MADAGO NURSING JOURNAL
p-ISSN: 274-9271/ e-ISSN: 2746-9263
Vol. 6, No. 1, Tahun 2025, page 8-14
DOI: https://doi.org/10.33860/mnj.v6i1.3812
Website: https://jurnal.poltekkespalu.ac.id/index.php/MNJ/index
Publisher: Poltekkes Kemenkes Palu

Yoga Exercise Effectively Reduces Dysmenorrhea In Adolescent Girls At Budi Murni 2 Private High School Medan

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ARTICLE INFO

Article History:
Received: 2025-07-12
Accepted: 2025-07-30
Published: 2025-08-01

Keywords:
Dysmenorrhea;
Yoga Exercise;
Adolescent Girls;

ABSTRACT

Background: Dysmenorrhea is a common menstrual problem among adolescent girls and often affects daily activities, concentration, and academic performance. Yoga exercise is known to reduce menstrual pain through relaxation, improved blood circulation, and increased endorphin release. This study aimed to analyze the effectiveness of yoga exercise in reducing dysmenorrhea among adolescent girls at Budi Murni 2 Private High School Medan.

Methods: This pre-experimental study employed a one-group pretest–posttest design involving 56 adolescent girls selected using purposive sampling. Yoga exercise was conducted for 30 minutes twice weekly. Dysmenorrhea intensity was assessed using the Wong Baker Faces Pain Rating Scale before and after the intervention. Data were analyzed using descriptive statistics and the Spearman Rank correlation test.

Results: Before the intervention, 82.1% of respondents experienced severe dysmenorrhea. After yoga exercise, 85.7% reported a decrease to mild pain, and 12.5% reported no pain. The Spearman Rank correlation test showed a significant relationship between yoga exercise and dysmenorrhea reduction ($p = 0.019$) with a very strong negative correlation ($r = -0.885$).

Conclusion: Yoga exercise is effective in reducing dysmenorrhea among adolescent girls. The findings support yoga as a non-pharmacological intervention that can be integrated into school-based health programs to manage menstrual pain.

INTRODUCTION

Dysmenorrhea is highly prevalent worldwide, affecting an average of 50% of women in all countries, including 72% in Sweden, 85.6% in the United States and Kuwait (WHO, 2017). 64.5% in Indonesia, with 54.89% experiencing severe dysmenorrhea (Retnosari et al., 2023). Dysmenorrhea is defined as menstrual pain that disrupts daily activities (Tomasoa & Rini, 2023). The imbalance of progesterone leads to increased prostaglandin production, causing uterine contractions and severe pain (Amru & Selvia, 2022; B. P. Sari et al., 2025).

Dysmenorrhea can have negative impacts on adolescents, disrupting learning activities and concentration, which may lead to decreased academic performance. In addition, dysmenorrhea can interfere with daily activities, work performance, sleep quality, mood, and may also cause anxiety and depression (Yulina et al., 2020). Similarly, Fitriliana (2023) reported that 28.6% of respondents felt stressed, which affected their concentration in class, and 16.2% of them were absent from school (Fitriliana, 2023). A total of 28.6% of respondents were reported to feel stressed, which affected their concentration in class, and 16.2% of them were

absent. Although dysmenorrhea is not a life-threatening condition, its recurrent monthly symptoms require appropriate management (K. Sari et al., 2018). Dysmenorrhea can be alleviated through yoga exercise, which helps reduce stress through physical movements, deep breathing, and meditation (Fairia et al., 2022). Yoga is a recommended relaxation technique for reducing dysmenorrhea by focusing on strength, flexibility, and breathing, thereby improving both mental and physical health (Rusyanti & Ismiyati, 2024). Yoga can increase β-endorphin levels up to fivefold, and the more frequently it is practiced, the higher the β-endorphin levels become (Hadianti & Ferina, 2021). he increased β-endorphin is received by receptors in the hypothalamus and limbic system, enhancing blood flow to the reproductive organs, reducing stress, and promoting relaxation (Anggasari et al., 2022). This mechanism can reduce dysmenorrhea symptoms and is associated with decreased pain, as well as improvements in memory, appetite, sexual function, blood pressure regulation, and proper breathing patterns (Nandia et al., 2025).

