Original Article

Effect Of Chocolate and Exercise on Reducing Menstrual Pain (Dysmenorrhea) In Adolescent

Soerjo Hadijono[1,2]

[1] *Bunda Semarang Hospital, Central Java, Indonesia*
[2] *STIKES Guna Bangsa Yogyakarta, Indonesia*

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ABSTRACT

Background: The problem of adolescent reproductive health is still a problem that needs attention. Many women experiences discomfort at the onset of menstruation, one of which is dysmenorrhea. Various attempts were made to relieve these symptoms is by acts of non-pharmacological such as exercise and giving chocolates. Purpose of this study was to determine the effect of the combination of chocolate and exercise to decrease menstrual pain (dysmenorrhea) in adolescents in SMPN 1 Bangkalan

Methods: This method uses a method Quasi Experiment using a control time series design. The population in this study were students of SMP Negeri 1 Bangkalan who experienced dysmenorrhea. The sampling technique used in this study was simple random sampling with inclusion and exclusion criteria of 54 respondents who were divided into two groups with 27 respondents in each group.

Results: The results showed that there was an effect of exercise and chocolate on decreasing menstrual pain with a sig value of 0.050 0.05 and an OR value of 5.263. In addition, there are also other factors that influence the decrease in menstrual pain, namely BMI with a sig value of 0.032 0.05 and an OR value of 0.214.

Conclusion: there is an effect between the combination of exercise and chocolate in reducing menstrual pain (dysmenorrhea).

Corresponding Author Contact:
Soerjo Hadijono
Email: soerjoh@gmail.com

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Introduction

The problem of adolescent reproductive health is still a problem that needs attention. Adolescent reproductive health is not only a sexual problem but also involves all aspects of reproduction, especially for young women who later become women who are responsible for their offspring. An understanding of menstruation is very necessary to be able to encourage adolescents who experience menstrual disorders to know and take the best attitude regarding the reproductive problems they experience (Herawati, 2017; Rahmadhayanti et al., 2017)

Dysmenorrhea is severe pain before or during menstruation that forces the sufferer to rest and leave work or daily life for several hours or days (Dhyana, 2019; Fitria & Haqqattiba'ah, 2020). Dysmenorrhea affects more than half of menstruating women, and its prevalence varies widely. According to data from WHO, there were 1,769,425 people (90%) of women who experienced dysmenorrhea

with 10-15% experiencing severe dysmenorrhea. In Indonesia, the incidence of dysmenorrhea is 107,673 people (64.25%), consisting of 59,671 people (54.89%) experiencing primary dysmenorrhea and 9,496 people (9.36%) experiencing secondary dysmenorrhea (Calis, 2017). In East Java, the number of productive young women aged 10-24 years is 56,598 people. Meanwhile, those who experience dysmenorrhea and come to the obstetrics department are 1.31% (BPS East Java, 2010).

Various treatment efforts have been made to relieve pain symptoms, both pharmacologically and non-pharmacologically. One of the non-pharmacological efforts to reduce menstrual pain is to consume foods that stimulate the release of endorphins and serotonin and contain calcium, one of which is chocolate. This food ingredient is favored by many people, especially in adolescents, in addition to its delicious taste, it also contains tryptophan which can stimulate the release of serotonin which works to inhibit pain pathways in the spinal cord and contains carbohydrates when consumed will produce endorphins which can activate the analgesia system of the brain by inhibiting prostaglandins (Khonsary, 2017). Several studies also mention the relationship of several nutrients with a decrease in the level of dysmenorrhea (Armour et al., 2019; Barcikowska et al., 2020; Bernardi et al., 2017). Nutrients that can help relieve dysmenorrhea are calcium, magnesium and vitamins A, E, B6, and C (Smeltzer, 2014). Chocolate is rich in calcium, potassium, sodium, magnesium and vitamins A, B1, C, D, and E. Magnesium is useful for relaxing muscles and can provide a sense of relaxation that can control a moody mood. Magnesium functions to enlarge blood vessels, thereby preventing muscle spasms and blood vessel walls. Magnesium serves to relieve dysmenorrhea or pain during menstruation

