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The Effect of Dysmenorrhea Exercise on Reducing Dysmenorrhea in Grade X Adolescent Females

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Abstract

Background: Dysmenorrhea is a prevalent menstrual disorder among adolescent females, often associated with significant discomfort and disruption of daily activities. In Indonesia, it represents one of the most common menstrual complaints in adolescents. Non-pharmacological interventions such as dysmenorrhea exercise, have been proposed as accessible and low-cost approaches to alleviate menstrual pain**. Purpose:** This study aimed to assess the effect of dysmenorrhea exercise on reducing pain intensity among female adolescents in grade X at SMAN 1 Seputih Raman, Indonesia. **Methods:** A pre-experimental one-group pre-test and post-test design was employed. A total of 66 female students were selected using accidental sampling. Dysmenorrhea pain levels were assessed using the Numeric Rating Scale (NRS), and data were collected via observation sheets. The Wilcoxon signed-rank test was used to analyse changes in pain levels before and after the exercise intervention. **Results:** The results showed a statistically significant reduction in dysmenorrhea pain following the exercise intervention, with a p-value of 0.000 ($p < 0.05$). This finding supports the hypothesis that dysmenorrhea exercise can effectively decrease the severity of menstrual pain in adolescent girls. **Conclusion:** Dysmenorrhea exercise appears to be a beneficial, non-invasive intervention to manage menstrual pain in adolescents. These findings suggest that regular implementation of such exercises could serve as a practical strategy for pain relief and health promotion among school-aged females. Further studies with control groups and long-term follow-up are recommended to confirm and expand upon these results.

Keywords: dysmenorrhea, exercise therapy, adolescent, pain measurement

Introduction

According to the World Health Organization (WHO), reproductive health is a condition of comprehensive physical, mental, and social well-being, not just freedom from disease or disability, in all aspects related to the reproductive system and its functions and processes. Sustainable Development Goals (SDGs) are an international and national commitment to improve the welfare of society through 17 global goals and targets that are targeted to be achieved by 2030 by developed and developing countries. One of the targets of the SDGs is to ensure universal access to sexual and reproductive health services, including family planning services and the provision of related information and education [3].

Adolescence is a transition period from childhood to adulthood characterized by various physical, emotional, and psychological changes. Adolescents are individuals aged 10-24 years who are not married. In this phase, the maturation of reproductive organs occurs, known as puberty. For female adolescents, one of the signs of maturation is the occurrence of menstruation or menstruation (menarche). Menstruation is the discharge of blood due

to the decay of the uterine wall because fertilization does not occur. One of the disorders often experienced during menstruation is menstrual pain (dysmenorrhea).

Dysmenorrhea can be triggered by increased levels of prostaglandins in the endometrium. This increase occurs due to the influence of the hormone progesterone during the luteal phase of the menstrual cycle. Prostaglandin levels peak at the beginning of menstruation, which then stimulates strong contractions in the myometrial muscles. These contractions can constrict blood vessels, causing ischemia, endometrial tissue damage, bleeding, and pain[7].

Based on data from the World Health Organization (WHO) in 2023, around 10% or around 190 million women and girls of reproductive age worldwide have endometriosis. The most common symptom is severe pain in the pelvic area, especially during menstruation[12]. In Indonesia, the incidence of dysmenorrhea is 107,673 people (64.25%), consisting of 59,617 people (54.89%) experiencing groundwork dysmenorrhea and 9,496 people (9.36%) experiencing secondary dysmenorrhea (Indonesian Ministry of Health, 2022). Based on information from the Lampung Provincial Health Office in 2019, the incidence rate has increased every year, the number of adolescent girls has reached 19,430. Where the average adolescent girl who experiences dysmenorrhea aged 17-20 years reaches 34%. In 2020 the number of adolescent girls reached 20,120 people, where those experiencing dysmenorrhea aged 17-20 years reached 36%. According to the Indonesian Health Profile Information in 2023 adolescent girls who received blood supplement tablets in Lampung Province were 69.4%. According to information from the Central Lampung Regency Statistics Agency, the number of adolescent girls aged 15-24 years in 2023 was 101,826 people (BPS, 2023). According to information from the Central Lampung Statistics Agency, in 2024 adolescents aged 15-24 years who received counseling on reproductive health (kespro), HIV/AIDS, and family planning (KB) were 1,216 people[4].

