

The Effectiveness of Yoga in Reducing Dysmenorrhea Pain in Adolescent Girls

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ABSTRACT

Background: In Indonesia, primary dysmenorrhea reaches 72.89%. The severity of dysmenorrhea in adolescent girls occurs in various levels, ranging from mild, moderate, to severe. There are various factors that play a role in influencing the severity of dysmenorrhea, including age, nutritional status, age at first menstruation, age of mother's menstruation, experience of pain at first menstruation, menstrual cycle, duration of menstruation, physical condition before menstruation, frequency of dysmenorrhea, duration of dysmenorrhea

Methods: This research design uses one group pretest-posttest design. Research conducted in Desa Bangun Rejo. The population in this study were female adolescents who experienced primary dysmenorrhea. This study used non-probability sampling with consecutive sampling by distributing questionnaires to see the scale of dysmenorrhea pain to be taken as a sample with the number of samples based on inclusion and exclusion criteria. The sample obtained was 30 respondents with a moderate pain scale. The research instrument used a dysmenorrhea questionnaire sheet with a measurement scale NRS (Numeric Rating Scale). Data analysis using non-parametric statistics Wilcoxon test to determine the effect of yoga movements in reducing dysmenorrhea in adolescent girls.

Results: Research conducted on 30 respondents showed that Dysmenorrhea before doing yoga with an average score of 1.37 with the lowest score of 0 and the highest score of 2. The results of the study conducted on 30 respondents showed that Dysmenorrhea after doing yoga (Post test) with an average score (Mean) of 0.63 while the lowest score was at a score of 0 and the highest score was at a score of 2. The results of the bivariate analysis test were obtained by conducting a statistical test of the Wilcoxon Test and obtained significant results $p\text{-value} = 0.000$ ($p < 0.05$)

Conclusion: There was a significant difference in Dysmenorrhea before and after being given gymnastics treatment, so it can be concluded that there is the effectiveness of yoga gymnastics in reducing dysmenorrhea pain in adolescent girls.

I. Introduction

Adolescence is widely recognised as a pivotal stage in human development, characterised by profound transformations that encompass not only physical changes but also shifts in attitudes and emotional states. This transitional period, which typically spans the ages of 11 to 20 years, serves as a bridge from the innocence of childhood to the complexities of adulthood. During these formative years, individuals undergo significant physiological, psychological, mental, emotional, and social maturation, as noted by Wrisnijati (2019). Each of these dimensions plays a crucial role in shaping an adolescent's identity and experiences, contributing to the multifaceted nature of this life stage. One of the most

notable physical changes that adolescent girls experience during puberty is the onset of menstruation. This biological milestone, often referred to as menarche, marks a significant transition in a young woman's life. Menstruation is defined as the periodic and cyclical shedding of the uterine lining, known as the endometrium, which occurs approximately 14 days following the ovulation process. According to Hesty and Nurfitriani (2023), this biological event not only signifies reproductive capability but also introduces a host of physical and emotional challenges that many young women must navigate.

Among the myriad of menstrual-related issues, dysmenorrhea, or menstrual pain, stands out as a prevalent concern for adolescent girls. This condition manifests as painful cramps that can range from mild discomfort to debilitating pain, significantly impacting daily activities and overall quality of life. Widayati (2020) highlights that in Indonesia, the prevalence of primary dysmenorrhea is alarmingly high, affecting approximately 72.89% of adolescent girls. The severity of dysmenorrhea can vary widely, presenting in different intensities such as mild, moderate, or severe pain. Several factors contribute to the variability in dysmenorrhea severity among adolescent girls. These include age, nutritional status, the age at which menstruation first occurs, the age at which their mothers began menstruating, and prior experiences of menstrual pain. Additionally, the characteristics of the menstrual cycle itself—such as its duration and regularity—play a significant role in shaping the experience of dysmenorrhea. According to the Ministry of Health (2019), the frequency and duration of dysmenorrhea episodes are also critical in understanding the overall impact of this condition on young women's lives.

