

THE EFFECT OF ABDOMINAL STRETCHING EXERCISES ON DYSMENORRHEA DECREASE OF ADOLESCENT IN ENVIRONMENT DUSUN III, HELVETIA SUB- DISTRICT, SUNGGAL, MEDAN

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ABSTRAK

Masa remaja merupakan periode terjadinya pertumbuhan dan perkembangan yang pesat baik secara fisik, psikologis, maupun intelektual. Saat menstruasi sangat dibutuhkan perilaku menjaga kebersihan dan mencegah terjadinya nyeri pada saat menstruasi. Penelitian ini bertujuan untuk mengetahui Pengaruh Latihan Abdominal Stretching Terhadap Penurunan Nyeri Haid Remaja di Lingkungan Dusun III, Desa Helvetia, Sunggal, Medan. Desain penelitian ini adalah *Quasy Eksperimen* dengan menggunakan *Design Pretest dan Post Test*. Populasi dari penelitian adalah remaja perempuan berumur 11-16 tahun di Lingkungan Dusun III, Desa Helvetia, Sunggal, Medan. Sampel dari penelitian ini sebanyak 10 responden yang diambil menggunakan tehnik *Total Populasi*. Pengumpulan data menggunakan lembar observasi. Berdasarkan hasil uji bivariat terdapat pengaruh latihan abdominal stretching terhadap penurunan nyeri haid remaja sebelum di lakukan latihan dengan sesudah di lakukan latihan abdominal. Penelitian ini dapat dijadikan referensi dalam meningkatkan pengetahuan dan kesadaran remaja dalam melakukan pencegahan nyeri haid serta diharapkan remaja putri lebih meningkatkan lagi perilaku kebersihannya dengan lebih memperbanyak membaca buku dan mengikuti seminar Kesehatan yang diadakan.

Kata Kunci : *Latihan abdominal stretching, nyeri haid, remaja*

ABSTRACT

Adolescence is a period of rapid physical, psychological, and intellectual growth and development. Maintaining hygienic practices and preventing menstrual pain are crucial during menstruation. This study aimed to determine the effect of abdominal stretching exercises on reducing menstrual pain among adolescent girls in Hamlet III, Helvetia Village, Sunggal, Medan. A quasi-experimental design with pre-test and post-test measurements was employed. The study population consisted of adolescent girls aged 11–16 years in Hamlet III, Helvetia Village, Sunggal, Medan. A sample of 10 respondents was selected using the total population sampling technique. Data were collected using observation sheets. Bivariate analysis results indicated that abdominal stretching exercises had an effect on reducing menstrual pain when comparing pre-exercise and post-exercise levels. This study can serve as a reference for enhancing adolescents' knowledge and awareness regarding the prevention of menstrual pain; furthermore, it is hoped that adolescent girls will further improve their hygiene practices by reading more and attending health seminars.

Keywords: Abdominal stretching exercises, menstrual pain, adolescents

BACKGROUND

Humans are beings that grow and develop; adolescence is one stage of this growth and development. Differences in physical growth between males and females manifest in the development of reproductive organs, physical appearance, and body shape, resulting from the emergence of primary and secondary sexual characteristics. Adolescent females undergo both primary and secondary changes; primary sexual changes are characterized by the growth of female reproductive organs during puberty and the onset of menstruation. The menstruation experienced by adolescent females can lead to issues, one of which is dysmenorrhea (Handayani, 2022).

From a psychological perspective, adolescence is a transitional period between early childhood and early adulthood, beginning at approximately 10 to 12 years of age. Adolescence is marked by rapid physical changes, dramatic increases in weight and height, alterations in body shape, and the development of sexual characteristics (Endah et al,2024).

The Ministry of Health of the Republic of Indonesia (Kemenkes RI) defines "reproductive health" as a state of complete physical, mental, and social well-being regarding all matters related to the reproductive system, functions, and processes; it encompasses not merely the absence of disease or infirmity, but also the ability to lead a safe sexual life (Ministry of Health of the Republic of Indonesia, 2023).

