

## Effleurage Massage using Rose Essential Oil in Reducing the Intensity of Dysmenorrhea Pain in Adolescent Girls

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### ABSTRACT

**Background:** Dysmenorrhea is pain in the lower abdomen during menstruation which is generally caused by contractions of the myometrium due to prostaglandin production. In Indonesia, 43-93% girls experiencing dysmenorrhea. Effleurage massage using rose essential oil is one of the non-pharmacological methods that can be used to reduce the intensity of pain during dysmenorrhea.

**Purpose:** The purpose of this study was to determine the effect of effleurage massage using rose essential oil on the intensity of dysmenorrhea pain in adolescent girls.

**Methods:** This study used a quasi-experimental design with a type of non-equivalent control group design. The sample in this study amounted to 24 people who would be divided into 4 treatment groups, namely treatment groups 1 and 2 given effleurage massage using rose essential oil and control groups 1 and 2 given effleurage massage using almond oil, with the duration of each group's massage for 15 minutes and 10 minutes. Data analysis was performed using the Two Way Anova test.

**Results:** The most effective action in reducing the intensity of dysmenorha pain is effleurage massage using rose essential oil for 15 minutes based on the mean value of the Two Way Anova test which is 3.83, and the significance number for massage duration variable 0.015 (significant).

**Conclusion:** The effleurage massage method using rose essential oil can be used as one of the non-pharmacological therapeutic methods in reducing the intensity of dysmenorrhea pain that is easy to apply, especially for adolescent girls when experiencing menstrual pain.

**Keywords:** adolescent girls, dysmenorrhea, effleurage massage, rose essential oil

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## **BACKGROUND**

Adolescence is a critical period in human life where there is rapid physical, psychosocial, cognitive and emotional growth as well as sexual and reproductive maturity. One of the signs of puberty in girls is menarche. Menstruation can be defined as periodic bleeding from the uterus that occurs every month and throughout a woman's active reproductive life (Lehtimäki, et al., 2019).

One of the problems that teenagers often complain about related to menstruation is dysmenorrhea or abdominal pain during menstruation. Dysmenorrhea generally occurs in the first years after menarche in adolescent girls. Data from WHO found that 90% of women experience dysmenorrhea. Research conducted in various other countries shows that the incidence of primary dysmenorrhea in each country is reported to be more than 50%. In Indonesia, the incidence of dysmenorrhoea consists of 72.89% primary dysmenorrhea can occur every time you menstruate due to changes in the hormone prostaglandin which triggers uterine contractions but is not caused by disease or other medical causes. and 21.11% secondary dysmenorrhea is menstrual pain that can be triggered by problems with the reproductive organs with pain that is more severe and lasts longer than primary dysmenorrhea (Pangestu, 2020).

Dysmenorrhea can cause discomfort and pain that is felt often results in women not being able to do activities so they have to rest. Several actions can be used to reduce pain in the incidence of dysmenorrhea, namely pharmacologically and non-pharmacologically. However, the use of pharmacological therapy often has side effects for the body, such as nausea and headaches so it needs consideration to use it. One of the non-pharmacological management that can be used is a relaxation technique that serves to inhibit the brain from releasing pain sensations and does not cause side effects to the body using essential oils, effleurage, and physical exercise (Bobak, 2019).

The effleurage technique is in the form of gentle and flowing strokes with the aim of hypoxia in the tissues reduced so that oxygen levels in the tissues increase which causes reduced pain and the release of endorphin hormones so that the pain threshold increases (apay, et al., 2012). One technique that is effective in reducing dysmenorrhea is masase aromatherapy. The content of essential oils that have healing power can be more optimally absorbed by organs that require treatment and are also useful for improving physical and psychological conditions so that they become better (MacKinnon, 2004).

Rose flowers are one of the efficacious plants for treatment. The rose flower smells good because of the presence of essential oils in it. The main components in rose essential oil are phenyl ethyl alcohol, citronellol, eugenol, and geraniol (Damayanti, et al., 2012). The use of essential oils from roses can foster a feeling of calm in the body, mind, and spirit. Rose flower essential oil also has a local analgesic and antispasmodic effect. After massage, there is an increase in the release of endorphins so as to increase the pain threshold and reduce the pain felt (Uysal, 2016). From the background above, researchers are interested in conducting research on the effect of effleurage massage using rose essential oil on the intensity of dysmenorrhea pain in adolescent girls.

