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Pain Reduction from Dysmenorrhea Using a Warm Compress and Lavender Aromatherapy

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ABSTRACT

Cases of dysmenorrhea are quite high among college students, ranging from 53% to 86%. If this problem is not resolved immediately, it will have an impact on decreasing learning activities, social activities and student learning achievements. One of the non-pharmacological treatments that can be done alone is with warm compresses and lavender aromatherapy. This study's goal was to evaluate how well lavender aromatherapy and warm compresses worked to lessen dysmenorrhea. This pre-experimental study involved two groups (warm compress group and the lavender aromatherapy group) with purposive sampling. The number of samples is 30 respondents. Pain is measured by Numeric Rating Scale (NRS). Statistical test with paired sample t-test and independent t-test. The results showed that the dysmenorrhea pain scale decreased after the intervention.. In the warm compress group it decreased from 4.00 to 2.93 (p = 0.001). In the lavender aromatherapy group, from a scale of 3.40 to 2.60 (p=0.001). The findings of the comparison between the effects of lavender aromatherapy and warm compresses show a p-value of 0.575. Dysmenorrhea can be effectively treated with warm compresses and lavender aromatherapy.

Keywords:

Warm compress, Lavender aromatherapy, Dysmenorrhea

1. INTRODUCTION

Menstruation is a natural occurrence for a woman. Even so, in reality many women complain about this condition due to the pain they experience [1]. Dysmenorrhea is pain and cramps in the lower abdomen that make a woman feel uncomfortable when menstruation comes. The physical discomfort that is felt begins just before menstruation until menstruation comes and continues for 2 to 3 days [2].

The incidence of dysmenorrhea around the world varies, ranging from 16.8% to 81%. The highest value measured in the United States is 90%. In Italy it was lower, namely 84.1%, of which 43.1% reported dysmenorrhea in each period of the menstrual cycle and 41% experienced it in several periods of the menstrual cycle, resulting in a decrease in school attendance of 47.8% and a decrease in social activity of 44 % [3].

In Indonesia, the prevalence of dysmenorrhea ranges from 45 to 95%. Other sources claim that Indonesia has a 64.25% incidence of dysmenorrhea, of which 54.89% are primary and 9.36% are secondary [4]. The incidence of dysmenorrhea cannot be absolutely certain due to the lack of awareness of sufferers to visit a doctor. It can be said that 90% of Indonesian women have experienced dysmenorrhea [5].

Adolescents who experience activity disorders due to dysmenorrhea cause these adolescents to be unable to carry out activities. Dysmenorrhea in adolescents must be treated even if only with self-medication or non-pharmacology to avoid things that are more severe. The impact that occurs if dysmenorrhea is left untreated is disruption of activities of daily living, retrograde menstruation (menstruation that moves backwards), infertility, ectopic pregnancy, cysts and infections. Primary dysmenorrhea also affects pain in the lumbar region, nausea and vomiting, headache, fatigue, dizziness, fainting, diarrhea and emotional instability [6].

In general, there are two types of treatment for dysmenorrhea: pharmaceutical therapy and non-pharmacological therapy. Analgesic therapy, which is the most frequently used method of treating pain pharmacologically, has an influence on consumers since it might have negative effects on the medicine. Non-

pharmacological treatment options include changing one's lifestyle, eating a balanced diet, applying warm compresses, engaging in acupuncture, acupressure, hypnosis, using floral essences, aromatherapy, and using herbal remedies [7][8].

Non-pharmacological treatment that can be done independently is with warm compresses and the use of lavender flower aromatherapy. Giving warm compresses uses the principle of delivering heat by means of conduction, namely by attaching a hot jar to the stomach so that heat transfer will occur.

Vasodilation of blood vessels may result from the warming sensation of compresses. By improving blood flow to endometrial cells and tissues, acids and food can be delivered more freely and the elimination of these substances can proceed more effectively. The endometrium's improved blood supply helps lessen menstruation pain. [9].

