



Therapeutic Effectiveness of Curcuma longa (Turmeric) Beverage on Reducing Dysmenorrhea Pain

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Abstract. Dysmenorrhea or painful menstruation is a gynecological problem that is most commonly experienced by women of various ages. The incidence of dysmenorrhea in the world are numerous. On average, more than 50% of women experience it. Turmeric drinks are a type of drink that is prepared with the main ingredient of turmeric. Turmeric is believed to contain natural ingredients active ingredients that can function as analgesics, antipyretics and anti-inflammatories. This study examines the impact of Curcuma longa (turmeric) drink therapy on dysmenorrhea pain reduction among female adolescents at Poltekkes Wira Husada Nusantara. Employing a one-group pretest-posttest design, 50 students were assessed for dysmenorrhea severity before and after a three-day treatment with turmeric drinks. Results indicate a significant decrease in pain level post-treatment, with the average pain score reducing from 6.20 to 13.13 in the experimental group, compared to the minimal change in the control group (from 7.07 to 8.20). Statistical analysis revealed a t-value of 8.254 for the experimental group ($p < 0.001$), confirming the efficacy of turmeric in alleviating menstrual pain. The findings align with previous research, supporting turmeric's role as an analgesic, anti-inflammatory, and antispasmodic agent. Given its natural composition and beneficial effects, turmeric is a viable non-pharmacological intervention for dysmenorrhea management. These results support the use of turmeric drinks as an effective remedy for reducing menstrual pain and suggest further investigation into its broader applications in menstrual health management.

Keywords: Curcuma longa, dysmenorrhea, pain, turmeric

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INTRODUCTION

Adolescence is a dynamic phase of development in a person's life, marked by the transition from childhood to adulthood and characterized by rapid physical, mental, emotional, and social changes. One of the key biological markers in adolescent girls is the onset of menstruation, which signifies the beginning of reproductive capability [1]. Menstruation typically begins between the ages of 10 and 16, influenced by factors such as health status, nutritional levels, and body weight relative to height. However, many women experience menstrual-related problems, with dysmenorrhea being one of the most common issues [2].

Dysmenorrhea, a gynecological complaint, arises due to an imbalance in progesterone levels, leading to significant pain during menstruation. Women with dysmenorrhea produce prostaglandins at levels ten times higher than those without the condition [3]. These prostaglandins increase uterine contractions, which, when excessive, can also affect the large intestine. Dysmenorrhea can also be associated with specific medical conditions such as endometriosis, pelvic infections, uterine tumors, appendicitis, digestive disorders, and even kidney abnormalities. The characteristic pain of dysmenorrhea typically presents as discomfort in the lower abdomen before and during menstruation, often accompanied by nausea due to increased uterine contractions. This condition can significantly impact the physiological and psychological well-being of adolescents, leading to irritability, rapid heartbeat, anxiety, sleep disturbances, and disruptions in daily activities [4].

Dysmenorrhea significantly hampers daily physical activities. According to the Indonesian Ministry of Health (2017), approximately 40-70% of women of reproductive age experience dysmenorrhea, with 10% suffering to the extent that it interferes with daily activities. The condition is most prevalent among adolescents, with 70-90% of cases occurring during this stage, consequently affecting their academic, social, and other activities. The peak incidence of primary dysmenorrhea occurs in late adolescence (around the 20s), with about 92% of adolescents being affected. The incidence typically decreases with age and after childbirth [5].

A preliminary study conducted by the researchers' involved interviews with 10 adolescent girls at Poltekkes Wira Husada Nusantara. The findings revealed that 8 of these girls experienced severe dysmenorrhea, resulting in absenteeism from college, while 2 girls reported mild dysmenorrhea that allowed them to continue their daily activities. The administration of turmeric (*Curcuma longa*) drinks was noted to alleviate menstrual pain and provide a calming effect, thereby reducing the severity of dysmenorrhea.

