# THE EFFECT OF CITRUS (LEMON) AROMATHERAPY TO REDUCE LEVEL OF PAIN IN ACTIVE PHASE I LABOR

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**ABSTRAK : EFEK AROMATERAPI CITRUS (LEMON) TERHADAP PENURUNAN TINGKAT NYERI PADA PERSALINAN AKTIF TAHAP I**

Latar Belakang: Nyeri persalinan merupakan suatu keadaan fisiologis. Keadaan ini merupakan perasaan tidak menyenangkan yang terjadi pada saat proses persalinan. Jumlah ibu hamil di Kabupaten Tulang Bawang khususnya di RS Mutiara Bunda pada tahun 2022 sebanyak 1638 ibu hamil yang mengalami persalinan normal sebanyak 364 orang dan diperkirakan seluruhnya akan mengalami nyeri saat persalinan (61,53%). Tujuan penelitian: mengetahui pengaruh aromaterapi jeruk (lemon) terhadap penurunan tingkat nyeri persalinan kala aktif I di RS Mutiara Bunda Kabupaten Tulang Bawang pada tahun 2023.

Metode: Jenis penelitian kuantitatif, desain penelitian eksperimen sederhana (Pretest-Postes With Control Group Design). Populasi ibu yang akan melahirkan sebanyak 364 responden per tahun. Sampel yang digunakan sebanyak 30 responden yang dibagi menjadi 2 kelompok yaitu 15 intervensi dan 15 kontrol (tanpa perlakuan). Teknik pengambilan sampel purposif. Analisis data univariat dan bivariat menggunakan uji t independen.

Hasil: Rata-rata intensitas nyeri persalinan fase aktif I pada kelompok intervensi sebelum diberikan inhalasi aromaterapi jeruk (lemon) dengan mean 8,60. Intensitas nyeri persalinan kala I fase aktif pada kelompok intervensi setelah diberikan aromaterapi jeruk (lemon) d inhalasi dengan mean 6,40. Rata-rata intensitas nyeri persalinan fase aktif I sebelum kelompok tidak diberikan inhalasi aromaterapi jeruk (lemon) dengan rerata 8,67. Rata-rata intensitas nyeri persalinan fase aktif I setelah kelompok tidak diberikan inhalasi aromaterapi jeruk (lemon) dengan rerata 8,20. Kesimpulan : Hasil uji statistik diperoleh p-value = 0,000 (<0,05) yang berarti terdapat pengaruh aromaterapi jeruk (lemon) terhadap penurunan tingkat nyeri persalinan kala I kala I. persalinan di RS Mutiara Bunda Kabupaten Tulang Bawang pada tahun 2023. Saran : Diharapkan kepada petugas kebidanan baik di rumah sakit maupun yang mempunyai praktik bidan mandiri agar dapat memberikan promosi kesehatan melalui media leaflet yang berisi materi manfaat dan manfaat. kegunaan aromaterapi untuk kesehatan, khususnya untuk relaksasi persalinan.

Kata Kunci : Aromaterapi Jeruk (Lemon), Nyeri, Fase Aktif Fase I

**ABSTRACT**

Background: Labor pain is a physiological condition. This situation is an unpleasant feeling that occurs during the birth process. The number of pregnant women in Tulang Bawang Regency, especially at Mutiara Bunda Hospital in 2022, is 1638 pregnant women who experience normal delivery as many as 364 people and it is estimated that all of them will experience pain during labor (61.53%). Research objective: to know the effect of citrus (lemon) aromatherapy to reduce the level of pain in the first active phase of labor at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023.

Method: Type of quantitative research, simple experimental research design (Pretest-Postes With Control Group Design). The population of mothers who will give birth is 364 respondents per year. The sample used 30 respondents who were divided into 2 groups, namely 15 interventions and 15 controls (without treatment). Purposive sampling technique. Univariate and bivariate data analysis using independent t-test.

Results: The average intensity of active phase I labor pain in the intervention group before being given citrus (lemon) aromatherapy inhalation with a mean of 8.60. The intensity of labor pain in the first stage of active phase in the intervention group after being given citrus (lemon) aromatherapy d inhalation with a mean of 6.40. The average intensity of labor pain during the first active phase before the group was not given citrus (lemon) aromatherapy inhalation with a mean of 8.67. The average intensity of labor pain during the first active phase after the group was not given citrus (lemon) aromatherapy inhalation with a mean of 8.20. Conclusion: The results of the statistical test obtained a p-value = 0.000 (<0.05), which means that there is an influence of citrus (lemon) aromatherapy to reduce the level of pain in the active phase of labor in the first stage of labor at Mutiara Bunda

Hospital, Tulang Bawang Regency in 2023. Suggestion: It is hoped that midwifery officers, both in hospitals and those who have independent midwife practices, should be able to provide health promotion through the media of leaflets containing material on the benefits and uses of aromatherapy for health, especially for relaxing labor.

