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THE EFFECTIVENESS OF EXERCISE MODIFICATION "KAK ERFITA" ON REDUCTION OF MENSTRUAL PAIN (DISMENORE) ADOLESCENTS IN ONE OF JUNIOR HIGH SCHOOL IN SOUTH JAKARTA 2019

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Abstract— There are various complaints or problems during menstruation that are usually experienced by a woman, but the most problem was discomfort or intense pain, this was commonly called dysmenorrhea or menstrual pain. Exercise was a non-pharmacological method to reduce dysmenorrhea pain. The purposed of this study was to examine the effectiveness of exercise modification "KakErfita" on reducing menstrual pain (dysmenorrhea) in adolescents. The design of this study was a quasi-experimental with the pretest-posttest control group design technique. The research subjects were adolescent at one of junior high school in South Jakarta in 2019. The results showed that there was a significant influence on the intervention group compared to the non-intervention group in cycle I with a value of $p = 0.037$ ($p < 0.05$) and there was also a significant influence in cycle II with a value of $p = 0.018$ ($p < 0.05$). "KakErfita" exercise modification to reduce menstrual pain. The more often the exercise "KakErfita" was carried out, the lower level of menstrual pain will be felt. Exercise "KakErfita" can be a routine sports activity at school to reduce menstrual pain in adolescents.

Keywords: Dysmenorrhea, Exercise, Adolescents.

Introduction

Dysmenorrhea is a very prominent physical disorder in women who experience menstrual bleeding. The main manifestation of dysmenorrhea is cramping pain (tension) in the abdominal area, which starts 24 hours before menstruation and can last for 24 - 36 hours, although the severity only lasts for the first 24 hours on menstruation (Lentz GM, Lobo RA, Gershenson DM, 2012). Menstruation usually occurs at 11 years and lasts until menopause at 45 - 55 years (Benson, 2009).

During menstruation there was various complaints or problems that were usually experienced by a woman, but the most problem was discomfort or intense pain, this was commonly called dysmenorrhea or menstrual pain. Research in various countries showed the prevalence of adolescents experiencing dysmenorrhea was quite large, for example in Pakistan 78%, Turkey 84%, Iran 91%, Oman 94%, and Korea 59.8%. In Indonesia, the prevalence of dysmenorrhea has never been reported, but in some areas the number of adolescents experiencing dysmenorrhea was quite large, for example in Central Jakarta 87.5% of adolescents with dysmenorrhea were found, and 96.41% of adolescents at one of senior high school in Cimahi were found. , in Surabaya 71.3%, and adolescents in one of senior high school in Kendari by 90.3%(Nurwana, Sabilu and Andi Faizal Fachlevy, 2017; Proverawati and Misaroh, 2017).

Dysmenorrhea during menstruation was caused by a decrease in the hormone progesterone and the release of arachidonic acid cyclooxygenese-2 (COX-2). COX-2 stimulates an increase in prostaglandin F2α (PG-F2 α) and luecotrienes in the endometrium. PG-F2αtriggers an inflammatory response resulting in increased myometrial contractility. Increased myometrial contraction cause myometrial ischaemia. Myometrium that is ischemic causes pain during menstruation (Lentz GM, Lobo RA, Gershenson DM, 2012). Apart from menstrual pain, there are also other biological symptoms, such as sweating, tachycardia, headache, nausea, vomiting, diarrhea, and tremble(Lentz

GM, Lobo RA, Gershenson DM, 2012; S., I. and F.C., 2015). Apart from causing health problems, dysmenorrhea can also affect the quality of life and decrease the productivity of adolescents.(Ju, Jones and Mishra, 2014; Potur, Bilgin and Komurcu, 2014; S., F.C. and I., 2014; S., I. and F.C., 2015).

