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The Effect of Dysmenorrhea Exercise on Reducing Mild Dysmenorrhea Pain and Anxiety in Adolescent Girls

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ABSTRACT

Dysmenorrhea is a common condition experienced by adolescent girls during menstruation. This condition is usually characterized by pain in the lower abdomen that can be accompanied by other symptoms such as nausea, headaches, fatigue, and mood swings. In addition to physical symptoms, dysmenorrhea can also affect adolescents' psychological state, one of which is increased anxiety levels. Non-pharmacological treatments such as dysmenorrhea exercises can be an alternative to reduce pain and anxiety. This study aims to determine the effect of dysmenorrhea exercises on reducing mild dysmenorrhea pain and anxiety in adolescent girls. The study used a quantitative approach with a quasi-experimental one-group pretest-posttest design. The study sample consisted of 25 adolescent girls selected using a total sampling technique. The results showed that before the dysmenorrhea exercise intervention, all participants (100%) experienced mild pain. After the intervention, the majority of respondents (84%) no longer felt pain and 16% still experienced mild pain. Meanwhile, before the intervention, the majority of respondents (55%) experienced moderate anxiety, and after the intervention, the majority (64%) experienced mild anxiety. Statistical analysis using the Wilcoxon test showed a significant reduction in pain levels ($Z = -4.690$; $p = 0.000$) and anxiety levels ($Z = -4.796$; $p = 0.000$). In conclusion, dysmenorrhea exercises effectively reduced the intensity of mild dysmenorrhea pain and anxiety levels in adolescent girls at Doa Bangsa Vocational School.

Keywords: Dysmenorrhea Exercises, Mild Dysmenorrhea Pain, Anxiety

INTRODUCTION

Adolescence is a valuable time for physical and mental health, as well as for a good education. During adolescence, what's known as growth spurts, as well as puberty, occur. This phase is characterized by physical growth accompanied by mental, cognitive, and psychological development, as well as reproductive growth and development that regulate sexual function. One biological sign of adolescence is the onset of menstruation (Ministry of Health of the Republic of Indonesia, 2023).

Menstruation begins at puberty and marks a woman's reproductive age, or childbearing potential. Menstruation typically begins between the ages of 10 and 16, influenced by several factors such as a woman's health, nutritional status, and weight relative to height. However, many women experience menstrual problems, such as painful menstruation (dysmenorrhea) (Sumudarsono, 2020). Dysmenorrhea, or menstrual pain, is a gynecological problem caused by an imbalance in the hormone progesterone. If left untreated, dysmenorrhea can disrupt a woman's daily routine. Dysmenorrhea refers to pain experienced during menstruation (Gunawati, 2021).

According to WHO data in 2020, the global prevalence of dysmenorrhea is quite significant, affecting 1,769,425 women. Ninety percent of women of childbearing age in every country experience menstrual discomfort. In the United States, estimates of the prevalence of dysmenorrhea range from 45% to 90%. This rising figure is thought to arise from underreporting of symptoms. Many women purchase their own medication and avoid seeing a doctor. In Indonesia, a total of 107,673 women experience dysmenorrhea each month during their menstrual cycle. The prevalence of menstrual pain, or dysmenorrhea, varies between 45% and 95% in women of childbearing age (Oktorina et al., 2023). Data from the West Java Health Office in 2022 showed a relatively high incidence of dysmenorrhea among adolescents. A total of 54.9% of women in West Java experienced dysmenorrhea, with 24.5% experiencing mild dysmenorrhea, 21.28% experiencing moderate dysmenorrhea, and 9.36% experiencing severe dysmenorrhea. (West Java Health Office, 2023).

Based on data from the Sukabumi Regency Health Office in 2024, the number of adolescent girls was 221,717, of which 52% experienced dysmenorrhea during menstruation. Meanwhile, data on adolescent girls at the Palabuhanratu Community Health Center in 2024 amounted to 4,452 people, where from the results of health screening on school children in the new academic year of 2024, 2,136 (48%) experienced menstrual pain/dysmenorrhea during menstruation. The Palabuhanratu Community Health Center is located in the Sukabumi Regency area, which has the 5th highest number of adolescent girls and cases of dysmenorrhea out of 58 Community Health Centers. The Palabuhanratu Community Health Center area has 14 high school/vocational high school equivalent schools where the number of adolescent girls is 2,444 people, of whom 1,246 people (51%) experience dysmenorrhea or menstrual pain commonly experienced by adolescent girls.

