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Research Article

Giving Lavender Therapy Aroma to Dysmenorrhea Pain in Adolescents in Iloheluma Village, Patilanggio District, Pohuwato Regency

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Abstract: Primary dysmenorrhea is menstrual discomfort that begins during menarche and is not associated with any underlying pelvic pathological disorders. It is a common condition that can significantly affect daily activities and lower the quality of life. The pain often associated with dysmenorrhea may be alleviated by improving blood circulation and utilizing pleasant aromas. One of the most widespread gynecological conditions, dysmenorrhea affects women of all ages and is frequently characterized by painful menstruation. Aromatherapy, particularly with lavender flowers, has been traditionally used to treat a variety of conditions including pain, postpartum depression, anxiety, and discomfort following cesarean sections. It has also been used to reduce dysmenorrhea. According to the World Health Organization (WHO), 90% of women experience some form of dysmenorrhea, with 10–15% of these cases classified as severe. Pain management strategies for dysmenorrhea can be categorized into pharmaceutical and non-pharmacological methods, with aromatherapy being one of the prominent non-pharmacological techniques. This study aimed to assess the impact of lavender flower aromatherapy (Lavandula angustifolia) on the severity of dysmenorrhea in teenage females residing in Iloheluma Village, Patilanggio District, Pohuwato Regency. A quantitative, quasi-experimental approach was utilized in this research, employing a purposeful sampling method. The severity of dysmenorrhea discomfort before and after the lavender aromatherapy sessions was evaluated using the paired t-test. Of the respondents, 55% were aged 15–19 years. Prior to the aromatherapy treatment, 100% of participants reported moderate pain intensity. Following the aromatherapy session, the most common pain level reported by the participants (100%) was mild pain. These results suggest that lavender flower aromatherapy has a significant effect in reducing the severity of dysmenorrhea and can be considered an effective non-pharmacological intervention for menstrual discomfort.

Keywords: Adolescent; Dysmenorrhea Pain; Lavender Aromatherapy

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1. Introduction

The interval between puberty and adulthood, or the process of mental, emotional, social, and physical maturation, is known as adolescence. The first menstruation in women, or menarche, is one of the signs of puberty, which is one of the phases of development characterized by the maturation of the sexual organs and the achievement of the ability to reproduce (Yunianingrum, 2018).

Regular bleeding from the uterus during menstruation is an indication that the uterus has reached adulthood. Women can feel discomfort while menstruating. The pain can range from moderate to severe, depending on the type and intensity. This disorder, known as dysmenorrhea, is characterized by excruciating discomfort that can interfere with daily activities (Maharani et al., 2018).

One of the signs of female maturity is the occurrence of menstruation. Few people experience it over the age of 13 to 15, and it often begins in adolescence between the ages of 9 and 12. Until reaching the age of 45 to 55 years, which is usually referred to as menopause, women will continue to experience menstruation every month. The most common menstrual cycle in women is 28 days, with an average monthly period of 3 to 8 days. However, the average cycle and duration vary greatly from one woman to another (Zuraida; Keta Dania Pumi, 2020).

The World Health Organization (WHO) reports that 90% of women, or 1,769,425 people, suffer from dysmenorrhea, with 10% to 15% experiencing severe dysmenorrhea. According to reports, the prevalence of dysmenorrhea ranges from 25% to 97% (50% on average) worldwide, and in almost 20% of cases, the pain is very annoying or disabling. The prevalence of dysmenorrhea in Indonesia is 107,673 (64.25%), with 9,496 (9.36%) suffering from secondary dysmenorrhea and 59,671 (54.89%) suffering from primary dysmenorrhea. Adolescents who suffer from dysmenorrhea during menstruation also feel mental stress, which limits their daily activities, especially their ability to study in school (Helmia Meinika 1), 1979).