The aforementioned statement is consistent with the findings of Vianti and Ari S (2018), who reported that prior to yoga practice, a proportion of adolescents experienced severe menstrual pain, which decreased to moderate pain after participating in yoga exercises. Using the Wilcoxon signed-rank test with $\alpha = 0.05$, the study showed a p-value of 0.001, indicating a significant effect of yoga on reducing menstrual pain intensity (Vianti & Ari S, 2018). Similarly, Anggraeni and SA (2023) found a significant effect of yoga therapy on decreasing dysmenorrhea intensity among nursing students, with a reported p-value of 0.002 (Anggraeni & SA, 2023). A preliminary study conducted by the researchers on November 11, 2023, involving observations and interviews with 10 female students at Budi Murni 2 Private High School Medan, revealed that although 8 out of 10 students who experienced menstrual pain were aware of yoga exercise, none had ever practiced it. Furthermore, 6 out of the 10 students with dysmenorrhea frequently requested permission to leave the classroom during lessons due to pain.

Based on these findings, this study was conducted to examine whether there is an association between yoga exercise and dysmenorrhea among adolescent girls at Budi Murni 2 Private High School Medan. Therefore, the aim of this research is to analyze the effect of yoga exercise on dysmenorrhea in adolescent girls.

METHODS

Study Design and Setting

This study employed a pre-experimental design with a one-group pretest–posttest approach. The research was conducted at Budi Murni 2 Private High School Medan, North Sumatra, Indonesia, from November 2023 to April 2024. Yoga sessions and data collection were carried out in classroom settings according to the scheduled intervention program.

Population and Sample

The study population consisted of 129 female students enrolled in grade XI (MIPA and IPS). A total of 56 students were selected as samples using purposive sampling based on predetermined inclusion criteria. Students who met the criteria and agreed to participate were included in the study.

Intervention

The intervention involved yoga exercise sessions conducted twice weekly for 30 minutes each. The yoga program included a series of physical postures, breathing techniques, and relaxation exercises aimed at reducing menstrual pain

Data Collection Instruments

Dysmenorrhea intensity was measured using the Wong Baker Faces Pain Rating Scale (WBFPRS), a validated tool with a rating scale ranging from 0 to 10. The instrument was administered before the intervention (pre-test) and after the completion of the yoga sessions

(post-test). All data were collected directly in the school environment under researcher supervision.

Ethical Considerations

Ethical approval was obtained from the relevant institutional authority. All participants provided informed consent prior to participation. Confidentiality was ensured by anonymizing all collected data, and participants were informed of their right to withdraw from the study at any time.

Data Analysis

Data were analyzed descriptively to summarize respondent characteristics and pain intensity distribution. Bivariate analysis was conducted using the Spearman Rank correlation test to determine the relationship between yoga exercise and dysmenorrhea reduction. A significance level of $p < 0.05$ was used.

Quality Control

Quality assurance measures included standardized instructions during data collection, direct supervision during pre- and post-test assessments, and consistent administration of the yoga intervention to ensure reliability and accuracy of the findings.

RESULTS

The results of this study provide an overview of respondent characteristics and the changes in dysmenorrhea intensity before and after the yoga intervention. Data analysis was conducted to describe age and ethnicity distribution, evaluate the levels of menstrual pain experienced by participants, and determine the relationship between yoga exercise and dysmenorrhea reduction. The findings are presented in tables below to illustrate the effects of the intervention and the statistical associations identified.

A total of 56 adolescent girls participated in this study. Table 1 presents the distribution of respondents based on age and ethnicity

Table 1. Distribution of Respondents by Age and Ethnicity

Characteristics	n	%
Age		
15 years	2	3.5
16 years	31	55.4
17 years	23	41.1
Ethnicity		
Batak Toba	19	33.9
Batak Karo	16	28.6
Nias	10	17.9
Chinese	11	19.6

The majority of respondents were 16 years old (55.4%) and predominantly of Batak Toba ethnicity (33.9%).

Table 2. Dysmenorrhea Intensity Before and After Intervention

Category	Pre-test		Post-test	
	n	%	n	%
No Pain	0	0	7	12.5
Mild Pain	0	0	48	85.7
Moderate Pain	0	0	1	1
Distrurbing	7	12.5	0	0
Very Distrubing	46	82.1	0	0
Unbrearable	3	5.4	0	0

Before the intervention, most respondents (82.1%) reported "very disturbing" pain levels. After participating in yoga sessions, 85.7% of respondents reported "mild pain," and 12.5% reported no pain at all. This indicates a substantial reduction in dysmenorrhea intensity following the intervention

Table 3. presents the results of the Spearman Rank correlation test

Variabel	Correlation Coefficient (ρ)	p-value
Yoga Exercise and Dysmenorrhea	−0.885	0.019

Table 3 demonstrates The correlation analysis showed a statistically significant relationship between yoga exercise and reduced dysmenorrhea intensity ($p < 0.05$). The correlation coefficient ($\rho = -0.885$) indicates a very strong negative relationship, meaning that increased yoga participation is associated with decreased menstrual pain levels.

