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The Effect of Dysmenorrhea Gymnastics on the Pain Scale of Dysmenorrhea

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ABSTRACT

Teenager women experience growth and development, one of which is characterized by the occurrence of haid. Dysmenorrhoea is often found at the beginning of menstruation young women experience menstrual pain. Exercise in this case gymnastics dysmenorrhea is shown to increase b-endorphin 4 to 5 times in the blood. Data obtained from the youth poly of UPT Puskesmas Kec. Sananwetan in September 2020 showed that 2 out of 5 PSBR teenagers who came to the UPT Puskesmas Kec. Sananwetan experienced complaints of dysmenorrhea every month. Research aims to determine the effect of giving Dysmenorrhea gymnastics on young women in PSBR Blitar City. This study included a quasi-experimental study with a population of 35 young women and samplingusing Purposive Sampling. Based on the results of a study conducted using a dependent T-test statistical test (dependent T-test), the time of dysmenorrhea pain before dysmenorrhea gymnastics in young women was 4 (16%) adolescents experiencing mild dysmenorrhea pain, 12 (48%) adolescents experiencing moderate pain, and 9 (36%) adolescents experiencing severe pain scale, dysmenorrhea pain scale after dysmenorrhea gymnastics in young women is 3 (12%) adolescents do not experience dysmenorrhea pain, 22 (88%) adolescents experience moderate pain. This study proves that dysmenorrheagymnastics has a significant influence on the scale of dysmenorrhea pain in adolescents in the Social Service of Youth Development (PSBR) of Blitar City.

Keywords : Dysminorea; Dysmenorrhea Gymnastics; Teenager

Background

Adolescence is a time of change both physically, biologically, and productively. Adolescence begins when a person undergoes changes be it physically, biologically, reproductively. In adolescent women the most prominent thing when experiencing growth and development, one of which is characterized by the occurrence of menstruation (1). Often found at the beginning of menstruation, young women experience menstrual pain, although it is not uncommon to find women of childbearing age who are not married to have the same complaints, namely experiencing menstrual pain at the beginning of their menstrual cycle, menstrual pain is called Dysmenorrhea (2).

Dysmenorrhea can have an impact on a woman's activities if left untreated. Dysmenorrhea causes activity intolerance, and severe pain can result in absenteeism at work or at school. Thus resulting in a decrease in work productivity and attention in class (3). According to (4) by type dysmenorrhea consists of Primary and secondary *Dysmenorrhea*. *Primary dysmenorrhea* is a pain that arises from the first menstruation and will recover on its own over time, precisely after the stabilization of the body's hormones or changes in the position of the uterus after marriage and childbirth. *Secondary dysmenorrhea* usually only appears later, that is, if there are persistent diseases or abnormalities such as uterine infections, cysts or polyps, tumors around the womb, as well as abnormalities in the position of the uterus that interfere with surrounding organs and tissues. (5) mention that pain experienced by adolescents with primary dysmenorrhea can cause serious problems such as negative emotions accumulated due to complaints such as lower abdominal pain, fatigue, loss of appetite, headache, diarrhea, and nausea.

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According to the *World Health Organization* (WHO) in research ((6) the incidence rate of Dysmenorrhea is quite high worldwide. The average incidence of dysmenorrhea in young women is between 16.8 –81%. On average in European countries Dysmenorrhea occurs in 45-97% of women. With the lowest prevalence in Bulgaria (8.8%) and the highest reaching 94% in the country of Finland. The highest prevalence of Dysmenorrhea is often encountered in adolescent women, which is estimated to be between 20-90%. About 15% of adolescents reported having severe dysmenorrhea. In the United States, Dysmenorrhea is recognized as the most frequent cause of school absences experienced by young women. In addition, a survey was also conducted on 113 United States women and declared a prevalence of 29-44%, the most at the age of 18-45 years. The incidence rate of Dysmenorrhea in Indonesia is 64.25% consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. In 2018, the results showed that 84.4% of young women of Level I Ners in Stikes Santa Elisabeth Medan Dormitory experienced Dysmenorrhea with a mild pain intensity of 26.7%, moderate pain 73.3%, and severe pain 0% (1).