Keywords : Citrus (Lemon) Aromatherapy, Pain, Active Phase I Phase

## INTRODUCTION

Labor is a natural process that will be experienced by every pregnant woman. In this process there is stretching and widening of the cervix as a result of contractions of the uterine muscles to push the baby out. Most mothers begin to feel pain or labor pain is during the active phase I, in this phase the mother feels severe pain because the uterus contracts more and more frequently to expel the products of conception (Sukarni., Margareth. 2019).

Maternal morbidity and health rates which are described through the Maternal Mortality Rate (MMR) can describe the health status of the mother. This indicator not only assesses maternal health rates, but is also able to assess health services and community health scores. Based on WHO (Word Health Organization) data, maternal mortality and morbidity increased in 2015 to 130/100,000 births, in 2014 to 100/100,000 births (WHO, 2020).

In Indonesia, there are 107,000 pregnant women (28.7%) who experience anxiety related to labor pain in the face of labor. In Lampung Province there were 8,948 pregnant women, and there were 5,355 people (59.8%) experiencing labor pain during labor. (Lampung Health Dept Profile, 2020).

The number of pregnant women in Tulang Bawang Regency, especially at Mutiara Bunda Hospital in 2022, was 1638 mothers who had normal deliveries as many as 364 people and it is estimated that all of them experience feelings of pain during labor (61.53%). (Mutiara Bunda Hospital, 2022).

Labor pain can cause stress that causes excessive release of hormones such as catecholamines and steroids. This hormone can cause smooth muscle tension and vasoconstriction of blood vessels. This can result in decreased uterine contractions, decreased uteroplacental circulation, reduced blood and oxygen flow to the uterus, and uterine ischemia. (Afifah, 2013).

There are several factors that affect the birth process, the strength of contractions and pushing (power), the birth canal (passage), the fetus and placenta (passanger), psychological, and helper (provider). Emotional or psychological factors for prolonged labor are the mother's fear and anxiety that are not resolved during childbirth. 65% of prolonged labor events are caused by inefficient uterine contractions in response to anxiety, thereby inhibiting uterine activity. One of the causes that ranks at the top of the occurrence of prolonged labor is the stress response. This condition occurs because women face various problems in their adaptation during the birth process, including pain during contractions, fear of being unable to deal with problems that will occur, tension and hyperventilation. (Hayati, 2017).

Unhandled properly pain can cause other problems, namely increasing anxiety in facing childbirth so that the production of the hormone adrenaline increases and causes vasoconstriction thereby reducing maternal blood flow to the fetus. Decreased blood and oxygen flow to the uterus and tissue ischemia result in hypoxia in the fetus and in the mother it can result in prolonged labor and increase in pain impulses. Therefore, this can increase the number of maternal and infant morbidity rates (Himawati., Kodiyah. 2020).

Labor pain can be treated using pharmacological and non-pharmacological methods. Aromatherapy is an alternative non-pharmacological method to reduce pain (Smith &Crowther, 2011; Cholifah, 2016). Lemon aromatherapy contains limonene which can inhibit prostaglandins so that it can reduce labor pain (Cheragi&Valadi, 2010; Cholifah, 2016). Limonene control siklooksigenase I and II, prevent prostaglandin activity and reduce pain (Namazietal., 2014; Cholifah, 2016)

According to Young (2011; Oktaviani, 2020), Lemon aromatherapy oil is easily available and contains 66-80% limonene, geranylacetate, nerol, linalyacetate, á pinene 0.4-15%, á pinene 1-4%, terpinene 6-14% and myrcen. Limonene is the main component in citrus chemical compounds that can inhibit the action of prostaglandins so that they can reduce pain (Cheragi&Valadi, 2010; Oktaviani, 2020).

In addition, limonene controls cyclooxygenase I and II, prevents prostaglandin activity and reduces pain, including nausea and vomiting. (Namazietal, 2014; Rompas, 2019). Linalyl acetate contained in lemon aromatherapy is an ester compound formed by combining organic acids and alcohol. Esters are very useful for normalizing emotional states and unbalanced body conditions, and also have properties as a sedative and tonic,

especially for the nervous system. (Tarsikah, etal, 2012; Ulsafitri, 2018).

Based on the pre-survey in January 2023 normal labor pain at Mutiara Bunda Hospital, Tulang Bawang Regency, Lampung Province found that women in labor experienced pain to the point of anxiety. For self-pain management, only drugs from the hospital were used and no additional intervention was given as pain relief. Based on the pre-survey conducted on 5 mothers in labor, it was found that 4 mothers experienced labor pain with a moderate degree of pain on a scale of 6, and 1 mother experienced mild pain on a scale of 4.