Puberty is defined as the transitional period from childhood to adulthood, concluding when the ovaries begin to function. This phase is marked by the emergence of secondary sexual characteristics in females aged 8–14 years (Koes Irianto, 2022). Menstruation is the bleeding that results from the shedding of the inner uterine lining (the endometrium). The endometrial lining is prepared to receive an implanted embryo; if implantation does not occur, the lining is shed. This bleeding occurs periodically, with the interval between periods constituting a single menstrual cycle. While menstrual cycles vary among women, a normal cycle generally falls within a 21–35 day range, with an average of 28 days (Puspita, Anjarwati, 2023). A key issue for adolescent girls regarding menstruation is a lack of knowledge about the process itself and about health management during menstruation. A 2020 UNICEF study in Indonesia revealed that one in six girls missed school for a day or more due to menstruation (Erna Setyaningrum, 2024).

Research by Linda Puspita and Tuti Anjarwati (2019) demonstrated that abdominal stretching exercises influence menstrual pain intensity among adolescent girls at SMK Pelita Gedongtataan. Abdominal stretching—performed to enhance muscle strength, endurance, and efficiency—can improve fitness, optimize responsiveness, foster mental and physical relaxation, support physical development, and alleviate muscle cramps, muscle pain, and menstrual discomfort. Consequently, abdominal stretching exercises can reduce the intensity of dysmenorrhea pain (Ana Ratnawati, 2023).

Exercise is a safe, non-pharmacological management method that utilizes physiological processes. Physical exercise has been proven to increase blood endorphin levels four- to five-fold; thus, the more exercise performed, the higher the endorphin levels become. Performing abdominal stretching exercises for 10 to 15 minutes—repeated three times consecutively when pain begins—can relax uterine muscles and improve blood perfusion to the uterus (Eva, 2023).

A preliminary survey conducted in 2020 involving 12 adolescent girls in Hamlet III, Helvetia Village, Sunggal, Medan, revealed that nine of the 12 early-adolescent respondents frequently experienced dysmenorrhea (menstrual pain), while three reported having monthly periods without any associated complaints. Menstrual pain sometimes limited the girls' physical activity and interfered with their daily routines. When asked about the nature of their menstrual pain, its impact on their activities, and their knowledge of abdominal stretching exercises, the respondents described

a sensation of constriction and cramping in the lower abdomen that disrupted their activities. This pain was severe enough to cause some of the girls to miss school. These issues prompted the researcher to conduct a study on the effect of abdominal stretching exercises on reducing menstrual pain among adolescents in Hamlet III, Helvetia Village, Sunggal, Medan.

METHOD

A research design is a scientific approach to obtaining data for specific purposes and uses. The method employed in this study is the quantitative experimental method. The experimental research method is used to determine the effect of a treatment or intervention under controlled conditions. This study utilizes a quasi-experimental design, specifically a pre-test and post-test design, involving the entire population of respondents who underwent both pre-test and post-test assessments. In this design, the intervention group received the treatment; pain intensity was measured prior to the exercise and measured again after the exercise. The observations aimed to determine the effect of abdominal stretching exercises on the reduction of menstrual pain among adolescent girls in Dusun III, Helvetia Village, Sunggal, Medan. The study was conducted in Dusun III, Helvetia Village, Sunggal, Medan from June to October 2020.

The population for this study consisted of all adolescent girls aged 11–16 years experiencing menstrual pain in Dusun III, Helvetia Village, Sunggal, Medan, totaling 10 respondents. This study employed purposive sampling, selecting 10 adolescent respondents experiencing dysmenorrhea who met the following criteria: 1) Adolescents aged 11–16 years, 2) Adolescents experiencing menstrual pain during menstruation 3) Adolescents serving as the 10 respondents and the exclusion criteria for this study are: 1) Adolescents with a history of specific gynecological conditions, such as endometriosis, fibroids, etc, 2) Those who do not use pharmacological therapy for menstrual pain.

Research data analysis involves the set of numerical or categorical data resulting from the study of specific traits or characteristics. Based on the approach taken, the analysis can be categorized as follows: Univariate analysis aims to explain or describe the characteristics of each individual variable under study. In this research, the univariate analysis describes the pain levels of the respondents and bivariate analysis is a statistical method used to determine whether a significant relationship or difference exists between two variables. This study identifies differences in menstrual pain levels before and after abdominal stretching exercises.