Factors influenced dysmenorrhea were younger age, low body mass index (BMI), smoking, early menarche, prolonged or deviated menstrual flow, perimenstrual somatic complaints, pelvic infection, sterilization, somatization, psychological disorders, genetic, and a history of sexual violence affecting the prevalence and severity of dysmenorrhea. Several studies suggest that exercises could reduce dysmenorrhea were aerobic exercise, muscle strengthening, stretching and muscle relaxation techniques, yoga and jogging. The result of relaxation decreased activity of the sympathetic nervous system and a reduction in pain. Relaxation also diverted attention from pain and provides tools to control pain and reduce negative emotions with pain or injury. Exercise was done for 10 minutes and done regularly in 3 times a week showed significant results for reducing dysmenorrhea (Gamit, Sheth and Vyas, 2014; Kannan and Claydon, 2014; Kannan *et al.*, 2015; Ortiz *et al.*, 2015; Shirvani, Motahari-Tabari, 2017).

Several studies have examined the effects of exercise intervention on pain reduction. Aerobics, jogging, yoga and muscle relaxation had been shown to reduce menstrual pain. Researchers intend to rearrange a series ofexercise that could reduce menstrual pain, which was named "KakErfita". and analyzed the effect of the "KakErfita" exercise movement on reducing menstrual pain (dysmenorrhea) in adolescents, so that it could be used as information and options in dealing with menstrual pain (dysmenorrhea).

Methods

This study used a quasi-experimental pre-post test control group design. The sample consisted of 60 consisting of the intervention group who gave exercise modification "KakErfita" and the control group were adolescents who were present at the time of the intervention but did not exercise. Measurement of the level of menstrual pain using the Visual Analogic Scale (VAS) pain scale in the sample was carried out before and after intervention for two menstrual cycles. Inclusion criteria were healthy, normal body mass index, willingness to be a respondent, suffering primary dysmenorrhea, aged more 12 years old and exclusion criteria namely suffering from pelvic inflammatory disease such as endometriosis, cysts, or still getting treatment of a disease or taking medication from a doctor. The first measurement (cycle I) was carried out 4 weeks after the intervention and the second measurement (cycle II) was carried out after 4 weeks from the first cycle. The research instrument used an observation sheet and checklist of exercise movement "kakerfita". Data processing used computer software and bivariate analysis for menstrual pain before and after treatment.

Result

Table 1. Distribution of characteristics of all respondents in a junior high school in South Jakarta, 2019

Variable	Mean	Median	SD	Min-Maks
Age	13.15	13	1.12	11-16
BMI	21,14	21.10	2,69	17-28
The Pain level before intervention	5.07	4.00	2.53	2-12
The Pain level after intervention cycle 1	3.57	4.00	2.36	0-10
The Pain level after intervention cycle 2	1.9	2.0	2.2	0-8

Based on table 1, the average age of adolescents was 13 years with the youngest 11 years old and the oldest age was 16 years. The average BMI of adolescents studied was 21.14 with the lowest BMI was 17 and the highest was 28. Based on the level of pain, before the intervention the average pain felt by adolescents was 5.07 with the lowest pain intensity was 2 and the highest was 12. After Intervention was carried out for 4 weeks (cycle I) the average pain level in all respondents was 3.57 with the lowest intensity 0 and the highest was 10. Furthermore, after the intervention for 4 weeks from cycle I (cycle II), the pain level of the respondents was 1,9 with the lowest intensity 0 and the highest 8.

Table.2 Differences level of menstrual pain in cycle I and cycle II

Variabel	Intervention			Non-intervention		
	Mean	SD	95% CI	Mean	SD	95% CI
Menstrual pain cycle 1						
Before	4.93	2.66	3.93-5.92	5.20	2.44	4.29-6.11
After	2.93	2.65	1.93-3.92	4.20	1.84	3.51-4.89
Menstrual pain cycle 2						
Before	4.93	2.66	3.93-5.92	5.20	2.44	4.29-6.11
After	1.27	2.26	0.42-2.11	2.60	1.97	1.86-3.34

Based on the table above, it showed the average level of menstrual pain after given the exercise intervention "KakErfita" (Cycle I) was smaller than before the intervention. The average menstrual pain before the intervention was 4.93 with SD 2.66, while after the intervention it was 2.93 with SD 2.65. Meanwhile, the non-intervention group showed the mean level of menstrual pain after exercise in (Cycle I) was smaller than before the intervention. The average menstrual pain before the intervention was 5.20 with SD 2.44, while after intervention it was 4.20 with SD 1.84.

