

THE EFFECT OF WARM COMPRESS AND AROMATHERAPY LAVENDER TO DECREASING PAIN ON PRIMARY DYSMENORRHEA

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ABSTRACT

Primary dysmenorrhea is menstrual pain that occurs since menarche without a pelvic pathology condition causing disruption of daily activity and decreasing quality of life. Improved blood circulation and aromatic smell can reduce pain. This study aims to know the different mean decrease pain of primary dysmenorrhea in given warm compress and aromatherapy lavender. This study was quasi-experimental design. The subjects of this study were adolescents of 44 respondents who suffered from dysmenorrhea and met the criteria. The results of this study indicate that the mean of primary dysmenorrhea pain before and after given warm compress is 6.05 ± 1.046 and 3.55 ± 1.335 with a mean decrease of 2.5, it means there was the influence of giving warm compress to decrease of primary dysmenorrhea pain ($p = 0,000$). The mean of primary dysmenorrhea pain before and after lavender aromatherapy was 5.95 ± 1.214 and 4.77 ± 1.232 with a mean decrease of 1.18, it means there was an effect of lavender aromatherapy on decreasing primary dysmenorrhea pain ($p = 0.000$). Mann Whitney test obtained results $p = 0.000$, means there were differences dysmenorrhea pain reduction with warm compresses and aromatherapy lavender. Warm compresses are more effective in reducing primary dysmenorrhea pain.

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INTRODUCTION

Puberty is one stage of development characterized by the maturity of the sexual organs and the achievement of the ability to reproduce, where one of the characteristics of a woman's sign of puberty is the occurrence of first menstruation (menarche).¹ Menstruation is the decay of the endometrial tissue layer along with blood, occurs periodically and is affected by reproductive hormones.² Menstruation can cause significant disturbances for women, menstrual disorders that often occur in most women are dysmenorrhea.³ Dysmenorrhea is a discomfort in the lower abdomen before and during menstruation that occurs due to excessive release of prostaglandins resulting in increased uterine contractions resulting in menstrual pain.⁴

The incidence of menstrual pain in the world, on average more than 50% of women in each country experience menstrual pain.³ The rate of dysmenorrhea in America it was around 60%, the rate of dysmenorrhea in Sweden in 2008 was around 72%,³ the

rate of dysmenorrhea in Mexico in 2010 was around 64%,⁵ the number of dysmenorrhea in China in 2010 was around 41,9% - 79,4%,⁶ the rate of dysmenorrhea in Egypt in 2011 was very high at around 94,4%,⁷ the rate of dysmenorrhea in Khadapa in 2011 was around 65%,⁸ while in Indonesia alone it reaches 55%. The rate of primary menstrual pain in Indonesia reached 54.89%, while the remaining 9.36% were secondary type sufferers, which caused them to be unable to carry out any activities and this would reduce the quality of life for each individual.³ The prevalence of dysmenorrhea experienced by 16-year-old women was 90%, 24-year-old women were 67%, and 10% of 24-year-old women reported having daily dysfunction due to dysmenorrhea pain.⁹

Although dysmenorrhea is experienced by many women who menstruate, many ignore it without doing the right treatment, even though there are many ways that can be done to reduce the pain. Handling can be carried out pharmacologically by using nonsteroidal anti-inflammatory drugs (NSAIDs) and the use of combined contraceptive pills.⁴ However, all NSAIDs cause digestive tract disorders and severe kidney damage if used in high doses.¹⁰ Therefore, non-pharmacological or complementary therapies are needed that have minimal side effects. The first alternative method is the use of warm compresses. Warm compresses are compressed by using hot jugs or hot water bottles wrapped in cloth, which is conduction where heat is transferred from the bladder into the body causing dilation of blood vessels and a decrease in muscle tension resulting in menstrual pain will be reduced or lost.³ Warm compresses as a very effective method to reduce muscle aches or spasms. The second alternative method is the use of aromatherapy. Aromatherapy is an alternative treatment that uses odors or fragrances derived from aromatic compounds. The response of odors produced from aromatherapy will stimulate the work of brain neurochemical cells. Therefore, a pleasant odor will stimulate the thalamus to secrete enkefalin which functions as a natural pain reliever and produces a feeling of calm.¹¹ Aromatherapy lavender has the benefit of relieving muscle aches, reducing tension, stimulates menstrual blood flow, decreases toxicity, and allergies.^{12,13} Both of these non-pharmacological treatments or alternative ways have their respective advantages. However, there is no known difference and the effectiveness of these two ways of treating primary dysmenorrhea.

