

# The effect of yoga on the intensity of primary dysmenorrhea in adolescent girls at Insan Permai Youth Posyandu Cikancung Village Bandung

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## ABSTRACT

Dysmenorrhea is pain during menstruation that interferes with the daily activities of adolescent girls such as decreased concentration on learning because of the pain felt. One way to reduce the intensity of dysmenorrhea is with yoga. Therefore, it is necessary to prove the effect of yoga on dysmenorrhea intensity. The general purpose of this study was to determine the effect of yoga on the intensity of dysmenorrhea in adolescent girls at the Insan Permai Youth Posyandu, Cikancung Village. While the specific purpose is to identify the dysmenorrhea intensity score before and after yoga and analyze the effect of yoga in reducing dysmenorrhea in adolescent girls at the Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency. This research design is a quantitative analytic pre-experiment with a one group pretest-posttest design approach and calculated using the paired t-test. The sample in this study amounted to 25 adolescent girls with data collection tools in the form of NRS (Numeric Rating Scale) observation sheets. The results of the study obtained a dysmenorrhea intensity scale before yoga with a mean of 4.32 and a dysmenorrhea intensity scale after yoga with a mean of 2.08 and p-value <0.05. This means that there is an effect of yoga in reducing dysmenorrhea in adolescent girls. This research is expected to be a reference for young women in reducing dysmenorrhea and midwives can also provide promotion that yoga is an alternative way to overcome dysmenorrhea.

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## INTRODUCTION

Adolescence is the age at which individuals integrate into adult society, the age at which children no longer feel below the level of their elders but are on the same level. At this stage there is a very rapid process of growth and development both physically and psychologically. This physical growth and development includes various organs, one of which is the reproductive organs. The maturation of reproductive organs in women is characterized by the occurrence of menstruation (K. Sari et al., 2018).

Menstruation is a period of periodic vaginal bleeding due to the detachment of the uterine endometrial layer that occurs in women during their fertile period except when pregnancy occurs. Many menstrual disorders are usually faced by a woman. These menstrual disorders usually cause physical discomfort for a woman that can interfere with activities. One of the menstrual disorders that cause physical discomfort is menstrual pain or dysmenorrhea (Ningrum, 2017).

The World Health Organization (WHO) in 2017 found that the incidence of dysmenorrhea pain in the world is very large. On average, more than 50% of women in each country experience menstrual pain (dysmenorrhea). The incidence of dysmenorrhea in Indonesia is 64.52%, consisting of 54.89% primary dysmenorrhea (menstrual pain found without any abnormalities in the genital organs, often occurs in women who have never been pregnant) and 9.36% secondary dysmenorrhea (menstrual pain accompanied by genital anatomical abnormalities). Primary dysmenorrhea is experienced by 60-75% of adolescent girls, with three-quarters of them experiencing mild to severe pain and a quarter experiencing severe pain (Kemenkes RI, 2017).

Dysmenorrhea usually results from the excessive release of certain prostaglandins, prostaglandin F<sub>2</sub> LF from uterine endometrial cells. Dysmenorrhea can also be defined as pain that occurs without signs of infection or pelvic disease. Thus, dysmenorrhea is pain felt by women during menstruation (Jannah, 2017). The severity of dysmenorrhea is directly related to the duration and amount of menstrual blood. Dysmenorrhea is divided into two types, namely primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is menstrual pain without pathology found in the pelvis and secondary dysmenorrhea is menstrual pain associated with various pathological conditions in the genital organs, such as endometriosis, adenomyosis, uterine myoma, cervical stenosis, pelvic inflammatory disease and pelvic attachment or irritable bowel syndrome (N. Jannah, 2017), (M. R. Sari, 2019).

