

The Relationship Between Physical Activity Level and Dysmenorrhoea in Young Women

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ABSTRACT

Introduction: Menstrual disorders that often occur are menstrual pain (dysmenorrhoea), especially in adolescence. The average incidence of dysmenorrhoea in young women is between 16.8 and 81% worldwide. Physical activity is one of the relaxation techniques that can be used to reduce dysmenorrhoea. The purpose of this study was to find out the relationship between Physical Activity level and the incidence of dysmenorrhea in young women at SMP Negeri 16 Padang.

Materials and Methods: This research used observational analytic methods with cross-sectional design. The sample in this study was young women (9th class students), totaling 39 people. This study used the IPAQ Questionnaire Sheet and pain scale rate to confirm dysmenorrhoea. Analysis of this study used chi square.

Results: We found that most respondents (61.5%) had dysmenorrhoea, and more than half of respondents (61.5%) rarely did Physical Activity. Bivariate test results found that there is a relationship between Physical Activity level and dysmenorrhoea (p value = 0.044, α = 0.05, df = 3). From the analysis results, the value of OR = 4.500 was also obtained, meaning that respondents who did not exercise regularly had a 4.5 times chance of experiencing dysmenorrhea compared to respondents who did regular exercise.

Conclusion: Respondents who rarely do physical activity often experience dysmenorrhoea. Therefore, good education is needed for young women, which is one of the things that can be done to prevent and reduce the event of dysmenorrhoea is to exercise regularly.

KEYWORDS:

Physical Activity Level, Dysmenorrhoea, Young Women

INTRODUCTION

Adolescence is a transition period from children to adulthood. In young women, one sign of the maturity of the reproductive organs is marked by the arrival of menstruation or menarche. Based on data from the National Health and Nutrition Examination Survey (NHANES), the average age of menarche in Indonesia is 12.5 years with a range of 9–14 years.¹

Menstrual disorders that often occur are menstrual pain (dysmenorrhoea). The pain takes place in the days before or early menstruation.² Pain is usually felt in the lower or middle abdomen and sometimes even extends to the hips, thighs and back.⁴ Abdominal pain during menstruation or dysmenorrhea that is felt by every woman is different, some are slightly disturbed but some are so disturbed that they cannot carry out activities.² If this pain cannot be handled properly, it will interfere with daily activities and learning outcomes.

According to the World Health Organization (WHO), the incidence of dysmenorrhoea is quite high throughout the world. The average incidence of dysmenorrhoea in young women is between 16.8 and 81%. Dysmenorrhoea incidence in Indonesia is 54.89% primary dysmenorrhoea.³ Abnormalities occur in 60–70% of women in Indonesia, with 15% of them complaining that their activities are limited due to dysmenorrhoea.¹

Painful menses or dysmenorrhea affects 40–90% of women. Despite its high prevalence, understanding of its pathophysiology and its relation to other pain syndromes in women is still limited. Dysmenorrhea has been historically categorized into two distinct types: primary and secondary. Primary dysmenorrhea is menstrual pain without pelvic pathology, with onset typically just after menarche. Pain in primary dysmenorrhea occurs during menses and lasts 2–3 days. Secondary dysmenorrhea describes menstrual pain when underlying pathology is identified (such as uterine or ovarian lesions); its onset may be years after menarche. Pain may start 1–2 weeks before menses and persist beyond, lasting several days.⁴

Dysmenorrhoea felt by every woman is different. Some are disturbed so they cannot do activities. One effective way to prevent dysmenorrhoea is by doing physical activity. From a preventive perspective, risk factors for dysmenorrhea should be identified. Previous studies have shown that lifestyle factors, including physical activity and diet, are related to the condition in adolescents.⁵ Some physical exercises can increase blood supply to the reproductive organs thereby facilitating blood circulation.

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Table I: Characteristics of the respondents (N=39)

Respondent characteristics	Mean (SD)	Median	p value (t-test)
Age	14.54 years (0.600)	14 years	0.967
Menarche age	12.51 years (0.854)	13 years	0.311
Body weight	49.6 kg (13.00)	46 kg	0.920
Height	152.4 cm (7.77)	153 cm	0.163
Body Mass Index	21.2 (19.48)	20	0.611

Table II: Relationship of Physical Activity level with dysmenorrhoea (N = 39)

Physical Activity level	Dysmenorrhoea						p value
	Yes		No		Total		
	f	%	f	%	f	%	
Seldom (<3 times a week)	18	75	6	25	24	100	0.0234 ($\alpha = 0,05$, $df = 3$)
Often (≥ 3 times a week)	6	40	9	60	15	100	
Total	24	61.5	15	38.5	39	100	

Women who do regular exercise at least 30–60 minutes every 3–5 times per week can prevent dysmenorrhoea. If women regularly exercise, women can provide oxygen for almost 2 times per minute so that oxygen is conveyed to vasoconstriction blood vessels. Women can take a leisurely walk, light jogging, swimming, gymnastics or cycling according to their respective conditions.⁶

On the other hands, exercising three days before the beginning of menstruation increases the flow of pelvic blood, disrupting the accumulation of prostaglandins in this part of the body and thus delay the emergence of pain. Exercise during menstrual pain also leads to the transfer of excess substances and prostaglandins which are faster than the uterus, which is the main factor responsible for menstrual pain, and thus reduce the duration of pain during menstruation.⁷

MATERIALS AND METHODS

This type of research used observational analytic methods with cross-sectional design to find out the relationship between Physical Activity level and the incidence of dysmenorrhea in young women at SMP Negeri 16 Padang. The research was conducted at SMP Negeri 16 Padang from July to September 2022. The population of this study was 116 peoples spread across 9 classes with varying numbers.