The average level of menstrual pain after given the exercise intervention "KakErfita" (Cycle II) was smaller than before the intervention. The average menstrual pain before the intervention was 4.93 with SD 2.66, while after intervention it was 1.27 with SD 2.26. Meanwhile, the non-intervention group showed that the average level of menstrual pain after exercise (cycle II) was smaller than before the intervention. The mean menstrual pain before the intervention was 5.20 with SD 2.44, while after intervention 2.60 with SD 1.97.

Table 3 Analysis differences levels of menstrual pain before and after exercise "KakErfita" in cycle I and II

Group	Mean	SD	Different Mean	p value
Menstrual Pain Cycle I				
Intervention				
Before	4.93	2.66	2.00	0.000
After	2.93	2.65		
Non-Intervention				
Before	5.20	2.44	1.00	0.059
After	4.20	1.84		
Menstrual Pain Cycle II				
Intervention				
Before	4.93	2.66	3.66	0.000

After	1.27	2.26		
Non-Intervention				
Before	5.20	2.44	2.60	0.000
After	2.60	1.97		

*p value signifikan< 0,05

Based on table 3, it was known that there was a significant increased in the mean level of menstrual pain before and after given the "kakerfita" exerciseintervention in the intervention group (cycle I) with a mean difference of 2.00. The statistical test value also proved that there was a significant difference in the mean before and after the intervention was given (p value = 0.000). Meanwhile, the results of statistical analysis also showed that in the non-intervention group, the mean level of menstrual pain before and after increased with a mean difference of 1.00 (cycle I). This value means that there is a slight increase in the mean before and after the study. However, the statistical test value showed that there was no significant difference in the non-intervention group respondents (p = 0.059).

Based on table 3 in cycle II, it was known that there was a significant increased in the mean level of menstrual pain before and after given the "kakerfita" exercise intervention in the intervention group with a mean difference of 3.66 (cycle II) . The statistical test value also proved that there was a significant mean difference before and after the intervention was given (p value = 0.000). Meanwhile, the results of statistical analysis also showed the mean level of menstrual pain in the non-intervention group before and after (cycle I) increased with a mean difference of 2.60. This value meant that there was a slight increased in the mean before and after the study and the value of the statistical test showed that there was a significant difference in the non-intervention group respondents (p = 0.000).

Table 4 Differences level of menstrual pain (before, after the intervention cycle I, and after the intervention cycle II) in the intervention and non-intervention groups.

Menstrual Pain		**Mean**	**SE**	**P-value**	**95%CI**
Intervention Group					
Before intervention	After intervention cycle I	2.00	0.65	0.003	0.70-3.30
	After intervention cycle II	3.66	0.65	0.000	2.37-4.97
After intervention cycle I	Before intervention	-2.00	0.65	0.003	-3.30-0.70
	After intervention cycle II	1.66	0.65	0.013	0.37-2.97
After intervention cycle II	Before intervention	-3.66	0.65	0.000	-4.97- **-2.73**
	After intervention cycle I	-1.66	0.65	0.013	-2.97- **-0.37**
Non-Intervention Group					
Before intervention	After intervention cycle I	1.00	0.54	0.069	-0.08 – 2.08
	After intervention cycle II	2.60	0.54	0.000	1.52 – 3.68
After intervention cycle I	Before intervention	-1.00	0.54	0.069	-2.08 – 0.08
	After intervention cycle II	1.60	0.54	0.004	0.52 – 2.68
After intervention	Before intervention	-2.60	0.54	0.000	-3.68- **-1.52**
	After intervention cycle I	-1.60	0.54	0.004	-2.68- **-0.52**

cycle II

In the intervention group, the results of the post hoc test showed that the lowest level of pain was after doing KakErfita's exercise in cycle II, then after in cycle I. The difference in the level of menstrual pain between after the intervention in cycle II and before the intervention was -3,66. The difference in the level of menstrual pain between after the intervention in cycle II and after the intervention in cycle I was -1.66. and The difference in the level of menstrual pain between after the intervention in cycle I and before the intervention of -2,00.