The use of lavender aromatherapy is a useful therapeutic tool for improving physical and psychological conditions. Physically, it relieves pain, and psychologically, it relaxes the mind, relieves tension and anxiety, and brings peace. Lavender flowers contain linalyl acetate, which relaxes and relaxes the nervous system and tense muscles, and linalool acts as a relaxant and sedative, so it can relieve menstrual cramps [1][10].

Warm compresses and lavender aromatherapy are still mostly used as non-pharmacological treatments. The purpose of this study was to compare the effectiveness of lavender aromatherapy and warm compresses in reducing the discomfort associated with dysmenorrhea in adolescent girls.

2. METHOD

This study used a pre-experimental design with two groups: a warm compress group and a lavender aromatherapy group. The warm compress group was given a warm compress intervention for 1 hour and the lavender aromatherapy group was given lavender aromatherapy for 1 hour. The sample selected by purposive sampling technique is by first determining the number of population samples. The number of samples is 30 respondents use means of a paired numerical analytic formula. The warm compress group of 15 respondents and the lavender aromatherapy group of 15 respondents. From this benchmark, a sample of class A was taken as the aromatherap lavender group and class B as the warm compress group with the criteria of students who experienced primary dysmenorrhea on a scale of mild, moderate or severe pain for the last 3 months, were able to express their feelings and had regular menstrual cycles. As for students who have gynecological disorders, are married, do not sign informed consent and are currently using other treatment therapies, they were excluded from the study sample Screening of this sample with a questionnaire completed by the respondents. To gauge discomfort at the start of menstruation, the Numeric Rating Scale (NRS) is employed. The One-Sample Kolmogorov-Smirnov Test findings showed a p value of 0.064 > 0.05, indicating that the data were normal, hence the t-test was employed as the analytical test (paired sample t-test and independent t-test).

3. RESULTS AND DISCUSSION

3.1. Result

Table 1
Respondent Characteristics in the Groups Who Used Warm Compresses and Those Who Used Lavender Aromatherapy

Characteristics		Warm Compress Group		Lavender Aromatherapy Group	
		f	%	f	%
Age	18	7	46,7	8	53,3
	19	8	53,3	7	46,7
Menarche (years)	11	4	26,7	5	33,3
	12	6	40,0	4	26,7
	13	3	20,0	3	20,0
	14	2	13,3	2	13,3
Flow lenght (days)	5	2	13,3	2	13,3
	6	5	33,3	6	40,0
	7	6	40,0	5	33,3
	8	3	20,0	2	13,3
Family History of Dysmenorrhea	Yes	10	66,7	9	60,0
	No	5	33,3	6	40,0

Based on table 1, it is possible to compare the traits of the lavender aromatherapy group and the warm compress group. Age differences between the warm compress group and the aromatherapy group, namely in the 18–19 age range, were evident. The majority of menarche in the warm compress group were 12 years old (40%) while the lavender aromatherapy group had menarche at an average age of 11 years (33.3%). Between the two groups,

there were no appreciable differences in the menstrual flow's duration. Despite this, the modification is not particularly noteworthy. Furthermore, 66.7% and 60% of occurrences of dysmenorrhea in the family, respectively.

Table 2
Dysmenorrhea Levels in the Warm Compress Group and the Lavender Aromatherapy Group are Described Before and After the Test

Dysmenorrhea	Warm Compress Group				Lavender Aromatherapy Group			
	Pretest		Posttest		Pretest		Posttest	
	f	%	f	%	f	%	f	%
Mild pain	6	40,0	9	60,0	8	53,3	12	80,0
Moderate pain	7	46,7	6	40,0	5	33,3	3	20,0
Severe pain	2	13,3	0	0,0	2	13,3	0	0,0
Total	15	100,0	15	100,0	15	100,0	15	100,0

According to table 2, the prevalence of respondents who reported having dysmenorrhea before receiving warm compresses was moderate pain (46.7%), while the rate of dysmenorrhea following warm compresses was mild pain (60%). According to the data presented above, dysmenorrhea discomfort has decreased from a moderate to a light degree. This is distinct from the lavender aromatherapy group in that the bulk of the dysmenorrhea rates at the pretest were only slightly different. The findings, however, indicated a reduction in each level of dysmenorrhea discomfort, namely at the levels of severe pain (13.3% to 0%), moderate pain (33.3% to 20%), and mild pain (53.3% to 80%).