In young and fertile women, dysmenorrhea is the most common symptom, characterized by lower abdominal pain or discomfort during menstruation that can interfere with daily activities. The most common reason why young women see a doctor for advice and therapy is because of dysmenorrhea (Zuraida; Keta Dania Pumi, 2020)

Adolescents who suffer from dysmenorrhea and their activities are reduced are unable to carry out their duties. To avoid more severe problems, dysmenorrhea in adolescents must be addressed, even if only with self-treatment or non-pharmacological methods. Infertility, ectopic pregnancy, retrograde menstruation, cysts, infections, and disturbances in daily activities are all consequences of untreated dysmenorrhea (Sulistyawati et al., n.d.).

Fragrances made from essential oils are used in aromatherapy, an additional treatment. Essential oils can be mixed with base oils and applied to skin that is not damaged or inhaled (Brooker, 2009). A variety of techniques, including massage, inhalation, sprays, baths, compresses, gargling, and air fresheners, can be used for this treatment. Compared to other approaches, aromatherapy by inhalation is much faster. Sandalwood, cinnamon, basil, kananga, cloves, oranges, mint, lavender, roses, jasmine, and other aromas are some of the many aromatherapies (Maulina, 2020).

An alternative method to reduce pain is aromatherapy. Inhaling essential oils activates olfactory receptor cells, which send signals to the limbic system, the brain's emotional center. Along with increased blood circulation, aromatherapy can have a calming and relaxing effect. An affordable and safe treatment for dysmenorrhea is aromatherapy (Maharani et al., 2018).

According to Kartika, 2024 (Kartikasari et al., 2024) The use of the scent of certain plant ingredients as a therapeutic tool is known as aromatherapy. Each essential oil has a

variety of pharmacological actions, including antiviral, diuretic, valsodilaltor, penenal, aldrenal relaxant, and antibacterial qualities.

As a traditional flower, lavender can help improve digestion and reduce feelings of sadness and tiredness. These flowers can soothe the body, keep the skin hydrated, help exfoliate dead skin cells, and revitalize the epidermis. Lavender flowers are also used as a base for mosquito repellent solutions (lotions, sprays, or burns) and as a combination for detergents, soaps, and fragrances (Pitaloka et al., 2024).

Anise, sandalwood, cloves, sandalwood, cinnamon, kapulogo sabrang, basil, eucalyptus, ginger, ylang, bergamot orange, lemon, orange, chamomile, lavender, rose, black pepper, jasmine, and valerian are aromatherapies that often use a lot of essential oils, especially those derived from the native flora of Indonesia. Lavender is one of the most commonly used fragrances in aromatherapy. Lavender oil is one of the most popular oils used in aromatherapy today due to its high concentration of linool. This oil is used for inhalation and skin massage. The chemical components of the fragrance reach the olfactory bulb and then the limbic system of the brain when we inhale it. Beneath the cerebral cortex is a structure that resembles a ring: the limbic system. (Maharani et al., 2018).

Based on the above, researchers believe that it is very important to investigate how lavender aromatherapy affects dysmenorrhea-related discomfort in adolescents in Iloheluma village, Patilanggio district, Pohuwato district.

2. Research methods

This study uses a one-group pretest-posttest design and is quasi-experimental. This research was conducted in Iloheluma Village, Patilanggio District, Pohuwato. Adolescents in Iloheluma Village became the research population. Purposive sampling, a non-probability sampling method, is used in sampling procedures. The study sample consisted of all adolescents with mild dysmenorrhea who met the inclusion criteria as follows: 1) Willing to answer questions, 2) Have a regular menstrual cycle, 3) Have mild dysmenorrhea, and 4) Not use pain relievers. Exclusion criteria include: 1) Having a history of asthma, 2) Having severe dysmenorrhea, and 3) Providing unwanted reactions to aromatherapy inhalation, such as nausea, allergies, dizziness, vomiting, and others. The paired sample t-test is one of the statistical tests used in univariate and bivariate data analysis.

