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Original Research

The Effect of *Jamu Kunyit Asam* (Turmeric–Tamarind) Consumption on Menstrual Pain (Dysmenorrhea) Scale Reduction among Adolescent Girls at Hamalatul Quran Girls' Islamic Boarding School, Kediri, East Java

Pengaruh Konsumsi Jamu Kunyit Asam terhadap Penurunan Skala Nyeri Menstruasi (Dismenore) pada Remaja Putri di Pondok Pesantren Putri Hamalatul Quran Kediri, Jawa Timur

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Abstract: *Dysmenorrhea is one of the most common gynecological complaints among adolescent girls and often disrupts daily activities, including learning and worship routines in Islamic boarding schools (pesantren). Jamu kunyit asam, a traditional Indonesian herbal drink made from turmeric (*Curcuma longa*) and tamarind (*Tamarindus indica*), is widely used to relieve menstrual pain. This study aimed to analyze the effect of jamu kunyit asam consumption on the menstrual pain scale among adolescent girls at Hamalatul Quran Girls' Islamic Boarding School, Kediri, East Java. A quasi-experimental study with a one-group pretest–posttest design was conducted on 30 female students (santriwati) with primary dysmenorrhea, selected by purposive sampling. Respondents drank 200 mL of jamu kunyit asam once daily for three consecutive days from the first day of menstruation. Pain intensity was measured using the Numeric Rating Scale (NRS 0–10) before and after the intervention and analyzed with the Wilcoxon signed-rank test. The mean pain score decreased from 5.63 ± 1.35 before to 2.77 ± 1.28 after the intervention ($p < 0.001$). Jamu kunyit asam consumption significantly reduced the dysmenorrhea pain scale among adolescent girls. It may be used as a simple, affordable complementary non-pharmacological option in pesantren settings, alongside proper health education.*

Key word: dysmenorrhea, Islamic boarding school, jamu kunyit asam, menstrual pain, teenage girls

1. INTRODUCTION

Adolescence is a transitional period from childhood to adulthood marked by rapid physical, hormonal, and psychosocial changes, one of which is the onset of menstruation (menarche) (1). Menstruation is a normal physiological process, yet for many adolescent girls it is accompanied by lower abdominal cramping known as dysmenorrhea. Primary dysmenorrhea, which occurs without an underlying pelvic pathology, is the most frequent form in adolescents and is closely related to increased prostaglandin production and uterine contractions during menstruation (1,2,3,4).

Dysmenorrhea is highly prevalent worldwide. A systematic review reported that its prevalence among young women ranges from roughly 17% to 81%, with severe pain affecting a substantial proportion of them (5,6). The pain frequently interferes with concentration, school attendance, and daily activities (1,5,6,7). In Indonesia, menstrual pain has also been associated with school absenteeism among adolescent students (8).

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In Islamic boarding schools, where students follow a dense schedule of formal lessons, Qur'an memorization, and congregational worship, menstrual pain may further reduce learning and religious activity. Moreover, access to analgesics and health services in islamic boarding school is often limited, so students tend to rely on self-care and traditional remedies (7).

Management of primary dysmenorrhea includes pharmacological therapy such as non-steroidal anti-inflammatory drugs (NSAIDs) and non-pharmacological approaches (2,9,10). Long-term analgesic use may cause side effects, which encourages the use of herbal alternatives (11,12). *Jamu kunyit asam* is a traditional Indonesian drink made from turmeric rhizome (*Curcuma longa*) and tamarind fruit (*Tamarindus indica*) (13,14). Curcumin, the main active compound of turmeric, has anti-inflammatory and analgesic properties (15,16,17), and a network pharmacology analysis suggested that the turmeric–tamarind combination targets proteins related to dysmenorrhea pain (18). Randomized controlled trials have also shown that curcumin supplementation reduces the severity of premenstrual and menstrual symptoms, including dysmenorrhea (19,20). Several Indonesian studies have reported lower dysmenorrhea pain scores after *kunyit asam* administration in adolescents (21,22).

However, evidence from islamic boarding school settings remains scarce, even though the living environment, diet, and routine of female stundents differ from those of students in general schools. This study therefore aimed to analyze the effect of *jamu kunyit asam* consumption on the menstrual pain (dysmenorrhea) scale among adolescent girls at Hamalatul Quran Girls' Islamic Boarding School, Kediri, East Java. The findings are expected to support the use of locally available, low-cost herbal care in islamic boarding school health programs.

2. METHODS

Study design, place, and time. This was a quasi-experimental study with a one-group pretest–posttest design (23). The study was conducted at Hamalatul Quran Girls' Islamic Boarding School, Kediri, East Java, from 1 September –1 October 2026. Pain was measured on the first day of menstruation before the intervention (pretest) and on the third day after the last dose (post-test) in the same menstrual cycle.

Population and sample. The population was all female students living in the boarding school. Respondents were selected by purposive sampling using the following criteria. Inclusion criteria were: aged 12–18 years; had experienced menarche with a regular cycle (21–35 days); experienced primary dysmenorrhea with NRS ≥ 1; and willing to participate with parental/guardian consent. Exclusion criteria were: history of gynecological disorders (e.g., endometriosis), allergy to turmeric or tamarind, taking analgesics or other herbal remedies during the study, and gastric disorders. A total of 30 respondents met the criteria.

Intervention. Jamu kunyit asam was freshly prepared by boiling 10 g of sliced turmeric rhizome and 5 g of tamarind pulp in 250 mL of water until about 200 mL remained, with a small amount of palm sugar added to improve taste. Respondents drank 200 mL once daily after meals for three consecutive days, starting on the first day of menstruation. Consumption was supervised by the research team and the boarding school health officer.