Table 3
Levels of Dysmenorrhea in the Warm Compress Group and the Lavender Aromatherapy Group

Group	Variable	Mean	SD	SE	P value
Warm Compress Group	Before	4,00	1,927	0,498	0,001
	After	2,93	1,438	0,371	
Lavender Aromatherapy Group	Before	3,40	1,882	0,486	0,001
	After	2,60	1,765	0,456	

According to Table 3, there was a difference in the warm compress group, with the mean dysmenorrhea before warm compresses being 4.00 and the mean dysmenorrhea after warm compresses being 2.93. These findings demonstrate that the frequency of dysmenorrhea decreased with the application of warm compresses. Because the null hypothesis was rejected based on the results of the paired sample t-test, which had a p-value of 0.001, there was a significant difference in the degree of dysmenorrhea between the times that warm compresses were applied and before.

The similar result occurred in the lavender aromatherapy group, where the mean level of dysmenorrhea prior to the study was 3.40 and decreased to 2.60 after the study. According to these findings, the rate of dysmenorrhea decreased in the lavender aromatherapy group. The lavender aromatherapy group's level of dysmenorrhea was significantly different from the control group's level according to the results of the paired-samples t-test, which had a p-value of 0.001 and a p-value of $0.001 > 0.05$.

Table 4
Analysis of Differences in the Rate of Dysmenorrhea After Intervention in the Warm Compress Group and Lavender Aromatherapy Group

Group	N	Mean Difference	SD	SE	P value
Warm Compress Group	15	1,07	1,438	0,371	0,575
Lavender Aromatherapy Group	15	0,80	1,765	0,456	

According to Table 4, the mean difference in dysmenorrhea rate reduction following the use of warm compresses is 1.07, whereas the mean difference is 0.80 following the use of lavender aromatherapy. This demonstrates the variance in the average reduction in dysmenorrhea discomfort between the groups that received lavender aromatherapy and warm compresses a little bigger than in aromatherapy.

We came to the conclusion that there was no difference in pain relief for dysmenorrhea between warm compresses and lavender aromatherapy based on independent t-test results with p-values of $0.575 > 0.05$. This proves that lavender aromatherapy and warm compresses both work to relieve dysmenorrhea.

3.2. Discussion

Cramping pain in the lower abdomen that develops during menstruation and limits activities is known as menstrual pain. Multiple reasons, including psychological, constitutional, cervical blockage, endocrine or hormonal, and allergy ones, might contribute to painful menstruation (dysmenorrhea). The posterior uterus, inactivity, and emotional or social stress are other reasons that might exacerbate dysmenorrhea. Consequently, some women perceive dysmenorrhea as a monthly hassle [11][12].

Although the exact causes of dysmenorrhea are unknown, the majority of its symptoms can be attributed to the action of uterine prostaglandins. The first two days of the menstrual cycle are when dysmenorrhea symptoms are at their worst [13]. According to one theory, dysmenorrhea is "anemic discomfort" brought on by reduced blood flow from the uterus's excessive activity. Increased prostaglandin and vasopressin production is related to pain [14]. Strong uterine muscular contractions brought on by the prostaglandins hormone, which is responsible for this pain. This prostaglandin causes tissue ischemia by tightening the uterine wall and compressing (constricting) the blood vessels nearby. Prostaglandins also activate pain receptors in the uterus, intensifying the agony there [15]. Dysmenorrhea diminishes motivation for learning and accomplishment, appears without signs of illness or pelvic disease, and, if untreated, can have detrimental repercussions that extend throughout pregnancy and childbirth. [16].

