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The effectiveness of providing turmeric and tamarind herbal drink on reducing menstrual pain scale in students

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Abstract

Background: Menstrual pain, or dysmenorrhea, is a common complaint among women of reproductive age, particularly adolescents and young adults. This condition is characterized by cramps or pain in the lower abdomen that can radiate to the waist and thighs and generally occurs before or during menstruation. One popular approach is the use of herbal plants, in line with increasing public awareness of a healthy lifestyle and the use of natural ingredients.

Purpose: To determine the effectiveness of turmeric and tamarind herbal drink on reducing menstrual pain and dysmenorrhea in D3 nursing students at the Batari Toja Bone Institute.

Method: This study involved 20 female nursing students and used a quasi-experimental design. The study design was a pre-posttest one-group design, namely a design before and after the turmeric and tamarind drink intervention. The sampling technique used was purposive sampling. Analysis used univariate and bivariate analysis with paired simple t-tests. The results of the paired T-test, comparing menstrual pain experienced by respondents before and after the intervention, showed that the turmeric and tamarind drink had an effect on reducing primary menstrual pain, as indicated by a P-value of 0.0001, meaning $\alpha < 0.05$. This resulted in the acceptance of H_a and the rejection of H_o , indicating that the turmeric and tamarind drink had an effect on reducing primary menstrual pain in female nursing students.

Results: There was a decrease in the dysmenorrhea scale before and after the turmeric and tamarind administration. Before the turmeric and tamarind administration, most respondents were in the moderate pain category (11 respondents (55%)), while after the turmeric and tamarind administration, most respondents were in the no pain category (7 respondents (35%)).

Conclusion: According to the researcher's assumption, the dysmenorrhea pain experienced by respondents before the turmeric and tamarind administration was caused by excessive production of the hormone prostaglandin during menstruation, which causes uterine muscle contractions and leads to primary dysmenorrhea.

Keywords: Adolescent Girls; Dysmenorrhea; Turmeric and Tamarind.

INTRODUCTION

Reproductive health is an important component of overall health, particularly for adolescents, as they are an age group undergoing growth and development. During puberty, young women experience physical, hormonal, and psychological changes marked by the onset of reproductive organ function, one of which is menstruation (Khaysia 2022). Menstruation is a cyclical physiological process caused by the shedding

of the endometrium in response to changes in reproductive hormones. Although a natural process, menstruation is often accompanied by symptoms that can disrupt daily activities, particularly menstrual pain or dysmenorrhea (Rahayu & Karmi, 2024).

Menstrual pain, or dysmenorrhea, is a common complaint experienced by women of reproductive age, particularly adolescents and young adults. This

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condition is characterized by cramps or pain in the lower abdomen that can radiate to the waist and thighs and generally occurs before or during menstruation (Sugiharti & Febriana, 2021). Physiologically, primary dysmenorrhea occurs due to increased prostaglandin production, which triggers excessive uterine muscle contractions, causing pain. In addition to pain, other symptoms such as nausea, dizziness, and weakness often accompany it, impacting the physical and psychological well-being of sufferers (Hafizhah & Ramadhan, 2023).

According to WHO data (2016), the prevalence of menstrual pain has increased significantly in many countries, with the prevalence of pain in adolescent girls ranging from 17% to 81% (Guimarães & Póvoa, 2020). According to World Health Organization (WHO) data from 2017, 1,769,425 women (90%) experienced menstruation, with 10-16% experiencing heavy periods. The prevalence of menstrual pain globally is significant, with an average of almost 50% of women experiencing it. According to basic health research in Indonesia, the prevalence of menstruation is 64.25% among women of childbearing age and 78.6% among early adolescents. In Indonesia, three-thirds of women with early menstrual pain experience mild to severe pain, while the remainder experience severe pain (Mansouri, Arjmand, Tavirani, Razzaghi, Nejad, & Hamdieh, 2020).

The impact of dysmenorrhea is not limited to physical discomfort but also impacts daily activities. In adolescent girls and university students, menstrual pain can lead to impaired concentration, decreased participation in learning, and even absenteeism from school or university (Umma, Rahagia, & Pamungkas, 2024). Several reports indicate that some adolescents choose to rest at home and limit activities when experiencing menstrual pain, and many even require analgesics to relieve their symptoms. If this condition occurs repeatedly, it can impact an individual's quality of life and productivity (Khaysia, 2022).

Dysmenorrhea is generally treated with pharmacological therapy using analgesics and anti-inflammatory drugs. Although effective in relieving pain, long-term use of these medications can potentially cause side effects such as stomach upset and the risk of anemia (Fadhillah & Futriani, 2025). Therefore, safer and more accessible non-pharmacological alternative therapies are needed.

One popular approach is the use of herbal plants, as public awareness of a healthy lifestyle and the use of natural ingredients increases. Turmeric and tamarind is a traditional herbal remedy long known and consumed by Indonesians to help reduce menstrual pain (Rahayu & Karmi, 2024).

