|---|
| 15 | 8 | 32% | 6 | 24% |
| 16 | 5 | 20% | 4 | 16% |
| 17 | 6 | 24% | 5 | 20% |
| 18 | 6 | 24% | 10 | 40% |
| **Total** | **25** | **100%** | **25** | **100%** |

Source: Data processed by the author, 2025

Table 3. Characteristic Distribution Results Based on Class Level

| Class | Intervention (n) | Intervention (%) | Control (n) | Control (%) |
|---|---|---|---|---|
| X | 8 | 32% | 6 | 24% |
| XI | 7 | 28% | 6 | 24% |
| XII | 10 | 40% | 13 | 52% |
| **Total** | **25** | **100%** | **25** | **100%** |

Source: Data processed by the author, 2025

Univariate analysis was conducted to describe the characteristics of respondents based on age and grade level in each group. In the intervention group, most respondents were in the 16–17 year age range, while in the control group, the proportion of respondents aged 18 years was

higher. Based on grade level, respondents in both groups were from grades 10 to 12, with a greater proportion of grade 12 students in the control group than in the intervention group. This analysis was descriptive in nature and was not intended to test for statistical equivalence between groups. Therefore, although the characteristics of respondents in both groups were descriptively comparable, inferential equivalence between groups was not formally tested in this study.

Univariate results showed that 15-year-old respondents constituted the largest proportion in the intervention group, totaling 8 people (32%), followed by 17- and 18-year-old respondents, each totaling 6 people (24%), and 16-year-old respondents totaling 5 people (20%). Meanwhile, in the control group, most of the respondents were 18 years old, totaling 10 people (40%), followed by 15-year-old respondents totaling 6 people (24%), 17-year-old respondents totaling 5 people (20%), and 16-year-old respondents totaling 4 people (16%). This shows that the age distribution in the two groups was compared descriptively , although the control group had more 18-year-old respondents. For class characteristics, in the intervention group, most of the respondents came from class XII, totaling 10 people (40%), followed by class X totaling 8 people (32%), and class XI totaling 7 people (28%). In contrast, in the control group, grade XII students dominated, with 13 respondents (52%), followed by grade X and XI students, each with 6 students (24%). This indicates that most of the respondents in this study were in their final year of high school, namely grade XII. Overall, the distribution of age and grade in both groups showed similar and fairly even characteristics, which could not be tested for statistical equality between groups.

**Bivariate Analysis**

A normality test was performed to verify whether the data conformed to the assumption of a normal distribution using the Shapiro–Wilk test. Normal distribution is a key assumption in the use of parametric statistical tests. Therefore, before further analysis is conducted, a normality test for the data used is necessary.

**Pre-Test Normality Test**

Table 4. Results of the Pre-Test Normality Test Using the Shapiro–Wilk Method

| Variable | Statistic | df | Sig. (p-value) |
|---|---|---|---|
| Heavy | 0.590 | 25 | 0.000 |
| At the moment | 0.590 | 25 | 0.000 |

Source: Data processed by the author, 2025

Based on the output results, both data groups (Severe and Moderate) had a significance value <0.05. Thus, the pre-test data in both groups were not normally distributed.

**Post-test Normality Test**

Table 5. Results of the Post-Test Normality Test Using the Shapiro–Wilk Method

| POST-TEST | | Shapiro-Wilk | | |
|---|---|---|---|---|
| | | Statistics | Df | Signature. |
| RESPONDENTS | AT THE MOMENT | 0.632 | 30 | 0,000 |
| | LIGHT | 0.626 | 20 | 0,000 |

Source: Data processed by the author, 2025

As reported by both groups of post-test data (Moderate and Mild) in this test, it shows a significance value of <0.05. Thus, the data falls into the non-normal distribution category.

**Mann-Whitney U test**

Table 6. Mann-Whitney U method

| Respondents | | N | Average Rating | Number of Ratings |
|---|---|---|---|---|
| POST-TEST | Intervention | 25 | 27.5 | 687.5 |
| | Control | 25 | 23.5 | 587.5 |
| | Total | 50 | | |

Source: Data processed by the author, 2025

As reported by the test results, the intervention group had a mean rating of 27.5 which exceeded the control group (23.50), indicating a greater change in pain intensity scores. This indicates that the intervention group's post-test score was higher compared to the control group. The mean rating values indicate that the intervention group achieved better post-test performance than the control group. This is supported by the Sum of Ratings, which showed 587.50 for the control group along with 687.50 for the intervention group, reflecting a clear variation across the distribution of scores.