Data obtained by researchers from the UPT Adolescent Poly Puskesmas Kec. Sananwetan in September 2020 showed that out of 35 young women of PSBR in Blitar city, 25 people were treated to experience menstrual pain during menstruation. In addition, researchers also often find that 2 out of 5 PSBR teenagers who come to the IGD UPT Puskesmas Kec. Sananwetan experience complaints of dysmenorrhea every month. Acute pain experienced by adolescents with primary dysmenorrhea makes it an excuse for individuals to seek a source of health care. Pain assessment is important to provide the most appropriate intervention for pain complaints (7)

Medical management in primary dysmenorrhea consists of the administration of oral contraceptives and NSAIDs (Nonsteroidal Anti-Inflamatory Drugs). Oral contraceptives work by reducing menstrual blood volume by suppressing the endometrium and ovulation, so that protaglandin levels are low. The class of NSAIDs (Nonsteroidal Anti-Inflamatory Drugs) drugs given to primary dysmenorrhea patients are ibuprofen, naproksen and mefenamic acid. Medication is given after pain is felt, and continued for the first 2 to 3 days at the time of menstruation (8). The management or physical therapy for secondary dysmenorrhea depends on the cause. Administration of therapeutic NSAIDs (Nonsteroidal Anti-Inflamatory Drugs), due to pain caused by an increase in protaglandins. Antibiotics can be given when there is an infection and surgery can be performed if there are anatomical and structural abnormalities (9). (1) mention to be able to reduce the intensity of dysmenorrhea common methods used such as warm compresses, drinking ginger herbs and mozart music.

Apart from these methods, dysmenorrhea treatment can also be done by *abdominal stretching* to stretch the abdominal muscles and reduce abdominal pain. In addition to abdominal stretching (10)(10) gymnastics to reduce dysmenorrhea pain, abdominal stretching and gymnastics Dysmenorrhea both provide a comfortable effect on people with Dysmenorrhea, *abdominal stretching* and Dysmenorrhea gymnastics regularly and regularly can increase the secretion of hormones, especially estrogen. Regular gymnastics for young women can release beta endorphins (natural pain relievers) into the bloodstream so that it can reduce Dysmenorrhea, in addition to making the body feel refreshed and can cause feelings of pleasure. Gymnastics that is done regularly when experiencing Dysmenorrhea can increase the number and size of blood vessels, which channel blood throughout the body including the reproductive organs so that blood flow becomes smooth and it can reduce the symptoms of Dysmenorrhea. Increase the volume of blood flowing throughout the body including the reproductive organs, it can facilitate the supply of oxygen to the blood that undergoes vasoconstriction, so that menstrual pain can be reduced(8)

Dysmenorrhea Gymnastics is a form of non-pharmacological treatment for Dysmenorrhea in the form of sports activities. One of the benefits of exercise is that it stimulates the production

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of endorphins in the brain. Endorphins are hormones produced by the pituitary gland that can provide a feeling of calm and resistance to feelings of pain (11). Dysmenorrhea gymnastics is the choice of researchers because Dysmenorrhea gymnastics is easy to do and does not require tools. This gymnastics also does not require expensive costs, is easy to do and certainly does not cause harmful side effects to the body. By doing gymnastics gradually will provide a relaxing sensation and can reduce pain (12)

The body will react when experiencing stress, thus reducing resistance to pain. The first sign indicating a stressful state is the reaction of stretching the muscles of the individual body filled with stress hormones that cause body temperature, heart rate, breathing and blood pressure to increase. On the other hand, when stressed, the body will produce excessive *hormones adrenaline, estrogen, progesterone,* and *prostaglandins*. The hormone e*strogen* can cause an excessive increase in uterine contractions, while *the hormone progesterone* is a contraction inhibitor. Excessive contraction increase will cause adrenaline hormone pain can cause body muscles including uterine muscles to become tense so that it can cause pain during menstruation (13)

