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# Improving Reproductive Health Among Adolescent Girls at SMA 1 Purwakarta Through the Consumption of Turmeric and Red Ginger

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**KEYWORDS**
reproductive health, adolescent girls, herbal plants, dysmenorrhea.

**ABSTRACT**

Adolescent girls often face reproductive health issues such as irregular menstrual cycles and dysmenorrhea. Herbal plants (such as turmeric and red ginger) are known to help balance hormones and reduce menstrual pain. The objectives of this research were to analyze the effect of consuming a formulation of turmeric and red ginger on increasing knowledge of reproductive health, reducing the intensity of dysmenorrhea, and improving menstrual cycle regularity among adolescent girls at SMA 1 Purwakarta. A quantitative study using a pretest-posttest one-group design was conducted. The sample consisted of 40 adolescent girls selected using purposive sampling. The intervention involved the consumption of herbal drinks made from turmeric and red ginger for four weeks, accompanied by educational sessions. Data were collected through a reproductive health knowledge questionnaire, menstrual cycle records, and the Visual Analog Scale (VAS) for pain intensity. Analysis was performed using a paired t-test and the McNemar test. After the intervention, there was a significant increase in reproductive health knowledge ($p = 0.000$), menstrual cycle regularity ($p = 0.003$), and a decrease in menstrual pain intensity ($p = 0.000$). Consumption of herbal plants can be an effective non-pharmacological alternative for improving reproductive health in adolescent girls. The research implications suggest that this intervention can be integrated into school health promotion programs (implication for practice) and provides a basis for further research with a more robust design to explore the long-term effects and mechanisms of action.

## INTRODUCTION

Menopause is a natural phase in a woman's life characterized by the permanent cessation of menstrual cycles due to a decline in ovarian function. This process typically occurs between the ages of 45 and 55 and is often accompanied by various physical, psychological, and emotional symptoms that can affect a woman's quality of life (Boroujeni et al., 2024a; Boroujeni et al., 2024b; Heshmati et al., 2024). Common symptoms include hot flashes, sleep disturbances, mood changes, and an increased risk of osteoporosis and cardiovascular disease (Pattanittum et al., 2016; Phillips-Howard et al., 2016; Poluzzi et al., 2014; Rietjens et al., 2017). Therefore, appropriate strategies are needed to help women navigate these changes and maintain a healthy lifestyle (Sirotkin & Harrath, 2023; Wang et al., 2022; Wuttke et al., 2014; Xu et al., 2020; Zaccara et al., 2016; Zaccara et al., 2021).

Reproductive health issues among adolescent girls, such as irregular menstrual cycles (oligomenorrhea or amenorrhea) and dysmenorrhea, represent a significant global health concern with profound impacts on quality of life, academic performance, and daily activities (WHO, 2021). In Indonesia, the Ministry of Health's 2023 report indicates that over 50% of female adolescents experience dysmenorrhea, and approximately 30% report irregular

menstrual cycles. These conditions often lead to school absenteeism and reduced participation in social activities, highlighting an urgent need for effective and accessible interventions.

Current management strategies predominantly rely on pharmacological treatments, such as non-steroidal anti-inflammatory drugs (NSAIDs) and hormonal therapy (e.g., birth control pills). However, these approaches are often associated with limitations, including side effects (e.g., gastrointestinal discomfort, hormonal imbalances), variable efficacy, and limited accessibility or cultural acceptance in certain communities (Putri, 2020; Sari, 2022). Consequently, there is a growing interest in non-pharmacological alternatives, particularly the use of herbal plants, which are perceived as safer and more culturally resonant.

Herbal plants like turmeric (*Curcuma longa*) and red ginger (*Zingiber officinale* var. *rubrum*) have been traditionally used for their anti-inflammatory, analgesic, and phytoestrogenic properties. Previous studies, such as those by Astuti (2023) and Sari (2022), have demonstrated their potential in alleviating menstrual pain and regulating cycles. However, these studies often focus on single herbs, short durations, or small sample sizes, leaving a gap in understanding the combined and sustained effects of these herbs within a structured intervention in a school-based adolescent population. Furthermore, there is limited evidence from Indonesia that integrates educational components with herbal intervention to measure holistic improvements in reproductive health knowledge and physiological outcomes.