Dysmenorrhea Menstrual cramps are muscle cramps during menstruation, or pain during menstruation or before menstruation. Menstrual pain usually occurs in the lower abdomen, but it can extend to the lower back, waist, pelvis, upper thighs, and calves. This pain can be accompanied by severe abdominal muscle cramps. Muscle cramps occur due to severe contractions of the abdominal muscles during menstrual blood production from the uterus, which causes the uterine muscles to tighten, resulting in cramps or pain known as menstrual cramps (Ani et al., 2022).

Dysmenorrhea can be caused by various factors, including pathological conditions. Some of these pathological conditions include pelvic inflammatory disease, endometriosis, tumors or uterine abnormalities, as well as problems such as a hymen or vaginal opening, stress, and anxiety. In general, dysmenorrhea is caused by irregular myometrial contractions, which can present with one or more symptoms. These symptoms vary from mild to severe lower abdominal pain, including pain radiating to the buttocks and intermittent pain in the medial thigh. Impacts of dysmenorrhea can include dizziness, nausea, vomiting, headaches, and even fainting. Lower abdominal cramps can radiate to the back and then spread to the groin and legs. Factors influencing dysmenorrhea include endocrine factors, muscle tension, perception, structural factors, and psychological factors such as anxiety and psychosocial stress (Elsera et al, 2022).

Anxiety is an emotional response to fear of something that might happen, triggered by a stressor. Anxiety arises as a form of anticipation of danger and serves as a signal for individuals to prepare for the threat. One of its psychological impacts is anxiety (Sutejo, 2020). Adolescents experiencing anxiety or stress tend to experience increased prostaglandin synthesis, accompanied by decreased estrogen and progesterone levels. This can result in reduced blood flow to the uterine muscles and uterus, which causes menstrual pain or dysmenorrhea. When adolescent girls feel anxious about their menstruation, this can lower the pain threshold and exacerbate the discomfort felt (Elsera, 2022). According to the WHO, the global incidence of anxiety has reached 301 million people (4.05%). According to the Basic Health Research (Riskesdas) (2020), Indonesian adolescents experience emotional mental dysfunction that includes symptoms of depression and anxiety. The prevalence of anxiety and depressive disorders is estimated at 1.4% in adolescents aged 10-14 years, and 3.5% in adolescents aged 15-19 years.

Additionally, anxiety can exacerbate pain issues, such as menstrual discomfort or dysmenorrhea. In women, this condition is often associated with increased pain sensitivity

caused by stress hormones like cortisol, which disrupt the body's hormonal balance. As a result, menstrual pain may feel more intense or last longer. This discomfort can occur alone or in conjunction with other signs of emotional distress. Excessive worry can disrupt adolescents' focus, hinder their learning, and lead to insomnia, decreased appetite, and shortness of breath. In addition to anxiety, adolescents can also experience dysmenorrhea, which is characterized by uterine contractions that occur during their menstrual cycle, with symptoms lasting up to the third day (Elsera et al., 2022). Psychological factors, such as anxiety, contribute to dysmenorrhea. Anxiety often occurs when someone worries about unknown factors, especially in adolescent girls who are menstruating. Dysmenorrhea can cause students to miss school due to the pain they experience. Anxiety, indirectly, can reduce the pain threshold, making menstrual pain worse, potentially reaching acute or chronic levels (Elsera, 2022).

Treatments for dysmenorrhea include pharmacological and non-pharmacological approaches. Pharmacological treatments include analgesics, which can relieve pain but have side effects, such as drug dependence. Non-pharmacological treatments include exercise and aromatherapy.

To overcome pain and anxiety due to dysmenorrhea, namely by doing Dysmenorrhea exercises, because Dysmenorrhea exercises can reduce pain intensity through mechanisms, namely by relaxing muscles that experience spasms caused by increased prostaglandins, resulting in vasodilation of blood vessels and will increase blood flow to areas experiencing spasms and ischemia. In addition, when doing an exercise in this case is dysmenorrhea exercises, the body will release endogenous opioids, namely endorphins and enkephalins produced in the brain and spinal cord. These substances have properties similar to morphine with analgesic effects that form a pain suppressant system and the body becomes relaxed, so that pain and feelings of anxiety are reduced (Lely, 2022).