Dysmenorrhea in adolescent girls can have an impact on disruption of learning activities and can also reduce concentration due to the pain felt. Anxiety when facing premenstrual syndrome is also a problem for adolescent girls. Anxiety can cause body reactions that will occur repeatedly such as feeling empty in the stomach, shortness of breath, palpitations, profuse sweating, headaches and others. Dysmenorrhea is a critical global health problem in women of reproductive age, as it causes school absenteeism, poor academic performance, lost work time and has a significant negative influence on daily activities. Dysmenorrhea causes adolescent girls to be unable to go to school, learning activities in learning are disrupted, concentration becomes decreased or even absent so that the material provided during learning takes place cannot be captured by adolescents who are experiencing dysmenorrhea. Teenagers also lack knowledge about dysmenorrhea so that most of them do not handle pain properly (P. Lestari & Putri, 2018), (Hadianti & Ferina, 2021).

Several ways can be done to reduce the intensity of dysmenorrhea, namely pharmacology (administration of oral drugs such as ibu profen, naproxen, and mefenamic acid) and non-pharmacology (therapies that can help reduce dysmenorrhea such as warm compresses, massage, exercise and yoga or meditation where yoga can control the nervous system which can ultimately reduce pain. Yoga can create an atmosphere of relaxation that can release muscle tension, when the body begins to relax / relax, it will have a positive effect on the entire circulatory system and heart to rest. In a research study conducted by Sella and Ana (2021) regarding dysmenorrhea management, it was found that 10% of knowledge about dysmenorrhea management was in the good category, 62.5% in the sufficient category and 27.5% in the insufficient category. The study hopes that schools will collaborate with health workers to provide information for students about how to handle dysmenorrhea so that students are better prepared to face and respond when menstruating (Kuswardani et al., 2021).

Like sports in general, yoga also has physical benefits. But unlike conventional sports, there are psychological benefits that can be obtained from doing yoga. The benefits that can be obtained if undergoing yoga include managing weight, helping prevent and treat several health problems such as heart disease, arthritis, asthma and high blood pressure, improving mental health by reducing

stress, depression, sleep disorders, improving breathing, relieving pain and injury. Of the many benefits of yoga, the focus of research is to reduce pain. Pain in the body is often caused by a sedentary lifestyle and stress. Routine movements will improve blood circulation. Smooth blood circulation usually eliminates pain that appears in the body (Adnyani, 2020).

According to research conducted by Kurwardani et al (2021) on students, it was found that yoga gymnastics treatment can reduce the intensity of dysmenorrhea in students with a decrease in different pain levels. Dysmenorrhea which was reduced was quite significant, namely from 24 severe pain to 2 mild pain and 3 mild pain to pain disappeared. Meanwhile, research conducted by Lestari et al (2019) on the effect of yoga therapy on pain intensity in adolescent girls experiencing primary dysmenorrhea, concluded that yoga therapy can be used as non-pharmacological management to reduce dysmenorrhea pain in adolescent girls (Kuswardani et al., 2021),(T. R. Lestari et al., 2019).

Based on preliminary studies conducted by interviewing 20 adolescent girls at the Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency, only 3 adolescent girls did not experience dysmenorrhea (15%) and 17 other adolescent girls (85%) experienced dysmenorrhea with varying intensity. For handling, 10 people took painkillers and 7 other people handled it by using warm water compresses. As for the handling of dysmenorrhea by doing yoga, it has never been done.

## RESEARCH METHOD

The research design used was pre-experiment design,. The type of design used is one group pretest-posttest design. This research was conducted within one month. The population in this study were adolescent girls at the Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency as many as 62 people. The sample was taken from adolescent girls who came to the Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency. sampling using accidental sampling technique totaling 25 samples. The inclusion criteria in the study were adolescent girls who were willing to become respondents and signed consent, adolescent girls who had regular menstruation every month, often felt primary dysmenorrhea during menstruation on the first and second days. While the exclusion criteria are adolescents who have comorbidities such as endometriosis, benign tumors in the endometrium, chronic pelvic inflammatory disease, adolescents who take menstrual pain medication or dysmenorrhea during menstruation and adolescents who do not live in place. The data obtained is primary data using the NRS (Numeric Rating Scale) observation sheet given at the time before (pre) given yoga and after given yoga (post) The variables studied are Yoga, Dysmenorrhoe. Data analysis used is Paired T-Test.