Based on research conducted by Glacier at the University of Maryland Medical Center, women who consume 500 ml of calcium per day experience a decrease in pain during menstruation by up to 30%, easily absorbed calcium can help reduce dysmenorrhea). School of Medicine, California University, stress levels can be minimized or even eliminated with chocolate. This is because chocolate contains psychoactive molecules that can make chocolate eaters feel comfortable. Some of the content of chocolate such as caffeine, theobromine, methyl-xanthine, and phenylethylalanine is believed to improve mood and reduce fatigue so that it can be used as an antidepressant. Chocolate can relieve menstrual pain because it has various ingredients that are efficacious as anti-pain (Adytia, 2020; Arfailasufandi & Andiarna, 2018; Wahyuni, 2018; Zolekhah & Utami, 2021).

In addition to giving chocolate, non-pharmacological therapy to treat pain is exercise. Many researchers say exercise can overcome dysmenorrhea and exercise is safer and does not contain side effects because it uses the body's physiological processes. This is supported by the results of research which states that physical exercise (exercise) can increase blood flow in the pelvis and stimulate endorphins in the body to have an impact on reducing pain scale. According to there is physical exercise that can be used to reduce dysmenorrhea during menstruation, namely by doing Abdominal Stretching Exercise which is a physical exercise to stretch the abdominal muscles which is carried out for approximately 10-15 minutes to increase muscle strength, endurance and muscle flexibility. can reduce the pain of dysmenorrhea in adolescents (Dita, 2019; Nuralam et al., 2020; Partiwi & Mustary, 2021).

The instrument in this study was an observation sheet using the Smeltzer SC pain scale. Bane used to measure menstrual pain before and after being given treatment in the treatment group and different treatments in the control group. The instrument used for chocolate therapy uses dark chocolate weighing 7 grams per bar, with a dose of 20 grams per day in the two weeks before menstruation. The instruments used for exercise are SOP abdominal stretching and checklist sheets. The analysis used univariate and bivariate analysis to determine the effect of treatment on menstrual pain.

Method

This method uses a method Quasi Experiment using a control time series design. The population in this study were students of SMP Negeri 1 Bangkalan who experienced dysmenorrhea. The sampling technique used in this study was simple random sampling with inclusion and exclusion criteria of 54 respondents who were divided into two groups with 27 respondents in each group (Sugiono, 2009).

Results

From the results of univariate analysis related to the characteristics of the respondents, the following results were obtained:

Table 1. Distribution of Respondents Characteristics

Variables	Group				Homogeneity
	Intervention		Control		
	n	%	n	%	
Age					
11-13 years	2	7.4	7	25.9	0.000
14-16 years	15	92,	20	74.1	
Age at menarche					
< 12 years	11	40.7	8	29.6	0.402
12 years	16	59.3	19	70.4	
BMI					
Skinny	6	22.2	15	55, 6	
fat	3	11.1	2	7.4	0.256
Ideal	18	66.7	10	37	
Family					
History	21	77.8	12	44.44	0.002
No history	6	22.2	15	55,	
History of menstrual pain intensity					
Often	11	40.7	6	22.2	0.0007
Sometimes	16	59.3	21	77.8	
Complaints during menstrual pain					
Abdominal pain	13	48.1	14	51.9	
Cramps	3	11.1	3	18.5	0.590
Back pain	9	33.3	9	22.2	
Nausea	2	7.4	2	7.4	

Table 2 Pain Characteristics of Respondents Before and After Treatment

ofGroup	Dysmenorrhea											
	Pre-Test						Post Test					
	Mild		Moderate		Severe		Mild		Moderate		Severe	
	N	%	N	%	N	%	N	%	N	%	N	%
Experiment	18	66.7	8	29.6	1	3.7	26	96.3	1	3.7	-	-
Control	16	55.3	8	29.6	3	11.1	24	88.9	1	3.7	2	7.4

Based on table 2 it can be seen that pain in the post test control group still has severe pain of 7, 4% compared to post-test pain in the experimental group

Table 3 The Relationship between Chocolate and Exercise Giving to Decrease Menstrual Pain in

	Dysmenorrhea				Sig.
	Pain is reduced		Pain remains		
	N	%	N	%	
Experiment	25	92.6	2	7.4	0.036
Control	19	70.4	8	29.6	

Based on table 3 it is known that the chi square test statistic produces a probability of 0.036 (<0.05) so it can be concluded that there is a relationship between the treatment group and the decrease in menstrual pain.