The results of Anugraheni's (2013) study stated that warm compresses can reduce the intensity of pain in dysmenorrhea. This study was conducted on 30 respondents who experienced dysmenorrhea, the average pain before being given warm compresses 53.3% experienced severe pain and 46.7% experienced moderate pain. On average after being given warm compresses 63.3% experienced mild pain and 36.7% experienced moderate pain.¹⁴ Research conducted by Oktaviana (2012) states that warm compresses have an effect on decreasing dysmenorrhea pain. This study was conducted on 20 respondents with the results of the average pain before and after being given warm compresses were 6.28 and 4.57, so that there was a significant decrease in pain intensity that is 1,71.¹⁵ The results of the research conducted by Maharani (2016) state that lavender flower aromatherapy affects the decrease in menstrual pain. The average reduction in pain before and after lavender aromatherapy was given 4.7 and 2.6, resulting in a significant decrease of 2.1.¹⁶ Based on the results of these studies it can be concluded that both are effective in reducing menstrual pain.

Based on the results of a preliminary study at the As Salafiyah Islamic Boarding School by distributing questionnaires to 100 young women 78 of whom had a history of menstrual pain, data was obtained that analgesic drugs as many as 15 young women, left alone as many as 40 young women, slept as many as 10 people, drank herbs and applied eucalyptus oil as many as 13 young women. While the Islamic Boarding School Ash-Sholihah distributed questionnaires to 98 young women, 60 of whom had a history of menstrual pain, obtained data that the treatment was done to reduce menstrual pain with

18 analgesics, and left alone 42 young women. While the warm compresses and aromatherapy had never been done.

METHOD

This study used quasi-experiment with two group comparison pretest-posttest design. This research was conducted in May-June 2018 at As Salafiyah Islamic Boarding School and Ash-Sholihah Islamic Boarding School in Sleman. The sample in this study was young women who suffered from dysmenorrhea and met the inclusion and exclusion criteria. The inclusion criteria are age range 16-18 year-old, having regular menstruation cycles, having dysmenorrhea, the intensity of moderate and severe pain, do not use other complementary therapy, do not have hot allergies and ready to given aromatherapy lavender. The exclusion is young women who smoke and consume alcohol, young women who experience menstrual disorder. The selection of samples in this study was based on inclusion and exclusion criteria by filling out the dysmenorrhea screening questionnaire so that a sample of 44 young women was obtained. Then a draw was made to select 22 respondents who entered the experimental group, a group that received warm compress therapy and 22 respondents who entered the comparison group, a group that received lavender aromatherapy. Warm compresses are given for 60 minutes in 2 times with a temperature of 38.5°C - 40°C that have the shape of warm water rubber bags placed on the suprapubic and lower abdominal or painful areas. Lavender aromatherapy is given in the form of a candle that is lit for 60 minutes in a closed room. Data collection techniques used pain intensity questionnaire before and after intervention with a scale of Numeric Rating Scale 0-10. The data were analyzed using the Wilcoxon Signed Rank Test and Mann Whitney Test.

RESULT

Table 1. Frequency Distribution Based on Characteristics of Research Subjects

Characteristic	Subject Group				p-value
	Experiment Group		Comparison Group		
	N	%	N	%	
Age					
16 year	13	60,1	17	77,3	0,158
17 year	7	31,8	5	22,7	
18 year	2	9,1	0	0	
Total	22	100	22	100	
Menarche Age					
13 year	11	50	12	54,6	0.70
14 year	7	31,8	7	31,8	
15 year	4	18,2	3	13,6	
Total	22	100	22	100	
Menstrual cycle					
< 28 day	0	0	0	0	1.00
28-35 day	22	100	22	100	
>35 day	0	0	0	0	
Total	22	100	22	100	
Pain (score)					
1-3	0	0	0	0	0.55
4-6	15	68,2	15	68,2	
7-10	7	31,8	7	31,8	
Total	22	100	22	100	

Based on Table 1 it is known that most of the respondent's age 16 years, most experience menarche at the age of 13 years, most have a menstrual cycle 28-35 days,

and most have 4-6 pain. Table 1 shows that the characteristics of respondents in both study groups were homogeneous with $p > 0.05$.

