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The effect of Effleurage Massage and Dysmenorrhea Exercise in Reducing Menstrual Pain in Adolescent Girls

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ABSTRACT

Introduction: Dysmenorrhea is a common condition among adolescent girls and often negatively affects academic performance. Many adolescents rely on pharmacological treatment to manage menstrual pain, despite the potential side effects. Interview findings indicate that adolescents have limited knowledge of non-pharmacological pain management methods. Therefore, this study aimed to examine the effects of effleurage massage and dysmenorrhea exercise on reducing menstrual pain in adolescent girls.

Methods: This study employed a quasi-experimental pretest–posttest design with two intervention groups: effleurage massage and dysmenorrhea exercise. The sample consisted of 30 adolescent girls experiencing menstrual pain in Lamongan Regency, selected using purposive sampling and equally divided into two groups (n=15 per group). The independent variables were effleurage massage and dysmenorrhea exercise, while the dependent variable was menstrual pain. Interventions were administered according to standardized operating procedures, and pain intensity was measured using a pain scale observation sheet. The Wilcoxon test was used to assess changes in pain before and after the interventions, while the Mann–Whitney test was applied to compare pain reduction between groups, with a significance level of 0.05.

Results: A decrease in pain intensity was observed in 93.3% of participants in the effleurage massage group and 86.7% in the dysmenorrhea exercise group. Both effleurage massage (p=0.001) and dysmenorrhea exercise (p=0.002) significantly reduced menstrual pain. However, no significant difference in pain reduction was found between the two groups (p=0.177).

Conclusion: Effleurage massage and dysmenorrhea exercise are equally effective non-pharmacological interventions for reducing menstrual pain in adolescent girls.

Keywords: Dysmenorrhea, Effleurage massage, Exercise

INTRODUCTION

The incidence of menstrual pain in the world is very high, on average more than 50% of women in every country experience menstrual pain. In the United States, the prevalence of menstrual pain is estimated at 45-90%. The incidence of menstrual pain in adolescents is reported to be around 92%. In Sweden, 90% of women under 19 and 67% of women aged 24 report menstrual pain. The incidence of dysmenorrhea in Indonesia is around 64.25%, consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea (Syamsuryanita & Nurul Ikawati, 2022). According to the Indonesian Ministry of Health (2016), the prevalence of adolescent girls in Indonesia who experience menstrual pain is around 55%. Menstrual pain is caused by prostaglandin hormones released by the body which stimulate uterine muscle contractions. There are two types of dysmenorrhea, primary and secondary.

Primary dysmenorrhea occurs during menstruation without any abnormalities in the reproductive organs, while secondary dysmenorrhea is menstrual pain that occurs due to gynecological disorders, such as endometriosis (mostly), fibroids, and adenomyosis (Nurdahliana & Fitriani, 2021). The pain they experience prevents them from participating in school activities. These students don't know how to reduce the pain. Their only option is rest and sleep. Some teenagers manage menstrual pain by taking medication. However, medication often has side effects. Therefore, non-pharmacological measures are needed to reduce menstrual pain. Interventions in the form of exercise and massage were chosen because these interventions have minimal side effects, are long-term safe, and reduce drug dependence. The occurrence of dysmenorrhea can result in a high number of absences at school of around 60-85% and can also cause decreased memory, lack of motivation for school, inability to present assignments optimally and some have to leave school because of unbearable pain (Nurjanah, Yuniza, & Iswari, 2019). The impact of dysmenorrhea in adolescents is often experienced physically such as nausea, vomiting, dizziness, diarrhea, back pain, and fatigue. Psychologically, such as decreased activity levels due to feeling unwell, decreased student achievement, an increase in the number of adolescent girls who do not attend school, and feelings of anxiety and restlessness. The impact of menstrual pain on adolescent girls includes disturbed feelings of well-being, decreased activity, disturbed sleep patterns, disturbed appetite, disturbed interpersonal relationships, and difficulty concentrating on work and study (Dewi, 2022). The aim of this study was to determine the effect of effleurage massage and dysmenorrhea exercise in reducing menstrual pain in adolescent girls.