Based on research by Lili Kartika (2022), the results of the study showed that providing dysmenorrhea exercises had an effect on reducing the scale of menstrual pain in adolescent girls with a sig. 0.000 (<0.005). This research is supported by research by Shely Vionica (2022), the results of the study showed that the application of dysmenorrhea exercises for 7 days can reduce dysmenorrhea pain and anxiety in adolescents. It was proven from the four clients that the pain scale could be reduced from severe pain to mild pain, and anxiety in clients also reduced from mild anxiety to no anxiety in clients.

The Palabuhanratu Community Health Center area has 1 sub-district and 4 villages so it has a fairly dense population and many high schools / vocational schools. Doa Bangsa Vocational School is one of the vocational schools located in Citepus Village which has a total of 215 young women. Based on a preliminary study conducted by researchers in January 2025 at Doa Bangsa Vocational School on 15 female respondents conducted through interviews, 12 of them experienced menstrual pain / dysmenorrhea and were worried that menstrual pain would interfere with daily activities. Therefore, respondents dealt with the pain in several ways including, taking painkillers as many as 5 people (42%), sleeping as many as 2 people (17%), applying eucalyptus oil as many as 1 person (8%), drinking water as many as 1 person (8%), and doing nothing as many as 3 people (25%). Young women have not done dysmenorrhea exercises to relieve menstrual pain and anxiety. For this reason, the researcher took the research title Based on the above background, the author is interested in conducting research with the title "The Effect of Dysmenorrhea Exercise on Reducing Mild Dysmenorrhea Pain and Anxiety in Adolescent Girls at Doa Bangsa Vocational School, Palabuhanratu District, Sukabumi Regency in 2025".

METHOD

This research method uses a quantitative approach with a quasi-experimental design through a one-group pretest-posttest design, which only involves one intervention group that is measured before and after being given treatment in the form of dysmenorrhea exercises. The population in this study were all 25 female students who experienced mild dysmenorrhea at SMK Doa Bangsa, Palabuhanratu District in 2025, with a sampling technique using total sampling according to the predetermined inclusion and exclusion criteria. The study was conducted in September 2025 at SMK Doa Bangsa, with instruments in the form of a Numeric Rating Scale (NRS) pain scale, an anxiety scale Zung Self-Rating Anxiety Scale (ZSAS), SOP dysmenorrhea exercises, and observation sheets. The research procedure was carried out for 5 days which included the preparation stage, pretest implementation, dysmenorrhea exercise intervention for 3 days (each session 30 minutes), and posttest. The data obtained were then processed through the stages of editing, coding, entry, scoring, and cleaning using SPSS. Data analysis was carried out univariately to see the distribution of variables, and bivariately using the paired sample t-test after the Shapiro-

Wilk normality test, with a significance level of $p < 0.05$ to determine the effect of the intervention on reducing pain and anxiety.

RESULTS

Univariate Analysis

Table 1. Distribution of mild dysmenorrhea pain levels before and after dysmenorrhea exercises at Doa Bangsa Vocational School in 2025

Pain Category	Pre-test		Post test	
	n	%	n	%
No pain	0	0	21	84%
Mild pain	25	100.0	4	16.0
Moderate Pain	0	0	0	0
Severe pain	0	0	0	0
Very severe pain	0	0	0	0
Total	25	100.0	25	100.0

Based on Table 1, before the dysmenorrhea exercises (pre-test), most respondents experienced mild pain (100%). After the intervention (post-test), pain levels decreased, with 21 respondents (84%) no longer experiencing pain, and 4 respondents (16%) still experiencing mild pain.

Table 2. Distribution of anxiety levels before and after dysmenorrhea exercises were carried out in female adolescents at Doa Bangsa Vocational School in 2025.