Dysmenorrhea exercise is a form of relaxation that is highly recommended. The purpose of dysmenorrhea gymnastics is to reduce the dysmenorrhea experienced by some women every month. This is because when doing exercise or gymnastics, the body will produce the endorphin hormone. Endorphin is produced by the brain and spinal cord. This hormone acts as a natural tranquilizer produced by the brain, so it causes a feeling. an athlete who regularly exercises has a lower incidence of dysmenorrhea compared to women who are obese, and in women who have irregular menstrual cycles[7].

The results of a preliminary overview conducted on December 3, 2024, at SMA N 1 Seputih Raman were obtained from January to November 2024, as many as 292 students who visited the UKS with complaints of menstrual pain. As well as the results of interviews with 5 female students, obtained symptoms that are often experienced, such as lower abdominal pain, not feeling well, and unstable emotions. Based on the background of these problems, the researcher is interested in knowing the effect of dysmenorrhea gymnastics on the level of dysmenorrhea in adolescent girls in class X SMA N1 Seputih Raman Central Lampung.

Methods

This type of research is quantitative with a Pre-Experimental design with a one-group pretest-posttest approach with sampling techniques using accidental sampling techniques. This research was conducted by grouping respondents or

subjects and then observing after before and after the intervention. The subjects of this study were class X adolescent girls with a population of 206 students, and the sample used was 66.

Result

Table 4.1 Distribution Characteristic Respondent

Characteristics Respondent	n	%
Age		
15	27	40.9
16	34	51.5
17	5	7.6
Total	66	100

Based on Table 4.1, it can be seen that the age of respondents 15 years is 27 students (40.9%), age 16 years is 34 students (51.5%), and age 17 years is 5 students (7.6%)

Table 4.2 Distribution Frequency of Average Pain Scale Before Dysmenorrhea Gymnastics Treatment

Variable	N	Mean	Min	Max
Before Dysmenorrhea Gymnastics treatment	66	3.67	2	6

Based on Table 4.2, Of the 66 respondents, it is known that the average dysmenorrhea pain scale before dysmenorrhea gymnastics is 3.67, with the lowest pain scale being 2 and the highest pain scale being 6

Table 4.3 Distribution Frequency of Average Dysmenorrhea Pain After Dysmenorrhea Gymnastics Treatment

Variable	N	Mean	Min	Max
After Dysmenorrhea Gymnastics treatment	66	2.55	1	5

Based on Table 4.3 above of the 66 people who answered, it is known that the average dysmenorrhea pain scale is 2.55, with the lowest pain scale being 1 and the highest pain scale being 5.

Table 4.4 Distribution Uji Normalitas

Pain Scale dysmenorrhea	N	Sig	Remarks
Pre-Test	66	.000	No normal
Post-Test	66	.000	No Normal

Based on Table 4.4 above, there are the results of the normality test on the dysmenorrhea pain scale in adolescent girls before and after the intervention. The Sig value in the previous test and the test afterwards was 0.000, with a P-value <0.05; therefore, the Wilcoxon test was used to analyze the data.

Table 4.5 Effect of Dysmenorrhea Gymnastics on Adolescent Girls in class X at SMA N1 Seputih Raman

Variable	N	Mean	SD	P-Value
Pre-Test	66	3.67	1.219	0.00
Post-Test	66	2.55	1.192	

As shown in Table 4.5, the results of the Wilcoxon test show that there is an effect of dysmenorrhea exercises on reducing dysmenorrhea in adolescent girls of SMA N1 Seputih Raman. With a P-value of 0.000 <0.05, Ho is rejected so it is concluded that there is an effect of dysmenorrhea exercises on reducing dysmenorrhea in adolescent girls of SMA N1 Seputih Raman.