Warm compresses and lavender aromatherapy were administered to student midwives at a midwifery school who were suffering from dysmenorrhea in this experiment. The findings demonstrated that the age features of the warm compress group and the aromatherapy lavender group, with an age range of 18-19 years and he with a menarche age range of 11–12 years, were not significantly different. This is in accordance with the hypothesis that menarche occurs in girls between the ages of 10 and 16 [17]. Both groups are more likely to have a history of dysmenorrhea in the family. This is consistent with recent research showing that women who have a positive family history of dysmenorrhea had a 1.45 times higher risk of developing the condition than those who do not [18].

According to data analysis, the average amount of pain from dysmenorrhea decreased both before and after the use of warm compresses. Warm compresses are administered and the alleviation of dysmenorrhea discomfort are significantly associated, according to statistical analyses. In line with other research that demonstrates a difference. Warm compresses are highly effective at reducing dysmenorrhea pain [16]. A warm compress is a technique for providing the client with a warm sensation by utilizing a liquid or apparatus that generates warmth in the area of the body that needs it [19].

According to Rima's (2018) research, applying warm compresses helps lessen dysmenorrhea pain. This is due to the fact that applying heat widens blood vessels, improves blood flow, alleviates ischemia in myometrial cells, lessens contractions of the uterine smooth muscles, encourages muscular relaxation, and lessens pain from spasms and stiffness [20] [21]

This compressive impact aids in blood circulation, pain relief, intestinal erection stimulation, and promotes restful sleep for the patient. Warm compresses can ease pain and stress while reducing uterine ischemia and blood pressure. They can also improve menstrual flow and lessen pelvic vein congestion [22].

The outcomes of the trial on warm compresses were comparable to those of using lavender aromatherapy. According to data analysis, the average amount of pain from dysmenorrhea decreased between the times it was administered before and after lavender aromatherapy. According to statistical analyses, administering lavender aromatherapy and lowering dysmenorrhea discomfort are significantly correlated. According to Cristiana's research (2020), there is a substantial difference between the intensity of pain prior to and following the administration of lavender aromatherapy. The findings of this study support that assertion [11]. According to research by Matsumoto (2013), using lavender essential oil can increase the parasympathetic nervous system's activity and tranquility for at least 10 minutes. Lavender can boost the brain's alpha waves, causing the body to relax and lessen pain [23].

According to Titi Hamraani's research (2020), the average score of menstrual cramps before lavender aromatherapy was 3.69. After lavender aromatherapy, the average score is 2.06. Cramps and pain that occur during menstruation are localized in the lower abdomen. Complaints about menstrual pain range from mild to severe [24].

The effectiveness of lavender aromatherapy in relieving menstrual pain can be attributed to various effects. In general, aromatherapy stimulates the limbic system and can help with pain relief. The addition of an abdominal massage with essential oils also improves circulation and relieves spasms that cause pain. In addition to analgesic, sedative and anticonvulsant effects. Lavender can increase circulation thereby relieving smooth muscle pain and as a local anesthetic[25]. Lavender essential oil stimulates menstruation and circulation and is considered an adrenocorticotropic with antispasmodic properties [14].

The analysis of the data revealed that there was a difference between the groups receiving lavender aromatherapy and warm compresses in terms of the average reduction of primary dysmenorrhea discomfort. Warm compresses were generally more effective than lavender aromatherapy for easing the pain associated with dysmenorrhea. According to Yunianingrum's research, primary dysmenorrhea pain decreased by an average of 1.18 in the lavender aromatherapy group whereas it increased by an average of 2.96 in the warm compress group. Therefore, it may be said that the experimental group's mean pain reduction was greater than that of the comparison group [21]. Warm compresses and lavender aromatherapy had significantly different effects on relieving

dysmenorrhea pain, according to the analytical test results. Contrary to what was shown in this study, warm compresses and lavender aromatherapy had similar effects on reducing the pain associated with dysmenorrhea.