METHOD

The Quasy experimental design with pretest and post-test consisted of two groups, each given a different intervention. The first group received an exercise intervention to overcome dysmenorrhea, and the second group received an effleurage massage intervention. Interventions are given daily while experiencing pain. Massage is given by gently rubbing the stomach, while exercises are done with body movements,

especially on the stomach area, such as arching the back, moving the knees to the right and left. Researchers conducted observations (pretests) that allowed them to examine changes that occurred after the treatment (posttests). The sample in this study was 30 female adolescents who experienced menstrual pain in Lamongan Regency and each group consists of 15 female adolescent. Sampling was conducted using purposive sampling. The inclusion criteria for respondents were adolescents aged 14-24 years who experienced menstrual pain without reproductive disorders, had a normal menstrual cycles and normal menstrual duration, while the exclusion criteria were those who experienced reproductive disorders. Data collection instruments used effleurage massage and dysmenorrhea exercise techniques, and pain was measured using a pain scale. To determine changes in pain scale before and after the intervention, the Wilcoxon Sign Rank Test with α=0.05 was used. Meanwhile, to compare pain reduction in the exercise and effluent massage groups, the Mann-Whitney test was used.

RESULTS

Based on table 1, it shows that teenagers who experience menstrual pain are high school aged teenagers (33%) and college students (67%), all respondents have a normal menstrual cycle (100%) and all respondents have a menstrual period lasting 3-7 days (100%).

Table 2 shows a p-value of 0.001, which is less than α. Therefore, it can be concluded that effleurage massage has an effect on reducing menstrual pain. Similarly, the dysmenorrhea exercise group showed a p-value of 0.002,

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics	n	(%)
Grade of School		
Senior High School	10	33%
College Students	20	67%
Age		
14–17 years	10	33%
18-24 years	20	67%
Menstrual cycle		
< 21 days	0	0%
21-35 days	30	100%
> 35 days	0	0%
Length of menstruation		
< 2 days	0	0%
3-7 days	30	100%
> 7 days	0	0%
Total	**30**	**100%**

indicating that dysmenorrhea exercise has an effect on reducing menstrual pain. Based on Table 3, it shows that the p value of 0.177 is greater than α, which means there is no difference in pain reduction between the Effleurage Massage and Dysmenorrhea exercise groups.

DISCUSSION

Most adolescent girls who menstruate will experience menstrual pain. Based on table 1, school-age adolescents experience menstrual pain. This pain is a normal symptom of menstruation and often begins immediately after the first period, but for some women, the pain can persist throughout the menstrual period. Dysmenorrhea is pain experienced during menstruation, with complex symptoms including lower abdominal cramps that radiate to the back. Menstrual pain is often accompanied by symptoms such as headaches, nausea, frequent urination, and

Table 2. Effect of Effleurage Massage and Dysmenorrhea Exercise on Pain Reduction

Group	Category	Mean	Std. Deviasi	p value Wilcoxon Test
Effleurage Massage	Pretest	7.8	1.207	0.001
	Posttest	3.4	1.056	
Dysmenorrhea exercise	Pretest	7.6	1.404	0.002
	Posttest	4.27	1.486	

Table 3. Differences in Pain Reduction in the Effleurage Massage and Dysmenorrhea Exercise Groups

Group	Mean	p value Mann Whitney Test
Effleurage Massage	17.63	0.177
Dysmenorrhea exercise	13.37	

other disturbing symptoms known as dysmenorrhea. Dysmenorrhea is caused by hormonal imbalance, which can be caused by disease (pelvic inflammatory disease), endometriosis, uterine tumors or abnormalities, an incomplete hymen or vagina, or excessive stress or anxiety. The occurrence of dysmenorrhea can result in a lot of absences at school or at the office in women of reproductive age around 60-85% in adolescence and can also cause decreased memory, lack of motivation to study, inability to present assignments optimally and some also have to leave lectures because of unbearable pain.

Various efforts to overcome and cure primary dysmenorrhea include taking medication, getting enough rest, regular exercise, massage and warm compresses. Dysmenorrhea can be treated pharmacologically, namely by using drugs, while non-pharmacologically, by means of massage and physical exercise (Natalia, 2022). Management in reducing pain is through pain management, which is a multidisciplinary approach that uses pharmacological (Pain Modifiers), non-pharmacological and psychological approaches that aim to eliminate pain or pain relief. Non-pharmacological pain management is an effort to overcome and eliminate pain with a non-pharmacological approach in the form of relaxation, distraction, hypnosis, acupuncture, massage, guided imagery, dysmenorrhea exercises, efflurage massage and so on (Veronica & Oliana, 2022). Complementary therapy to overcome menstrual pain has no side effects and is declared safe (Dol Kim, 2020).

