

The Differences of First Stage Labor with Lemon and Lavender Aromatherapy in Panongan Health Centre Tangerang Regency

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Abstract

Background: Severe pain during labor can cause fatigue in the mother so that there is a risk of prolonged labor which can endanger the mother and fetus. Panongan Community Health Center, Tangerang Regency, Banten in January-March 2022 there were 142 deliveries, 11 mothers (7.8%) of whom delivered SC at the mother's request because they could not stand the pain of labor.

Purpose: To determine the differences in labor pain in the first stage of labor for mothers who were given lavender aromatherapy and lemon aromatherapy at the Panongan Health Center, Tangerang Regency, in 2022.

Methods: Quasy experimental design study with two group pre-post test design. The sample in this study was 30 respondents using a purposive sampling technique. Data were analyzed using paired sample t-test and Independent T-Test which were previously tested for normality and homogeneity.

Results: Pain in the first stage of labor in women giving birth before giving lavender aromatherapy averaged 6.00 and after being given lavender aromatherapy an average of 3.20 with an average difference of 2.80. Pain in the first stage of labor in women giving birth before giving lemon aromatherapy averaged 6.47 and after being given lemon aromatherapy averaged 1.73 with an average difference of 4.74. The results of bivariate analysis with paired sample t-test giving lavender aromatherapy a value of 0.000 and lemon aromatherapy a p value of 0.000. Independent T-Test results posttest p value 0.002.

Conclusion: there are differences between lavender aromatherapy and lemon aromatherapy on first stage labor pain among mothers. It is hoped that giving lemon and lavender aromatherapy can be applied thoroughly in Indonesian health services.

Keywords: Labor pain, Lavender aromatherapy, Lemon aromatherapy.

Introduction

One of the needs of a mother in labor is to get help to relieve pain. Pain is a physiological condition in labor that causes discomfort due to stimulation of certain nerve endings. During labour, pain is caused by uterine contractions, cervical dilatation and perineal distension. Pain during labor is unique and different for each individual, this is because the pain is influenced by fear or anxiety about childbirth, fatigue during the birth

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process, social culture, and previous birth experiences.¹ (Alyensi & Arifin, n.d.)

Meanwhile, the phenomenon of maternal mortality in Banten Province is still relatively high. According to the Banten Province Health Profile in 2019 there were 226 cases, in 2020 there were 135 cases and in 2021 there were 329 cases of maternal death. This indicates that maternal mortality in 2021 has increased compared to the previous year.⁴ Tangerang Regency found 34 maternal mortality rates.⁴ The Panongan Health Center, Tangerang Regency, is one of the areas in Tangerang Regency, where AKI was found in 2020 and there was no maternal mortality rate, but in 2021 there will be another maternal death of 1 person. The cause of maternal death is due to bleeding.

Looking at these data it can be seen that one of the causes of death is caused by prolonged labor. The duration of labor is influenced by the hormone cortisone where when there is a decrease in this hormone it will result in increased HSP (Heat Shock Protein) synthesis so that it can increase uterine muscle contractions. Good uterine muscle contractions play a role in facilitating the progress of labor and shortening the length of labor. The reduction in pain in the first active phase has a major influence on the fetal outcome as indicated by the assessment of the baby's fitness.⁹

Complications in the length of time of delivery, fatigue, stress on the mother can cause the mother's blood flow through the placenta to decrease, so that the flow of oxygen to the fetus is reduced, resulting in fetal distress and this can cause asphyxia. Fear and anxiety about labor pain will stimulate the release of excessive catecholamine and steroid hormones, causing vasoconstriction which results in reduced blood flow and oxygen to the uterus causing uterine inertia (inadequate contractions). Factors related to the duration of the first stage of labor include maternal age, parity, TFU, gestational age, distance from pregnancy, activity during pregnancy and physiotherapy.⁹

