

# The Effectiveness of Effeurage Massage Using Lavender Aromatherapy for Menstrual Pain Relief

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## Abstract

Dysmenorrhea is menstrual pain due to uterine contractions as a result of increased production of prostaglandin and release of the endometrium during menstruation. Dysmenorrhea causing discomfort in women, difficulty walking, loss of appetite, nausea, vomiting, which can interfere with routine activities. Lavender aromatherapy is believed to alter the perception of pain. The purpose of this research is the effect of using aromatherapy lavender against menstrual pain level of SMA Negeri I Kasihan Bantul. This research uses pre-experimental design method of time series design, with purposive sampling technique, consisting of 40 students. Assessment of pain intensity before and after being given effeurage massage using lavender aromatherapy immediately on the first day menstruasi and repeated 6 hours later. The analysis using the Wilcoxon matched pairs test, Z count -3.640 and asymp sig. (2-tailed) 0.000. There is significant influence giving effeurage massage using lavender aromatherapy to decrease dismenorea.

**Keywords:** Dysmenorrhea, effeurage massage, aromatherapy lavender

## 1.1. Introduction

Dysmenorrhea is the menstrual problem (i.e. painful periods before or during menstruation). The pain begins several hours before or during menstruation and last for 48 to 72 hours. The increasing production of a prostaglandin causes uncoordinated and irregular uterine contractions resulting in pain. Women with dysmenorrheal problem have higher intra-uterine pressure and their prostaglandin levels are twice as much as in menstrual blood. Consequently, the blood flow reduces so that ischemia and uterine hypoxia cause pain. Menstrual periods occur in the lower abdomen but can spread to the lower back and thighs and may be accompanied by severe stomach cramps. The cramps are derived from contractions in the uterus. These contractions are normal during menstrual processes and are usually first felt when the bleeding is started. Moreover, it still continuously occurs for 32-48 hours (French, L & Smith, 2015).

Pain intensity is an idea of pain severity that one feels and is a very subjective measurements as pain in the same intensity perceived very differently by two different people. An objective approach to measure pain is most likely by using the body's physiological response to pain itself. This technique, however, is also unable to give a clear picture about the pain itself. Based on the bourbonnais rating scale, score of 0 indicates that there is no pain, scale of 1-3 patients experience mild pain, scale of 4-6 patients experience moderate pain, scale of 4-6 patients experience moderate pain which is characterized by hissing and grinning of the patient but still able to follow orders well. Scale of 7-9 objectively patients can not follow commands but they can respond by action, for example indicates the location of the pain but cannot describe it, and on a scale of 10 the pain is very severe, that the patient is no longer able to communicate (Novia, 2008).

The pain causes discomfort in women during menstruation. A great pain around the lower part causes difficulty to walk, nausea, vomit, bad appetite, and unconsciousness. Women experiencing the pain during menstruation are not able to do their routine so that they must rest and carry on truanting (Jeon & Cha, 2014).

A study in the United States showed that a highest prevalence of the menstrual pain in adolescent women was between 20-90%. It was about 15% of teenagers who reported their severe menstrual pain and made them not to attend school. Besides, a study in Sweden found that a prevalence of the dysmenorrhoea was 90% of 19-year-old women, 67% of 24-year-old women, and 10% of 24-year-old women. Efforts were made by teenagers to overcome the pain by taking free medication and some of them consulted a doctor (Marzouk, et.all, 2013).

Riyanto cit (Novia, 2018) says that an incidence rate of the dysmenorrhea in Indonesia shows various results. In Islamic State Senior High 4 Jakarta, a prevalence of the dysmenorrhea of 376 female students was 81.9% by which 18.6% of the students experienced severe pain. Symptoms of the dysmenorrhea included headache (10.6%), back pain (25%), mood disorder (73.1%), and tiredness (36.4%). The dysmenorrhea had caused 5.9% of female students not to attend school. Moreover, most of the students also did not consult a doctor and 79.3% of the girls overcome the symptoms with resting. The study conducted by Handayani (2014) in State Senior High School 7 Pekanbaru with 439 people as a population of the study and 110 people as a sample of the study showed that 56 students (50.9%) had sufficient knowledge about the dysmenorrhea and 87 students (79.1%) had no useful action to overcome dysmenorrhea.