Table 2. Decreased Dysmenorrhea Pain Before and After a Warm Compress

	N	Average \pm SD	Average Difference \pm SD	Z	P
Decreased dysmenorrhea pain before warm compresses	22	6.05 \pm 1,046	2,96 \pm 1,058	-4,161	0.000
Decreased dysmenorrhea pain after warm compresses.	22	3,09 \pm 1,231			

Based on Table 2 it is known that the average pain of dysmenorrhea before being given a warm compress is 6.05, while the average pain after being given a warm compress is 3.09. The results of the analysis showed that p -value $0.000 < 0.05$ means that there was a significant difference between dysmenorrhea pain before and after giving warm compresses.

Table 3. Decreased Dysmenorrhea Pain Before and After Aromatherapy Lavender

	N	Average \pm SD	Average Difference \pm SD	Z	P
Decreased dysmenorrhea pain before aromatherapy lavender	22	5,95 \pm 1,214	1,18 \pm 1,053	-3,601	0.000
Decreased dysmenorrhea pain after aromatherapy lavender	22	4,77 \pm 1,232			

Based on table 3 it is known that the average pain of dysmenorrhea before lavender aromatherapy is 5.95, while the average pain after lavender aromatherapy is 4.77. The results of the analysis showed that p -value of $0.000 < 0.05$ means that there was a significant difference between dysmenorrhea pain before and after lavender aromatherapy was given.

Table 4. Differences in Decreased Dysmenorrhea Pain in Experimental Groups and Comparative Groups

	n	Average \pm SB Pre	Average \pm SB Post	Differences Average \pm SB	Z	P
Experiment Group	22	6.05 \pm 1,046	3,09 \pm 1,335	2,96 \pm 1,058		
Comparison Group	22	5,95 \pm 1,214	4,77 \pm 1,232	1,18 \pm 1,053	-4,15	0.000

Based on table 4 it is known that the difference in the mean primary dysmenorrhea pain in the experimental group was 2.96, whereas in the comparison group the mean reduction in primary dysmenorrhea pain was 1.18. The mean reduction in pain in the experimental group is higher compared to the comparison group. The results of the analysis showed that p -value $0.000 < 0.05$ means that there was a significant effect

between the administration of warm compresses and lavender aromatherapy in reducing primary dysmenorrhea pain, warm compresses were more effective in reducing pain in primary dysmenorrhea.

DISCUSSION

Characteristics of the respondents in this study in both groups were mostly 16 years old, had menarche at the age of 13 years, had a menstrual cycle at 28-35 days, and had dysmenorrhea pain on a scale of 4-6. Based on these results it can be concluded that the two groups have the same characteristics, so it can be tested by giving a warm compress treatment in the experimental group and lavender aromatherapy in the comparison group.

Based on Table 2 it is known that the average pain of dysmenorrhea before being given a warm compress is 6.05 and after giving a warm compress the average has a pain scale of 3.09. The results of the analysis showed a p-value of 0.000 <0.05, this indicating that there was a decrease in dysmenorrhea pain with warm compresses. The results of this study are in line with the research conducted by Oktaviana (2012) which states that there is a significant difference between the level of pain before and after a warm compress.¹⁵ The occurrence of dilation of blood vessels so as to improve blood circulation relieve ischemia in myometrial cells, reduce contraction of myometrial smooth muscle, and increase muscle relaxation and reduce pain due to spasm or stiffness.¹⁷