Discussion

The occurrence of dysmenorrhea can be influenced by several factors including age, body mass index, age at menarche, family history

The results of this study indicate that most of the respondents experienced menarche at the age of 12 years, while the age of the respondents was mostly in the range of 14-16 years, which means that the respondents were middle teens and were in the 1–2-year period after the first menstruation. In adolescents who are still 1-2 years old, the cervix is different from women who are adults. In women the older the age, the more frequent menstruation occurs so that the cervix becomes wider, so that in old age the incidence of dysmenorrhea is rarely found.

From the results of the study, it was found that respondents who had a normal BMI still experienced dysmenorrhea. This is because it is not only nutritional status that affects dysmenorrhea. In respondents with normal BMI, dysmenorrhea can be influenced by other factors such as age at menarche, family history, 1-2 years after menarche. In addition, students with low pain resistance even though they only experience little or mild pain will feel more pain than students with high pain resistance .

Based on pain intensity, 59.3% of respondents in the experimental group and 77.8% of respondents in the control group experienced pain sometimes with a homogeneity value of 0.007 <0.05, which means the pain intensity of these respondents was homogeneous. Pain experienced intermittently during dysmenorrhea (Herawati, 2017). This is similar to the results of Karim (2015) who found that dysmenorrhea began to occur

24 hours before menstrual bleeding and could last for 24-36 hours even though the severity only lasted for the first 24 hours when menstrual bleeding occurred. In his research, Karim said that more than 50% of respondents experienced pain for less than 2 days. Which states that pain occurs before menstruation, or at the beginning of menstruation. Lasts a few hours, but sometimes days. Pain that occurs before menstruation can be overcome so that it does not become heavy at the beginning of menstruation.

Stretching or stretching is the simplest physical activity. Muscle stretching is a physical exercise to maintain and develop flexibility or flexibility. Muscle stretching exercises can also improve posture and avoid pain in the neck, shoulders and waist. The purpose of muscle stretching exercises is to help increase oxygenation or the process of exchanging oxygen and carbohydrates in cells and to stimulate the flow of the lymph system so that it can increase muscle flexibility by restoring the muscles and maintaining their function properly (Rahmadhayanti et al., 2017). Adolescents with dysmenorrhea will experience cramps during menstruation, especially in the lower abdomen which is chronic and cyclic. Spasmodic pain associated with menstruation without any pathological indications. Abdominal muscle stretching exercises help increase blood perfusion to the uterus and relax the uterine muscles, so that anaerobic metabolism does not occur which will produce lactic acid. Because lactic acid is not formed, the pain impulses received by type C nerve fibers are inadequate. So that the pain impulse received by type C pain fibers is inadequate, substance P is not secreted and the substantia gelatinosa gate (SG Gate) does not open so that there is no decrease in pain intensity information that will be perceived in the cerebral cortex (Khonsary, 2017).

With a combination of exercise and chocolate, the pain experienced by the respondents was reduced by 93% on the third day. The combination of magnesium and iron also has an effect on the uterine muscle relaxation process. Magnesium is the fourth most abundant mineral in the body and is essential for health. Magnesium is able to relax muscles and can and can control mood. It also enlarges blood vessels so as to prevent muscle spasms and blood vessel walls. Meanwhile, the iron in dark chocolate is a cofactor for the enzyme tryptophan hydrooxylase which triggers the release of serotonin, thereby inhibiting pain pathways in the spinal cord. Therefore, magnesium serves to relieve dysmenorrhea or pain during menstruation.

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Conclusion

Conclusion of this study is that there is a significant effect of giving a combination of chocolate and exercise on reducing menstrual pain. In this study, the respondent's pain intensity before being treated was severe pain. After being given treatment, the intensity decreased to mild pain. The results of this study can be used as a reference not only for health workers and adolescents who experience dysmenorrhea but also for further research. The next researcher can conduct research with a larger and varied sample on the combination of treatment in reducing the intensity of menstrual pain

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