Exercise in this case Dysmenorrhea gymnastics is proven to increase b-endorphin 4 to 5 times in the blood, so the more exercise / gymnastics, the higher the level of *b-endorphin* in the blood. Dysmenorrhea gymnastics which is done regularly and correctly that is done for 20 minutes at the time of Dysmenorrhea, performed 2 times each exercise can increase *b-endorphin* which is proven to be closely related to pain reduction, improving appetite, sexual ability, improved memory, breathing and blood pressure, differences with previous studies this study uses a numerical scale because in this case the numerical scale better describes the real situation. (14). Based on the data and elaboration in the previous paragraph, the researcher wanted to examine the effect of Dysmenorrhea gymnastics on the pain scale in young women in the PSBR dormitory in Blitar City.

Methods

The method used by researchers is the one group pretest approach method - posttest *desig*n is a study carried out by giving a pretest (initial observation) first before being given an intervention, after that an intervention is given, then *a posttest* (final observation) is carried out. The population in the study was all young women in the PSBR dormitory, which amounted to 35 people who became fostered teenagers in the UPT Puskesmas work area, Sananwetan District, Blitar City. The samples in this study were all populations that met the criteria for being sampled. The sampling uses *Purposive Sampling.*

In this study using an observation sheet and using a measuring scale consisting of 1 measuring scale using the Numeric Rating Scale (NRS). Dysmenorrhea gymnastics was given to each respondent, dysmenorrhea gymnastics was given 2 x 20 minutes when dysmenorrhea occurred, then identified dysmenorrhea after being given dysmenorrhea gymnastics to young women in the PSBR dormitory in Blitar City. In scoring, a *Numerical Rating Scale* (NRS) is used which is one to determine the score. Scoring on the observation sheet on the reduction of dysmenorrhea pain is given a number of 0-10, each number can show the intensity of pain felt by the respondent, namely: no pain (0), mild pain (1-3), moderate pain (4-6), severe pain (7-9), and severe pain (10). Test analysis using *a dependent t test.*

Results

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Characteristics of Respondents

The characteristics of the respondents obtained in this study are as presented in the table below:

Table 1 Frequency distribution of respondents' characteristics

Characteristic	Frequency	Percentage (%)
Age		
13-14 years	9	36
15-17 years	11	44
18-19 years	5	20
Age of menarche		
11 years	13	52
12 years	5	20
13 years	6	24
14 years	1	4
The day of menstruation to-		
1	6	24
2	12	48
3	5	20
4	1	4
5	1	4
Cycle		
Orderly	19	76
Not	6	24
Action		
Left	23	92
Taking medications	1	4
Other (compresses)	1	4
Activity		
Annoyed	25	100.0
Undisturbed	0	0

The results of the study in table 1 showed the distribution of respondents based on the age of young women was the most between 15-17 years (44%) and the smallest age range of 18–19 years (20%), the most early menstrual age was 52% (age 11 years), 24% (age 13 years) and the smallest 4% (age 14 years), at the time of menstruation the most on day 2 with the number of 12 people (48%) and 24% on the first day as many as 6 people, experienced dysmenorrhea regularly as many as 76% (19 people), who allowed when experiencing dysmenorrhea amounted to 23 people (92%) and others were allowed and compressed 4% each (1 person) and felt when dysmenorrhea could interfere with the activity of 25 people (100%).

Dysmenorrhea pain scale before dysmenorrhea gymnastics

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Table 2 Frequency distribution of dysmenorrhea pain scales before administration of dysmenorrhea gymnastics

Pain scale	Frequency	Percentage (%)
Light	4	16
Keep	12	48
Heavy	9	36
Total	25	100

Distribution of the frequency of dysmenorrhea pain scales before dysmenorrhea gymnastics is given to young women at the Adolescent Development Social Service (PSBR) of Blitar City on May 17-June 17, 2021. Showed that the scale of dysmenorrhea pain experienced by young women before getting dysmenorrhea gymnastics therapy was 48% (12 people) experienced moderate dysmenorrhea pain and 36% experienced severe pain (9 people).

