Lavender Aromatherapy on Pain Intensity in the First Stage of Giving Birth Women at South Tangerang City Hospital

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Abstract: The number of deliveries in health care facilities in 2021 in Indonesia was 90.9%. Delivery pain is an unavoidable experience and is one of the main determinants in the delivery process. Inappropriate management of this pain can cause negative physiological and psychological impacts. This study aimed to determine the effect of aromatherapy on the intensity of pain in mothers giving birth in the Active Phase 1 at the South Tangerang City Hospital in 2023. The research method used in this study was quantitative, with the research design used being Quasi Experiment with a Pre-test Post-test One Group Design research design. The population in this study were all mothers giving birth from January to March at the South Tangerang City Hospital, totaling 108 people. The sampling technique was carried out using purposive sampling, obtaining 52 respondents. The analysis in this study used a paired T-test to determine the effect of lavender aromatherapy on the intensity of delivery pain in the active phase I. The results of the study showed that the pain scale before giving lavender aromatherapy to mothers in the first active phase of delivery was mostly in the severe pain category of 21 people (40.4%) and a small portion of moderate pain of 15 people (28.8%). It was found that the pain scale after giving lavender aromatherapy was mostly in the moderate pain category of 32 people (61.5%) and a small portion of severe pain of 16 people (30.8%). Based on the results of statistical tests using the T-test (Paired Samples Test), the P value (0.000) was obtained which was smaller than the α value (0.05), so it can be concluded that there is an effect of giving lavender aromatherapy on delivery pain. It is hoped that the results of this study can motivate health workers to manage delivery pain by utilizing aromatherapy.

Keywords: Lavender Aromatherapy, Delivery Pain, non-pharmacological

INTRODUCTION

Data from the Indonesian Ministry of Health (2021) indicates that in 2021, 90.9% of births occurred in healthcare facilities, an increase from 86% in 2020, which did not meet the 2020 Strategic Plan (Renstra) target. However, in 2021, this indicator met the 2021 Strategic Plan target of 90.92% against a target of 89%. The provinces with the highest birth coverage in healthcare facilities were DKI Jakarta at 114.8%, Banten at 99.3%, and South Sulawesi at 99.3%. Coverage exceeding 100% occurred because the target data was set lower than the actual data realized (Kemenkes, 2021).

Delivery pain is considered a physiological response to the natural biological process. The average pain score during delivery is reported to be higher than pain associated with bone fractures, sciatica, or toothaches. Pain can occur due to: (1) myometrial ischemia during uterine contractions, (2) stretching of the cervix, vagina, and perineum, and (3) distension of other perineal structures, especially during the second stage of delivery. The intensity of delivery pain affects the mother's psychological condition, the birthing process, and fetal well-being (Zuarez-Easton et al., 2023).

Between 7-14% of women in developed countries experience delivery without pain, but the majority (90%) of deliveries involve pain, with 2 out of 4 women experiencing the worst pain (pain scale 9-10). It was reported that among 2,700 deliverying mothers, only 15% experienced mild pain, 35% moderate pain, 30% severe pain, and 20% very severe pain. Studies indicate that severe pain during delivery can cause psychological

disorders, with 87% of mothers experiencing postpartum blues, 10% depression, and 3% psychosis (Aninora, 2020).

Delivery pain is an unavoidable experience and one of the main determinants in the birthing process. Poor pain management can lead to negative physiological and psychological impacts. Research conducted in the United States reveals that 84% of deliverying mothers choose to use non-pharmacological techniques to reduce delivery pain. Among them, 55.2% use breathing techniques, and 17.3% use massage techniques (Effendi et al., 2023).

Currently, non-pharmacological approaches such as relaxation techniques, acupuncture, acupressure, massage therapy, and aromatherapy have been identified as prominent fields in midwifery due to their affordability, popularity, ease of use, and low risk. Aromatherapy, as a non-pharmacological and complementary alternative therapy, involves the use of essential oils from natural plants to calm and control the mind and body through aromatic compounds and essential oils with neurological and physiological effects. The use of aromatherapy in women's care has long been established. Among pregnant women, complementary and alternative therapies are common approaches. Evidence from various countries shows that the use of aromatherapy among pregnant women has increased from 13% to 78% (Zuarez-Easton et al., 2023).

Aromatherapy has been widely used with essential oils, such as lavender, to relieve pain in various conditions, including pain from dysmenorrhea, osteoarthritis, and delivery. Aromatherapy not only helps reduce the intensity of pain but also speeds up the delivery process with minimal side effects. Lavender essential oil contains linalool and linalyl acetate, compounds known to have analgesic properties. These compou

nds can reduce the transmission of pain signals in the nerves and help block pain receptors in the brain (Ridouh & Hackshaw, 2022).