During childbirth, if a person feels anxious, the brain will release a substance that shuts down the release of endorphins so that the pain is felt even more extraordinary and causes the mother to become stressed in facing her birth which makes the pain impulses increase and the contractions of the uterine muscles weaken.³ In labor in the first stage of labour, the pain felt is visceral in nature arising from uterine contractions and cervical dilatation which is innervated by sympathetic afferents and transmitted to the spinal cord in the 10th Thoracal – Lumbar 1st segment via delta nerve fibers and C nerve fibers originating from the wall lateral and uterine fundus. Pain will increase with isometric

contractions in the uterus against obstacles by the cervix/uterus and perineum.¹¹

There are many methods for dealing with labor pain. Ways to deal with labor pain, by pharmacological and non-pharmacological methods. There is some research evidence supporting the efficacy of the choice of pharmacological methods in the management of labor pain, but the systematic overview also highlights that there is a relationship between the administration of pharmacological methods and a number of side effects.⁶

Giving pharmacological methods, labor pain will be reduced physiologically, but the psychological and emotional conditions of the mother will be neglected.¹⁰ Whereas non-pharmacological methods are effective without adverse side effects and can increase satisfaction during labor because the mother can control her feelings and strength.¹¹ These methods include hot and cold therapy, touch therapy, massage, reflexology, relaxation, dancing, sugar-free gum, trans or subcutaneous nerve stimulation, water therapy, using birth balls, music therapy, acupuncture and aromatherapy.⁷

Aromatherapy in the form of lavender essential oil is a complementary therapy that is able to treat pain and infection because it is an anti-inflammatory, analgesic and antimicrobial.¹⁶ Linalool (43.32%) and Linalyl Acetate (26.32%) are the largest components of lavender flower oil.²⁰ The content of linalool and linalyl acetate is what stimulates the parasympathetic and has a narcotic effect and linalool acts as a sedative. Annida in her research by giving 4 drops to mothers during the first active phase in 50 milliliters (ml) of water in an aromatherapy diffuser for 30 minutes showed that lavender aromatherapy intervention had a significant effect on reducing the intensity of labor pain during the first active phase of labor.²

Apart from using lavender aromatherapy, it turns out that giving lemon aromatherapy has a limonene content of 70.58%.¹⁹ Limonene is the main component in citrus chemical compounds that can inhibit the prostaglandin work system so that it can reduce pain which can be an effective anesthetic in reducing anxiety during the delivery process, where anxiety results in a long labor process so that it can be fatal to the fetus (fetal outcome).¹²

Panongan Community Health Center, Tangerang Regency, Banten is one of the health facilities for childbirth. Based on the pre-survey of the Panongan Community Health Center, Tangerang Regency, Banten, the incidence of prolonged labor in 2020 was 28.7% (201 cases out of 699 deliveries), while in 2021 it was found to be 37.9% (297

cases out of 784 deliveries). Preliminary survey at the Panongan Community Health Center, Tangerang Banten Regency by recording secondary data from the last 3 months, August-October 2022, there were 142 deliveries, out of 142 deliveries 11 mothers (7.8%) included SC deliveries at the request of the mothers themselves because they could not stand the pain of labor. Seeing the results of previous studies giving lavender and lemon aromatherapy can reduce labor pain. Based on this background, researchers felt interested in conducting research with the title Differences in First Stage Labor Pain in Mothers Given Lavender Aromatherapy and Lemon Aromatherapy at the Panongan Health Center, Tangerang Regency in 2022.

Method

1. Research design

The research design is a quasy experimental design. The design used was a two-group pre-post test design.

2. Settings and Samples

The location of the research was carried out at the Panongan Health Center, Tangerang Regency. When the research was conducted in November 2022-January 2023. The population in this study were all mothers giving birth at the Panongan Health Center, Tangerang Regency, Banten in August-October 2022, there were 142 respondents. Calculation of the minimum sample size is based on calculations using a hypothesis test with the lameshow formula, the number of samples is 15 respondents multiplied by 2 becomes 30.

The sampling method that the researchers used was purposive sampling. The intervention group was given lavender aromatherapy and the control group was given lemon aromatherapy.