4. CONCLUSION

The outcomes demonstrated a reduction in the dysmenorrhea pain scale following treatments. It dropped from 4.00 to 2.93 in the group receiving warm compresses (p = 0.001). On a scale of 3.40 to 2.60, the lavender aromatherapy group scored lower (p=0.001). The findings of the comparison of the effects of lavender aromatherapy and warm compresses show a p-value of 0.575. It might be argued that lavender aromatherapy and warm compresses are equally efficient in alleviating dysmenorrhea.

Instead of taking NSAID class medications, it is advised for students who experience dysmenorrhea to apply warm compresses and employ lavender aromatherapy. This study can serve as a guide for educational institutions looking for non-pharmacological methods to lessen dysmenorrhea.

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REFERENCES

[1] F. F. Mokoginta, F. Jama, and N. I. Padhila, "Lavender Aromatherapy Candles Can Reduce Primary Dysmenorrhea Rate," *Wind. Nurs. J.*, vol. 01, no. 02, pp. 113–122, 2021.

[2] C. Yulanda, *Description of Physical and Psychological Response Dysmenorrhea Adolescent Girls Age 13-15 Years In The State 1 SMP Girimarto, District Wonogiri*. Surakarta, 2013. [Online]. Available: http://dinkesjatengprov.go.id/v2018/dokumen/bukusakutw32019/mobile/index.html#p=60

[3] G. Grandi *et al.*, "Prevalence of menstrual pain in young women: What is dysmenorrhea?," *J. Pain Res.*, vol. 5, pp. 169–174, 2012, doi: 10.2147/JPR.S30602.

[4] M. Astri Koniyo and F. Zess, "Giving Warm and Aromatherapy Plester Compresses to Dysmenorhea Teenage Girl," *Jambura Heal. Sport J.*, vol. 1, no. 1, pp. 6–14, 2019.

[5] Zuraida and D. Pumi Keta, "The Effect of the Combination of Yoga and Lavender Aroma Therapy on the Levels of Dymenorrhic Pain in Adolescent Women at the Sumatera Thawalib Parabek," *Matern. Child Heal. Care J.*, vol. 2, no. 2, 2020.

[6] C. F. M. Mukaromah, *The Effect of Lavender Aromatherapy on Primary Dysmenorrhea Pain in Adolescent Girls with Literature Review*. Fakultas Ilmu Kesehatan Universitas dr Soebandi, 2021.

[7] S. Maimunah *et al.*, "Effectiveness Comparison Between Warm And Cold Compress As Non- Pharmacologic Therapy for Dysmenorrhea in Adolescens," *Medula*, vol. 7, no. 5, pp. 79–83, 2017.

[8] F. Aboualsoltani, P. Bastani, L. Khodaie, and S. M. B. Fazljou, "Non-Pharmacological Treatments of Primary Dysmenorrhea: A systematic Review," *Arch. Pharm. Pract.*, vol. 1, no. S1, pp. 136–142, 2020.

[9] S. Hayati and A. P. Hasanah, "The Effectiveness of Warm Compress Therapy on Reducing Dysmenorrhea Pain in Adolescents in Bandung," *J.* Keperawatan *BSI*, vol. VI, no. 2, pp. 156–164, 2018.

[10] D. Waslia, "Literatur Review : Terapi Komplementer Dalam Mengatasi Nyeri Persalinan," *Pros. Pertem. Ilm. Nas. Penelit. Pengabdi. Masy. (PINLITAMAS 1)*, vol. 1, no. 1, pp. 502–507, 2018.

[11] I. Christiana and D. Jayanti, "The Effect of Lavender Aroma Therapy on The Levels Of Menstrual Pain (Primer Dysmenorhes) In Women's House of Stikes Banyuwangi, 2020," *Healthy*, vol. 15, no. 402, pp. 87–92, 2020.

[12] T. Martha Pundati, C. Sistiarani, and B. Hariyadi, "Factors that Related to Incidences Of Dysmenorrhea in 8th Semester Students of Jenderal Soedirman University, Purwokerto," *Kesmas Indones.*, vol. 8, no. 1, pp. 40–48, 2016.