Table 2 shows a p-value of 0.001, which is less than α. It can be concluded that effleurage massage is effective in reducing menstrual pain. Research results show that most adolescent girls who receive effleurage massage experience a reduction in menstrual pain. Massage is a form of cutaneous stimulation that provides a relaxing sensation, resulting in vasodilation in the blood vessels, which increases blood circulation in the massaged area, increasing cell turnover, reducing pain and supporting the healing process (Aryandani & Hermawati, 2024). This is in line with research conducted in Bandung Regency on female students who experienced menstrual pain, with the results showing a reduction in menstrual

pain to become lighter, so that massage was proven to have a significant effect on reducing pain (Siagian, 2019). Other research also proves that there is an effect of effleurage massage therapy in reducing the pain scale of primary dysmenorrhea in adolescent girls (Amin & Purnamasari, 2020). Effleurage massage is effective in reducing the scale of menstrual pain in adolescent girls (Sari & Titi Hamranani, 2019). Massage in the form of Swedish massage can also reduce menstrual pain in women (Nugraha & Setiyarini, 2023). Dysmenorrhea massage is a form of massage that uses rhythmic movements such as stroking, kneading, and rubbing the skin. This massage produces mechanical effects, including increased skin elasticity, relaxation/ relief, and prevention of adhesions. The physiological effects include increased vasodilation, activation of the gate control mechanism, and release of endorphins. Massage can relieve this pain because it stimulates the skin (tactile fibers), which can inhibit pain signals from other areas of the body. Massage affects the hypothalamus and the pain gate, which stimulates the anterior pituitary gland to produce endorphins, which can induce feelings of comfort and well-being (Andria, A. et al. 2016).

In this study, adolescents who performed dysmenorrhea exercises mostly experienced a reduction in pain levels. Based on table 2, it shows a p-value of 0.002, which is less than α, meaning that dysmenorrhea exercises have an effect on reducing menstrual pain. Menstrual pain can be felt in the pelvic and waist areas, and non-pharmacological treatments have been shown to be effective in reducing these symptoms. Non-pharmacological treatment with manual therapy combined with pelvic floor muscle exercises can increase the threshold for lower back pain (Deodato, et al., 2023). Lack of physical activity is a risk factor for primary dysmenorrhea. This is because during menstrual pain, oxygen cannot reach the blood vessels in the reproductive organs, causing pain. Physical activities such as gymnastics, walking, working out, aerobics, jogging, and other sports performed three to four times a week tend to reduce the risk of primary dysmenorrhea. This is in line with research conducted by (Kusumawati & Aniroh, 2020) that physical activity in the form of exercise is related to the occurrence of menstrual pain, but the most dominant factor is the consumption of fast food. Several factors cause menstrual pain, one of which is physical activity. Menstrual pain increases with a lack of physical activity. This impacts blood flow and oxygen circulation to the uterus, which causes pain. Activity stimulates the production of endorphins, which can reduce sensitivity to pain and improve blood flow, thereby reducing pain during menstruation (Sugiyanto & Luli 2020).

Table 3 shows no difference between the effleurage massage and exercise groups. Both groups were equally effective in reducing menstrual pain. Research that has been conducted shows that before the euffleurage massage, most of the respondents experienced moderate pain and after the euffleurage massage, most of them experienced mild pain (Hermaniati, 2023). Other research by other researchers also showed that before doing dysmenorrhea exercises, most respondents experienced moderate pain (50%) and after doing dysmenorrhea exercises, respondents experienced mild pain (52%)

(Djimbula, 2022). Physical exercise given aims to strengthen the muscles surrounding the lumbar and improve well-being and resilience muscle. This exercise is performed on the abdominal muscles stretched to increase strength and tighten muscles. This exercise is for regulates the stomach and increases strength muscles create vasodilation of blood capillaries in the muscle permeability increases, which can increase metabolism and blood flow to the uterus (Purukan, 2025). Euffleurage massage can improve blood circulation, warm abdominal muscles, and promote physical and mental relaxation. Euffleurage massage is a safe, easy, inexpensive, side-effect-free relaxation technique that can be performed alone or with assistance (Zuraida & Aslim, 2020). Both interventions are equally effective in reducing menstrual pain because they both trigger similar physiological mechanisms that relieve discomfort, such as increased blood circulation and the release of endorphins. The increased blood flow of massage relaxes tense uterine muscles and improves circulation to the pelvis, reducing cramps and pain. Exercise, on the other hand, increases blood flow throughout the body, including the pelvis, helping to oxygenate the muscles and relieve cramps.

CONCLUSION

The adolescent group with the effleurage massage and dysmenorrhea exercise intervention mostly experienced a reduction in menstrual pain. Effleurage massage and dysmenorrhea exercise significantly reduced menstrual pain. There was no difference in pain reduction between the effleurage massage and dysmenorrhea exercise groups. These two techniques can be used by midwives or other health workers as a solution to reduce menstrual pain.

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