The inclusion, non-inclusion and exclusion criteria of this study are as follows:

a. Inclusion criteria

- 1) Mothers who give birth at the Panongan Health Center, Tangerang Regency.
- 2) Mothers who do not experience pregnancy complications
- 3) Patients aged 15 -35 years
- 4) Cervical dilatation $\geq 4 - 8$ cm
- 5) Mothers who feel pain on a scale ≥ 4

- 6) Patients who do not have a history of allergies to lavender or lemon aromatherapy
- 7) Patients who are willing to be respondents

b. Exclusion criteria

- 1) Ibu bersalin dengan kala II dan III persalinan
- 2) Ibu bersalin yang dirujuk
- 3) Ibu yang tidak sadarkan diri
- 4) Ibu yang mengalami cyto
- 5) Ibu yang memiliki penyakit polip atau keterbatasan dalam penciuman

3. *Intervention*

Each group of researchers only gave therapy for 30 minutes. The research procedure for administering aromatherapy was carried out by incorporating 4 drops of lavender or lemon aromatherapy essential oil in 50 milliliters (ml) of water, put it in an aromatherapy diffuser, turn it on and inhale for 30 minutes.

4. *Measurement and data collection*

Researchers collected data with pain observation sheets before and after giving lavender and lemon aromatherapy to each group.

5. *Data analysis*

Data analysis used paired sample t-test and Independent T-Test.

Results

Univariat Analysis

Table 1.
Pain Level in the First Stage of Labor for Mothers in Birth Before and After Giving Lavender and and Lemon Aromatherapy at the Panongan Health Center, Tangerang Regency in 2022

Lavender and Lemon Aromateraphy							
Intervention	Pretest			Post test			
	Mean	Min	Max	Mean	Min	Max	Mean Differences
Lavender	6,00	4	8	3,20	1	6	2,80
Lemon	6,47	4	8	1,73	0	3	4,74

Normality Test

Table 2
Shapiro-Wilk Normality Test Results

First Stage Labor Pain of Childbirth Women	Asymp.Sig(2-tailed)	Results
Lavender aromateraphy		
<i>Pre test</i>	0,103	Normal
<i>Post test</i>	0,296	Normal
Lemon aromateraphy		
<i>Pre test</i>	0,175	Normal
<i>Post test</i>	0,063	Normal

Homogeneity Test

Tabel 3
 Homogeneity Results

First Stage Labor Pain of childbirth women	Sig	Results
<i>Pretest</i>	0,379	Homogen
<i>Posttest</i>	0,166	Homogen

Bivariat Analysis Results

Table 4

The Effect of Lavender Aromatherapy and Lemon Aromatherapy on Pain in the First Stage of Labor among Childbirth Women at the Panongan Health Center, Tangerang Regency in 2022

Inter vention	First Stage Labor Pain of Childbirth Women							
	Pretest			Post test				
	Mean	Min	Max	Mean	Min	Max	Mean diff	P Value
<i>Lavender</i>	6,00	4	1	3,20	8	6	2,80	0,000
<i>Lemon</i>	6,47	4	0	1,73	8	3	4,74	0,000

Table 5
Differences in Pain in the First Stage of Labor in Mothers Given Lavender and Lemon Aromatherapy at the Panongan Health Center, Tangerang Regency in 2022

First Stage Labor Pain of Childbirth Women	Lavender	Lemon	Mean difference	P Value
	<i>Mean</i>	<i>Mean</i>		
<i>Pretest</i>	6,00	6,47	0,47	0,346
<i>Posttest</i>	3,20	1,73	1,47	0,002

Discussion

1. The Effect of Lavender Aromatherapy on Pain in the First Stage of Labor among Childbirth Women at the Panongan Health Center, Tangerang Regency in 2022.

Based on the results of the study, the calculation of the difference in the mean (average) pretest and posttest pain levels in the first stage of labor in women giving birth in the lavender aromatherapy group was 2.80. The results of the Paired Sample Test show a significance value of $0.000 > 0.05$, so it can be concluded that there is an effect of lavender aromatherapy on labor pain in the first stage of labor in mothers giving birth at the Panongan Health Center, Tangerang Regency in 2022.