## **METHODS**

This study used a Quasi Experiment design with a type of Non Equivalent Control Group Design. The sample in this study was 24 students of Senior High School 1 Kandat, Kediri Regency aged 15-17 years who were divided into 4 groups with each group containing 6 people. The research group was divided into treatment group 1 (KP1) given effleurage massage for 10 minutes using rose essential oil as much as 2 ml, treatment group 2 (KP2) given

effleurage massage for 15 minutes using rose essential oil as much as 2 ml. While control group 1 (KK1) was given effleurage massage for 10 minutes using almond oil as much as 2 ml and control group 2 (KK2) was given effleurage massage for 15 minutes using almond oil as much as 2 ml. The four groups began by filling out a questionnaire sheet of dysmenorrhea pain intensity before being given treatment (pre-test) using the Numeric Rating Scale (NRS) scale then gave treatment according to the predetermined group after filling out the questionnaire again to determine the intensity of dysmenorrhea pain after treatment (post-test). The results of the study were tested with the Two Way ANOVA test. This research was carried out in June until August 2023. This study was approved by the Health Research Ethics Committee Institute of Health Science Strada Indonesia number 3850/KEPK/VI/2023.

## RESULTS

Assessment of pain scale before and after effleurage massage was given to respondents with dysmenorrhea obtained results that can be observed in Table 1.

Table 1. Pain Scale Assessment Before and After Effleurage Massage

Level of Pain	Before		After	
	Frequency	%	Frequency	%
No pain	0	0%	4	17%
Mild	4	17%	16	66%
Moderate	19	79%	4	17%
Severe	1	4%	0	0%

The results showed that before the effleurage massage procedure, the majority of respondents experienced moderate pain, which was as many as 19 people, while 4 people experienced mild pain and 1 person experienced severe pain. After the effleurage massage, the majority of respondents experienced mild pain, namely as many as 16 people, 4 people experienced moderate pain, and 4 people did not feel pain.

Table 2. Dysmenorrhea Pain Scale Before and After Effleurage Massage in Control Group and Treatment Group

Level of Pain	Control Group				Treatment Group			
	10 min		15 min		10 min		15 min	
	Before	After	Before	After	Before	After	Before	After
No pain	0	0	0	0	0	1 (17%)	0	3 (50%)
Mild	0	5 (83%)	0	3 (50%)	3 (50%)	5 (83%)	1 (17%)	3 (50%)
Moderate	6 (100%)	1 (17%)	5 (83%)	3 (50%)	3 (50%)	0	5 (83%)	0
Severe	0	0	1 (17%)	0	0	0	0	0

Based on table 2, in the control group before being given effleurage massage with almond oil for 10 minutes, all respondents experienced moderate pain. After the massage, 5 people experienced mild pain and 1 person experienced severe pain. While in the control group before being given effleurage massage with almond oil for 15 minutes, 5 people experienced pain and 1 person experienced severe pain. After the massage, 3 people experienced moderate pain and 3 people experienced severe pain.

In the treatment group before being given effleurage massage with rose essential oil for 10 minutes, 3 people experienced moderate pain and 3 people experienced severe pain. After

the massage, 1 person felt no pain and 5 people felt mild pain. While in the control group before being given effleurage massage action with rose essential oil for 15 minutes, 1 person experienced mild pain and 5 people experienced severe pain. After the massage, 3 people felt no pain and 3 people experienced mild pain.

Table 3. Significance Value of Two Way Anova Test

Variable	Sig.
Massage Duration	.015
Essential Oil	.000
Massage Duration * Essential Oil	0.154

The two-way anova test and data from the group can be said to have a significant effect if the p value  $< 0.05$ . The significant value obtained for the variable massage duration on the intensity of dysmenorrhea pain felt was  $p = 0.015$  ( $p < 0.05$ ) and the significant value obtained for the variable essential oil used in the effleurage period on the intensity of dysmenorrhea pain felt was  $p = 0.000$  ( $p < 0.05$ ). While the significant value obtained for the variable massage duration and essential oil used in the effleurage masase simultaneously on the intensity of dysmenorrhea pain is  $p = 0.154$  ( $p > 0.05$ ). So it can be concluded that the administration of effleurage masase with a certain duration of time or certain essential oil can affect the decrease in the intensity of dysmenorrhea pain in adolescent girls.

The measurement of the mean value obtained from the number of pain differences before and after effleurage massage can be seen in table 4.