Discussions

The results of data analysis showed that the characteristics of respondents based on age were found to be 15 years old as many

as 27 students (40.9%), 16 years old as many as 34 students (51.5%) and 17 years old as many as 5 students (7.6%).

The results of this study are in line with the theory of[14] Explaining that adolescence is a transition period from children to adults characterized by physical, emotional and psychological changes. According to the population and family planning agency (BkkbN) adolescents are aged 10-24 years and are not married, and according to WHO adolescents are those aged 10-19 years.

This research is in line with the theory of[5] Adolescence is a transitional stage towards healthy adult development. For successful socialization, the younger generation must successfully overcome age-appropriate developmental tasks. The developmental tasks of adolescence such as: Accepting his own physical condition and the qualities he has, Achieving emotional independence from parents or surrounding figures who have authority, Developing interpersonal communication skills and getting along with peers, both individually and in groups, Finding other people as models for himself, Accepting himself and having confidence in his own abilities

The results of this study are in line with the theory of[5] explaining that women The more frequent menstruation, the wider the neck of the uterus, so that in old age the incidence of dysmenorrhea is rarely found. The incidence of dysmenorrhea can be found in young women aged 15-25 years and will disappear at the end of 30 years without the discovery of genital abnormalities on gynecological examination[5].

Research conducted by[10] explained that the age of respondents <17 years as many as 50 respondents (82%) and age> 17 years as many as 11 respondents (18%). In this study, it was stated that there was no relationship between age and decision making to treat dysmenorrhea whether using drugs or without drugs with a p value of 0.429. Respondents who were less than 17 years old and more than 17 years old chose to treat dysmenorrhea without drugs compared to drugs. This is possible because the age of vocational school is a period of adolescence stage where the level of maturity in the process of thinking and decision making is more directed and mature.

Research conducted by[5] It shows that respondents who have 15 years of age are 3 respondents with a percentage of 40% and respondents who have 16 years and 17 years of age are 3 respondents with a percentage of 30%. The age factor greatly affects pain perception where the older a person is, the experience he has in dealing with pain already exists so that in feeling pain there is less impact than at a young age where the experience in feeling pain does not yet exist so that when he gets pain it will feel very painful.

Research conducted by[11] shows that the age characteristics of adolescent girls who experience dysmenorrhea are early adolescents and mid adolescents aged 14 years as much as 50% and ages 15-17 years as much as 50% this shows that age affects the incidence of dysmenorrhea where primary dysmenorrhea begins when experiencing menstruation for the first time and increases at the age of 15-17 years and will be at its highest level at the age of 20-24 years and will disappear when a woman becomes pregnant and gives birth pervagina.

The results of data analysis showed that the average dysmenorrhea pain scale before dysmenorrhea gymnastics training was 3.67, with the highest pain scale of 6 and the lowest pain of 2. The results of this study are in line with the theory of [7] explains that high levels of prostaglandins in the endometrium caused by progesterone during the luteal phase of the menstrual

cycle can cause dysmenorrhea. Strong myometrial contractions cause blood vessels to narrow, causing ischemia, endometrial disintegration, bleeding, and pain. The results of this study are in line[1] providing an explanation of the causes of dysmenorrhea, including: 1) Age of Menarche. Menarche at a young age causes the reproductive organs to not function optimally and are not ready to undergo changes, which causes pain during menstruation. 2) Family history: Women who have a family history of dysmenorrhea are more likely to experience primary dysmenorrhea. 3) Normally, exercise is a simple activity. However, many people overlook the fact that exercise improves the health of the entire body. To maintain one's physical, mental, and quality of life throughout the day, activity or exercise involves moving the limbs and exerting energy. Women who exercise regularly for at least 30 to 60 minutes every three to five times a week can prevent primary dysmenorrhea. According to the situation, each woman can do a leisurely walk, light jogging, swimming, gymnastics or cycling. 4) Duration of Menstruation: The longer menstruation occurs, the uterus contracts more frequently, which results in more prostaglandins being secreted. Excessive prostaglandin production causes pain. In addition, primary dysmenorrhea is caused by continuous uterine contractions. The results of this study are in line with the research[13] Of the 30 respondents in the dysmenorrhea exercise group before dysmenorrhea exercise, most experienced moderate pain (20 people, or 66.7%) and severe pain (10 people, or 33.3%). These results are in line with research by[7] which found that of the 15 respondents before dysmenorrhea gymnastics, there was no very severe pain intensity (0%), and there was no very severe pain intensity (0%).