Dysmenorrhea pain scale after administration of dysmenorrhea gymnastics

Table 3 Frequency distribution of dysmenorrhea pain scales after administration of dysmenorrhea gymnastics

Pain scale	Frequency	Percentage (%)
Light	14	56
Keep	11	44
Heavy	0	0
Total	25	100

Distribution of the frequency of dysmenorrhea pain scales after being given dysmenorrhea gymnastics to young women at the Youth Development Social Service (PSBR) of Blitar City on May 17-June 17, 2021. Showing that the scale of dysmenorrhea pain experienced by young women after getting dysmenorrhea gymnastics therapy was 56% (14 people) experiencing mild pain the rest in the moderate pain category 44% (11 people).

Pain scales before and after dysmenorrhea gymnastics in young women

Table 4 Pain Scale before and after dysmenorrhea gymnastics in young woman

	N	Min	Max	Mean	Std Dev
Before gymnastics	25	3	7	5.72	1.429
After Gymnastics	25	1	6	3.40	1.354
P-value	0,000				

The average scale of dysmenorrhea pain before and after Dysmenorrhea Gymnastics in young women in the Social Service of Youth Development (PSBR) of Blitar City who get dysmenorrhea gymnastics has decreased, namely 3.40 (mild pain), the average is obtained

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after adolescents do dysmenorrhea gymnastics.

Before the statistical T-Test was carried out, a normality test using *Spiro Wilk* obtained a result of 0.077 p-value > 0.05 which means that it was distributed normally, then a dependent T-test was carried out. And a p-value of 0.000 is obtained, then if the p-value value is < 0.005 so that it can be concluded that there is an influence of dysmenorrhea gymnastics on the scale of dysmenorrhea pain in adolescents.

Discussion

The results showed that before dysmenorrhea gymnastics was seen, 16% (4 people) experienced mild pain, 48% (12 people) experienced moderate pain, and 36% severe pain (9 people). With different levels of pain in each age range, the highest number of respondents were complaints of moderate pain, namely between 13-17 years old as much as 48% (12 people). In accordance with previous research, namely Prabasiwi research (2016) which found that menstrual age is most experienced by young women at the ideal age (12-14 years).

Dysmenorrhea or menstrual pain is normal but can be excessive if it is influenced by physical and psychic factors such as stress and the influence of the hormone's prostaglandins and progesterone. According to (15), it is caused because during menstruation exfoliated endometrial cells release prostaglandins. Prostaglandins stimulate the uterine muscle (uterus) and affect blood vessels causing uterine ischemia (decreased blood supply to the uterus) through contraction of the myometrium (muscles of the uterine wall) vasoconstriction (narrowing of the blood vessels).

Apart from the age factor, it was also found that the early menstrual age of young women, namely 11 years old, was 52%. It also affects the level of dysmenorrhea pain. According to (16), menarche is the first menstrual period that occurs during a woman's puberty. The ideal age of menarche is 12 to 14 years old, and it is said to be early menarche if the age is under 12 years. From the results of the research above, it can be seen that in young women in the Adolescent Development Social Service (PSBR) many experience dysmenorrhea with this category of moderate pain in line with the study ((9) The rapid age of menarche is < 12 years which is a risk factor for primary dysmenorrhea.

Another result of the study was the highest incidence of dysmenorrhea on the 2nd day of menstruation as much as 48% (12 people). Dysmenorrhea begins 1-2 before menstruation or the day at the time of menstruation, the most severe pain is felt during the first 24 hours of menstruation and subsides on the second day (17). The nature of pain is spasms, usually confined to the lower abdomen but can spread to the lumbar region and thighs. Along with pain can be found nausea, vomiting, headache, diarrhea and irritability (18). Theory (9)dysmenorrhea there are several clinical divisions, namely mild, lasting a while and being able to continue daily work. Moderately, painkillers are needed, without the need to leave work. Heavy, need to rest a few days and can be accompanied, headache, lumbago, diarrhea, and a sense of distress. Pain is subjective and highly individual. The pain stimulus can be a stimulus of a physical or mental nature, while the damage can occur to the actual tissues or to the ego functioning of an individual. When experiencing dysmenorrhea pain, young women in PSBR only let it go as much as 92% (23 people). Some people still think it is not a problem to endure the pain that every period feels so women tend to be reluctant to go to the doctor. The view is deeply erroneous and should be updated immediately. It is very unwise if the pain is continuously allowed let alone the pain lasts continuously every time (15).