Anxious Category	Pre-test		Post test	
	n	%	n	%
No Worries	0	0	9	36.0
Mild anxiety	11	44.0	16	64.0
Moderate Anxiety	14	55.0	0	0
Severe anxiety	0	0	0	0
Panic Anxiety	0	0	0	0
Total	25	100.0	15	100.0

Based on Table 2, before the dysmenorrhea exercises (pre-test), most respondents, 14

(55%) experienced moderate anxiety and 11 (44%) experienced mild anxiety. After the dysmenorrhea exercises (post-test), there was a decrease in anxiety levels, with 9 (36%) respondents no longer anxious and 16 (64%) respondents experiencing mild anxiety.

Bivariate Analysis

Table 3. Results of the Normality Test of Pretest and Posttest Data using Shapiro Wilk

Variables	*Kolmogorov-Smirnov Statistics*	df	Sig.	*Shapiro-Wilk Statistics*	df	Sig.
Pain (pre test)	0.539	25	0,000	0.203	25	0,000
Pain (post test)	0.506	25	0,000	0.445	25	0,000
Anxiety (pre-test)	0.367	25	0,000	0.634	25	0,000
Anxiety (post test)	0.409	25	0,000	0.610	25	0,000

Based on the results of the Shapiro-Wilk normality test, all variables, both pain and anxiety, in the pretest and posttest data had a significance level <0.05, indicating that the data were not normally distributed. Therefore, further analysis used the non-parametric Wilcoxon signed-rank test.

Table 4. The effect of dysmenorrhea exercises on reducing dysmenorrhea pain and anxiety levels in female adolescents at Doa Bangsa Vocational School in 2025

Variables	Mean	Z Value	*P-value*
Pain Level (Pretest-Posttest)	11.50	-4,690	0.0000
Anxiety Level (Pretest-Posttest)	12.0	-4,796	0,000

Based on table 4, the results of the Wilcoxon signed rank test show that the average (mean) for the pain level is 11.50 with a Z value = -4.690 and p value = 0.000, while the average for the anxiety level is 12.0 with a Z value = -4.796 and p value = 0.000. Thus, it can be concluded that dysmenorrhea exercise has a significant effect on reducing pain and anxiety levels in adolescent girls.

DISCUSSION

Distribution of mild dysmenorrhea pain levels before and after dysmenorrhea exercises in female adolescents at Doa Bangsa Vocational School in 2025

Based on the research results, before the dysmenorrhea exercise intervention (pretest), all respondents (25 people or 100%) experienced mild pain during menstruation. No respondents were in the category of no pain, moderate pain, severe pain, or very severe pain. After the dysmenorrhea exercise intervention (posttest), there was a significant change, with 21 respondents (84%) no longer experiencing pain, and 4 respondents (16%) still experiencing mild pain. No respondents experienced moderate or severe pain. These results indicate that dysmenorrhea exercise is effective in reducing the intensity of menstrual pain in adolescent girls.

Mild dysmenorrhea is menstrual pain of low intensity (e.g., a score of 1-3 on a scale of 0-10 or grade 1 on the NRS scale), which still allows individuals to carry out daily activities (studying, working, moving around) without significant impairment and requires little or no pain medication. (Nugraha, 2022).

The study results showed a significant reduction in pain levels after dysmenorrhea exercises. Physical activity such as exercise can improve blood circulation in the pelvic and uterine areas, thereby reducing uterine contractions that cause ischemia and pain. Exercise or stretching movements also help relax uterine muscles that experience spasms due to increased prostaglandins, thus reducing pain intensity. Furthermore, physical exercise stimulates the release of endorphins, which function as the body's natural analgesics and create a feeling of comfort. Regular exercise before or during menstruation makes the body more prepared to deal with hormonal changes and uterine contractions, making pain more manageable. Overall, dysmenorrhea exercises have been proven effective in reducing pain intensity, with the majority of respondents moving from the "mild pain" category to "no pain."

A study conducted by Pramudianti (2022) entitled "Effectiveness of Dysmenorrhea Exercises on Dysmenorrhea Pain in Fourth-Year Undergraduate Nursing Students" showed that the average pain level before the intervention (pre-test) was 5.79, which is classified as moderate pain. After the intervention, in the form of dysmenorrhea exercises, the average pain decreased to 2.32, which is classified as mild pain.