[13] Z. Raisi Dehkordi, F. S. Hosseini Baharanchi, and R. Bekhradi, "Effect of lavender inhalation on the symptoms of primary dysmenorrhea and the amount of menstrual bleeding: A randomized clinical trial," *Complement. Ther. Med.*, vol. 22, no. 2, pp. 212–219, 2014, doi: 10.1016/j.ctim.2013.12.011.

[14] S. Han, M. Hur, J. Choi, and M. S. Lee, "Effect of Aromatherapy on Symptoms of Dysmenorrhea in College Students : A Randomized Placebo-Controlled Clinical Trial," no. June 2015, 2006, doi: 10.1089/acm.2006.12.535.

[15] A. Osayande and S. Mehulic, "Diagnosis and initial management of stroke," *Am. Fam. Phisiciaan*, vol. 89, no. 5, pp. 57–65, 2014.

[16] A. Oktaviana and R. Imron, "Reducing Pain With Warm Compresses," *J. Keperawatan*, vol. VIII, no. 2, pp. 137–141, 2017, [Online]. Available: https://ejurnal.poltekkes-tjk.ac.id/index.php/JKEP/article/view/155

[17] R. Nikjou, R. Kazemzadeh, M. Rostamnegad, S. Moshfegi, M. Karimollahi, and H. Salehi, "The Effect of Lavender Aromatherapy on the Pain Severity of Primary Dysmenorrhea : A Triple - blind Randomized Clinical Trial," *Ann. Med. Health Sci. Res.*, vol. 6, no. 4, pp. 211–215, 2016, doi: 10.4103/amhsr.amhsr.

[18] A. K. Andriani and M. S. Dewi, *The Relationship Between Family History And Stress With Primary Dismenorhea In FKM Unair Students*. Surabaya: Universitas Airlangga, 2019.

[19] H. Mahua, S. Mudayatiningsih, and P. Perwiraningtyas, "The Effect of Giving Warm Water Compresses on Dysmenorrhea in Young Women at SMK Angkasa Singosari Malang," *Nurs. News (Meriden).*, vol. 3, no. 1, pp. 259–268, 2018.

[20] R. M. Nida and D. Septiana Sari, “The Influence of Warm Compress Decrease in Dismenorhea Eleventh Grade Students of SMK Muhammadiyah Watukelir Sukoharjo,” *Kebidanan dan Kesehat. Tradis.*, vol. 1, no. 2, pp. 100–144, 2016.

[21] E. Yunianingrum, *The Effect of Warm Compress And Aromatherapy Lavender to Decreasing Pain on Adolescent With Primary Dysmenorrhea at Islamic Centre As-Salafiyyah and Islamic Centre Ash-Sholihah Sleman*. Yogyakarta: Politeknik Kesehatan Yogyakarta, 2018.

[22] Y. Oktri, A. F. Hakim, and R. Juaeriah, “Comparison of the level of decreasing scale of dysmenorea pain using warm compress and massage counterpressure methods to junior high school students in cimahi city,” *Int. J. Sci. Technol. Res.*, vol. 7, no. 12, pp. 176–179, 2018.

[23] F. Bakhtshirin, S. Abedi, and D. Razmjooee, “The effect of aromatherapy massage with lavender oil on severity of primary dysmenorrhea in Arsanjan students,” *Irian J. Nurs. Midwifery Res.*, vol. 20, no. 1, pp. 156–160, 2015.

[24] S. S. T. Hamranani and D. P. Sari, “Lavender Aromatherapy on Alleviating Menstrual Pain in Female Teenagers: A Case Study on Polanharjo Klaten,” *Heal. Sci. Int. Conf.*, no. HSIC 2019, pp. 104–109, 2020, doi: 10.5220/0009123301040109.

[25] T. M. F. Marzouk, A. M. R. El-nemer, and H. N. Baraka, “The Effect of Aromatherapy Abdominal Massage on Alleviating Menstrual Pain in Nursing Students : A Prospective Randomized Cross-Over Study,” *Hindawi*, vol. 2013, 2013.