RESULTS

1) Univariate Analysis

Univariate analysis was used to describe the data for each variable in the study. Data are presented in frequency distribution tables. Based on the research results, the age distribution and data regarding the period before and after abdominal exercises were determined. The results of this univariate analysis, processed using the SPSS program, are as follows:

Table 4.1 Frequency Distribution of Menstrual Pain Among Adolescents Aged 11–16 Years in Dusun III, Helvetia Village, Sunggal, Medan.

No	Age (years old)	Amount	
		Frequency (n)	Percent (%)
1	11	10	15,0
2	12	30	25,0
3	13	20	15,0
4	14	10	20,0
5	15	20	15,0
6	16	10	10,0
Total		10	100

Based on table 4.1, among the 10 (100%) respondents experiencing menstrual pain, the highest number of respondents were aged 12 (3 respondents or 20.0%); this was followed by those aged 13 and 15, who shared the second-highest frequency (2 respondents or 20% each); the remaining respondents were aged 11, 14, and 16, each with an equal frequency of 1 respondent (10%).

Table 4.2 Frequency Distribution of Menstrual Pain among Adolescent Girls in Hamlet III, Helvetia Sunggal Village, Medan

No	Nyeri Haid	Pretest		Latihan1		Latihan2		Latihan3		Latihan4	
		F	%	F	%	F	%	F	%	F	%
1	Tidak Nyeri	0	0	0	0	0	0	2	20	8	80
	Nyeri Ringan	2	20	2	20	6	60	8	80	2	20
2	Nyeri Sedang	4	40	4	40	3	30	0	0	0	0
3	Nyeri Berat	4	40	4	40	1	10	0	0	0	0
4	Nyeri Hebat	0	0	0	0	0	0	0	0	0	0
5											
Total		10	100	10	100	10	100	10	100	10	100

Based on table 4.2 regarding adolescent menstrual pain, it was found that among the 10 respondents prior to the abdominal stretching exercise (pre-test), 2 (20%) experienced mild pain, 4 (40%) experienced moderate pain, and 4 (40%) experienced severe pain. By the third exercise session, a significant reduction in pain levels was observed: 8 respondents (80%) reported mild pain, the number of respondents with moderate pain dropped to 3 (30%), and the number with severe pain decreased to 1 (10%). Furthermore, the post-test results showed that 8 respondents (80%) reported being pain-free, while the number of those experiencing mild pain fell to 2 (20%).

Based on the univariate frequency distribution analysis regarding the effect of Abdominal Stretching exercises on the reduction of menstrual pain (pre- and post-test), it was found that among the 10 respondents (100%), 4 (40%) initially experienced severe menstrual pain and 4 (40%) experienced moderate pain; following the exercises (post-test), there was a reduction in pain, with 8 respondents (80%) reporting no pain.

2) Bivariate Analysis

Bivariate analysis is a method used to examine the relationship between two variables—specifically the independent and dependent variables. In this study, the researcher investigated the

effect of Abdominal Stretching exercises in Hamlet III, Helvetia Village, Sunggal, Medan. This analysis was applied to two variables hypothesized to have an influence or correlation with one another.

Table 4.3 Normality Test

		Kolmogorov-Smirnov			Shapiro-Wilk		
	Group Control	Statistic	Df	Sig.	Statistic	Df	Sig.
Abdominal	Pre-Test	0,164	10	0,200	0,897	10	0,201
Workout Results	Post Test	0,224	10	0,168	0,911	10	0,287

Based on Table 4.3 the results of the normality tests show that the significance values for both the Kolmogorov-Smirnov and Shapiro-Wilk tests are greater than 0.005; therefore, based on the Kolmogorov-Smirnov test, the data are normally distributed.