At the physiological level, the primary cause of dysmenorrhea is linked to the increased production of prostaglandins, which are hormone-like substances that induce uterine contractions. This increase is often triggered by a decrease in progesterone levels during the menstrual cycle. When fertilisation does not occur, the elevated levels of estrogen lead to swelling and subsequent shedding of the endometrium. As prostaglandin levels peak at the onset of menstruation, they result in heightened uterine contractions, which can lead to significant pain. Sari and Hayati (2020) explain that this pain is most acute on the first day of menstruation, gradually diminishing as the menstrual period progresses.

In light of the challenges posed by dysmenorrhea, it is essential to explore effective management strategies that can alleviate pain and improve the quality of life for adolescent girls. One promising approach is the practice of yoga, which has been recognised for its potential to reduce menstrual pain. Yoga encompasses a range of techniques that promote relaxation, mindful breathing, and specific body postures, all of which can contribute to pain relief (Christiana, 2019).

The benefits of yoga extend beyond mere physical relief; it also fosters a sense of mental and emotional well-being. Engaging in yoga during menstruation can help to alleviate stress, a common companion to menstrual discomfort. Sinaga (2020) emphasises that yoga not only facilitates relaxation but also encourages a deeper connection between the mind and body, empowering young women to manage their symptoms more effectively. By integrating yoga into their daily routines, adolescents can cultivate resilience and develop coping mechanisms that extend beyond the realm of menstrual health.

Adolescence is a complex and transformative period marked by significant changes in various aspects of life, particularly for young women experiencing menstruation. The challenges posed by dysmenorrhea underscore the need for awareness and effective management strategies to support adolescent girls during this critical phase. By understanding the physiological underpinnings of menstrual pain and exploring holistic approaches such as yoga, we can empower young women to navigate these changes with greater confidence and ease. Ultimately, fostering an environment that promotes open dialogue about menstrual health and encourages healthy coping strategies is essential in supporting adolescents as they transition into adulthood.

II. METHODS

The design of this study used one group pretest-posttest design. The study was conducted in Bangun Rejo Village. The population in this study were female adolescents who experienced primary dysmenorrhea. This study used non-probability sampling with consecutive sampling by distributing questionnaires to see the scale of dysmenorrhea pain to be taken as a sample with the number of samples based on inclusion and exclusion criteria. The sample obtained was 30 respondents with a moderate pain scale. The research instrument used a dysmenorrhea questionnaire sheet with a measurement scale of NRS (Numeric Rating Scale). Data analysis used non-parametric statistics Wilcoxon test to determine the effect of yoga movements in reducing dysmenorrhea in female adolescents.

III. RESULT

The following is univariable data from the research results based on the characteristics of the respondents, namely the age at which they first experienced menstruation, the menstrual cycle, the length of time (days) between the first and subsequent menstruation, the length of dysmenorrhea, and the length of menstruation.

Variabel	Category	Frekuensi	Persentase (%)
Age of menarche	13 years old	30	100
Total		30	100
Length of Menstruation	<4 days	4	13.3
	4-7 days	11	36.7
	>7 days	15	50
Total		30	100
Time (Dismenore)	Before Menstruation	15	50
	Day 1 and 2 of menstruation	11	36.7
	Day 1 of menstruation is over	4	13.3
	Total	30	100

Based on the table above, the age of first menstruation for all teenagers is at the age of 13 years, totaling 30 respondents (100%). The duration of menstruation in female teenagers is mostly >7 days, totaling 15 respondents (50%), and 4-7 days, totaling 11 respondents (36.7%), while a small portion is <4 days, totaling 4 respondents (13.3%). The time of onset of pain (dysmenorrhea) is mostly before menstruation, totaling 15 respondents (50%) and day 1 & 2 of menstruation, totaling 11 respondents (36.7%), while a small portion is day 1-menstruation is finished, totaling 4 respondents (13.3%).