The preliminary study was conducted at State Senior High School 1 Kasihan, Bantul. Subject of this study was 15 students of 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> grade that had the dysmenorrhea. 10 students said that they could not focus on the lesson during menstrual period; 5 students said that they had to go to school or rest in Student Health Unit in case menstruation and dysmenorrhea were still felt; 2 students admitted that they often fainted during the dysmenorrhea; 6 students said that they let dysmenorrhea healed without treatments; 7 students said that they should take the painkiller and 2 of them had to rest and took medicine until the dysmenorrhea was healed.

Dysmenorrhoea is common thing but it is not easy to handle. It is important to choose an effective and easy-to-use method. Aromatherapy is a therapy to help improve health, to encourage excitement, sedate the pain, and stimulate the healing process. The lavender essential oil is considered to be an adrenocortical stimulant that can stimulate the menstrual circulation and has anticonvulsive properties. Lavender is also useful as a sedative substance to relieve pain Lavabree, (1990), cit Hur *et al.*, (2012) In Nursing Intervention Classification (NIC), aromatherapy is an essential oil used to soothe and overcome pain as well as to increase relaxation and comfort through effleurage massage, smearing, bathing, inhalation, and vaginal administration with hot or cold compress techniques. Aromatherapy is a part of complementary treatment therapy that can be given by nurses independently.

Teenagers are worried about the dysmenorrhoea because they think they have problem on their reproductive organs in every menstrual cycle. Women with dysmenorrhoea do not know the treatment techniques to relieve the pain safely. Women who have the dysmenorrhoea are likely to take pharmacological therapy in an effort to relieve pain. Based on these problems, the researcher is interested in conducting research on the effect of lavender aromatherapy on the dysmenorrhea pain level in female students of SMA Negeri 1 Kasihan Bantul. The result of this study is expected to increase the nursing science database especially nursing maternity in the taking of aromatherapy complementary therapies on the dysmenorrhoea pain. The objective of this study is to know the effect of aromatherapy lavender on the dysmenorrhoeic pain levels in SMA Negeri I Kasihan Bantul.

### 1.2. Problem Statement

The aim of this study was to know the effect of giving lavender aromatherapy to the level of dysmenorrhoeic pain of high school students of SMA Negeri I Kasihan Bantul. Specific objective of this research, can know the level of dysmenorrhea pain before giving of aromatherapy lavender and can know the level of dysmenorrhoea pain after giving effleurage massage using aromatherapy lavender at student of SMA Negeri I Kasihan Bantul Yogyakarta Indonesia.

The results of this study are expected to increase the database of nursing science, especially nursing maternity in the utilization of complementary therapy aromatherapy on dysmenorrhoea pain. For maternity nursing service unit can make reference standard operasional procedure in improving service at woman of productive age about treatment of dysmenorrhoea.

### 1.3. Research Method

The type of this study was an experimental study. The experimental study was a study with the aim of knowing an arising symptom or effect due to the certain treatment. The experimental study used in this study was pre-experimental design. The method of this study was time series design. This design did not use comparison groups which were used to test the differences after the treatment was given. The population of this study was all female students of SMA Negeri 1 Kasihan Bantul who had primary dysmenorrhea. The sampling technique used in this study was a purposive sampling. The number of samples of this study was 40 female students. The criteria for the subject of this study were (1) students who had menarche period in the age of 10-13 years that had menstrual period not more than 7 days in a cycle and (2) students who had not given birth in the age of 17-20 years.

The lavender aromatherapy was given by the respondents through the effleurage massage technique after receiving training from the researcher. The lavender essential oil was from 2 drops with 1 ml of olive oil. The effleurage massage was done for 10 minutes, repeated for 10 minutes after 6 hours of the first massage. The data were collected before (at pre test) and after (at post test). The effleurage massage was carried out with the lavender aromatherapy for 10 minutes. It was done twice (i.e. in the first day when dysmenorrhoea occurred and it was repeated 6 hours after the first treatment). An assessment of the pain criteria used numerical rating scale (i.e. 0 was no pain, 1-3 was mild pain value, 4-6 was moderate pain, 7-9 was severe pain, and 10 was very severe pain).