Table 4.4 Independent T-test

Group Statistics					
	Kelas	N	Mean	Standart Deviation	Standart Mean
Pre-and Post-Training	1,00	10	8,9000	2,64365	,83600
Results	2,00	10	1,3000	,94868	,30000

Independent Sample Test									
		F	Sig.	df	Sig.(2-tailed)	Mean Difference	Standart Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Pre-and Post-Training Results	Equal variances assumed	17,319	001	18	,000	7,60000	,88819	5,73397	9,46603
	Equal Variances not assumed			11,280	,000	7,60000	,88819	5,65101	9,54899

Based on the "Group Statistics" Table 4.4 above, the sample size for both the pre-test and post-test abdominal exercise groups is 10 respondents each. The mean score for the abdominal exercise results is 8.9000 for the pre-test group and 1.3000 for the post-test group. Thus, based on descriptive statistics, it can be concluded that there is a difference in the mean results of abdominal stretching exercises between the pre-test and post-test regarding the reduction of menstrual pain in adolescents.

Based on the output above, the significance value for Levene's Test for Equality of Variances is 0.001 (< 0.05); this indicates that the data variances between the pre-test and post-test groups are homogeneous (equal). Consequently, the interpretation of the Independent T-test output table relies on the values found in the "Equal variances assumed" row.

Based on the Independent T-test output table under "Equal variances assumed," the 2-tailed significance value is 0.00 (< 0.05). Applying the decision-making criteria for the T-test, it can be concluded that the alternative hypothesis (H_a) is accepted and the null hypothesis (H_o) is rejected. This implies that abdominal stretching exercises have an effect on reducing menstrual pain in adolescents when comparing the state before and after the exercises were performed.

DISCUSSION

The Effect of Abdominal Stretching Exercises on Reducing Menstrual Pain Among Adolescents in Hamlet III, Helvetia Village, Sunggal, Medan.

Based on the univariate frequency distribution analysis regarding the effect of abdominal stretching exercises on menstrual pain reduction (pre- and post-intervention), it was found that among the 10 respondents (100%), 4 (40%) experienced severe menstrual pain and 4 (40%) experienced moderate pain prior to the exercises; following the intervention, 8 respondents (80%) reported being pain-free. Furthermore, the Independent t-test output showed a Sig. (2-tailed) value of 0.000 ($p < 0.005$), indicating a significant effect of abdominal stretching exercises on the reduction of menstrual pain. This signifies a significant difference in the reduction of dysmenorrhea intensity between the experimental and control groups, leading to the conclusion that abdominal stretching exercises are effective in reducing dysmenorrhea intensity. Abdominal stretching is a stretching exercise that focuses on the abdominal muscles.

Menstruation is bleeding caused by the shedding of the inner lining of the uterus (the endometrium). If embryo implantation does not occur, this lining is shed. While women's menstrual cycles vary, a normal cycle generally occurs at intervals of 21–35 days, with an average of 28 days. Dysmenorrhea tends to be more severe in women who do not exercise regularly; consequently, during episodes of dysmenorrhea, oxygen delivery to the blood vessels of the reproductive organs is impaired. Exercise is a safe, non-pharmacological management method that utilizes physiological processes. Physical exercise has been proven to increase blood endorphin levels four- to five-fold; thus, the more exercise performed, the higher the endorphin levels.

Research by Pratiwi et al (2021) of “The Effectiveness of Dysmenorrhea Exercises and Abdominal Stretching Exercises on Menstrual Pain Intensity in Adolescents with Primary Dysmenorrhea” this states study employed a quasi-experimental design with a post-test-only control group, conducted at an Islamic boarding school with a sample of 36 adolescents suffering from primary dysmenorrhea. Participants were divided into three groups: 12 performed dysmenorrhea exercises, 12 performed abdominal stretching exercises, and 12 performed no exercises (control group). The dysmenorrhea exercises and abdominal stretching exercises were carried out for four consecutive days in the afternoon prior to the first day of menstruation. Subsequently, menstrual pain intensity was assessed on the first day of menstruation using the Numeric Rating Scale. The results showed that in the dysmenorrhea exercise group, 58.3% experienced mild pain and 41.7% experienced moderate pain; in the abdominal stretching exercise group, 66.7% experienced mild pain and 33.3% experienced moderate pain; whereas in the control group, 66.7% experienced moderate pain and 33.3% experienced severe pain. Thus, interventions involving dysmenorrhea exercises and abdominal stretching exercises can reduce menstrual pain intensity in adolescents with primary dysmenorrhea.