Frequency Distribution of Pain Levels before Yoga Exercise

Pain Scale	Frekuensi	Persentase (%)
Mild pain		
Moderate pain	5	16.7
Severe pain	25	83.3
Total	30	100

Based on the table above, the level of menstrual pain before doing yoga exercises for all female adolescents was on a severe scale for 25 respondents (83.3%) and moderate pain for 5 respondents (16.7%).

Frequency Distribution of Pain Levels after Yoga Exercise

Pain Scale	Frekuensi	Persentase (%)
Mild pain	21	70
Moderate pain	9	30
Severe pain	0	0
Total	30	100

Based on the table above, the level of menstrual pain after being given yoga exercises, all female adolescents were on a mild scale, amounting to 21 respondents (70%), and experienced moderate pain amounting to 9 respondents (30%).

Bivariate Analysis of Dysmenorrhea Before and After Yoga Intervention

Pain Level	N	Mean (Min-Max)	p-Value
Before given	30	1.37 (0-2)	0.000
After given	30	0.63 (0-2)	

Based on the results of the bivariate analysis above, at the level of Dysmenorrhea before doing yoga, the study conducted on 30 respondents showed that Dysmenorrhea before doing yoga with an average score of 1.37 with the lowest score of 0 and the highest score of 2. The results of the study conducted

on 30 respondents showed that Dysmenorrhea after doing gymnastics (Post test) with an average value (Mean) was at a score of 0.63 while the lowest value was at a score of 0 and the highest value was at a score of 2. The results of the bivariate analysis test were obtained by conducting a statistical test of the Wilcoxon Test and obtained a significant p-value = 0.000 ($p < 0.05$) meaning that there was a significant difference in Dysmenorrhea before and after being given gymnastics treatment, so it can be concluded that there is the effectiveness of yoga gymnastics in reducing dysmenorrhea pain in adolescent girls.

IV. DISCUSSION

Pain is a deeply subjective experience, one that is intricately woven into the fabric of individual perception and influenced by a multitude of personal factors. Each person's interpretation of pain is shaped by their unique psychological, social, and biological contexts, making it an inherently variable phenomenon. This variability poses significant challenges in the assessment of pain intensity, as the same stimulus can elicit vastly different responses from different individuals. For instance, two patients may experience the same level of tissue damage yet report contrasting pain levels based on their previous experiences, cultural backgrounds, and even their emotional states. This complexity is highlighted in the work of Arifin (2021), who emphasises the importance of considering these diverse factors when measuring pain levels, as they can profoundly affect the outcomes of pain assessments.

Pain typically arises as a protective response to stimuli that threaten bodily integrity, whether through physical damage, such as pressure or extreme temperatures, or through chemical irritants. When tissue is injured, the body initiates a cascade of biochemical events. Damaged cells release various chemical mediators, including histamine, bradykinin, serotonin, and prostaglandins. These substances play crucial roles in modulating pain perception; they increase the sensitivity of nociceptors—our pain receptors—widen blood vessels, and enhance vascular permeability. This biochemical response not only triggers sensations of pain but also leads to inflammation, which can exacerbate the discomfort experienced by the individual (Solehati, 2015).

During menstruation, for example, the shedding of endometrial tissue results in the production of prostaglandins, which are instrumental in inducing uterine contractions. This physiological response, while essential for the menstrual cycle, can also lead to dysmenorrhea, or menstrual pain. Recent research has illuminated the relationship between elevated prostaglandin levels, particularly the PGF2 α subtype, and the severity of menstrual pain experienced by women (Chumpitazi et al., 2023). The narrowing of blood vessels in the endometrial layer, a consequence of these prostaglandins, restricts oxygen flow to the tissue, resulting in hypoxia—a condition that is known to trigger pain through various mechanisms (Burney, 2019).