Lavender oil is one of the well-known aromatherapy agents for its sedative, hypnotic and anti-neurodepressive effects on humans because lavender oil can give a sense of calm, so it can be used as a stress management agent.²²

In accordance with the results of previous research, their research showed that the P-value was $0.002 < 0.05$ so it can be concluded that there was an effect of lavender aromatherapy on active phase I labor pain at the Afifah Clinic, Bandung Regency.¹⁵

Researchers assume that there is an effect of lavender aromatherapy on the level of pain in laboring mothers, this is due to the presence of linalol acetate which will create a pleasant smell that makes mothers relax and has an impact on reducing pain in laboring mothers.

2. The Effect of Lemon Aromatherapy on Pain in the First Stage of Labor among Childbirth Women at the Panongan Health Center, Tangerang Regency in 2022

Based on the results of the study, the calculation of the difference in the mean (average) pretest and posttest the level of labor pain in the first stage of labor in the lemon aromatherapy group was 4.74. The results of the Paired Sample Test show a significance value of $0.000 > 0.05$, so it can be concluded that the effect of lemon aromatherapy on

labor pain in the first stage of labor in women giving birth at the Panongan Health Center, Tangerang Regency in 2022.

The content of linalool is a sedative (sedative) and limonene has the benefit of increasing blood circulation. Linalool is useful for stabilizing the nervous system so that it can have a calming effect on anyone who inhales it.¹³

In accordance with the results of Soraya's research giving lemon-citrus aromatherapy inhalation can reduce labor pain in the first stage of the active phase with a p value of 0.009.¹⁷ Ginting, et al. in his research showed the effectiveness of lemon aromatherapy for labor pain $p = 0.019$ where the value of $p < 0.05$.⁵

According to researchers, there is the effect of lemon aromatherapy on pain levels among childbirth women. The presence of limonene content which can inhibit prostaglandins so that it can reduce pain during labor, besides that the presence of linalil acetate in lemon-citrus aromatherapy is able to normalize unbalanced emotional states so that through giving lemon aromatherapy the pain experienced by mothers in labor is reduced.

3. The Differences of Pain in the First Stage of Labor among Childbirth Women Given Lavender Aromatherapy and Lemon Aromatherapy at the Panongan Health Center, Tangerang Regency in 2022

Based on the results of the Independent T-Test different test, it is known that the significance value is $0.002 < 0.05$, so it can be concluded that there is a difference in the level of pain in the first stage of labor after being given treatment in the lavender aromatherapy group and the lemon aromatherapy group in mothers giving birth at the Panongan Health Center, Tangerang Regency, Year 2022.

Lemon aromatherapy is a type of therapy that can be used to reduce pain intensity, the substances contained in lemons are useful for stabilizing the nervous system which can make a calm, comfortable and relaxing effect for anyone who inhales it, the smell of lemon aromatherapy fragrances can have a direct effect on the human brain.¹⁴ Meanwhile, the fragrance produced by lavender aromatherapy will stimulate the thalamus to secrete enkephalins, which function as natural pain relievers. Enkefalin is a neuromodulator that functions to inhibit physiological pain.¹⁸

Researchers have not found the same study that compared differences in the level of pain in the first stage of labor after being given treatment in the lavender aromatherapy

group and the lemon aromatherapy group in labor mothers.

According to researchers, seeing the results of a decrease in the administration of lemon and lavender aromatherapy, both of them can reduce labor pain because both can affect the activity of brain function through the nervous system and can increase the production of brain nerve conduction mass which can restore psychological conditions such as emotions, feelings, thoughts and desire, besides that aromatherapy can also provide a relaxing effect on nerves and tense muscles. When viewed based on the results of the decrease, it was found that birth mothers who received lemon aromatherapy experienced a decrease compared to those who received lavender aromatherapy, this was because the aromatherapy of lemon gave off a distinctive and stronger aroma compared to lavender aromatherapy so that the smell/aroma response was soothing and The resulting refreshing effect will stimulate the work of brain chemical neuro cells and can stabilize the nervous system and then cause a higher calming effect compared to lavender aromatherapy.

Limitation

There are limited time and costs, so the observation time is only one week and the process of ordering diffuser materials takes a long time so that the research process is a little hampered.

Conclusion

There is a difference in giving lavender aromatherapy and lemon aromatherapy to the level of labor pain in the first stage of labor for women giving birth at the Panongan Health Center, Tangerang Regency, in 2022 with a significance level of 0.002.

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