This study also aligns with research conducted by Annisa (2022) with "The Dysmenorrhea

Intensity of Respondents" published in Volume 10 Number 3, July 2022, examining the level of dysmenorrhea pain in adolescent girls using the VMSS (Verbal/Visual Measuring Scale Score) assessment scale. The results showed that after being given an intervention in the form of dysmenorrhea exercises, there was a significant decrease in pain levels, where the majority of respondents who were previously in the moderate pain category (Grade 2) moved to mild pain (Grade 1). This indicates that dysmenorrhea exercises are effective in helping to reduce the intensity of menstrual pain in adolescent girls.

Researchers assume that dysmenorrhea exercises can reduce the frequency and intensity of uterine contractions triggered by increased prostaglandin hormones by improving blood circulation in the pelvic area and relaxing the abdominal and uterine muscles. Furthermore, researchers also assume that regular physical exercise before or during menstruation makes the body more prepared to deal with hormonal changes, so that the pain symptoms that arise are less severe or even not felt at all. This physical activity is also believed to stimulate the release of endorphins, natural chemicals in the body that function as analgesics or natural pain relievers. Non-pharmacological interventions such as dysmenorrhea exercises are a safe and effective alternative to managing menstrual pain, because they do not cause side effects like analgesic drugs, are easy to perform, and can improve the physical and psychological well-being of women experiencing dysmenorrhea.

Distribution of anxiety levels before and after dysmenorrhea exercises in female adolescents at Doa Bangsa Vocational School in 2025.

Based on the research results, before the dysmenorrhea exercise intervention, all respondents experienced anxiety, with 44% (11 people) in the mild anxiety category and 55% (14 people) in the moderate anxiety category. After the dysmenorrhea exercise intervention, there was a positive change, with 36% (9 people) of respondents in the non-anxious category, while 64% (16 people) still experienced mild anxiety, and none were in the moderate, severe, or panic anxiety categories. These results indicate that dysmenorrhea exercise is not only effective in reducing menstrual pain but also has the potential to reduce anxiety levels in adolescent girls. This improvement likely occurs because exercise helps reduce physical tension, increases endorphin production, and prepares the body for menstruation, thereby simultaneously reducing the perception of pain and anxiety. Dysmenorrhea exercise intervention can reduce anxiety through several mechanisms. First, reducing pain due to physical activity reduces physical and emotional stress that triggers

anxiety. Second, exercise increases the body's relaxation response, releasing endorphins as natural analgesics and improving mood, in accordance with the endorphin hypothesis. Third, because pain and anxiety reinforce each other, physical pain reduction also reduces anxiety, in line with the fear-avoidance model. Dysmenorrhea exercises break the pain-anxiety cycle by combining reduced uterine contractions, activating the analgesic system, and increasing psychological control, thus alleviating anxiety.

Anxiety during dysmenorrhea is an emotional state that arises from fear or worry about menstrual pain, causing physical and psychological tension that impacts daily activities. Recurrent dysmenorrhea causes adolescents to anticipate the onset of pain, triggering anxiety reactions before and during menstruation (Sari, 2022).

This research aligns with research by Sumarni & Intasir (2022) entitled "Relationship of Dysmenorrhea and Physical Activity with Anxiety," which showed that dysmenorrhea was significantly associated with anxiety levels in college students ($p = 0.01$), indicating that menstrual pain can trigger higher anxiety levels. The results of this study showed that after dysmenorrhea exercise intervention, anxiety decreased from moderate to mild, and some respondents who previously had mild anxiety experienced improvement to no anxiety. This indicates that dysmenorrhea exercise is effective not only in reducing pain but also in reducing anxiety levels in adolescent girls.

This research also aligns with Triwahyuningsih et al.'s (2024) study, "The Role of Stress and Physical Activity on Primary Dysmenorrhea," which found that stress levels are closely related to anxiety. This finding supports the idea that physical activity interventions, such as exercise, can reduce dysmenorrhea pain and indirectly reduce anxiety. In your study, after dysmenorrhea exercise, anxiety decreased from moderate to mild, and some respondents who previously had mild anxiety became less anxious, demonstrating the effectiveness of exercise in reducing anxiety in adolescent girls.

