

## Original Research Article

# The effectiveness of lavender oil treatment using effleurage massage technique towards dysmenorrhea intensity of female students at Midwifery academy of Kartini Bali

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### ABSTRACT

**Background:** Dysmenorrhea is a menstruation-related issue which refers to the short pain prior to or during menstruation that led to walking difficulty, low appetite, nausea, vomit and, in some cases, unconsciousness. Lavender is also used as sedative, or as medicine to ease pain and change the perception of pain.

**Methods:** The method used in this research was pre-experimental design with time series design on the 17-25 years old-female students who experience dysmenorrhea and had never given birth prior to the research. Visual Analog Scale (VAS) was utilized to assess the scale of pain using observation method for 4 times namely, 1<sup>st</sup> observation which was conducted before the therapy, 2<sup>nd</sup> observation which is 10 minutes after the 1<sup>st</sup> observation, 3<sup>rd</sup> observation which was performed after effleurage massage therapy and goes on for 6 hours, and 4<sup>th</sup> observation which was 10 minutes after the 3<sup>rd</sup> observation.

**Results:** From the research on 42 female students, it was found that prior to the effleurage massage therapy almost all of the samples (83.3%) had intermediate pain intensity, meanwhile after the treatment the majority (95.2%) experience low dysmenorrhea. There was an impact of effleurage massage toward the dysmenorrhea intensity with the value of  $P=0.00$ .

**Conclusions:** The lavender oil therapy using effleurage massage technique effectively cause significant drop of dysmenorrhea intensity from 4.7 into 2.6 in the scale of pain.

**Keywords:** Dysmenorrhea, Effleurage massage, Lavender

### INTRODUCTION

Dysmenorrhea is a menstruation-related issue referring to the short pain prior to or during menstruation. Dysmenorrhea occurs few hours before or along with the beginning of menstruation and goes on for 48 to 72 hours. The increasing prostaglandin production and its release from endometrium during menstruation trigger uterus contraction which is uncoordinated and unregulated thus causing pain. Women who experience dysmenorrhea have higher intrauterine pressure and prostaglandin level in their menstruation blood which is

two times the normal level, more frequent and uncoordinated uterus contraction.<sup>1</sup> Due to the increasing uterus activity, the flow of blood is decreased thus causing ischemia and hypoxia in uterus which lead to pain. Menstrual pain occurs in the lower abdomen, but it could spread over to the lower part of back and thigh. This pain might be followed by severe stomach cramps originating from intrauterine contraction which is normal during menstruation and usually felt when the bleeding starts and goes on for 32 to 48 hours.<sup>1</sup> Pain during menstruation also causes discomfort for women since severe pain in the lower abdominal could result in

walking difficulty, low appetite, nausea, vomit or even unconscious. Some women, who experience pain during menstruation, could not do their routine activities as they have to take a rest and skip classes at school.<sup>1</sup>

A study in the United States showed the highest prevalence of menstrual pain in female adolescent, which is around 20-90%. Approximately 15% of those women were reported to be in the high level of menstrual pain which prevent them from going to school. Another study in Sweden found dysmenorrhea prevalence occurs 90% in 19 years old female, 67% in 24 years old female, and 10% in 24 years old female. The effort done by those women to ease the pain was mostly by taking medicines, while some opt for doctor consultation.<sup>2</sup>

According to Riyanto in Novia and Puspitasari, the occurrence rate of dysmenorrhea in Indonesia acquired from some researches, including the one followed by 376 female students of Madrasah Aliyah Negeri 4 Jakarta which found dysmenorrhea prevalence of 81.9% with 18.6% experience severe pain. The symptoms that often-followed dysmenorrhea was headache (10.6%), backache (25%), mood-swing (73.1%) and exhaustion (36.4%). Dysmenorrhea had caused 5.9% female student to be absent at school. The majority of the female students did not consult with doctor, while 79.3% get over by taking a rest. A research conducted by Febrianti at SMUN 7 Pekanbaru with the population of 439 people and the sample of 110 people showed that the number of female students who had proper knowledge about dysmenorrhea is 56 (50.9%), while 87 students exhibited inappropriate behavior to overcome dysmenorrhea.<sup>3</sup>