The symptoms associated with menstrual disorders are multifaceted. Physical symptoms include abdominal cramps, headache, fatigue, and breast tenderness, which can be severe enough to disrupt daily life. Psychological and emotional symptoms, such as irritability, anxiety, and mood swings, are also prevalent and contribute to decreased well-being. Long-term, untreated menstrual irregularities may lead to complications such as anemia or underlying conditions like polycystic ovary syndrome (PCOS) (Manuaba, 2021). Therefore, a comprehensive approach that addresses both symptom management and health literacy is essential.

This study aims to evaluate the effect of a combined intervention—consuming a herbal drink made from turmeric and red ginger alongside reproductive health education—on improving reproductive health knowledge, menstrual cycle regularity, and pain intensity among adolescent girls at SMA 1 Purwakarta. The findings are expected to provide empirical evidence supporting the use of herbal plants as a viable, non-pharmacological strategy to enhance reproductive health in adolescents, offering a practical solution for schools and communities to implement easily accessible health interventions.

## METHOD

This study employed a quasi-experimental quantitative design with a pretest-posttest one-group approach. The objective was to determine the effect of herbal plant consumption on the improvement of reproductive health among adolescent girls. The study was conducted at SMA 1 Purwakarta from February to March 2024. The population included all female students in grades X–XI aged 15–18 years. A sample of 40 respondents was selected using purposive sampling based on the following criteria:

1. Having irregular menstrual cycles or mild to moderate menstrual cramps,

2. Willing to participate in the study,
3. Not currently taking hormonal medications or other therapies.

Participants received a herbal drink made from turmeric and red ginger twice daily for 4 weeks, following established dosage guidelines for adolescent health. Initial data collection (pretest) assessed reproductive health knowledge, menstrual cycle regularity, and pain scale. After 4 weeks of intervention, final data collection (posttest) was conducted using the same instruments. Data analysis compared changes before and after the intervention, including:

1) Univariate analysis to describe respondent characteristics,
2) Bivariate analysis using paired t-tests to assess differences between pretest and posttest scores, with significance set at $p < 0.05$.

## RESULT AND DISCUSSION

### Univariate Analysis: Characteristics of Respondents

The study involved 40 female high school students from SMA 1 Purwakarta aged 15–18 years. The majority were aged 16–17 years (70%), with 65% previously experiencing moderate menstrual pain and 60% having irregular menstrual cycles.

**Table 1. Characteristics of Respondents (n=40)**

| Characteristic | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Age (Years)** | 15 | 4 | 10.0% |
| | 16 | 14 | 35.0% |
| | 17 | 14 | 35.0% |
| | 18 | 8 | 20.0% |
| **Menstrual Pain History** | Mild | 14 | 35.0% |
| | Moderate | 26 | 65.0% |
| | Severe | 0 | 0.0% |
| **Menstrual Cycle Regularity (Pre-test)** | Regular | 16 | 40.0% |
| | Irregular | 24 | 60.0% |

*Source: Primary data processed, 2024*

As shown in Table 1, the majority of respondents were 16-17 years old (70%). Most respondents (65%) had a history of moderate menstrual pain, and 60% had irregular menstrual cycles before the intervention.

The average knowledge score increased significantly after the intervention, with pretest scores of **64.5 ± 8.1 and** posttest scores of **81.2 ± 7.3.** *Paired t-test:* **p = 0.000 (p < 0.05), The percentage of respondents with regular menstrual cycles increased from 40% in the pretest to 75% in the posttest (p** = 0.003, **McNemar test).**

**The average pain score on the Visual Analog Scale (VAS) decreased significantly:** Pretest: **6.1 ± 1.4,** Posttest: **3.7 ± 1.2,** *Paired t-test***: p = 0.000 (p < 0.05)**

### Bivariate Analysis: Effect of Intervention

Bivariate analysis using the *Paired T-Test* and *McNemar Test* was conducted to determine the effect of the herbal drink intervention on the research variables. The results are summarized in Table 2.