A study conducted on 64 patients with post-herpetic neuralgia randomly placed them into control groups (almond oil) or one of three experimental groups (lavender oil, linalool, or linalyl acetate diluted in almond oil at a concentration of 1% v/v), with participants inhaling the aroma through natural breathing. The quality, severity, and intensity of pain were measured before and after the intervention. Sensory pain reduction was greater in the 1% lavender oil group, 1% linalool group, and 1% linalyl acetate group compared to the control group (all $P<0.001$). Affective pain reduction was greater in the 1% lavender group ($P<0.001$) and the 1% linalool group ($P=0.007$) compared to the control group. The decrease in pain severity and intensity was significantly greater in the three intervention groups compared to the control group. Inhalation of lavender oil and its volatile components effectively reduced the quality, severity, and intensity of post-herpetic pain, suggesting that lavender oil, linalool, and linalyl acetate may each be effective interventions for reducing pain in patients with post-herpetic neuralgia (You et al., 2024).

Based on preliminary studies conducted at the South Tangerang City General Hospital, the number of deliveries in 2021 was 641, while in 2022, the number of deliveries handled was 766. Based on the data obtained, the most frequent referrals from first-level facilities or independent midwifery practices were deliveries with pre-eclampsia (28.4%), bleeding (21.7%), prolonged delivery (16.3%), premature rupture of membranes (19.8%), and other referred cases (13.8%).

Interviews conducted by the researchers with 10 deliverying mothers regarding the pain they felt during delivery on a pain scale of 1-10

revealed that 85% of the mothers reported pain between 8-10. Based on these preliminary study results, the aim of this research is to determine the effect of lavender aromatherapy on pain intensity during the active phase of the first stage of delivery at South Tangerang City General Hospital.

METHOD

The research method used in this study is a quantitative method, with the research design being a Quasi-Experiment utilizing a Pre-test Post-test One Group Design. The population in this study consisted of all deliverying mothers from January to March at the South Tangerang City General Hospital, totaling 108 people. The sampling technique employed was purposive sampling, resulting in 52 respondents. In this study, the tool used to measure the level of pain was the Numeric Rating Scale (NRS). Statistical analysis was conducted using paired T-tests to determine the effect of lavender aromatherapy on the intensity of delivery pain during the active phase of the first stage of giving birth.

RESULTS

This study was conducted to determine the effect of lavender aromatherapy on reducing pain in deliverying mothers during the active phase of the first stage of delivery at South Tangerang City General Hospital from January to March 2023. The study involved 52 participants, using an observation sheet to assess pain during delivery contractions.

Table 1: Pain Intensity of Deliverying Mothers During the Active Phase of the First Stage of Delivery Before Lavender Aromatherapy at South Tangerang City General Hospital in 2023

Pain Scale Before Lavender Aromatherapy	Frequency (F)	Percentage (%)
Mild Pain	0	0
Moderate Pain	15	28,8
Severe Pain	21	40,4
Very Severe Pain	16	30,8
Total	52	100,0

From the table, the distribution of respondents based on pain scale before the administration of lavender aromatherapy shows that most were in the severe pain category, with 21 people (40.4%), and a smaller proportion experienced moderate pain, with 15 people (28.8%).

Table 2: Pain Intensity of Deliverying Mothers During the Active Phase of the First Stage of Delivery After Lavender Aromatherapy at South Tangerang City General Hospital in 2023

Pain Scale After Lavender Aromatherapy	Frequency (F)	Percentage (%)
Mild Pain	4	7,7
Moderate Pain	32	61,5
Severe Pain	16	30,8
Very Severe Pain	0	0
Total	52	100,0

Based on the research results, the pain intensity of deliverying mothers during the active phase of the first stage of delivery after lavender aromatherapy decreased, with 30.8% experiencing severe pain, 61.5% reporting moderate pain, and 7.7% experiencing mild pain.

Table 3: The Effect of Lavender Aromatherapy on the Pain Intensity of Deliverying Mothers During the Active Phase of the First Stage of Delivery at South Tangerang City General Hospital in 2023

Pain Scale	N	Mean	Median	Mini	Max	P Value

Before Lavender Aromatherapy	52	6,48	7,003	9	0,000
After Lavender Aromatherapy	52	4,48	5,002	7	

Based on Table 3, the comparison of pain scales before and after using lavender aromatherapy shows that the mean pain score before the intervention was 6.48, while after the intervention, it was 4.85. The minimum pain scale before lavender aromatherapy was 3, while after lavender aromatherapy, it was 2. The maximum pain scale experienced by delivering mothers before lavender aromatherapy was 9, and after lavender aromatherapy, it was 7. The statistical test using the paired T-test showed a P-value of 0.000, which is smaller than α (0.05), indicating that there was a significant difference in pain intensity before and after lavender aromatherapy.