Table 4. Mean Value of Two Way Anova Test

Group	N	Mean (Pain Difference)
Control Group 1 (KK1)	6	2.00
Control Group 2 (KK2)	6	1.67
Treatment Group 1 (KP1)	6	3.83
Treatment Group 2 (KP2)	6	2.67

Based on the results in table 4, the higher the mean value, the greater the effect in reducing the intensity of dysmenorrhea pain. So it can be concluded that the group that has the greatest influence in reducing the intensity of dysmenorrhea pain is treatment group 1 (KP1) which is given effleurage massage using rose essential oil with a massage duration of 15 minutes.

## DISCUSSION

Based on table 1, it was found that respondents experienced dysmenorrhea with varying levels of pain. Dysmenorrhea usually occurs before menstruation begins due to the influence of increased prostaglandins. The intensity of pain will decrease in line with decreasing levels of prostaglandin hormones. Pain is an individual and complex experience. The difference in the intensity of dysmenorrhea pain felt by each respondent can be caused by the difference in the start time of menstruation. According to the results of the study, the start time of menstruation varies from the evening of the previous day, in the morning when at school until noon to afternoon when almost after school (Ferries-Rowe, 2020).

This is in accordance with the opinion of Koohpayeh, et al. (2021) which states that menstrual pain is most often felt on the first or second day of menstruation (24-48 hours) along with the time of release of maximum prostaglandin hormone levels in menstrual blood. The difference in the intensity of menstrual pain felt by each respondent can also be caused by differences in perception of the pain experienced. A person's pain experience is influenced by several factors that can then increase or decrease the perception of pain, including: tolerance

or individual response to pain i.e. previous pain experiences, culture, anxiety, gender, age and expectations of pain relief efforts.

One action that can be used to reduce the intensity of dysmenorrhea pain felt by respondents is masase effleurage using aromatherapy oils. Through masase effleurage using aromatherapy oils, hypoxia that occurs in the tissues will be reduced because oxygen levels in the tissues increase so that the pain felt is reduced. In addition, there can also be an increase in blood circulation and a decrease in stress and relieve stiff muscles. After being given masase, there will be a release of endorphin hormones which can increase the pain threshold felt so that pain will feel reduced (Sholihah, 2020). This is proven based on the results of research that shows a decrease in the intensity of pain felt by respondents after being given effleurage using essential oils. The majority of respondents experienced mild pain, as many as 16 people (66%) and the rest experienced moderate pain and did not feel pain as many as 4 people each (17%).

The results of this study showed that there was a difference in the intensity of pain felt by respondents before and after being given masase effleurage using essential oil, both in the control group with almond oil and in the treatment group with rose essential oil (Table 2) where the difference in the intensity of dysmenorrhea pain was more significant in the group given masase effleurage using rose essential oil. This is in accordance with research conducted by Sadeghi, et al. (2015) where there is a difference in pain intensity between these two groups showing a p value of 0.003 which means there is a significant difference in the intensity of dysmenorrhea pain with the administration of masase effleurage using rose aromatherapy oil compared to those given masase effleurage using almond oil.

Effleurage massage using essential oils can increase oxygen circulation in the blood so that hypoxia and ischemia that occur in the tissues causing smooth muscles in the uterus to contract irregularly due to increased levels of prostaglandin hormones will decrease. When aromatherapy oil is used in the cooking process, the aromatherapy oil is not only inhaled through the sense of smell but can also be absorbed through the skin and then enter the tissues and circulatory system where it is then channeled to organs that require treatment so that the pain felt will be reduced (Andanawarih, et al., 2020).

The mechanism of reducing the intensity of dysmenorrhea pain by giving effleurage massage using essential oils can trigger the limbic system which plays a role in reducing pain and improving blood circulation and reducing spasms that cause pain. The effect of roses as an analgesic and antispasmodic. Stimulation of olfactory by rose essential oil can promote physiological and psychological relaxation. Inhalation of rose aromatherapy oil significantly reduces oxy-hemoglobin concentration and activity in the right prefrontal cortex and increases feelings of well-being. Rose essential oil is also believed to have a relaxant effect so it can be used to reduce anxiety, depression and stress. This is evident from the decrease in breath rate, oxygen saturation in the blood, systolic blood pressure. In addition, on an emotional level, the group that inhaled rose essential oil looked calmer and relaxed (Uysal et al., 2016).

## CONCLUSION

After knowing the mechanism of reducing the intensity of dysmenorrhea pain with effleurage massage using rose essential oil, namely by launching the oxygen circulation system in the tissues so that hypoxia and ischemia that occur will be reduced and the inhalation process of rose aromatherapy can increase the release of endorphins so that the pain threshold increases and the pain felt is reduced, it can be concluded that effleurage massage using rose essential oil can be used as one of the methods to reduce dysmenorrhea pain non-pharmacologically.

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