## RESULTS AND DISCUSSIONS

### Results

**Table 1.** Overview of dysmenorrhea intensity before yoga

Pain Score	n	%	Mean	Median	SD	Min-Maks	CI-95%
No Pain	0	0					
Mild Pain	6	24					
Moderate pain	19	76	4,32	4	1,215	2-6	3,82 - 4,82
Severe Pain	0	0					
Total	25	100					

Based on Table 1, it can be seen that the results of the analysis of 25 adolescent girls at Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency before being given an intervention with yoga, most of them experienced moderate pain (76%) and some others experienced mild pain (24%). The average intensity of dysmenorrhea before yoga was 4.32 with the mean intensity of dysmenorrhea before yoga was 4. The lowest intensity of dysmenorrhea before yoga was 2 and the

highest was 6 with a standard deviation of 1.215. From the interval estimation results it can be concluded that 95% is believed that the average intensity of dysmenorrhea before yoga is between 3.82 to 4.82.

**Table 2.** Overview of dysmenorrhea intensity after yoga

Pain Score	n	%	Mean	Median	SD	Min-Maks	CI-95%
No Pain	3	12					
Mild Pain	20	80					
Moderate Pain	2	8	2,08	2	1,256	0-5	1,56 - 2,60
Severe Pain	0	0					
Total	25	100					

Based on table 2, it can be seen that the results of the analysis of 25 adolescent girls at Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency after being given an intervention with yoga, most of them experienced mild pain (80%). Others experienced moderate pain (8%) and no pain (12%). The average intensity of dysmenorrhea after yoga is 2.08 with the mean intensity of dysmenorrhea after yoga is 2. The lowest intensity of dysmenorrhea after yoga is 0 and the highest is 5 with a standard deviation of 1.256. From the interval estimation results it can be concluded that 95% is believed that the average intensity of dysmenorrhea after yoga is between the scale of 1.56 to 2.60.

**Table 3.** The effect of yoga on dysmenorrhea intensity

Differences in influence before and after yoga	n	Mean	SD	CI-95%	p-value
	25	2,240	0,970	1,840-2,640	0,000

\*Paired sample T-Test

Based on table 3, it is explained that the average difference in dysmenorrhea intensity before and after yoga in 25 respondents is 2.240 with a standard deviation value of 0.970. From the interval estimation results it can be concluded that 95% is believed that the average difference in dysmenorrhea intensity before and after yoga is between a scale of 1.840 to 2.640 with a p-value equal to 0.000. The paired t-test results obtained  $p = 0.000 < \alpha = 0.05$  means  $H_0$  is rejected and  $H_1$  is accepted, which means there is a difference between variables. These results mean that there is an effect of yoga on changes in dysmenorrhea intensity in adolescent girls at the Insan Permai Youth Posyandu, Bandung Regency.

## Discussion

This research process was carried out in several stages, the first stage was to homogenize respondents based on inclusion and exclusion characteristics so as to obtain valid results. Respondents in this study were adolescents who were experiencing menstruation on the first and second day.