Turmeric is a dietary supplement containing cyclooxygenase compounds that can reduce the incidence of dysmenorrhea in women by reducing the rate of uterine contractions, which are inhibited by prostaglandins in uterine epithelial tissue (Widiatami, Widyawati, & Admini, 2018). In fact, the compound in turmeric, phenol, contains antioxidants that act as pain relievers, anti-inflammatory agents, and blood purifiers. It has the potential to suppress prostaglandin production, thereby reducing uterine contractions and pain intensity. Tamarind contains the active ingredient anthocyanin, which can treat and relieve menstrual pain by inhibiting the cyclooxygenase (COX) reaction that produces prostaglandins, which cause menstrual pain (Fadhillah & Futriani, 2025). The natural ingredients in turmeric and tamarind drinks can reduce symptoms of dysmenorrhea. Curcumin in turmeric

There are several ways to reduce dysmenorrhea, including pharmacological and non-pharmacological methods. Pharmacological drugs commonly used are analgesics and anti-inflammatory drugs such as mefenamic acid, ibuprofen, and others. Non-pharmacological therapies that can be used to reduce dysmenorrhea include herbal remedies, medical treatment, hypnotherapy, and acupuncture. Herbal therapy can be performed using traditional preparations derived from plant ingredients believed to be effective in reducing pain, such as cinnamon, soybeans, cloves, turmeric, ginger, and Chinese herbs (Rosmiyati, 2018). The active compounds contained in turmeric are curcumin and curcumenol. Curcumin inhibits the cyclooxygenase (COX-2) reaction, which inhibits or reduces inflammation, thereby reducing or inhibiting uterine contractions. Curcumenol in turmeric, which acts as an analgesic, inhibits the excessive release of prostaglandins through smooth epithelial tissue and inhibits uterine contractions, thereby reducing dysmenorrhea (Safitri, 2018). Meanwhile, the active compound contained in tamarind is anthocyanin, which has anti-inflammatory and antipyretic properties. It inhibits the action of the

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cyclooxygenase (COX) enzyme, thereby inhibiting the release of prostaglandins (Anindita, 2010).

However, the use of turmeric and tamarind in society is still largely based on empirical experience and inherited beliefs, so scientific proof of its effectiveness is needed. Based on the results of a pre-survey conducted at the Batari Toja Bone Institute, unstructured interviews were conducted with adolescents who were pregnant.

RESEARCH METOD

The research design used in this study is a quasi-experimental one. This study uses a one-group pretest-posttest design. Researchers provide

interventions to a sample group without a control group. This study began by measuring the pain scale of dysmenorrhea using the Numeric Rating Scale (NRS) before and after the administration of turmeric and tamarind decoction for 3 days. The population in this study were all female students of the Batari Toja Bone Institute. The level of pain will be measured using the Numeric Rating Scale (1-10). The sample used purposive sampling with a sample size of 20 female students by giving turmeric and tamarind drink during menstrual pain. The pain scale before and after the intervention will be analyzed univariately. Bivariate analysis of statistical tests using the t-test with the SPSS program.

RESEARCH RESULTS

Table 1. Menstrual Pain Before Administering Turmeric and Tamarind Intervention (N=20)

Variable	Results
Pre-Test Pain Level (%)	
No Pain	0/0
Mild Pain	7/35.0
Moderate Pain	11/55.0
Severe Pain	2/10.0
Unbearable Pain	0/0
Post-Test Pain Level (%)	
No Pain	4/20.0
Mild Pain	11/55.0
Moderate Pain	4/20.0
Severe Pain	1/5.0
Unbearable Pain	0/0

Based on Table 1. it can be seen that menstrual pain before the intervention in the control group, most respondents were in the pain category, namely 11 people (55%), followed by mild pain by 7 people (35%), and severe pain by 2 people (10%). After administering the turmeric and tamarind drink, there was a change in the distribution of pain scales, with the majority of respondents (11 people) in the mild pain category (55%), and 4 respondents (20%) no longer experiencing pain. The number of respondents with moderate pain decreased to 4 (20%) and 1 (5%) with severe pain. These results indicate a decrease in menstrual pain levels after administering the turmeric and tamarind drink.

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Table 2. Results of the Paired Sample t-Test for the Menstrual Pain Scale

Variabel	Mean $\pm$ SD	Mean Difference	T	Df	P-Value
Pretest	1.75 $\pm$ 0.72				
Posttest	1.10 $\pm$ 0.79	0,65	5.70	19	0.0001

A Paired Sample t-test was conducted to determine the difference in the average menstrual pain scale before and after administration of the turmeric and tamarind drink. The average pain scale before administration of the turmeric and tamarind drink was 1.75 ± 0.72 , while after the intervention it decreased to 1.10 ± 0.79 . The mean difference of 0.65 indicates a decrease in pain levels after the intervention. The results of the Paired Sample t-test showed a calculated t value of 5.70 with 19 degrees of freedom (df) and a significance value (p-value) of 0.0001 ($p < 0.05$). Because the p-value is smaller than 0.05, H_0 is rejected and H_a is accepted. Thus, it can be concluded that there is a significant effect of administering the turmeric and tamarind drink on reducing the scale of menstrual pain (primary dysmenorrhea) in female students.