3. Result and Discussion

Table 1. Frequency Distribution of Respondent Characteristics Based on Age, Menarche Age, Length of Menstruation in the Village Iloheluma

No.	Characteristic	Frequency	%
1.	Age		
	10-14 years	9	45
	15-19 years old	11	55
2.	Menarche Age		
	10 years	8	40
	11 years	7	35
	12 years	5	25
3.	Duration of menstruation		
	5 days	3	15
	6 days	7	35
	7 days	7	35
	8 days	3	15
4.	Timing of Giving		
	1 day before menstruation	7	35
	First day of menstruation	13	65
5.	Intensity of Giving		
	3 times	16	80
	4 times	4	20
	Total	20	100

Table 1 shows the distribution of characteristics of adolescents in Iloheluma Village based on age, menarche age, and menstrual duration. It was found that all adolescents were in early adolescence, namely 10-14 years old (45%) and 15-19 years old (55%). Based on menarche age, 40% of adolescents experience menarche by the age of ten. Thirty-five percent of adolescents experience a menstrual cycle that lasts six to seven days.

Table 2. Distribution of Pain Scale of Respondents Pre Test - Post Test of Lavender Therapy Aroma Giving

No.	Pain Scale	Pre F	%	Post F	%
1.	Moderate Pain	20	100	0	0
2.	Mild Pain	0	0	20	100

Table 2 shows that, prior to receiving lavender scent therapy, the majority of adolescents (100%) reported moderate discomfort. After receiving lavender aromatherapy, adolescents' overall pain scores decreased, with 20 people reporting mild discomfort (100%).

Table 4. The Effect of Lavender Aroma Therapy on Dysmenorrhea Pain in Adolescents in Iloheluma Village, Patilanggio District, Pohuwatu Regency

Pain Scale		N	Mean Rank	Sum of Ranks
skala_nyeri_sesudah - skala_nyeri_sebelum	Negative Ranks	20A	10.50	210.00
	Positive Ranks	0b	.00	.00
	Ties	0c		
	Total	20		

a. skala_nyeri_sesudah < skala_nyeri_sebelum
b. skala_nyeri_sesudah > skala_nyeri_sebelum
c. skala_nyeri_sesudah = skala_nyeri_sebelum

Table 3 illustrates the impact of lavender aromatherapy before and after the exam. The Wilcoxon test, which is used in statistical analysis studies, yields a value of $\varrho = 0.000$. Since the value ϱ is less than the value $\alpha = 0.05$, then Ha is acceptable. These findings suggest that lavender aromatherapy has an impact on the severity of primary dysmenorrhea

The years between childhood and full adulthood are known as adolescence. Nowadays, the body and brain are developing rapidly. Studies show that adolescence is divided into three phases (Sari, 2016). Early adolescence (early adolescence) (12-14 years) is when puberty begins, middle adolescence (15-17 years) is when rapid change reaches its peak, and late adolescence (18-21 years) is when physical development and mature thinking skills reach their peak. During this period, many physical and psychological changes occurred. One of the physical changes experienced by adolescent girls is menstruation, a physiological disease that affects women(Fransiska, 2023).

According to the findings of the study in Table 4, the majority of female students reported that they felt more uncomfortable after doing lavender aromatherapy. Lavender aromatherapy has an impact on the level of primary dysmenorrhea, according to the findings of the Wilcoxon test, which shows $\varrho = 0.000$ ($\varrho < \alpha$).

Excessive prostaglandin F2a in the menstrual blood causes uterine hyperactivity, which in turn causes pain throughout the menstrual cycle. Increased myometrium contractions caused by increased prostaglandins cause ischemic uterine wall muscles, endometrial disintegration, and decreased menstrual blood flow (Christiana1 & Jayanti2, 2020). A person with severe dysmenorrhea may have to take a few hours or days off from work or daily life each month to relax (Christiana1 & Jayanti2, 2020).