According to Arikunto in Rahmadi the sample is part of the number and characteristics possessed by the population. According to Arikunto in Rahmadi says that if the subject is less than 100, then the entire population becomes the research sample, but if the subject is more than 100 then you can take 10-15% or 15-25%. But, in this research, sampling was taken as much as 30% of the total population, because if researcher took 25% from population, the sample size was too small or less than 30, so that the researcher took 30% sample size from population and 10% added of sample for drop out. So, this research obtained as many as 39 people.⁸ The sampling technique used is Proportional Random Sampling, by dividing the number of students per class by the number of all students and then multiplying by the required number of samples. This study has received a letter of ethical

clearance with number 952/UN.16.2/KEP-FK/2022 from the Research Ethics Commission of Andalas University.

Information collected include physical activity, incidence of dysmenorrhoea and also characteristic of respondent such as age, menarche age, body weight, height, and body mass index. The incidence of dysmenorrhea is pain in the lower or middle abdomen, sometimes even up to the hips, thighs and back that is felt by young women during menstruation. Menstrual pain was measured using a visual pain scale. Interviews were conducted with respondents. Assessment of pain scale using the Visual Analog Scale. The researcher showed an analogy of the face when feeling pain. Respondents put a tick mark on the picture according to what the respondent felt when she felt dysmenorrhea. Expressed often if the pain score is more than 5, sometimes if the pain score is less than 5.

Physical activity level is stated as one of the relaxation techniques that can be used to reduce pain by doing sports. Researchers collect data by conducting interviews with respondents. Classified as seldom exercising if less than 3 times a week, often if exercising 3 or more times a week. Respondent Physical Activity are carried out using the IPAQ (The International Physical Activity Questionnaire) which is a standard questionnaire to assess one's Physical Activity. The amount of physical activity level performed can be measured using the International Physical Activity Questionnaire (IPAQ). The IPAQ questionnaire has been translated into Indonesian and tested for validity and reliability in 14 places and 12 countries. The validity and reliability values of this questionnaire are 0.30 and 0.80. So this questionnaire has been used internationally as an instrument to measure physical activity in adults between 15-49 years old. The advantage of the IPAQ questionnaire is that physical activity is described as not only exercising, such as physical activity at leisure, homework, physical activity related to work or physical activity related to movement/transport in the last seven days.^{9,10} The instrument's reliability and validity have been widely examined. The IPAQ Indonesian version has a high test-retest reliability of 0.884 and a validity correlation with

accelerometers of 0.00. The reliability tests validate the instruments' application in Indonesian adults.⁹

After that, all statistical research tests had carried out IBM SPSS statistics 26. Data analysis was performed using univariate and bivariate analysis. Bivariate analysis was performed using the chi square test with a 95% degree of confidence.

RESULTS

Based on the results of the research that has been carried out, the following results are obtained in table I. It was found that the average age of respondents was 14.54 years, experienced menarche at the age of 12.51 years, the average weight of 49.6 kg with an average height of 152.4 cm and with an average of IMT 21.2.

The relationship between physical activity level and dysmenorrhoea could be seen in Table II. The 24 respondents who rarely exercise, as many as 75% of respondents experienced dysmenorrhoea and of 15 people who exercise, 60% of respondents did not experience dysmenorrhoea with p value of 0.0234 $\alpha = 0.05$, $df = 3$. From the analysis results, the value of OR = 4.500 was also obtained, meaning that respondents who did not exercise regularly had a 4.5 times chance of experiencing dysmenorrhea compared to respondents who did regular exercise.

DISCUSSION

Based on table 1, it was found that the average age of the respondents was 14.54 years, the average age of menarche was 12.51 years, the average body weight was 49.6 kg, the average height was 152.4 cm and the average BMI was 21,2. The relationship between the characteristics above and the incidence of dysmenorrhea, none of the characteristic variables has a significant relationship with dysmenorrhea. Several studies have also found the same thing, that menarche age and nutritional status (BMI) have no relationship with dysmenorrhea.^{11,12} One of the reasons is differences in nutritional intake in adolescents that affect adolescent health. Hong Ju, Mark Jones in his research found that dysmenorrhea was inversely related to age, parity or number of live births, and use of oral contraceptives; and dysmenorrhea is positively associated with stress related to work and general life, as well as with a family history of dysmenorrhea.¹³ Based on the above research, it can be assumed that there is no relationship between the characteristic variables of age, age at menarche, weight, height and body mass index with dysmenorrhea.