Data was processed through editing, coding, sorting, data entry, and cleaning. The normality test was conducted by using Shapiro Wilk Test. The test result was at the error level ( $\alpha > 0.05$ ), then  $H_0$  was accepted and  $H_a$  was rejected. It meant the data was normally distributed. Data analysis for paired-data that is normally distributed was using the paired samples t-test. The data was analyzed by using non-parametric statistical test with Wilcoxon matched pairs test technique in case the data were not normally distributed. If the result of the test was a significance score ( $\alpha < 0.05$ ), it was concluded that  $H_0$  was rejected and  $H_a$  was accepted.

## 1.4. Result and Discussion

### 1.4.1. Result

Table 1.4.1. Characteristics of respondents

No	Karakteristik	Jumlah	Persentase
1	Age		
	a. 15 years	9	22,5
	b. 16 years	15	37,5
	c. 17 years	11	27,5
	d. 18 years	5	12,5
	Total	40	100
2	Menarche Age		
	a. 10-12 years	31	77,5
	b. > 12-14 years	9	22,5
	Total	40	100
3	Old Menstruation		
	a. 3-5 days	6	15,0
	b. 6-8 days	33	82,5
	c. 9-11 days	1	2,5
	Total	40	100

According to the table 1.4.1., it could be seen that (1) 15 respondents (37.5%) were in the age of 16 years; (2) 31 respondents (77.5%) had the menarche age and were in the age of 10-12 years; and, 33 respondents (82.5%) had menstruation for 6-8 days.

The results are shown in the following table:

Table 1.4.2. Description of research results

Number	Tingkat Nyeri	Pre Test		Post Test	
		F	%	F	%
1	No Pain (0)	0	0,0	6	15,0
2	Mild Pain(1-3)	24	60,0	25	62,5
3	Moderate pain (4-6)	13	32,5	9	22,5
4	Severe Pain(7-9)	3	7,5	0	0,0
5	Very Painfull (10)	0	0,0	0	0,0
	Total	40	100,0	40	100,0

The data of the table 1.4.2 showed that the average of respondents who did not have any pain during pretest was 0 respondents; and there were 6 respondents (15%) who did not feel pain after having effleurage massage at the post test by using aromatherapy lavender. Moreover, the number of respondents who had mild pain was 24 respondents (60%) and got higher to 25 respondents (62.5%). Besides, there were 13 respondents (32.5%) who got moderate pain during pretest and got lower to 9 respondents (22.5%) at posttest. In addition, there were 3 respondents (7.5%) who had severe pain at pretest and got higher lower (0%) at posttest.

The result of data normality test using Shapiro-Wilk with calculated significance score (z) was smaller than significance score ( $\alpha = 0.05$ ). Thus, it was concluded that data was not normally distributed.

There are the results of normality test data

Table 1.4.3. Data Normality Test Results

Number	Pain Level	z	df	Sig.
1	Mild Pain (1-3)	0,565	25	0,000
2	Moderate Pain (4-6)	0,617	9	0,000

The analysis used in this study was wilcoxon matched pairs non parametric statistical test. The result of this test was shown in the following table:

Table 1.4.4. Statistical Test Results of Research

	Z	Asymp.Sig. (2-tailed)
Posttest-pre test	-3,640	0,000

The result of this statistical analysis showed that *asyp. sig (2-tailed)* was 0.000 and it was smaller than  $\alpha = 0.05$  so that  $H_0$  was rejected and  $H_a$  was accepted. Thus, there was an effect of the effleurage massage using aromatherapy lavender on the dysmenorrhoea pain level. After lavender aromatherapy with the effleurage massage techniques was given, the pain was relieved.