Research by Handayani et al. (2022) is a quantitative study with a quasi-experimental design using a one group pretest posttest approach. The population of this study were all female students at the Wahdah Islamiyah Islamic Senior High School Makassar. The sample is 15 respondents was obtained using a purposive sampling technique. Respondents performed the abdominal stretching technique for 15 minutes every time they felt menstrual pain. The results showed that before being given abdominal stretching exercises an average value of 4.2000 was obtained with a standard deviation of 1.08233. Meanwhile, after being given abdominal stretching the average value was 2.4667 with a standard deviation of 1.06010. The results of the analysis of the paired sample t test obtained a value of 0.000 which means the value of $< (0.05)$. It can be concluded that there is an effect of abdominal stretching on decreasing adolescent dysmenorrhea. Therefore, it is highly

recommended for adolescents to do abdominal stretching exercises when experiencing dysmenorrhea.

This study aligns with research conducted by Syafna et al. (2023) titled "The Effect of Abdominal Stretching Exercises on Dysmenorrhea Intensity at the Daarun Nahdhah Islamic Boarding School, Bangkinang, Kampar Regency," which demonstrated that abdominal stretching exercises administered to the experimental group reduced dysmenorrhea intensity; independent t-test results showed statistical significance with a p-value of 0.000 (less than the alpha level of 0.05). The study employed a quasi-experimental design with a non-equivalent control group arrangement. This indicates a significant difference in the reduction of dysmenorrhea intensity between the experimental and control groups, leading to the conclusion that abdominal stretching exercises are effective in reducing dysmenorrhea intensity. Based on these findings, it can be concluded that abdominal stretching exercises can alleviate menstrual pain and play an important role as a non-pharmacological physical exercise for the body.

Research by Farida et al. (2023) indicates that abdominal stretching exercises serve as an effective non-pharmacological therapy for alleviating menstrual pain; these exercises are safe and easy to perform, relying on the body's natural physiological functions without the need for specialized equipment. The mechanism underlying pain reduction involves the exercises enhancing blood perfusion to the uterus and relaxing uterine muscles. This prevents anaerobic metabolism—such as glycolysis and glycogenolysis—which would otherwise produce lactic acid; the accumulation of lactic acid is a known cause of muscle pain and cramping. Since lactic acid buildup can be mitigated through oxidation, alternative therapies like abdominal stretching are beneficial for improving the flow of oxygen-rich blood. This facilitates oxidation, thereby lowering lactic acid levels and relaxing cramped abdominal muscles, ultimately reducing menstrual pain.

Research by Endah et al. (2024) of "The Effect of Abdominal Stretching Exercises on Reducing Menstrual Pain (Dysmenorrhea) Intensity Among Adolescent Girls at SMP N 27 Batam City" stating that the sample in this study was 15 female students who experienced dysmenorrhea, who were taken using a purposive sampling technique. The results of the study showed that the mean value of dysmenorrhea pain level for young women before being given Abdominal Streching Exercise was (2.80), then there was a decrease in the mean after being given Abdominal Streching Exercise to (2.00). The statistical test results have a p-value = 0.00 (<0.05), meaning there is a significant influence between the level of dysmenorrhea before and after being given the Abdominal Streching Exercise intervention to young women at SMPN 27 Batam City. The conclusion of this study is that there is a significant influence between the level of dysmenorrhea before and after being given the Abdominal Streching Exercise intervention to young women at SMPN 27 Batam City. It is hoped that young women will do effelurage massage themselves or with the help of other people as a non-pharmacological therapy to reduce and prevent dysmenorrhea.

Performing abdominal stretching exercises promotes physical relaxation, alleviates muscle tension (cramping), and reduces menstrual discomfort, effectively lowering the intensity of dysmenorrhea pain.

AUTHOR CONTRIBUTION

Ratu Hillery is the first researcher of this journal article and coordinating all of the publication.

CONFLICT OF INTEREST

There is no conflicts of interest

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