In the realm of pain management, alternative therapies have garnered increasing attention, with yoga emerging as a particularly effective modality for alleviating menstrual pain. The practice of yoga encompasses a variety of techniques, including specific breathing exercises and stretching movements, which have been shown to facilitate relaxation of the uterine muscles. This relaxation is critical in counteracting the spasms induced by heightened prostaglandin levels, thereby promoting improved blood flow to the endometrial tissue. By encouraging vasodilation, yoga helps to mitigate the pain associated with dysmenorrhea. Recent studies have corroborated this effect, illustrating that regular yoga practice can significantly diminish the intensity of menstrual pain through these physiological mechanisms (Rani, 2023).

Moreover, yoga's benefits extend beyond mere physical relief. The practice fosters a holistic approach to pain management by addressing both physical and emotional tension. Engaging in yoga can transform an individual's response to pain, equipping them with tools to remain calmer and more adaptive in the face of discomfort. This psychological shift can be particularly beneficial for individuals suffering from chronic pain conditions, as it can accelerate the recovery process and enhance overall well-being (Sutanto & Widyaningsih, 2022). The consistent movements and postures inherent in yoga practice also contribute to improved blood circulation, which can further alleviate pain or even eliminate it altogether (Putri et al., 2023).

The efficacy of yoga in managing menstrual pain has been substantiated by empirical research, including a notable study conducted by Yulina, Indrawati, and Ningsih (2020) at Pahlawan Tuanku Tambusai University. This study focused on nursing students and employed a pre-experimental design with a one-group pretest-posttest approach. The findings were striking: the average pain scale reported

by participants decreased significantly from 5.22 before the intervention to 2.50 following the yoga practice. Statistical analyses confirmed the effectiveness of yoga in reducing dysmenorrhea pain, yielding a p-value of 0.000, which underscores the statistical significance of these results.

The intricate nature of pain as a subjective experience necessitates a multifaceted approach to management. The interplay of biological, psychological, and social factors means that no single method can be universally effective for all individuals. However, the evidence supporting the role of yoga in alleviating menstrual pain is compelling. By integrating physical movement with mindfulness and relaxation techniques, yoga emerges as a powerful alternative for managing dysmenorrhea symptoms. As research continues to evolve, it is increasingly clear that yoga not only offers a means to reduce pain but also enhances the overall quality of life for those affected by menstrual discomfort. Therefore, incorporating yoga into pain management strategies is highly recommended, providing a holistic approach that aligns with the complex nature of pain itself.

V. CONCLUSION

There was a significant difference in Dysmenorrhea before and after being given gymnastics treatment, so it can be concluded that there is the effectiveness of yoga gymnastics in reducing dysmenorrhea pain in adolescent girls. The evidence supporting the effectiveness of yoga gymnastics in reducing dysmenorrhea pain among adolescent girls is compelling. The combination of physical exercise, mindfulness, and community support offers a multifaceted approach to managing this common condition. By recognising the significant difference in pain levels before and after engaging in yoga gymnastics, we can appreciate the holistic benefits that such practices provide. Ultimately, the integration of yoga gymnastics into the lives of young females not only alleviates the physical discomfort associated with dysmenorrhea but also fosters a sense of empowerment and resilience that can positively impact their overall quality of life. As we continue to explore and validate alternative treatments for dysmenorrhea, it is crucial to advocate for accessible and inclusive health programmes that cater to the needs of adolescent girls, ensuring they have the tools necessary to navigate the challenges of this natural yet often distressing aspect of their lives

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VII. CONFLICTS OF INTEREST

There is an effective influence of yoga exercise in reducing dysmenorrhea pain in adolescent girls in Bangun Rejo Village, Tanjung Morawa in 2025. Health workers are expected to be able to provide health information about the prevention and management of dysmenorrhea, namely in the form of non-pharmacological management through counseling and demonstration activities and for respondents can use yoga to treat dysmenorrhea and avoid the use of pharmacological techniques for treating dysmenorrhea.

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