### 1.4.2. Discussion

There were 15 respondents (37.5%) who were in the age of 16 years. A majority of students in the 10<sup>th</sup> grade of SMA Negeri 1 Kasihan Bantul was in the age of 16 and had menstrual pain. Students who were in the 10<sup>th</sup>

grade had an adaptation period with new friends and new school tasks. In addition, 16-year-old respondents in the 10<sup>th</sup> grade also followed the majority of Youth Red Cross activities so that they got psychological problems and fatigue which caused an increase in pain sensation during the dysmenorrhoeal. In the menarche age, there were 31 respondents (77.5%) who were in the age of 10-12. These ages were a sign of early function or normal maturation of female reproductive organs. Related to the category of a length of the menstruation, 33 respondents (82.5%) had experienced menstruation for 6-8 days. This corresponds to the normal length of menstrual restrictions.

According to research data, it showed a tendency of the effect of the effleurage massage treatment using aromatherapy lavender on the dysmenorrhoea pain level in SMA Negeri 1 Kasihan Bantul. This was seen by the presence of 6 respondents (15%) who did not experience pain after the treatment and there was previously no respondent who did not experience pain. Moreover, there were 25 respondents (62.5%) who had mild pain after the treatment and there were 24 respondents (60%). Besides, there were 9 respondents (22.5%) who had moderate pain after the treatment and there were previously 13 respondents (32.5%) who had moderate pain. Furthermore, the results were also found that there were no respondent who had severe pain after the treatment and there were previously 3 respondents (7.5%) who had severe pain. The result of the statistic test using Wilcoxon matched pairs test showed that  $Z_{\text{calculated}}$  was  $-3,640 > t_{\text{table}}$  and asymp sig. (2-tailed)  $0.000 < \alpha = 0.05$ . It meant that there was significant effect of the effleurage massage using aromatherapy lavender on dysmenorrhoea pain relief.

The pain was physically and emotionally unpleasant experience because of the actual or potential tissue damage. The menstrual pain occurred due to the release of blood flow. Pain transmission and pain impulse running along the sensory nerve to the dorsal root ganglion of the associated spinal nerve thrust into the posterior horn of the spinal cord (the first neuron). The second neuron appeared in the posterior horn crossing within the spinal cord (sensory intersection) and delivering impulses through the medulla oblongata, the varolli, and the midbrain to the thalamus. The impulse, therefore, traveled along the third neuron toward the sensory cortex (Anisa, 2015).

The gate control theory explained that the neural or spinal barrier mechanism occurred in the gelatinous substance of the dorsal horn and the spinal cord. As the nerve impulses were received by the nociceptors, the pain receptors on the skin and tissues were affected by the mechanism. The inhibition positions determined whether the nerve impulse ran free or not to the medulla and thalamus so that it could transmit impulses or sensory messages to the sensory cortex. If the barriers were closed, there was little or no conduction at all. This was why the dysmenorrhoea pain occurred and there was no treatment to relieve the pain during pre test. When the pain was not felt anymore after 2-3 days of menstruation, the barrier opened and impulses and messages could pass through it and could be transmitted freely so that the pain was no longer felt (Osayande, et.all, 2014).

Menstrual pain was greatly felt as a great sense of discomfort if it was waited until the pain subsided because of impulse detention which gradually disappeared. The lavender aromatherapy was believed to stimulate the activity of brain cells in the amygdale as sedative substance. Other researchers considered that some molecules of essential oils could interact in the blood with hormones or enzymes that could help relieve pain (Lindquist, 2014). The combination of a lavender aromatherapy with the effleurage massage techniques increasingly helped relieve the dysmenorrhoea pain. The healing power was contained in the essential oils which could penetrate through the skin and was carried into the body. It affected the internal tissues and organs of the body. The essential oils were very dangerous when it directly daubed to the skin in the form of pure oil. New essential oils could be used after it was diluted with basic oils such as olive oil, soybean oil, or coconut oil (Rashidi-Fakari, et.all, 2015).

The effleurage massage technique was a massage technique with a calm, gentle pressure towards the distal area. The effleurage massage technique improves blood circulation, gives pressure, warmed the abdominal muscles, and promoted physical and mental relaxation (Rashidi-Fakari, et.all, 2015). Moreover, Marzouk, et.all, (2013) also explained that essential oils with lavender aromatherapy were useful in improving blood circulation that affected the decrease of dysmenorrhoea pain.