In the preliminary study which was conducted towards the second-semester student of Midwifery Academy of Kartini Bali on February 23, 2016, there was one student who collapsed due to dysmenorrhea. From 15 female students who experienced dysmenorrhea during menstruation, 10 among them used painkiller, 2 drank traditional herbs while the other 3 chose to take rest in overcoming the pain. Dysmenorrhea is a common complain, however, there are not many cases resolved, thus it is very important to find and choose the effective method which is easy to be applied. Oil is a therapy using the extract oil from plantation which is called essential oil to help improving health, increasing spirit and passion, soothing the soul and stimulating the healing process. Lavender essential oil becomes adrenocortical stimulant which stimulates blood circulation during menstruation and has anticonvulsive character. Lavender is also useful as sedative, painkiller and a medicine to change the perception of pain.<sup>4</sup>

## METHODS

The research design was pre-experimental design with time series design method. This research was conducted at Midwifery academy of Kartini Bali from October 2017 until December 2017. The sample of this research was the

17-25 years old students who experienced dysmenorrhea with menstruation period not more than 7 days and have not given birth, which amounts to 42 people and sampling technique used here is purposive sampling. Data was collected using direct observation method with Visual Analog Scale (VAS).

Observation on the sample was conducted 4 times namely, 1<sup>st</sup> observation which was done before the therapy, 2<sup>nd</sup> observation which was conducted 10 minutes after the 1<sup>st</sup> observation, 3<sup>rd</sup> observation which was performed after the effleurage massage therapy and went on for 6 hours, 4<sup>th</sup> observation was conducted 10 minutes after the 3<sup>rd</sup> observation. Data was analysed in descriptive and bivariate manner using Wilcoxon signed rank test which was a non-parametric statistic examination. This research had been declared ethical by the research ethic commission of medical faculty of Udayana university/general hospital of Sanglah Denpasar through the letter numbered 2210/UN.14.2/Kep/2017.

## RESULTS

During the research from October until December 2018, there were some sample characteristics namely menstruation cycle, menarche age, and menstruation period as follow.

**Table 1: Frequency distribution of female student's characteristic at midwifery academy of Kartini Bali.**

Characteristic	Frequency (F)	Percentage (%)
<b>Menstruation cycle</b>		
Regular	39	92.8
Irregular	3	7.2
<b>Age during Menarche</b>		
<9 years old	0	0
10-16 years old	42	100
>17 years old	0	0
<b>Menstruation period</b>		
2-6 days	40	95.2
7-10 days	2	4.5

Table 1 shows that almost all of female students at Midwifery Academy of Kartini Bali had regular menstruation cycle which amount to 39 people (92.8%) and 40 people (95.2%) with menstruation period of 2-6 days. Based on the age during menarche, it was found that all students who were amounted to 42 people (100%) experience menarche in the age of 10-16 years old.

Univariate result as shown in the Table 2, found that the majority which amounts to 35 people (83.3%) experienced intermediate pain of dysmenorrhea intensity before lavender oil treatment using effleurage massage technique with the average of pain level equals to 4.7. Dysmenorrhea intensity after lavender oil treatment with effleurage massage technique showed that almost all which were amounts to 40 people (95.2%), experienced

low pain with the average of pain level equals to 2.6. The result of bivariate analysis using Wilcoxon Signed Rank

Test found that variables had meaningful relationship with the value of  $p < 0.05$ , as shown in Table 3.