**Table 2. Summary of herbal plant consumption intervention results**

| Variable | Pre-test (Mean ± SD) | Posttest (Mean ± SD) | p-value |
|---|---|---|---|
| **Reproductive health knowledge** | 64.5 ± 8.1 | 81.2 ± 7.3 | 0.000 |
| **Menstrual pain intensity (VAS)** | 6.1 ± 1.4 | 3.7 ± 1.2 | 0.000* |

Source: SPSS analysis output, 2024

## Discussion

This study demonstrates that the consumption of a herbal drink containing turmeric and red ginger for four weeks significantly improved reproductive health outcomes among adolescent girls (Jafari et al., 2022; Laganà et al., 2019; Patkar et al., 2022). The significant increase in knowledge scores can be attributed to the educational component of the study, where participants were informed about reproductive health and the benefits of the herbs they consumed (Iacovides et al., 2015; Heshmati et al., 2021). This aligns with the Ministry of Health's (2022) emphasis on the importance of health education in empowering adolescents to manage their reproductive health effectively.

The most notable finding was the significant reduction in menstrual pain intensity. This can be pharmacologically explained by the active compounds in the herbal mixture. **Turmeric** contains **curcumin**, a potent anti-inflammatory and analgesic compound that inhibits the synthesis of prostaglandins, which are the primary cause of uterine contractions and pain (Sari, 2022). **Red ginger** contains **gingerols** and **shogaols**, which also possess strong anti-inflammatory and antispasmodic properties, helping to relax uterine muscles (Putri, 2020). The synergistic effect of these two herbs provides a compelling natural alternative to NSAIDs. This finding strongly supports the work of Astuti (2023), who also reported a significant reduction in dysmenorrhea pain scores after administering red ginger extract.

Furthermore, the intervention led to a significant improvement in menstrual cycle regularity. This effect is likely mediated by the **phytoestrogen** compounds found in both turmeric and ginger (Chandra-Mouli & Patel, 2017; Daily et al., 2015; Dante & Facchinetti, 2011). These plant-based estrogens can help balance the body's endogenous hormone levels, particularly estrogen and progesterone, which are crucial for regulating the menstrual cycle (Manuaba, 2021). The results corroborate the findings of a previous study by Sari (2022), which indicated that turmeric supplementation helped regulate cycles in adolescents with oligomenorrhea.

Beyond the biological effects, the holistic approach of combining herbal consumption with education likely contributed to the positive outcomes. Increased knowledge empowers individuals to adopt healthier behaviors, such as improved nutrition and stress management, which are known co-factors influencing hormonal balance and menstrual health (WHO, 2021).

**Limitations of the Study:** The intervention duration was only 4 weeks, the *pretest-posttest* design lacked a control group, and the findings relied on students' subjective reports regarding their menstrual cycles. Future research with a *randomized controlled trial* (RCT) design, a longer intervention period, and objective hormonal measurements is recommended to confirm these promising findings.

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## CONCLUSION

The study concluded that a 4-week intervention combining the consumption of herbal drinks made from turmeric and red ginger with reproductive health education significantly

improved the reproductive health of adolescent girls at SMA 1 Purwakarta. Notable improvements were observed in reproductive health knowledge, reduction in menstrual pain intensity (dysmenorrhea), and menstrual cycle regularity. These findings suggest that turmeric and red ginger formulations offer an effective, safe, and easily applied non-pharmacological alternative for managing reproductive health issues in adolescents. The intervention also highlights the value of integrating traditional herbal remedies with educational efforts to promote health in school settings. Future research should explore larger samples, longer intervention periods, and the potential physiological mechanisms behind these effects to strengthen evidence and optimize implementation strategies.

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