Given these observations, the researchers are interested in exploring the effect of *Curcuma longa* (turmeric) drink therapy on reducing dysmenorrhea pain in adolescent girls at Poltekkes Wira Husada Nusantara. Dysmenorrhea management often involves pharmacological approaches, such as the use of analgesics or specific dysmenorrhea medications, alongside non-pharmacological interventions. Non-pharmacological treatments include the use of traditional herbal remedies, which have long been utilized in various cultural practices. Turmeric rhizomes have been recognized for their analgesic, anti-inflammatory, antioxidant, antimicrobial, anticancer, antitumor, and cholesterol-lowering properties, making them a potential natural remedy for dysmenorrhea.

METHOD

Study Design

This study employs a quantitative research approach using an experimental design, specifically the one-group pre-test and post-test design. This design involves administering *Curcuma longa* (turmeric) drink therapy to adolescent girls suffering from dysmenorrhea, to assess its impact on pain reduction. The intervention is given once daily over three consecutive days.

Population and Sample

The study was conducted at Poltekkes Wira Husada Nusantara from May to July 2024. The population consists of 98 adolescent girls enrolled at the institution. A purposive sampling technique was used to select a sample of 50 adolescent girls, divided into two groups: 25 girls who received the *Curcuma longa* drink (treatment group) and 25 who did not receive the drink (control group). The inclusion criteria include adolescents who experience dysmenorrhea during menstruation and are willing to participate in the study. Exclusion criteria include those not experiencing dysmenorrhea or unwilling to participate.

Research Procedure

After obtaining the necessary permissions, the researchers approached eligible participants and explained the study's purpose. Those who consented were enrolled and asked to fill out a pre-intervention questionnaire assessing their dysmenorrhea pain levels. The treatment group was then administered the *Curcuma longa* drink for three consecutive days. Pain levels were reassessed using the same questionnaire after the intervention.

Instrument

Data were collected using a structured questionnaire designed to measure dysmenorrhea pain levels, including the severity of pain, duration of pain, and impact on daily activities. The questionnaire was administered before and after the intervention to assess the effect of the Curcuma longa drink. According to the American Medical Association, pain is a sensory experience and unpleasant emotional consequences from actual or actual tissue damage potential. The pain scale measuring tool is a tool used to measure scale pain felt by a person with a range of 0 to 10. Numerical Rating Scale (NRS) Is the scale used for measuring pain in adults. Scale this is most effectively used when reviewing pain intensity before and after intervention therapeutic [6].

Data Analysis

The data were analyzed using paired t-tests to compare the mean pain levels before and after the intervention within the treatment group. Independent t-tests were used to compare pain levels between the treatment and control groups post-intervention. Statistical significance was set at $p < 0.05$, if the t-value exceeded the critical value, H_0 would be rejected, indicating a significant effect of Curcuma longa on dysmenorrhea pain reduction.

RESULTS AND DISCUSSION

The study included 50 adolescent girls aged between 19 and 21 years. Among the participants, 6 were 19 years old, representing 20% of the total sample. The largest age group consisted of 24 participants who were 21 years old, making up 46.7% of the sample, while 20 participants were 20 years old, accounting for 33.3%.

Table 1. Distribution of respondents by age

Age (year)	Frequency	
	n	%
19	6	12.00
20	20	40.00
21	24	48.00
Total	50	100.00

This distribution shows that the majority of the participants were in their early 20s, with a significant concentration at the age of 21. This age group is particularly relevant in the context of reproductive health, as it is during these years that young women are most likely to experience dysmenorrhea, a common menstrual disorder. The higher proportion of 21-year-olds suggests that dysmenorrhea might be more frequently reported or more severe among slightly older adolescents. These demographic findings are crucial for understanding the applicability of the study's results. The concentration of participants in the 21-year-old group indicates that the study's findings may be especially relevant to this age group. This observation highlights the need for age-specific strategies in managing dysmenorrhea, with interventions like Curcuma longa potentially offering significant benefits for this demographic.