The lavender aromatherapy with the effleurage massage technique was also useful to this study. It was seen from 6 respondents (15%) who did not have pain after the treatment. Moreover, respondents who had mild pain also increased after the treatment. It was seen from 24 respondents (60%) to 25 respondents (62.5%). Besides, respondents who had moderate pain decreasing from 13 respondents (32.5%) to 9 respondents (22.5%). Furthermore, there were 3 respondents (7.5%) who experienced severe pain in the pre test. After they had the treatment, there were no respondents who had severe pain.

The result of this study is consistent with the study that has been done by (Hur *et al.*, 2012) An objective of the study conducted by Hur, et al was to prove the effects of the aromatherapy and the acetaminophen on menstrual pain with 23 subjects of the experimental group and 23 subjects of control group. This study was using aromatherapy massage with clary sage, marjoram, cinnamon, ginger, and geranium in almond oil. The level of pain was measured by VAS before concentration and 24 hours after the massage. The result of this study showed

the relief of menstrual pain due to aromatherapy combined with massage. Thus, it was more significant than the control group who accepted acetaminophen.

Another research to support the researcher's study was done by Lindquist (2014). The objective of Hun et al study was exploring the effects of the aromatherapy on menstrual cramps due to the dysmenorrhea. The study was conducted on 67 student respondents who had menstrual cramps. These respondents were divided into 3 groups. The first group consisted of 25 respondents with 2 drops of lavender aromatherapy, 1 drop of clary sage, 1 drop of rose, and 5 cc almond daubed and massaged on the abdominal area. The placebo group consisted of 20 respondents with the almond oil daubed and massaged on the abdominal area. The control group consisted of 22 respondents who did not take any action. Furthermore, the dysmenorrhea pain was measured using a visual analog scale. The result of this study showed that the dysmenorrhea pain significantly relieved compared with the placebo group and control group.

The result of this study was also supported by the study conducted in one school with appropriate characteristics among the respondents. It meant that the respondents were selected due to the similarity of ages and peer group. Peer age interaction caused respondents to be more solid to take the massage using aromatherapy and could share experiences each other so that respondents could follow the activities of treatment without dropping out.

The limitation of this study was laid on non-random sampling. This non-random sampling could cause bias on the results of this study with false positive findings. Another limitation was that there was only one experimental group with a massage treatment using lavender aromatherapy so that the benefits of aromatherapy could not be compared with other treatment methods to relieve the dysmenorrhea pain. In addition, the combination of the effleurage massage techniques using lavender aromatherapy had not successfully relieved the dysmenorrhea pain. Also, there were 3 respondents who forgot not to do the effleurage massage using lavender aromatherapy so that the researcher had to find another respondent to replace these respondents.

### 1.5. Conclusion

There were 24 respondents (60%) who had mild pain and 0 respondents (0%) who did not have pain at all before effleurage massage was given. After the effleurage massage using lavender aromatherapy was given, 25 respondents (62.5%) had mild pain and 6 respondents (15%) had no pain at all. The result of Wilcoxon matched pairs test was that  $Z_{\text{calculated}}$  was  $-3,640 > t_{\text{table}}$  and *asympt sig. (2-tailed)*  $0.000 < \alpha = 0.05$ . It meant that there was significant effect of the effleurage massage treatment using lavender aromatherapy to relieve dysmenorrhea.

It is useful for University of Aisyiyah Yogyakarta because the maternity nursing science and complementary therapies team can add complementary care using the aromatherapy to the curriculum so that students are equipped with therapeutic aromatherapy materials and skills so long as they were in the academic education until they face a real practice to the community. Moreover, it is also useful for the State Senior High School 1 Kasihan, Bantul, particularly for Health Unit of the school because it can provide the lavender aromatherapy with the effleurage massage for students suffering from the dysmenorrhoea discomfort during school activities. Furthermore, it is also beneficial for the next researcher but the researcher suggests that samples must be re-selected using randomization techniques in order to reduce the bias risk. In this study, it needs other comparison groups such as the group who only do effleurage massage using placebo (olive oil).

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