Instrument and data collection. Menstrual pain intensity was measured using the Numeric Rating Scale (NRS) of 0–10, a validated and widely used tool for pain assessment (24,25). Scores were categorized as no pain (0), mild (1–3), moderate (4–6), and severe (7–10). Respondent characteristics (age, age at menarche, and menstrual cycle length) were collected with a short questionnaire.

Data analysis. Data were analyzed using SPSS. Univariate analysis described respondent characteristics and pain scores as mean ± standard deviation or frequency and percentage. Normality was tested with the Shapiro Wilk test; because the pain scores were not normally distributed, the difference between pretest and posttest scores was tested with the Wilcoxon signed rank test at a significance level of $p < 0.05$.

3. RESULTS

A total of 30 female students participated and completed the study. Table 1 shows the characteristics of the respondents. The mean age was 15.6 ± 1.2 years and the mean age at menarche was 12.4 ± 1.0 years. Before the intervention, most respondents experienced moderate pain.

Table 1. Characteristics of respondents (n = 30)

Characteristic	Value
Age (years), mean ± SD	15.6 ± 1.2
Age at menarche (years), mean ± SD	12.4 ± 1.0
Menstrual cycle length (days), mean ± SD	28.9 ± 2.4
Pain category before intervention, n (%)	
Mild (NRS 1–3)	5 (16.7)
Moderate (NRS 4–6)	17 (56.7)
Severe (NRS 7–10)	8 (26.7)

Table 2 presents the pain scale before and after *jamu kunyit asam* consumption. The mean NRS score decreased from 5.63 to 2.77, a mean reduction of 2.86 points. The Wilcoxon signed-rank test showed a significant difference between pretest and post-test scores ($p < 0.001$); 29 respondents experienced a lower pain score and 1 respondent showed no change.

Table 2. Menstrual pain scale before and after *jamu kunyit asam* consumption (n = 30)

Measurement	Mean ± SD	Median (min–max)	Mean difference	p-value*
Before (pretest)	5.63 ± 1.35	6 (3–8)	2.86	< 0.001
After (posttest)	2.77 ± 1.28	3 (0–5)		

* Wilcoxon signed-rank test.

The distribution of pain categories also shifted (Table 3). Before the intervention no respondent was free from pain and 8 respondents (26.7%) had severe pain; after the intervention no respondent reported severe pain, and 4 respondents (13.3%) were pain free.

Table 3. Distribution of pain category before and after the intervention (n = 30)

Pain category	Before		After	
	n	%	n	%
No pain (0)	0	0.0	4	13.3
Mild (1–3)	5	16.7	20	66.7
Moderate (4–6)	17	56.7	6	20.0
Severe (7–10)	8	26.7	0	0.0
Total	30	100	30	100

4. DISCUSSION

This study showed that *jamu kunyit asam* consumption significantly reduced the menstrual pain scale among female stundents, with the mean NRS score falling by 2.86 points and the proportion of severe pain decreasing to zero. This result is consistent with previous Indonesian studies that found lower dysmenorrhea scores after *kunyit asam* administration in adolescents (21,22). It is also in line with randomized trials in which curcumin reduced dysmenorrhea and premenstrual symptoms (19,20), and with meta-analytic evidence of the analgesic effect of turmeric extracts in other inflammatory pain conditions (26).

The reduction in pain can be explained by the pharmacological action of the ingredients. Primary dysmenorrhea arises when excessive prostaglandins, produced via the cyclooxygenase (COX) pathway, trigger strong uterine contractions and ischemia (1,2,3,4). Curcumin from turmeric has anti-inflammatory and analgesic effects, including the suppression of inflammatory mediators and COX activity (15,16). A network analysis also indicated that compounds in turmeric and tamarind interact with several proteins linked to dysmenorrhea pain (18). The tamarind component adds antioxidant and anti-inflammatory compounds (14) and, together with turmeric, is traditionally believed to relax the uterine muscle.

The characteristics of respondents were in line with the typical profile of primary dysmenorrhea, which most often occurs in adolescents within a few years after menarche (1,2,6,7). In the islamic boarding school setting, the supervised and regular administration of the drink may also have supported the effect, since students share the same environment, diet, and routine, which reduces variation from external factors. In addition, the warm drink and the attention given by the research team may have contributed a psychological comfort effect, which is a known component of pain relief.

The implication is that *jamu kunyit asam*, which is cheap, easy to prepare from local ingredients, and culturally accepted, can be offered as a complementary self-care option in islamic boarding school health posts (poskestren), combined with education on menstrual health (8,13). This is relevant because NSAIDs, although effective, may cause adverse effects such as gastrointestinal discomfort (9,11). Nevertheless, this study has limitations. The one-group design without a control group cannot rule out placebo effects, natural fluctuation of pain between cycles, or the influence of other factors such as rest and psychological state (23). The sample size was small and limited to one islamic boarding school, and pain was measured by self-report. Future studies should use a randomized controlled design with a larger sample, measure the effect over several menstrual cycles, and standardize the curcumin content of the preparation.

5. CONCLUSION

Consumption of *jamu kunyit asam* significantly reduced the menstrual pain (dysmenorrhea) scale among adolescent girls at Hamalatul Quran Girls' Islamic Boarding School, Kediri, East Java. *Jamu kunyit asam* can be recommended as a simple, low-cost complementary measure for relieving primary dysmenorrhea in islamic boarding school, and it is suggested that boarding school health officers and caregivers integrate it into menstrual health education and routine self-care. Further controlled studies with larger samples are needed to confirm these findings.

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