Inhaling lavender aromatherapy is one way to treat dysmenorrhea because it can cause the production of endorphins, which are considered natural pain relievers. This is because endorphins are produced by the body when lavender aromatherapy is used. The body releases endorphins, which are neuropeptides, when the body is at rest. The brain and spinal cord create endorphins. The brain produces this hormone, which can serve as a sedative that relieves discomfort and increases comfort during contractions. For lavender aromatherapy to be beneficial in treating pain problems, especially dysmenorrhea, it must be very effective. Research conducted by Matsumoto (2013) (Matsumoto et al., 2013) states that For at least

ten minutes, lavender aromatherapy can increase parasympathetic nerve activity and cause relaxation. The body becomes relaxed and pain decreases when lavender increases alpha waves in the brain (Christiana1 & Jayanti2, 2020).

Perry and Potter (2005) define pain as an unpleasant feeling that is specific to a specific part of the body. Because pain is subjective and depends on each person's perception and reaction, there are also variations in the intensity of pain experienced. A person's perception of pain, its intensity, and its quality, are all influenced by their understanding of what pain is and how they deal with it. Corwin (2009) stated that the excessive production of certain prostaglandins, F2 alpha prostaglandins, by uterine endometrial cells is often the cause of dysmenorrhea. The alpha prostaglandin F2 is a powerful inducer of uterine blood vessels and myometrium smooth muscle contraction. This causes immense suffering by exacerbating uterine hypoxia that often occurs during menstruation (Maharani et al., 2018).

One method to improve one's physical health is through aromatherapy, which involves the use of essential oils. Natural essential oils are oils squeezed from plants that have a strong aroma. Natural essential oils are oils squeezed from plants that have a strong aroma. This oil has the potential to be used as an inhalation oil, massage oil, toiletries, and fragrance. In addition to being inhaled, lavender flower aromatherapy can be done through massage. Since lavender contains linalool acetate, which can soothe the nervous system and tense muscles, inhaling lavender aromatherapy is one method to relieve discomfort during menstruation. Humans can benefit from the soothing, hypnotic, and anti-depressant properties of lavender aromatherapy. In addition, lavender aromatherapy methods significantly reduce the discomfort associated with dysmenorrhea (Pujiati & Sartika, 2016).

Middle adolescence and late adolescence are the adolescent age group in this study. One respondent, or 6.3%, was in late adolescence, while 15 respondents, or 93.9%, were in their mid-teens. Rohan's classification of adolescence into three categories—early adolescence, which includes 10 to 13 years old, middle adolescence, which includes 14 to 16 year olds, and late adolescence, which includes 17 to 19 years old—corroborates respondents' age classification (Hasdianah Hasan Rohan, 2013). Menarche can occur at about 12.5 years of age, two years after puberty begins (Coal, 2016).

The results of the Paired T Test showed a p value of 0.000. A p value of less than 0.05 indicates that lavender aromatherapy has an effect on dysmenorrhea-related discomfort in Iloheluma Village, Patilanggio District, Pohuwato Regency.

This is reinforced by Sari's research, which shows that stress causes the body to produce estrogen and adrenaline hormones excessively. Menstrual discomfort can come from an abnormal increase in uterine contractions caused by an excess of the hormone estrogen in the body. Meanwhile, when the level of the hormone adrenaline in the body increases, the uterine muscles and other muscles become stiff, resulting in discomfort during menstruation (Rica Pustikawaty, 2016).

4. Conclusion

This study shows that " the administration of lime juice with honey has a significant effect in reducing nausea vomiting (emesis gravidarum) in pregnant women in the first trimester. The results of statistical tests showed a significant difference between the frequency of emesis gravidarum before and after the intervention, with a value of $p < 0.05$. The combined effect of lime and honey is supported by the nutritional content of both, such as flavonoids and vitamin B6, which act as antagonists of serotonin receptors, as well as tonic and antioxidant properties. This therapy is considered safe, natural, and beneficial not only in overcoming emesis gravidarum but also in supporting the health of the mother and fetus.