**Table 2: Frequency distribution of dysmenorrhea level before and after the treatment of lavender oil using effleurage massage technique towards female students at midwifery academy of Kartini Bali.**

Level of labor pain	Before lavender oil therapy		After lavender oil therapy		Average of dysmenorrhea intensity before lavender oil therapy	Average of dysmenorrhea intensity after lavender oil therapy
	F	%	F	%		
No pain (0)	-	-	-	-	4.7	2.6
Low pain (1-3)	5	11.9	40	95.2		
Intermediate pain (4-6)	35	83.3	2	4.8		
Controlled severe pain (7-9)	2	4.8	-	-		
Uncontrolled severe pain (10)	-	-	-	-		
Total	42	100	42	100		

**Table 3: Bivariate analysis on the effectiveness of lavender oil therapy using effleurage massage technique on the dysmenorrhea intensity of female students of midwifery academy of Kartini Bali.**

Variable	Aromatherapy Treatment		P	95 % CI	
	Before	After		Baseline	Upper line
Level of labor pain	4.7	2.6	0.00	2.43	4.48

**DISCUSSION**

Based on this research result, it was proven that lavender oil therapy using effleurage massage technique effectively decrease the intensity of dysmenorrhea. This occurs due to Menarche treatment in earlier age that cause reproductive organs have not been functioned optimally and thus not ready to experience changes which led to pain during menstruation. This theory supports the research result in which the absent of early menarche age (<9 years old) and late menarche age (>17 years old), therefore respondent with uncontrolled severe dysmenorrhea intensity before or after lavender oil therapy using effleurage massage technique was nowhere to be found. The results of Badawi's study in Egypt show that there is a relationship between menstrual period and dysmenorrhea ( $p = 0.033$ ). Respondents who experienced dysmenorrhea most often occurred in menstrual period  $\geq 7$  days as much as 79.9%, with morbidity 55.3% mild dysmenorrhea 30% moderate dysmenorrhea and 14.8% severe dysmenorrhea.<sup>5</sup> This is in accordance with Shinta's Research et al. conducted in SMA Negeri 2 Medan, shows that there is a relationship between menstrual cycle with the incidence of menstrual pain ( $p = 0.001$ ). Respondents who experienced dysmenorrhea with severe pain intensity controlled on a scale of 7-9 were respondents with irregular menstrual cycles.<sup>6</sup>

Massage is one of the non-pharmacological methods performed to reduce pain. Impulses of pain carried by small-diameter nerves cause the girdle of the dispinal

cord to open and the impulse is passed to the cerebral cortex so that it will cause pain. But this pain impulse can be blocked by providing stimulation of large diameter nerves that cause the gate control to close and pain stimuli can not be passed on to the cerebral cortex.<sup>7</sup> Utilization of massage methods using oil causes the healing power contained by essential oils can penetrate through the skin and carried into the body, mengefektivitasi internal tissues and organs. Because essential oil is not safe if applied directly to the skin in the form of pure oil, it should be dissolved with basic oils such as olive oil, soybean oil and coconut oil, then can be used in skin.<sup>8</sup>

This research goes in line with the research conducted by Ika R at SMP Negeri Kota Semarang with the same respondent characteristics. The result was that there was a difference in the effectiveness of menstrual pain level in female adolescents before and after lavender aromatherapy treatment with p-value of 0.000 which was smaller than  $\alpha (0.05)$ .<sup>9</sup> Respondents in this research was unmarried female adolescent because pregnant women usually experience nerve-related allergy which caused the decrease of adrenaline, as well as the widening cervix that decrease or eventually relieve menstrual pain, which could cause bias on the research data later on.

A study also posited that from the effectiveness of lavender aromatherapy on primary menstrual pain, appropriate result was found referring to the significant difference on the declining menstrual pain in the group which had been given aromatherapy in comparison with

the control group and had significant value in both before and after the lavender aromatherapy treatment with the value of  $p < 0.001$ .<sup>10</sup> This research result is also supported by Sulis R et al, which was conducted at SMA Negeri 1 Karangbangun, about lavender aromatherapy treatment to relieve menstrual pain, the result goes in line with this research referring to the significant drop of menstrual pain after lavender aromatherapy treatment with the value of  $p = 0.000$  with  $\alpha = 0.05$  where  $p < 0.05$ .<sup>11</sup>