DISCUSSION

From the information above, the distribution of respondents based on pain scale before lavender aromatherapy shows that most were in the severe pain category, with 21 people (40.4%), and a smaller proportion experienced moderate pain, with 15 people (28.8%).

Lavender aromatherapy has a calming effect and is both antiseptic and analgesic due to its main components, linalool and linalyl acetate. These compounds stimulate the parasympathetic system, have narcotic effects, and linalool acts as a sedative (Koulivand et al., n.d.).

Delivery pain is caused by uterine contractions, which can increase sympathetic nervous system activity. Severe delivery pain can cause physiological changes such as increased blood pressure, heart rate, and

respiratory rate. If not managed, this can lead to worry, tension, fear, and stress. Stress in deliverying mothers increases glucose consumption, leading to fatigue and the secretion of catecholamines, which inhibit uterine contractions, resulting in prolonged delivery and increased anxiety and pain (Delivery & Maguire, n.d.).

Lavender aromatherapy can psychologically reduce tension and anxiety while physically alleviating pain. Pleasant scents create a sense of well-being. This therapy can be administered through massage or inhalation (Ridouh & Hackshaw, 2022).

Lavender aromatherapy (Lavendula Augustfolia) contains linalool, linalyl acetate, and cineole, which help relax muscles experiencing spasms. When inhaled, lavender's volatile molecules quickly enter the nasal cavity, stimulating the hypothalamus to release neurochemicals like endorphins and serotonin, reducing muscle tension and producing calming physiological effects (You et al., 2024).

From Table 2, after lavender aromatherapy, most respondents (61.5%) experienced moderate pain, and a smaller proportion (30.8%) experienced severe pain. Delivery pain is a subjective experience caused by uterine contractions, cervical dilation, and fetal descent during delivery. Physiological responses to pain include increased blood pressure, pulse rate, respiration, sweating, pupil dilation, and muscle tension (Delivery & Maguire, n.d.).

Fear can cause uterine blood vessels to contract, resulting in pain. Without fear, muscles relax, and the cervix can thin and dilate naturally, allowing for easier fetal descent and a smoother, faster delivery with minimal pain (Chang et al., 2022). Regular relaxation exercises help mothers become accustomed to the birthing process, easing delivery and reducing fatigue (Delivery & Maguire, n.d.).

This study aligns with Tabatabaeichehr et al.'s systematic review, which found that inhaling lavender essential oil significantly reduces delivery pain. Lavender aromatherapy was more effective than deep breathing techniques in reducing delivery pain intensity (Tabatabaeichehr et al., 2020).

According to the researcher, the success of lavender aromatherapy was due to a supportive environment, proper use of relaxation tools, and cooperative deliverying mothers who followed midwives' recommendations to manage pain during the active phase, leading to reduced pain and a faster first stage of delivery.

From Table 3, the comparison of pain scales before and after lavender aromatherapy shows that the mean pain score before aromatherapy was 6.48, while after therapy, the mean pain score was 4.85. The minimum pain scale before therapy was 3, and the minimum pain score after therapy was 2. The maximum pain scale before therapy was 9, and after therapy, it was 7. The statistical test using the paired T-test showed a P-value of 0.000, indicating a significant difference in pain intensity before and after lavender aromatherapy.

Pain is a subjective and unpleasant experience. When inhaled, lavender aromatherapy releases active compounds that stimulate the hypothalamus to secrete endorphins, hormones that induce relaxation, calm, and happiness (Koulivand et al., n.d.).

Lavender aromatherapy (Lavendula Augustfolia) also contains linalool and linalyl acetate, which act as analgesics and stimulate the release of endorphins, providing calm, happiness, relaxation, and muscle relaxation, thereby reducing delivery pain (You et al., 2024).

This study used pure and high-quality lavender essential oil, free from added chemicals, as lower-quality oils may not provide optimal benefits (Farrar, 2020).

CONCLUSION

Based on the results of the study, it can be concluded that the pain scale after giving lavender aromatherapy to mothers in the first active phase of delivery is known to be mostly in the moderate pain category of 32 people (61.5%) and a small portion of severe pain of 16 people (30.8%). The results of statistical tests using the T test (Paired Samples Test), it is known that the P value (0.000) is smaller than the α value (0.05), so there is an effect of giving lavender aromatherapy on delivery pain in the first active phase. Aromatherapy is a non-pharmacological effort to overcome delivery pain so it is hoped that this therapy can be applied as one of the pain managemen in the delivery room.

Conflict of Interest

Hereby I declared that we have no conflict of interest.

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