Reference

Batubara, J. R. (2016). Adolescent development. *Pediatric Sari*, 12(1), 21. https://doi.org/10.14238/sp12.1.2010.21-9

Christiana, I., & Jayanti, D. (2020). The effect of lavender aromatherapy on the level of menstrual pain (primary dysmenorrhea) in the STIKES Banyuwangi women's dormitory in 2020. *22*(10), 180-185.

Fransiska, Y. (2023). Effect of lavender aromatherapy on reducing primary dysmenorrhea pain in adolescent girls at SMA Negeri 1 Godean. *Journal of Midwifery and Health Research*, 1(2), 35-45. https://doi.org/10.36743/jmhr.v2i1.459

Hasdianah Hasan Rohan, H. S. S. (2013). *Reproductive health textbooks*.

Helmia, M., & Meinika, L. A. (1979). JMK: Journal of lavender health media on menstrual pain (dysmenorrhea). Department of Midwifery, Polytechnic of the Ministry of Health Bengkulu. *Indragiri, Padang Harapan Bengkulu City*, 64-75.

Kartikasari, L., Wijayanti, T. R. A., & Purwanti, A. S. (2024). Effect of lavender aromatherapy on anxiety levels in pregnant women in the third trimester. *Journal of Nursing Practice and Education*, 4(2), 271-278. https://doi.org/10.34305/jnpe.v4i2.1067

Maharani, Y. V., Fatmawati, E., & Widyaningrum, R. (2018). Effect of lavender flower aromatherapy (Lavandula angustifolia) on intensity of menstrual pain (dysmenorrhea) in STIKES Madani Yogyakarta students. *Journal of Madani Medika Health*, 7(1), 43-49.

Matsumoto, T., Asakura, H., & Hayashi, T. (2013). Does lavender aromatherapy alleviate premenstrual emotional symptoms?: A randomized crossover trial. *BioPsychoSocial Medicine*, 7(1), 1-8. https://doi.org/10.1186/1751-0759-7-12

Maulina, R. M. (2020). The effect of lavender aromatherapy on the reduction of maternal pain in post-sectio caesarean section at Dr. Malang Hospital. *Journal of Islamic Medicine*, 4(1), 14-20. https://doi.org/10.18860/jim.v4i1.9032

Pitaloka, P. S., Scientific, W. S., & Alfitri, R. (2024). The effect of lavender aromatherapy candles on the intensity of labor pain in phase I at PMB Yulia Tri Jayanti Turen, Malang Regency in 2024. *SENTRI: Journal of Scientific Research*, 3(5), 2422-2429. https://doi.org/10.55681/sentri.v3i5.2785

Pujiati, W., & Sartika, L. (2016). Lavender essential oil vs. rose essential oil on menstrual pain intensity in adolescents. *Journal of Nursing*, 8(1), 30-41.

Pustikawaty, R. (2016). The effect of lavender aromatherapy on the scale of menstrual pain of class X students of State High School 1 Sungai Ambawang, Kubu Raya Regency. *4*(June), 2016.

Sulistyawati, L., Purwanti, D., Study, P., Midwife, P., Medicine, F., & Airlangga, U. (n.d.). Differences in the influence of warm compress method with aromatherapy methods to decrease the dysmenorrhea degree in adolescent girls. *Lisa Sulistyawati*, Dwi Purwanti.

Yunianingrum, E. (2018). Effect of warm compresses and lavender aromatherapy on the reduction of primary dysmenorrhea pain in adolescent girls at As Salafiyyah Islamic Boarding School and Ash-Sholihah Sleman Islamic Boarding School. *Maternity Nursing Textbook Edition 4*, Jakarta: EGC.

Zuraida, & Pumi, K. D. (2020). The effect of the combination of yoga and lavender aromatherapy. *Maternal Child Health Care Journal*, 2(2). https://doi.org/10.32883/mchc.v2i2.1046