In table 3 it is known that the average pain of dysmenorrhea before lavender aromatherapy is 5.95 and after being given aromatherapy lavender on average has a pain scale of 4.77. The results of the analysis showed a p-value of 0.000 <0.05, this indicating that there was a decrease in dysmenorrhea pain with lavender aromatherapy. The results of this study are in line with the research conducted by Froozan (2017) which states that there are significant differences between the level of pain of dysmenorrhea before and after lavender massage versus placebo massage.¹⁸ Stimulates the work of brain neurochemical cells, so brain neurochemical cells stimulate the thalamus to secrete enkefalin which functions as a natural pain reliever and produces a feeling of calm.¹⁹

In table 4 it is known that the difference in the average decrease in dysmenorrhea pain in the experimental group was 2.96 and in the grouping of the defects was 1.18. These results indicate that the experimental group had a higher mean in reducing primary dysmenorrhea pain compared to the comparison group. The results of the analysis test in the experimental group and comparison group showed that $p = 0.000 > 0.05$ meant that there were differences in the influence of the two groups in reducing pain in primary dysmenorrhea. Warm compresses are more effective in reducing dysmenorrhea pain. The

results of this study are in line with the research of Sulistyawati (2014), that the administration of warm compresses is more effective in reducing the pain of primary dysmenorrhea compared to aromatherapy.²⁰ This happens because the administration of warm compresses giving heat will cause blood vessels to dilate so that it can improve blood circulation, relieve ischemia in myometrial cells, decreases myometrial smooth muscle contraction, and increases muscle relaxation, thereby reducing pain due to spasm or irritation. Giving warm compresses affects the activity of large and small diameter nerve fibers. The excess pain is delivered by small-diameter nerve fibers that open the gates of the spinal cord, then forward to the pharmacokinetics of the brain stem and then sent to the thalamus or cortex to be interpreted as pain. Giving warm compresses will stimulate large-diameter nerve fibers, where the location of large-diameter nerve fibers and nerve fibers with small diameters walk parallel.²¹ Stimulation of large-diameter nerve fibers will cause the spinal cord's gate to close so that pain inclusions cannot enter the spinal cord and not forwarded to cortex awareness to be interpreted as pain. Therefore warm compresses are effective in reducing menstrual pain.²²

The difference in the average decrease in dysmenorrhea pain which is quite large between the experimental group and the comparison group due to the administration of aromatherapy involves the size of the room used to light lavender aromatherapy candles. This is what causes lavender aromatherapy to not reduce pain intensity as much as a warm compress. The use of lavender aromatherapy candles involves the sense of smell, namely the nose when lavender aromatherapy wax molecules that spread into the room are carried by air currents into the nose "roof", where soft cilia arise from receptor cells. When these molecules attach to the nasal cilia, an electrochemical message will be transmitted through the olfactory tract to the limbic system.^{23,24} The limbic system is a part of the brain associated with mood, emotion, memory, and learning.²⁵ After being delivered to the limbic system, the odor is then sent to the hypothalamus to be processed. The hypothalamus functions as a real and regulator, which is to bring up messages that must be conveyed to the brain and other parts of the body. The message received in the form of an odor response produced is converted into electrochemistry which causes euphoria (excessive pleasure), relax or sedative. So, a pleasant odor stimulates enfacalin which functions as a natural pain reliever, so that menstrual pain is felt to be reduced.^{23,24}

CONCLUSION

The characteristics of young women at the As Salafiyah Islamic Boarding School and the Ash-Sholihah Islamic Boarding School in Sleman are 16 years of age, experiencing menarche at the age of 13, having a menstrual cycle of 28-35 days, and having dysmenorrhea with a scale of 4-6. There is a decrease in primary dysmenorrhea pain before and after being given warm compresses and lavender aromatherapy wax is given. There are differences in the mean reduction in primary dysmenorrhea pain between those given warm compresses and lavender aromatherapy. Warm compresses are more effective in reducing pain in primary dysmenorrhea.

SUGGESTION

Apply warm compresses as non-pharmacological alternative therapies for young women who experience primary dysmenorrhea pain. Teenagers can apply non-pharmacological therapy in the form of warm compresses when experiencing dysmenorrhea pain. Need to do research on other non-pharmacological therapies that can be used to treat dysmenorrhea in young women. Similar studies need to be done with larger and different age samples.

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