The results of this study are in also same with the study from Taqiyah, et al which showed that out of 50 female students, 22 female students (22.0%) experienced mild dysmenorrhea where, 13 female students (90.9%) had adequate exercise habits while 9 female students (7.1%) had lack of exercise habits, while 19 female students (38.0%) experienced moderate dysmenorrhea where 16 female students (64.3%) had less exercise habits and 3 female students (4.5%) had moderate exercise habits sufficient, while the remaining 9

students (18.0%) experienced severe dysmenorrhea including 7 female students (28.6%) have less exercise habits and 2 female students (4.5%) have sufficient exercise habits. Based on the results of the analysis using the chi square statistical test, the value of $p: 0.000$ is obtained shows $p < \alpha (0.05)$, this means that there is a significant relationship between exercise habits less on the incidence of primary dysmenorrhea. There are several reasons people do not exercise regularly, two of them are the reasons for time and also costs. Costs are also often used as an excuse because of the assumption that serious sports require equipment that is not cheap. Though many sports do not require certain tools and places.^{14,15}

Most young women in SMP N 16 Padang City experience dysmenorrhoea. The results of this study are in line with the results of research from Fachruddin that most subjects experience primary dysmenorrhoea (69.1%), especially level 1 (49.5%), namely activities rarely disrupted, no systemic symptoms and rarely need analgesics.¹⁶

This increase results in uterine contractions and vasoconstriction of blood vessels, and the bloodstream that leads to the uterus decreases so that the uterus does not get an adequate oxygen supply, causing pain. So, young women should know how to decrease dysmenorrhoea.^{17,18} The results of this study are the same as being found in his research. There is an influence of exercise habits on the incidence of menstrual pain. This can be seen from the results of the statistical test which shows the p value = 0.000¹⁸

This study also had the same result from Tabrizi, et al that exercise is generally believed to relieve the symptoms of dysmenorrhea. One plausible explanation is that aerobic exercise is effective through shunting the blood flow away from the viscera, resulting in less blood con gestion in the pelvic area during the menstrual phase. Kazama et al. found that higher levels of sports activities were significantly related to a lower prevalence of severe dysmenorrhea (adjusted P for trend=0.045)⁵.

Women who do regular exercise at least 30–60 minutes every 3–5 times per week can prevent dysmenorrhoea. If women regularly exercise, women can provide oxygen for almost 2 times per minute so that oxygen is conveyed to vasoconstriction blood vessels. Women can take a leisurely walk, light jogging, swimming, gymnastics or cycling according to their respective conditions.⁶

Exercising 3 days before the beginning of menstruation increases the flow of pelvic blood, disrupting the accumulation of prostaglandin in this part of the body and thus delaying the emergence of pain. Exercise during menstrual pain also leads to the transfer of excess substances and prostaglandins which are faster than the uterus, which is the main factor responsible for menstrual pain and thus reduces the duration of pain during menstruation. Teenagers who rarely exercise have a chance of 1.2 times greater risk of having dysmenorrhoea than teenagers who often exercise. Endorphins are produced in the brain and spinal cord marrow.^{14,18,20}

A literature review from Rijanto, et al. that during adolescence there is a process of maturation of the reproductive organ system. So that the oxygen supply must also be met. Lack of physical activity will reduce the distribution of oxygen in the systemic circulation, thereby increasing a person's perception of pain, including dysmenorrhea. Adolescents with low levels of physical activity tend to be more at risk for more severe dysmenorrhea. On the other hand, adolescents who do regular physical activity can improve the working system of blood vessels so that they can reduce pain complaints and increase physical fitness. Based on this, it can be seen that the more routine a person does physical activity, the more likely it is to prevent or minimize the occurrence of dysmenorrhea. Exercise is a non-pharmacological management that is safer to use because it uses physiological processes.²¹

The present study has several limitations. First, the study used a cross-sectional design, which cannot determine causal relationships. In the context of this study, for example, the identified risk factors may have been caused by dysmenorrhea symptoms. A longitudinal study should be conducted to address this issue. Second, the participation rate was not sufficiently high, and thus generalization of our results should be made with caution. For example, it is possible that girls without dysmenorrhea may not have been interested in participating in the study. These methodological limitations should be addressed in future studies. Finally, we could not differentiate between primary and secondary dysmenorrhea, although secondary dysmenorrhea in adolescence is considered rare. This study requires further research related to other factors that can influence the events of dysmenorrhoea such as menstrual period, family history, nutritional status, sleep hours, and other factors.

CONCLUSION

From this study, it can be concluded that there is a significant relationship between physical activity level and dysmenorrhoea. Doing Sports is one of method to decrease or prevent dysmenorrhea especially in young women, because nowadays teenagers prefer to use gadget for long times and lack to do sports. So that, it make dysmenorrhea could be happened.

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CONFLICT OF INTEREST

Conflicts of interest have not been disclosed by any authors.

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