The reaction of relieving pain intensity after the lavender oil therapy with effleurage massage technique is caused by the massage technique which is included as one of the methods to ease pain. Pain impulse which is carried by small-diameter nerve caused the opening of gate control at spinal cord and escorts the impulse to cerebral cortex thus incites pain. However, this pain impulse might be blocked by giving stimulus on large-diameter nerve which will close the gate control thus stopping the flow of pain stimulus to cerebral cortex. The oil used for massage technique is commonly used to refresh exhausted body, repair blood circulation and stimulate body to excrete toxin as well as to improve mental health.<sup>12</sup> The utilization of massage method using oil causes the healing power contained in essential oil to pass through skin and enter the body, optimizing internal tissue and organs. Lavender oil also gives soothing effect, stability, and comfort. Besides that, lavender could reduce depression, stress, pain, emotion, hysteria, frustration and panic. Lavender could as well relieve pain and give relaxation.<sup>13</sup> From the observation of the authors during the lavender oil therapy which was performed using effleurage massage, there were some respondents who fell asleep while waiting for 6 hours before the 3rd observation. This phenomenon asserts that besides reducing pain, lavender aromatherapy could also provide relaxation and comfort.

## CONCLUSION

Lavender oil therapy using effleurage massage technique significantly affected dysmenorrhea intensity to downscale the dysmenorrhea intensity with the value of  $p < 0.05$ . The research of lavender aromatherapy on adolescent could be proceed by assessing the stress level during dysmenorrhea.

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## REFERENCES

1. Reeder SJ, Martin LL, Griffin DK. *Maternity Nursing; Women, Baby, and Family's Health*. EGC. Jakarta. 2011;46.
2. French L. Dysmenorrhea. *American family physician*. 2005 Jan 15;71(2):285-91.
3. Novia I, Puspitasari N. Risk Factors that Effect Primary Dysmenorrhea Occurrence. *The Indonesia J Public Helath*. 2008;4(3).
4. Han SH, Hur MH, Buckle J, Choi J, Lee MS. Effect of aromatherapy on symptoms of dysmenorrhea in college students: A randomized placebo-controlled clinical trial. *J Alternative Complementary Medicine*. 2006 Jul 1;12(6):535-41.
5. El Gilany AH, Badawi K, El Fedawy S. Epidemiology of dysmenorrhoea among adolescent students in Mansoura, Egypt. *Eastern Meditteranean Health J*. 2005;11.
6. Shinta D, Sirait H, Jemadi. Factors Associated with Dysmenorrhea Occurrence on Girl Students at SMA Negeri 2 Medan. Thesis. 2015 Mar 27;1(4).
7. Brennan F, Carr DB, Cousins M. Pain management: a fundamental human right. *Anesthesia & Analgesia*. 2007 Jul 1;105(1):205-21.
8. Berman, A. Snyder SJ, Kozier B, Erg G. *Clinical Practice Nursing Teaching Book*. Edition 5. EGC. Jakarta. 2009.
9. IKA, R. Differences Effectiveness of Decreased Menstrual Pain Rate on Young Women with Lavender Aromatherapy Technique and Mozart Music Therapy at SMP Negeri 39 Semarang City. *Journal STIKES Ngudi Waluyo Ungaran*. 2016;1-9.
10. Bakhtshirin F, Abedi S, YusefiZoj P, Razmjooee D. The effect of aromatherapy massage with lavender oil on severity of primary dysmenorrhea in Arsanjan students. *Iranian journal of nursing and midwifery research*. 2015 Jan;20(1):156.
11. Sulis R. Differences Giving Warm Compresses and Aromatherapy to Decreased Menstrual Pain (Dysmenorrhea) on Grade XI Girl Students at SMA Negeri 1 Karangbinangun. *J Stikes Muhammadiyah Lamongan*. 2014;1(XVII):43-52.
12. Apay SE, Arslan S, Akpınar RB, Celebioglu A. Effect of aromatherapy massage on dysmenorrhea in Turkish students. *Pain management nursing*. 2012 Dec 1;13(4):236-40.
13. Whiting RH, Woodcock J. Intellectual capital disclosures by Australian companies. *AFAANZ Conference*. 2009.

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