### Overview of Dysmenorrhea Intensity Before Yoga in Adolescent Girls at Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency

On the first day, respondents reported to the researcher to assess the intensity of dysmenorrhea, with the results obtained that the average intensity of dysmenorrhea before yoga was 4.32 with the lowest scale being 2 and the highest being 6. From the data obtained, most respondents experienced moderate pain (scale 4-6), totaling 19 respondents. While 6 other respondents experienced mild pain with a dysmenorrhea scale of 2-3. This shows that respondents experience dysmenorrhea with different levels of pain ranging from mild pain to moderate pain. Pain is defined as an unpleasant condition due to physical stimulation or from nerve fibers in the body to the brain and is followed by physical, physiological, and emotional reactions. The feeling of pain in each person is different in terms of scale or level, and only that person can explain or evaluate

the pain he is experiencing. According to Anjasmara (2018) defines pain as a sensory or emotional experience related to actual or functional tissue damage, with onset or slow and mild to severe intensity. Pain experienced during menstruation (dysmenorrhea) is caused by an increased amount of prostaglandins so that the uterus contracts excessively which causes pain during menstruation. Prostaglandins can cause hypertonus which will then cause vasoconstriction in the myotrium. The vasoconstriction that occurs will then cause ischemia of the uterine tissue so that oxygen and nutrients cannot be delivered to all tissues smoothly which will eventually cause pain (Adnyani, 2020)(Anjasmara, 2018).

From the results of this study, it can be seen that menstrual pain (dysmenorrhea) felt has the nature and degree of pain that varies. Starting from mild to moderate. Moderate conditions can interfere with daily activities, forcing sufferers to rest and leave work and school or their daily way of life for several hours or days. Most adolescent girls experience discomfort in the lower abdomen during menstruation. However, most young women do not know the correct way to deal with this menstrual pain, especially young women who have not had their first menstruation for a long time.

#### **Overview of Dysmenorrhea Intensity After Yoga in Adolescent Girls at Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency**

The picture of dysmenorrhea intensity after yoga is 2.08 with the lowest dysmenorrhea scale being 0 and the highest scale being 5. All respondents experienced a change in their dysmenorrhea intensity scale, namely a decrease after doing yoga for 20-30 minutes. The decrease is that one of the non-pharmacological ways that can be done to reduce pain intensity in dysmenorrhea and has no negative effects is yoga. Yoga exercise is a Technique to teach relaxation, breathing and body position to increase strength, and reduce pain complaints (Julaecha, 2019).

According to Kuswardani et al (2021), yoga can create an atmosphere of relaxation that can release muscle tension, when the body begins to relax / relax, it will have a positive influence on the entire circulation system and heart to rest. Yoga is one type of relaxation technique that can reduce pain intensity by relaxing the spasmed skeletal muscles and increasing blood flow to the spasmed area. Yoga can increase brain endorphin production which can reduce stress so that it also indirectly reduces pain. Endorphin is a neuropeptide produced by the body when relaxed. Endorphin is produced in the brain and spinal cord. This hormone can function as a natural tranquilizer produced by the brain that creates a sense of comfort and increases endorphin levels in the body to reduce pain during contractions. Yoga has been shown to increase b-endorphin levels four to five times in the blood so that the more you do yoga, the higher your b-endorphin levels will be. When someone does yoga, b-endorphin will come out and be captured by receptors in the hypothalamus and limbic system that function to regulate emotions. Increased b-endorphin has been shown to be associated with decreased pain, improved memory, improved appetite, sexual ability, blood pressure, and breathing (Kuswardani et al., 2021) (Kock et al., 2020).

This is in accordance with research conducted by Kuswardani et al (2021) on the effect of yoga exercises on reducing menstrual pain (dysmenorrhea) in female students of the Widya Husada Semarang Physiotherapy D III Study Program, with the results of a decrease in the intensity of dysmenorrhea before and after the application of yoga. This shows that yoga exercises can reduce the intensity of dysmenorrhea in students.

Based on the description above, yoga is one of the relaxation techniques that can be used to reduce dysmenorrhea. through breathing exercises that make respondents more relaxed so that the perception of pain felt is reduced. In addition, the movements performed in yoga can improve blood circulation so that the pain felt can be reduced (K. Sari et al., 2018).