Thus, referring to the significance value of the statistical test results (which in this case was previously found to be p = 0.000, or <0.5) . The findings indicate a meaningful difference between the two groups, indicating that the intervention contributed to better post-test results than no treatment.

Table 7. Mann-Whitney U test

| Statistical Test | POST-TEST |
|---|---|
| Mann-Whitney University | 262.5 |
| Wilcoxon W | 587.5 |
| Z | -1.143 |
| Asymptomatic. Sig. (2-tailed) | 0.253 |

Source: Data processed by the author, 2025

The analysis results showed a Z value of –1.143, along with a U value of 262.5. The post-test findings for both groups did not reach statistical significance, as indicated by an Asymp. Sig. (2-tailed) of 0.286 and a p value above 0.05. Although the intervention group recorded a mean rating of 27.50 compared to 23.50 for the other group, with a p value of 0.286 (> 0.05), the Mann-Whitney U test results showed no significance.

**Wilcoxon Analysis Test**

Table 8. Wilcoxon test

| | | N | Average Rating | Number of Ratings |
|---|---|---|---|---|
| POST TEST - PRE TEST | Negative Rating | 0 [a] | 0 | 0 |
| | Positive Rating | 37 [b] | 19 | 703 |
| | Tie | 13 [c] | | |
| | Total | 50 | | |

Source: Data processed by the author, 2025

The majority of respondents (37 out of 50) experienced an increase in scores from pre-test to post-test, with no observed decline. This indicates that the intervention had a strong positive effect on post-test performance.

Table 9. Wilcoxon test

| | POST TEST - PRE TEST |
|---|---|
| Z | -5.646 [b] |
| Asymptomatic. Sig. (2-tailed) | 0 |

Source: Data processed by the author, 2025

The analysis results showed that the PRE-TEST and POST-TEST scores were significantly different (Z = -5.113; p = 0.000). Most respondents experienced an increase in scores after the intervention, indicating its effectiveness.

**Respondent Characteristics**

The respondents in this study consisted of 50 adolescent girls, divided into an intervention group and a control group. The respondents were adolescent girls aged between 15 and 18 years and currently in high school (grades 10, 11, and 12).

The researchers considered the selection of adolescent girls as respondents very appropriate because the incidence of menstrual pain among adolescent girls is relatively high and is a critical problem that must be addressed as early as possible. This finding is consistent with research stating that menstrual pain in adolescents tends to be difficult to manage because it is rarely disclosed or reported by adolescent girls to their parents or health care providers. Furthermore, adolescence marks a transitional period involving significant hormonal and psychological changes, making adolescent girls highly vulnerable to reproductive health problems, including menstrual pain (dysmenorrhea) (Rustini et al., 2024). Untreated pain experiences can affect quality of life, academic achievement, and even mental health. Therefore, understanding the patterns and intensity of menstrual pain in this group is crucial for designing appropriate and effective interventions (Saputra et al., 2021). The selection of adolescent girls as research subjects also takes into account the importance of early reproductive health education. By involving them in this research, the data obtained will not only be relevant but also provide an opportunity to increase knowledge and awareness regarding the importance of properly managing menstrual pain. The interventions carried out in this study are expected to be the first step in increasing adolescents' awareness of their own health, while also encouraging them to be more open in discussing reproductive health issues with those around them, including family members and healthcare providers (Pangestu & Fatmarizka, 2023; Amroussia, 2022; Schmidt et al., 2022).

**Imbalance of Basic Characteristics as a Disturbing Factor**

Differences in age and grade level between the intervention and control groups should be considered when interpreting the results of this study. Demographic variables such as age and education level are known to be associated with pain perception, emotion regulation, coping strategies, and health-seeking behavior, which may influence subjective reporting of menstrual pain. Older adolescents tend to have more menstrual experience and may have developed more adaptive pain management strategies. Furthermore, higher education levels can influence levels of academic stress, psychosocial distress, and health literacy. Therefore, imbalances in these baseline characteristics could potentially act as confounding factors influencing differences in post-intervention pain scores, regardless of the effects of the herbal drink.

Further research is recommended to conduct baseline equivalence tests, respondent stratification, or statistical control of covariates to increase internal validity and strengthen causal inference.

**The effectiveness of dullness in reducing the incidence of menstrual pain in adolescent girls using the Mann-Whitney test analysis**

With a mean rating of 23.5 and a sum of 587.5 ratings, the control group scored lower than the intervention group, which had a mean rating of 27.5 and a sum of 687.5 ratings, as indicated by the Mann-Whitney U test. These results indicate a difference in post-test outcomes recorded between the intervention (administration of turmeric tamarind drink) and the group that did not receive the intervention.