The time of menstruation is a routine cycle experienced by women and will be a torturous and stressful time for those who experience menstrual pain and other symptoms that accompany primary dysmenorrhea. This can interfere with daily activities, especially the decrease in work

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productivity caused by discomfort. The age of 15-25 years is the age at which primary dysmenorrhea will reach its maximum and as a consequence the sufferer must leave his job for hours to rest (19). In accordance with previous research, namely research ((20) which found that menstrual age is most experienced by young women at the ideal age (12-14 years).

From the results of the above study, the pain before dysmenorrhea gymnastics in young women is at the level of moderate and severe pain. All teenagers also their activities are disrupted. In this case it is annoying in concentrating on studying or in the learning process in the classroom. But they let it go a lot more because they feel like it's natural every month. By not managing pain properly, it can cause severe pain perception. This can also be caused because young women have just experienced dysmenorrhea with some experiencing early menstrual age which is under the age of 12 years. In addition, it can also be influenced by the day of menstruation, namely when menstruation occurs on the first or second day is a phase where the level of dysmenorrhea pain is heavier than other days. The menstrual age of adolescents is the ideal age of having primary menstruation, namely over 12 years old and under 25 years old.

The results of the group study after dysmenorrhea gymnastics in table 4.8 showed that after dysmenorrhea gymnastics in young women there was a decrease on the pain scale with a result of severe pain of 0% and mild pain of 56%. (14 people) the rest of the adolescents still experience moderate pain 44% (11 people)

Various ways are carried out to reduce dysmenorrhea pain. Some use pharmacological and non-pharmacological techniques. Many non-pharmacological techniques can be performed to relieve pain. According to (9) there is one way to reduce menstrual pain, namely by doing aerobics gymnastics as a stress reliever so that pain is reduced. According to ((15) non-pharmacological management of dysmenorrhea pain in the form of physical exercise (sports) such as walking, swimming, and gymnastics.

Dysmenorrhea gymnastics is a physical activity that can be used to reduce pain, whose focus helps stretching around the abdominal muscles, pelvis, and waist, besides that the gymnastics can provide a relaxing sensation if done regularly. Because it is in a relaxed state, the body also stops the production of the hormone adrenaline and all the necessary hormones when we are stressed. So that the storage of b-endorphin in the body increases and can reduce the pain felt by everyone. When a person gymnastics, then b-endorphins will come out and be captured by receptors inside the hypothalamus and limbic system that serve to regulate emotions (12). Increased b-endorphins have been shown to be closely related to decreased pain, improved memory, improved appetite, sexual ability, blood pressure and breathing (18).

In this study there were 3 respondents with the intensity of dysmenorrhea pain before and after not changing. The results of this study showed that not all respondents experienced a decrease in the intensity of dysmenorrhea pain after doing dysmenorrhea gymnastics, this is because there are factors that influence the decrease in the intensity of dysmenorrhea pain. Irregular menstrual factors can cause no decrease in dysmenorrhea pain this is in accordance with the characteristic description of the respondents obtained, of the 25 respondents, 6 of them experienced irregular menstruation and can also be caused by factors of early age having menstruation, which is classified as early, namely under 12 years. This is in accordance with the theory expressed by (21) that there are several risk factors associated with the severity of dysmenorrhea symptoms are a younger age at the time of menarche, a longer menstrual period, the amount of blood that comes out during menstruation, irregular menstruation, a family history of dysmenorrhea and obesity are also associated with the occurrence of dysmenorrhea pain.

However, the results were mostly a decrease in the scale of pain in these respondents due to the intervention of dysmenorrhea gymnastics that stimulates the brain and spinal nerve system to produce endorphins that function as natural sedatives to cause a sense of comfort. For this reason, relaxation of dysmenorrhea gymnastics can be used as a non-medical first action when experiencing menstrual pain (dysmenorrhea).