#### **Analysis of the Effect of Yoga on Dysmenorrhea Intensity in Adolescent Girls at Insan Permai Youth Posyandu, Cikancung Village, Bandung Regency**

To determine the effect of yoga on changes in dysmenorrhea intensity scale, researchers used a paired t-test statistical test with the condition that the data must be normally distributed. After analyzing, based on table 1 it can be seen that the average intensity of dysmenorrhea before yoga is 4.32, based on table 2 the average intensity of dysmenorrhea after yoga is 2.08, based on table 3 there is a difference in the average before and after yoga is 2.24 and the value (p) obtained is 0.000 with a level of significance  $\alpha = 0.05$ . Because the value (p) is smaller than the value ( $\alpha$ ), then H0 is rejected and H1 is accepted.

This stated that there was a significant difference between before and after yoga on the intensity of dysmenorrhea. Based on the category, the intensity of dysmenorrhea before yoga was obtained by 6 respondents experiencing mild pain and 19 respondents experiencing moderate pain. Then after yoga there was a significant change. The number of respondents who experienced moderate pain changed to 2 respondents, 20 respondents experienced mild pain and 3 respondents no longer experienced pain.

This states that there is a significant difference between before and after yoga on dysmenorrhea intensity. As for the category, it was found that the intensity of dysmenorrhea before yoga was 6 respondents experiencing mild pain and 19 respondents experiencing moderate pain. Then after yoga there was a significant change. The number of respondents who experienced moderate pain changed to 2 respondents, 20 respondents experienced mild pain and 3 respondents no longer experienced pain.

This happens considering that pain is subjective and only someone who experiences the condition can describe the amount of pain felt. So that it will affect the pain intensity score of each respondent. Solehati and Kosasih (2017) argue that pain can occur due to pain stimuli which include physical (thermal, mechanical, electrical) and chemical. If there is damage to the tissue due to interrupted tissue continuity, histamine, bradykinin, serotonin, and prostaglandins will be produced by the body. These chemicals will cause pain. This pain is forwarded to the Central Nerve System (CSN) and then transmitted to type C fibers which produce a burning sensation or type A fibers which produce pain, such as stabbing. Many ways are used to reduce dysmenorrhea in addition to using drugs can use complementary therapy, namely yoga exercise therapy (T, Solehati, Kosasih, 2017)(Arini et al., 2020).

Yoga practice is a cost-effective exercise that can be done at home to help reduce pain levels during menstruation and to help improve one's quality of life. This is in line with Yulina (2020) that the effectiveness of yoga exercises on reducing dysmenorrhea pain in students at Pahlawan Tuanku Tambusai University in 2020 with the results showing that there is an effect of yoga on reducing the intensity of pain felt by students of Pahlawan Tuanku Tambusai University with the result of  $p$ -value = 0.000 (Prabhu et al., 2019)(Yulina & Ningsih, 2020).

Yoga is one of the sports relaxation techniques or physical exercises that can produce endorphin hormone, this hormone functions as a natural tranquilizer produced by the brain to produce a sense of comfort and reduce pain during contractions. This exercise can increase endorphin levels four to five times in the blood. The more exercise you do, the higher your  $\beta$ -endorphin levels will be. Someone who does exercise, then  $\beta$ -endorphin will come out and be captured by receptors in the hypothalamus and limbic system that serves to regulate emotions. Endorphin levels vary among individuals as well as factors such as anxiety that affect endorphin levels. Individuals with more endorphin will feel less pain. From the results of research conducted by researchers with theoretical concepts and the results of existing related research, it can be defined that there is a significant influence between yoga on changes in dysmenorrhea intensity scale. So that yoga can be applied as an alternative in dealing with dysmenorrhea.

## CONCLUSION

Based on these results, it can be concluded that the dangers of yoga are proven to be effective in reducing dysmenorrhea pain. This can be seen from the changes in the pain intensity scale before and after doing yoga as evidenced by the results of the analysis of the p value ( $0.000 < \alpha$  value (0.05).

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