Table 2. Results of Curcuma longa (Turmeric) administration on dysminorrhea pain

	Pretest score		Posttest score		t-value at the 0.05 level	p-value
	Mean	t value	Mean	t value		
Intervention group	6.20	-1.302	13.13	8.254	2.048	< 0.001
Control group	7.07	-1.473	8.20	1.713	2.048	0.103

The results of the pre-test and post-test experiments evaluating the effect of Curcuma longa (turmeric) on dysmenorrhea pain among female adolescents at Poltekkes Wira Husada Nusantara reveal significant findings. In the treatment group, the pre-test mean score was 6.20, and the post-test mean score significantly increased to 13.13. The calculated t-value for the post-test in this group was

8.254, which, when compared to the critical t-value of 2.048 at a 0.05 significance level, indicates a statistically significant effect ($p < 0.000$). This suggests that *Curcuma longa* effectively reduced dysmenorrhea pain in the participants of the treatment group. Conversely, the control group, which did not receive the *Curcuma longa* treatment, showed a pre-test mean score of 7.07, and a slight increase in the post-test mean score to 8.20. The t-value for this group was 1.713, which is less than the critical t-value of 2.048, and the p-value of 0.103 suggests that the change was not statistically significant.

These findings imply that *Curcuma longa* has a pronounced positive impact on reducing dysmenorrhea pain, as evidenced by the significant improvement in pain scores within the treatment group. In contrast, the control group did not experience a significant change, further reinforcing the effectiveness of *Curcuma longa* as a natural therapeutic intervention for menstrual pain. This study highlights the potential of *Curcuma longa* as an alternative treatment for dysmenorrhea, warranting further research into its mechanisms and broader applications.

The findings of this study align with previous research, Average pain before given therapy was 6.27 and after being given turmeric acid drink the average pain scale decreased to 2.85. This change shows that the sour turmeric drink has a great influence on the scale pain in female students with dysmenorrhea. Statistical test analysis using Wilcoxon Signed Ranks The test obtained a p-value of $0.000 \leq \alpha 0.05$ indicating that there is an influence in the sour turmeric drink in reducing the pain scale in class XI female students at Kudus Muhammadiyah High School [6].

Supporting the theory that turmeric (*Curcuma longa*) possesses active compounds with analgesic, antipyretic, and anti-inflammatory properties [7]. The key chemical constituent, curcumin, is known to inhibit the COX-2 enzyme, reducing inflammation and subsequently lessening uterine contractions, which are a primary cause of dysmenorrhea [8]. Additionally, curcumenol, another compound in turmeric, acts as an analgesic by inhibiting the excessive release of prostaglandins through the uterine epithelial tissue, further reducing uterine contractions and menstrual pain [9].

Turmeric drinks contain natural ingredients Acid can reduce dysmenorrhea complaints in their way. Curcumin and anthocyanins will work to inhibit cyclooxygenase reaction thereby inhibiting inflammation and reducing uterine contractions. Inhibition mechanism uterine contractions via curcumin by reducing the influx of calcium ions (Ca^{2+}) into calcium channels in epithelial cells uterus [6].

These results suggest that turmeric can be a viable non-pharmacological alternative for managing menstrual pain in adolescent girls. The active ingredients such as curcuminoids, flavonoids, and other compounds in turmeric provide analgesic and anti-inflammatory effects, making it an effective remedy for alleviating menstrual discomfort. Thus, this study corroborates existing theories and research, fulfilling the objective of demonstrating the impact of turmeric drink therapy on reducing dysmenorrhea in adolescent girls at Poltekkes Wira Husada Nusantara.

CONCLUSION

The study confirms that the *Curcuma longa* (turmeric) drink effectively reduces dysmenorrhea pain in adolescent girls, offering a natural, non-pharmacological alternative. Turmeric's active compounds inhibit inflammation and uterine contractions, aligning with existing research. This suggests turmeric is a viable option for managing menstrual pain and enhancing well-being without pharmaceutical interventions.

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