DISCUSSION

The findings of this study demonstrate a significant reduction in dysmenorrhea intensity among adolescent girls following the yoga intervention. Prior to the intervention, the majority of respondents experienced severe levels of menstrual pain, which aligns with existing literature indicating that dysmenorrhea is a common and debilitating condition among adolescents. Severe menstrual pain is often accompanied by symptoms such as lower abdominal cramps, back pain, headaches, and mood disturbances, which collectively disrupt academic performance and daily functioning (Huda & Tanjung, 2023; K. Sari et al., 2018).

The substantial decrease in pain intensity observed after the yoga sessions supports previous research suggesting that yoga is an effective non-pharmacological approach for managing dysmenorrhea. The mechanism underlying this effect is multifactorial. Yoga promotes muscle relaxation, improves blood circulation to the pelvic area, and enhances oxygen delivery to uterine tissues, thereby reducing prostaglandin-induced uterine contractions that contribute to menstrual pain (Fairia et al., 2022). Additionally, yoga incorporates controlled breathing and meditative components that help regulate the autonomic nervous system, reduce stress responses, and promote overall relaxation.

The findings are consistent with Vianti and Ari S (2018), who reported a significant decrease in menstrual pain following yoga practice, as well as Anggraeni and SA (2023), who demonstrated the effectiveness of yoga therapy in reducing dysmenorrhea among nursing students. These similarities strengthen the evidence supporting yoga as a reliable intervention for menstrual pain management.

The significant correlation found in this study ($\rho = -0.885$; $p = 0.019$) indicates a very strong negative relationship between yoga exercise and dysmenorrhea intensity. This suggests that the more consistently students engage in yoga, the greater the reduction in menstrual pain. Such findings may reflect the cumulative physiological and psychological benefits of yoga, particularly the increased production of β-endorphins, which act as natural analgesics and mood

stabilizers (Hadianti & Ferina, 2021; Anggasari et al., 2022). Elevated β-endorphin levels have been associated not only with reduced pain perception but also with improved emotional well-being, appetite regulation, and overall physical relaxation.

The results of the present study also emphasize the importance of preventive and supportive health programs in school settings. Many respondents were aware of yoga but had never practiced it, and several frequently left class during menstruation due to severe pain. These findings highlight the need for structured health promotion strategies, including regular yoga sessions, menstrual health education, and accessible school-based counseling services.

Overall, the study reinforces the potential of yoga as an accessible, low-cost, and safe intervention for reducing menstrual pain among adolescents. Its integration into school health programs could help improve students' comfort, attendance, concentration, and overall quality of life.

Limitations

This study has several limitations. The one-group pretest–posttest design without a control group limits the ability to confirm causality. The sample size was relatively small and drawn from a single school, reducing generalizability. Pain assessment relied on self-reported measures, which may introduce subjective bias. These factors should be considered when interpreting the results.

Recommendations

Future research should employ randomized controlled designs with larger and more diverse samples. Longitudinal studies are recommended to assess long-term effects of yoga across multiple menstrual cycles. Qualitative approaches may also provide deeper insight into students' experiences and factors influencing dysmenorrhea management.

CONCLUSION

This study demonstrated that yoga exercise is effective in reducing dysmenorrhea among adolescent girls. A significant decrease in menstrual pain intensity was observed after the intervention, with most respondents shifting from severe pain to mild or no pain. The strong negative correlation indicates that regular participation in yoga is associated with greater pain reduction. These findings support the use of yoga as a simple, accessible, and non-pharmacological approach to managing menstrual pain. Schools are encouraged to incorporate yoga activities into health promotion programs to improve students' menstrual well-being and daily functioning.

Author's Contribution Statement: Conceptualization: Dina Indarsita; Methodology: Yufdel; Formal Analysis: Dahlia Fronika Batubara; Writing – Original Draft Preparation: Dahlia Fronika Batubara; Writing – Review and Editing: Dina Indarsita; Resources: Yufdel; Supervision: Dina Indarsita. All authors have read and approved the final version of the manuscript.

Conflicts of Interest: The authors declare no conflicts of interest regarding this publication.

Source of Funding Statements: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

Acknowledgments: The authors would like to thank the Department of Nursing, Poltekkes Kemenkes Medan, for facilitating the implementation of this research, as well as all students at Budi Murni 2 Private High School Medan who participated willingly in the study.

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