DISCUSSION

The results of this study indicate that administering a turmeric and tamarind drink is effective in reducing menstrual pain levels in female students. The average decrease in pain scale from 1.75 to 1.10 indicates an improvement in the condition after the intervention. This result is statistically significant with a p-value of 0.0001, indicating a very small chance of the decrease occurring by chance. Physiologically, primary dysmenorrhea occurs due to increased production of the hormone prostaglandin during menstruation (Sugiharti & Febriana, 2021). Prostaglandins stimulate excessive uterine muscle contractions, causing pain. Turmeric contains the active compound curcumin, which has anti-inflammatory and analgesic properties (Rezkiyanti & Rusli, 2022). Curcumin works by inhibiting the cyclooxygenase (COX) enzyme, which plays a role in prostaglandin synthesis, thereby suppressing prostaglandin production and reducing uterine contractions. Tamarind in the turmeric and tamarind concoction also contains antioxidants that help improve blood circulation and reduce the inflammatory response. The combination of these two ingredients is thought to contribute to reducing the

intensity of menstrual pain in respondents. The results of this study indicate that administering a turmeric and tamarind drink significantly reduced menstrual pain levels in female students. This finding is consistent with previous studies demonstrating the effectiveness of a turmeric and tamarind-based concoction in relieving dysmenorrhea (Khaysia, 2022).

Previous research found that administering a turmeric and tamarind herbal drink affected the intensity of menstrual pain in adolescent girls, although warm compresses were more effective than turmeric and tamarind in reducing menstrual pain. This confirms that turmeric and tamarind still have a role in menstrual pain management as a non-pharmacological therapy worth considering (Fadhilah & Futriani, 2025). Other research has also shown that administering a turmeric and tamarind drink can reduce the intensity of dysmenorrhea pain in adolescent girls compared to a group that received no intervention. This study used a quasi-experimental design and found a shift in the majority of respondents from moderate to mild pain after consuming a turmeric and tamarind concoction (Intani, Yulita, & Ilmaskal, 2023).

Furthermore, another study, also using a one-group pre-test/post-test design in adolescent female students, showed that consuming tamarind turmeric water significantly reduced menstrual pain with a $p < 0.05$ score. These results strengthen evidence that the pain-relieving effect of the turmeric and tamarind combination is not a local phenomenon but has consistent results across diverse adolescent populations. Meanwhile, female students majoring in nutrition also reported that administering turmeric and tamarind significantly reduced dysmenorrhea pain ($p = 0.000$). These results are similar to this study, which showed significant changes in pain scales before and after the turmeric and tamarind intervention (Intani, Yulita, & Ilmaskal, 2023). Other research also shows that adolescents who regularly consume turmeric and tamarind concoctions are less likely to experience dysmenorrhea than those who do

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not. These results provide additional evidence that habitual consumption of turmeric and tamarind can impact the prevalence and intensity of menstrual pain over the long term (Safitri & Gustina, 2023).

Previous researchers revealed that after the application of turmeric and tamarind drinks, the mild pain scale was 26 (68.4%) and severe pain was 4. There was a difference in the effectiveness of turmeric and tamarind drinks on reducing menstrual pain (dysmenorrhea) in adolescents, which turned out that the application of turmeric and tamarind drinks was effective in reducing menstrual pain (dysmenorrhea) in adolescents. This literature review describes that turmeric and tamarind drinks are effective in reducing menstrual pain (dysmenorrhea) in adolescents (Arianti & Milindasari, 2022).

In general, the findings above demonstrate a consistent pattern: herbal interventions based on curcumin (the active component in turmeric) and tamarind showed a statistically significant reduction in menstrual pain intensity. This supports the hypothesis that active compounds like curcumin work through an anti-inflammatory mechanism by inhibiting the cyclooxygenase (COX) enzyme and excessive prostaglandin production, a mechanism also utilized by non-steroidal pharmacological therapies but with fewer side effects.

Thus, this study aligns with recent scientific literature from both quasi-experimental studies and pre-post-test case studies, demonstrating that administering turmeric and tamarind drinks is an effective non-pharmacological therapy alternative for treating primary dysmenorrhea in adolescents and female students.

CONCLUSION

The administration of turmeric and tamarind has an effect on reducing dysmenorrhea pain levels in female students at the Batari Toja Bone Institute. Therefore, it can be concluded that the turmeric and tamarind herbal drink is effective in reducing menstrual pain levels in female students. This drink has the potential to be a safe and easily implemented non-pharmacological therapy alternative in the management of primary dysmenorrhea.

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