The results of data analysis showed that the dysmenorrhea pain scale after dysmenorrhea gymnastics training averaged 2.55, with the lowest pain scale of 1 and the highest pain scale of 5. This shows that the pain level changes both before and after training. The results of this study are in line with the theory of[9] clarifying that there are two ways to treat dysmenorrhea, namely pharmacological and non-pharmacological therapies. Pharmacological therapy includes the administration of anti-pain drugs that inhibit the production of progtalandin or analgesic drugs such as aspirin, mefenamic acid, paracetamol, kofein, and feminax. 2) Non-pharmacological therapies such as warm compresses, abdominal massage with essential oils, drinking warm water, eating turmeric, and light exercise. Light exercise such as gymnastics can release endorphin, a chemical in the body, which reduces pain and makes you happy.

The results of this study are in accordance[15] In her book, she explains that dysmenorrhea gymnastics is a physical exercise consisting of movements that can be used to help reduce pain caused by menstruation. Because when you exercise, your body will produce endorphin, which is a neuropeptide that the body produces when in a relaxed or calm state. The brain and spinal cord produce endorphin hormones. The brain produces this hormone to make it comfortable and reduce pain during contractions.

This study is in accordance with research[13] After doing dysmenorrhea gymnastics, 27 people experienced mild-moderate pain, moderate to mild, and from mild partly to no pain; 3 people did not experience pain at all.

In line with the results of research by[6] this study showed that most adolescents experienced moderate pain at pretest (28 people (93.3%) and a small proportion experienced mild pain (2 people (6.7%)). At posttest, all adolescents experienced mild pain (30 people (100%)). This shows

that there is a difference between the pain levels of adolescents before and after dysmenorrhea exercises.

The results showed that there was an effect of dysmenorrhea gymnastics on reducing dysmenorrhea in adolescent girls of SMA N1 Seputih Raman. With a P-value of 0.000 <0.05, Ho is rejected, so it is concluded that there is an effect of dysmenorrhea exercises on reducing dysmenorrhea in adolescent girls of SMA N1 Seputih Raman. This research is in line with the ideas of[2], who explain the benefits of exercise for dysmenorrhea as follows: exercise done regularly and consistently can increase hormone secretion, especially estrogen. Regular exercise for adolescent girls can release beta-endorphins (natural painkillers) into the bloodstream, which can reduce dysmenorrhea and make you feel fresh and happy.

The findings of this study are in line with[11]. The results showed that the pain intensity before dysmenorrhea exercise was 5.40, and after dysmenorrhea exercise was 1.10. With a p-value of 0.000 ($p<0.05$), it can be concluded that there is a significant difference between pain intensity before and after dysmenorrhea exercises.

Limitation

This study employed a pre-experimental one-group pre-test and post-test design without a control group, which limits the ability to attribute changes solely to the intervention. Additionally, the sample was selected using accidental sampling from a single school, reducing the generalizability of the findings. The pain assessment relied on subjective self-reports using the Numeric Rating Scale, which may introduce reporting bias. Furthermore, the short duration of the study did not allow for the observation of long-term effects of the intervention.

Conclusion

Based on the results of research conducted at SMA N 1 Seputih Raman, it is concluded that there is an effect of dysmenorrhea gymnastics on reducing dysmenorrhea in Class X adolescent girls at SMA N1 Seputih Raman with the results of the Wilcoxon Test with (P value 0.000) so that Ha is accepted. It is expected that education and the UKS can develop information to be used as further intervention material for the handling of dysmenorrhea in adolescents.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Author Contributions

All authors contributed equally to the conception, design, data collection, analysis, interpretation, and writing of this manuscript.

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