Researchers assume that dysmenorrhea exercises can reduce anxiety in adolescent girls through several main mechanisms. First, reducing pain due to physical activity reduces the physical and emotional stress that typically triggers anxiety. Second, exercise increases the body's relaxation response, stimulating the release of endorphins, a natural analgesic, and improving overall mood and psychological well-being. Third, because pain and anxiety reinforce each other, reducing physical pain also indirectly reduces anxiety. Overall, dysmenorrhea exercises are thought to break the pain-anxiety cycle through a combination of reducing uterine muscle contractions, activating the natural analgesic system, and

strengthening psychological well-being, thus reducing anxiety.

The effect of dysmenorrhea exercises on reducing dysmenorrhea pain and anxiety levels in female adolescents at Doa Bangsa Vocational School in 2025.

Based on the results of statistical analysis using the Wilcoxon test, a significant decrease in pain and anxiety levels was found after the dysmenorrhea exercise intervention. For the pain level, a Z value of -4.690 was obtained with a p value of 0.000 (<0.05), indicating that the difference between the pretest and posttest scores was significant. This indicates that dysmenorrhea exercise effectively reduced the intensity of pain felt by adolescent girls. In addition, participants' anxiety levels also decreased significantly after the intervention. The Z value obtained was -4.796 with a p value of 0.000 (<0.05), confirming that post-intervention anxiety scores were lower than before the intervention. These findings confirm that dysmenorrhea exercise not only plays a role in reducing pain but can also help reduce anxiety experienced by adolescent girls during menstruation.

Dysmenorrhea, or menstrual pain, is a common condition experienced by women of reproductive age and can reduce quality of life and increase anxiety. This pain is usually caused by uterine contractions due to increased prostaglandins, which can be exacerbated by stress and psychological tension. Regular physical activity or exercise has been shown to reduce pain and anxiety through various mechanisms: reducing prostaglandin production, increasing the release of endorphins, which act as natural pain relievers, improving blood circulation and tissue oxygenation, and strengthening pelvic, abdominal, and lower back muscles. Psychologically, exercise also reduces stress hormones, relieves anxiety, and improves sleep quality, enabling women to cope more comfortably with menstrual pain. (Wijaya, 2024).

Several studies have shown that regular exercise or physical activity can reduce pain and anxiety in dysmenorrhea through physiological and psychological mechanisms. This research aligns with research by Pramudianti (2022), which showed that an exercise intervention five times a week before menstruation reduced pain from an average of 5.79 (moderate) to 2.32 (mild), with statistical significance (p = 0.006). This reduction in pain is thought to occur because exercise reduces uterine contractions, increases abdominal and pelvic muscle flexibility, and stimulates the release of endorphins, which act as natural analgesics.

This is also in line with research by Sumarni & Intasir (2022) which emphasized the close

relationship between menstrual pain and anxiety (p = 0.01). The results of this study showed that after the exercise intervention, participants' anxiety levels decreased from moderate to mild, and some who initially experienced mild anxiety even became less anxious.

Researchers assume that dysmenorrhea exercises can reduce menstrual pain through several mechanisms. First, exercise is believed to reduce uterine muscle contractions triggered by prostaglandins, thereby reducing pain intensity. Second, physical activity increases the release of endorphins and serotonin, which function as natural analgesics and anxiety relievers. Third, exercise helps break the cycle of pain and anxiety by reducing physical and emotional stress, increasing body control, and improving psychological well-being, thereby reducing anxiety that arises during menstruation. Thus, exercise interventions not only target pain physiologically but also have a positive effect on women's mental health..

CONCLUSION

Based on the results of research on the effect of dysmenorrhea exercises on reducing mild dysmenorrhea pain and anxiety in adolescent girls at SMK Doa Bangsa, Palabuhanratu District in 2025, it can be concluded that before the intervention all respondents (100%) experienced mild pain, but after being given dysmenorrhea exercises, most respondents (84%) no longer felt pain. In addition, the level of anxiety of respondents also decreased, where before the intervention the majority were in the moderate anxiety category (55%), then after the intervention most were in the mild anxiety category (64%). The results of statistical analysis showed a significant decrease in both pain and anxiety levels, with a Z value = -4.690 (p = 0.000) for pain and Z = -4.796 (p = 0.000) for anxiety. Thus, it can be concluded that dysmenorrhea exercises have a significant effect in reducing pain and anxiety levels in adolescent girls.

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