In the non-intervention group, the results of the post hoc test showed that the lowest pain level was after exercise in cycle II, then after in cycle I, and the highest pain level was before the intervention. The difference in the level of menstrual pain between after the intervention in cycle II and before the intervention was -2,60. The difference in the level of menstrual pain between after intervention in cycle II and after intervention in cycle I was -1,60. and Thedifference in the level of menstrual pain between after the intervention in cycle I and before the intervention was -1,00.

Table 5 Analysis Effect of Exercise Modification "KakErfita" on Adolescents

Variables	Group	Mean	SD	p value
Menstrual Pain Cycle I	Intervention	2.93	2.65	
	Non- Intervention	4.20	1.84	0.037
	Difference	1.27	0.81	
Menstrual Pain Cycle II	Intervention	1.27	2.26	
	Non- Intervention	2.60	1.97	0.018
	Difference	1.33	0.29	

Based on table 5, it was known that the mean level of menstrual pain in the intervention group respondents after being given the exercise intervention "KakErfita" was 2.93 with a variation value of 2.65 than the mean of respondents in the non-intervention group, namely 4.20 with a variation value of 1.84. There was a difference mean between after being given the intervention of 1.27 and the difference in the value of variation is 0.81. The results of the analysis showed that there was a significant effect on the intervention group compared to the non-intervention group in the first cycle with p value = 0.037 ($p < 0.05$).

The results of the analysis in cycle II noted that the mean level of menstrual pain in the intervention group respondents after being given the exercise intervention "KakErfita" was 1.27 with a variation value of 2.26 than the mean of respondents in the non-intervention group, namely 2.60 with a variation value of 1.97. This meant that there was a difference between the mean after being given the intervention of 1.33 and a difference in the value of variation of 0.29. The results of the analysis showed that there was a significant effect on the intervention group compared to the non-intervention group in cycle II with a value of $p = 0.018$ ($p < 0.05$)

Discussion

Based on the study showed that there was an effect of the exercise intervention " KakErfita" on reducing dysmenorrhea pain in adolescents. This was caused the exercise "kakErfita" could reduce dysmenorrhea pain in adolescents. In the statistical test results above the value of $P = 0.001$ ($P < 0.05$) with these results it could be concluded that there was an effect of exercise modification "kakErfita" on reducing pain (dysmenorrhea). There were many ways that could be done to deal with and cure

menstrual pain, one way was to pay attention to menstrual patterns and cycles and then anticipate so as not to experience menstrual pain. Increasing the level of health for endurance, for example doing adequate and regular exercise and providing adequate time to rest. Adequate and regular exercise could increase levels of endorphins which act as natural pain killers. Taking time could make the body less prone to pain.

Exercise was a non-pharmacological therapy that could reduce pain intensity. Several studies suggest that exercises that could reduce dysmenorrhea were aerobic exercise, muscle strengthening, stretching and muscle relaxation techniques, yoga and jogging. The result of relaxation was decrease in the activity of the sympathetic nervous system and a reduction in pain. Relaxation also served to divert attention from pain and provided tools to control pain and reduce negative emotions that accompany pain or injury. Exercise that was done for 10 minutes and done regularly in 3 times a week shows significant results in reducing dysmenorrhea. (Gamit, Sheth and Vyas, 2014; Kannan and Claydon, 2014; Kannan *et al.*, 2015; Ortiz *et al.*, 2015; Shirvani, Motahari-Tabari, 2017)

The benefits of modifying the exercise modification "kakErfita" include helping to strengthen the muscles in the abdominal area, hips and thighs. Strengthening muscles could block painful stimulation. Modification of exercise was also beneficial in relaxation and reducing pain awareness by increasing blood flow to the area of pain, stimulating sensory receptors in the skin and muscles underneath, providing a positive mood, increasing local circulation, stimulating the release of endorphins, decreasing endogenous catecholamines, stimulating efferent fibers resulting in blocks of pain stimuli.

Conclusion

Exercise modification "KakErfita" to reduce menstrual pain. The level of menstrual pain was lowest after exercise was done for 8 weeks. The more frequent exercise "Sis Erfita" was practiced, the more level of menstrual pain was reduced. Exercise "KakErfita" could be a routine exercise activity at school to reduce menstrual pain in adolescents.

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