The difference in mean ratings indicates that the group that received the complementary therapy intervention in the form of turmeric tamarind drink experienced a greater reduction in dysmenorrhea levels compared to the control group. In other words, the adolescent girls experienced a reduction in the intensity of dysmenorrhea as a result of the intervention. The researchers believe that these results support the hypothesis that turmeric tamarind can act as a complementary therapy option to reduce dysmenorrhea in adolescent girls. This effect is attributed to the curcumin in turmeric, which provides analgesic and anti-inflammatory actions, along with the antioxidants in tamarind, which can improve blood flow and relax muscles. Through a natural and herbal-based approach, turmeric and tamarind are a safer alternative to the use of analgesic drugs, which, in the long term, can cause side effects. The results of this study support the theoretical framework presented by (Saputri et al., 2020) and (Pertiwi et al., 2024), which states that curcumin in turmeric has a prostaglandin-suppressing effect, a substance responsible for causing pain during menstruation. By targeting the COX-2 enzyme, curcumin helps reduce processes associated with inflammation. Furthermore, previous research by (Agustina et al., 2023) and (Rezkiyanti & Rusli, 2022) showed that administering a turmeric and tamarind herbal drink significantly reduced menstrual pain in high school students, where the control group showed a more limited reduction in pain levels than the other groups. Another study by (Ulaa et al., 2022) also found that consuming a turmeric and tamarind herbal drink twice daily during menstruation can reduce pain scores based on the VAS scale.

Thus, the results of the tests conducted in this study are consistent with scientific theory and previous research findings, strengthening the conclusion that this intervention reduces the severity of dysmenorrhea.

**Differences in pre-test and post-test results between the intervention group and the control group based on the Wilcoxon analysis test**

The Wilcoxon Signed Rank Test results showed that of the 50 respondents who received the intervention, 37 experienced a decrease in pain scores after treatment (positive ratings), resulting in a total of 703 ratings with an average rating of 19. Meanwhile, no respondents experienced an increase in pain after the intervention (negative ratings = 0), and 13 respondents showed no change in pain scores (tie).

These results indicate that the intervention provided, namely the administration of traditional turmeric and tamarind herbal medicine, was proven effective in reducing the level of dysmenorrhea in adolescent girls. The absence of values on negative ratings confirms the finding that no participants experienced an increase in pain after the intervention. The researchers' response to these results was very positive, because it shows a consistent therapeutic effect of the use of natural complementary therapies such as turmeric and tamarind. This is in line with the curcumin content in turmeric, which is known to have anti-inflammatory and analgesic properties, as well as tamarind, which helps increase uterine muscle relaxation and accelerate menstrual blood excretion. These results are also consistent with findings from previous studies conducted by (Shabanian Boroujeni et al., 2024) and (Triningsih & Mas'udah, 2023), which reported that administering a traditional turmeric and tamarind drink significantly reduced menstrual pain in adolescents. These studies confirm that turmeric and tamarind are not only empirically effective but also safe as a non-pharmacological therapy for dysmenorrhea. Thus, the Wilcoxon test provides a strong statistical basis for the use of turmeric

and tamarind as an alternative complementary therapy for menstrual pain, especially in adolescent girls.

## Conclusion

Based on findings from a study of 50 female adolescent respondents, divided into intervention and control groups, it can be concluded that administering a turmeric-tamarind (kusuh) drink has demonstrated effectiveness in reducing dysmenorrhea levels. The Mann-Whitney U test results showed that the control group experienced less improvement in pain scores than the intervention group. These findings imply that the turmeric-tamarind intervention is effective in reducing the intensity of dysmenorrhea.

Furthermore, analysis using the Wilcoxon Signed Rank Test showed that the majority of participants in the intervention group reported a reduction in dysmenorrhea after turmeric-tamarind treatment, and none experienced worsening symptoms. This confirms that this therapy is safe and effective. The role of turmeric-tamarind as a complementary therapy is supported by the presence of curcumin in turmeric, which provides analgesic and anti-inflammatory benefits, along with tamarind, which provides antioxidant benefits and strengthens uterine muscles and improves blood flow.

In accordance with previous research and scientific concepts, this evidence suggests that turmeric-tamarind may act as a natural, safe, and affordable non-pharmacological alternative therapy for menstrual pain in adolescent girls.

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