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The results of research on the effect of dysmenorrhea gymnastics on the decrease in dysmenorrhea using statistical tests with dependent t-test obtained a p-value value of .000 then if the p-value value is <0.005 then Ho is rejected and Ha is accepted, so it can be concluded that there is an influence of dysmenorrhea gymnastics on the scale of dysmenorrhea pain in adolescents.

The results of statistical tests can be interpreted to mean that there is a significant influence of dysmenorrhea gymnastics on the scale of dysmenorrhea pain in young women. Gymnastics is a natural remedy that does not cause side effects on the body because gymnastics is a technique to maintain health and fitness. Doing gymnastics regularly by paying attention to its continuity, the frequency of gymnastics that should be done as much as 5 times, a week before the next menstruation and with the right duration of time to do gymnastics which is about 30 minutes, these factors will produce many benefits for the body (12). One of the benefits of dysmenorrhea gymnastics is that it can reduce and even eliminate pain felt before menstruation.

During gymnastics the body will produce endorphin hormones produced in the spinal cord and sum-sum. Gymnastics that are done regularly can increase the number and size of blood vessels, which channel blood throughout the body including the reproductive organs so that blood flow becomes smooth and it can reduce symptoms of dysmenorrhea. Increasing the volume of blood flowing throughout the body including the reproductive organs, this can facilitate the supply of oxygen to vasoconstriction blood vessels, so that menstrual pain can be reduced. Endorphin hormones function as natural sedatives that cause a sense of comfort (15). The higher endorphin hormones will reduce or relieve the pain that a person feels so that a person becomes more comfortable, happy, and launches oxygen delivery to the muscles (9)

From the results of the study above, there was a significant influence after being given dysmenorrhea gymnastics interventions in young women. Reduced pain levels in respondents who experienced dysmenorrhea during menstruation due to the treatment or administration of dysmenorrhea gymnastics. Researchers looked at the change in pain levels not only because of the gymnastics but could be seen based on other factors such as frequency, continuity, and duration of the gymnastics with each component of the movement in the warm-up, core and cooling movements each having a duration of about 20 minutes. The more you do gymnastics, the higher the level of b-endorphin. When a person performs gymnastics, then b-endorphin will come out and be captured by receptors inside the hypothalamus and limbic system that serve to regulate emotions. The increase in b-endorphin is closely related to the decrease in pain, the body can create a feeling of comfort and goodness, so that the pain felt will be reduced. Dysmenorrhea gymnastics is one of the interventions that can be developed in the world of nursing, especially community nursing and maternity nursing. Dysmenorrhea gymnastics is expected to help adolescents in overcoming dysmenorrhea that is felt every month during menstruation.

Conclusion and Recommendations

The scale of dysmenorrhea pain before dysmenorrhea gymnastics in young women is 4 (16%) adolescents experiencing mild dysmenorrhea pain, 12 (48%) adolescents experiencing moderate pain, and 9 (36%) adolescents experiencing severe pain scale. The scale of dysmenorrhea pain after dysmenorrhea gymnastics in young women is 14 (56%) adolescents experiencing mild dysmenorrhea pain, 11 (44%) adolescents experiencing moderate pain. There is an influence of dysmenorrhea gymnastics on the scale of dysmenorrhea pain in adolescents in the Youth Development Social Service (PSBR) of Blitar City.

For thosewho are respondent, girls at the Bina Remaja Social Care Center (PSBR) in Blitar City can apply dysmenorrhea gymnastics regularly to reduce and overcome menstrual pain. For researcher, thisstudy adds pentaquinsand insights into non-medical treatment to reduce

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and treat menstrual pain. For subsequent researchers to examine other factors that influence dysmenorrhea pain such as psychological factors and can also add non-pharmacological combination therapies such as aroma therapy. For research place, information about the benefits of dysmenorrhea gymnastics treatment as a treatment of menstrual pain needs to be optimized to provide knowledge for young women at the Bina Remaja Social Care Institution (PSBR) Blitar City, so that they can apply when dysmenorrhea occurs.

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