## RESEARCH METHODS

This research is a quantitative research. The experimental design used in this research is a simple experimental design (Pretest-Postes With Control Group Design). The population in this study were pregnant women at Mutiara Bunda Hospital, Tulang Bawang Regency with a total of 364 respondents a year. This study used 2 groups, namely the intervention group in the form of giving citrus aromatherapy and the control group (without treatment) with a total of 15 in each group so that the total sample was 30 respondents giving birth at Mutiara Bunda Hospital, Tulang Bawang Regency. The sampling technique in this study was purposive sampling. This research will be conducted from February to June 2023. Measuring labor pain using the FLACC pain meter, aromatherapy is given to gauze/tissue in the amount of 3 drops with a pipette/syringe or the equivalent of 1 ml, then inhaled to the respondent. The treatment group was given lemon inhalation aromatherapy for 30 minutes and the control group was given deep breathing guidance for 30 minutes. Ask the patient to inhale slowly through the nose and analyze univariate and bivariate data using independent t-tests.

## RESEARCH RESULTS

### Characteristics of Respondents

Table 1 shows the characteristics of respondents in the intervention group based on the highest number of ages not at risk (20-35 years) 13 respondents (86.7%) high school education 7 respondents (46.7%) housewife work 8 respondents (53, 3%) primipara parity 9 respondents (60.0%). Whereas in the control group the age is not at risk (20-35 years) 14 respondents (93.3%) high school education 6 respondents (40.0%) housewife work 7 respondents (46.7%) primipara parity 9 respondents ( 60.0%).

**Table 1**
**Characteristics of Respondents at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023**

| Characteristic | Intervention | | Control | |
|---|---|---|---|---|
| Age | | | | |
| No. Risk | 13 | 86,7 | 14 | 93,3 |
| Risk | 2 | 13,3 | 1 | 6,7 |
| Pendidikan | | | | |
| 3-year diploma | 1 | 6,7 | | |
| bachelor | 4 | 26,7 | 6 | 40,0 |
| Senior High School | 7 | 46,7 | 6 | 40,0 |
| Junior High School | 3 | 20,0 | 3 | 20,0 |
| Work | | | | |
| Teacher | 1 | 6,7 | 1 | 6,7 |
| Non-permanent employees | - | - | 1 | 6,7 |
| House wife | 8 | 53,3 | 7 | 46,7 |
| Non governance employees | 5 | 33,3 | 4 | 26,7 |
| Nurse | 1 | 6,7 | - | - |
| Self-employed | 1 | 6,7 | 1 | 6,7 |
| Police | - | - | 1 | 6,7 |
| Paritas | | | | |
| Multipara | 6 | 40,0 | 6 | 40,0 |
| Primipara | 9 | 60,0 | 9 | 60,0 |

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**Univariate Analysis**

Pretest intervention group

**Table 2**
**Intensity of Labor Pain During the First Stage of Active Phase in the Intervention Group Before Being Given Citrus (Lemon) Aromatherapy Inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023**

| Pain | N | Mean | SD | SE | Min-Max |
|---|---|---|---|---|---|
| Pretest | 15 | 8,60 | 0,507 | 0,131 | 8-9 |

From table 2 it is known that the average labor pain intensity in the first stage of the active phase in the intervention group before being given citrus (lemon) aromatherapy inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, with a mean of 8.60, which means that the respondent experienced controlled severe pain, with the lowest pain score of 6 and the highest pain score max 9.

Pretest intervention group

From table 3 it is known that the average intensity of labor pain during the first stage of the active phase in the intervention group after being given citrus (lemon) aromatherapy inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, with a mean of 6.40, which means that the respondent experienced moderate pain, with The lowest pain score is 6 and the maximum pain score is 7.

**Tabel 3**
**Intensity of Labor Pain During the First Stage of Active Phase in the Intervention Group After Being Given Citrus (Lemon) Aromatherapy Inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency 2023**

| Pain | N | Mean | SD | SE | Min-Max |
|---|---|---|---|---|---|
| Postest | 15 | 6,40 | 0,507 | 0,131 | 6-7 |

Pretest Control Group

**Table 4**
**Intensity of Labor Pain During the First Active Phase Before the Group Was Not Given Citrus (Lemon) Aromatherapy Inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023**

| Pain | N | Mean | SD | SE | Min-Max |
|---|---|---|---|---|---|
| Pretest | 15 | 8,67 | 0,488 | 0,126 | 8-9 |

From table 4 it is known that the average intensity of labor pain during the first active phase before the group was not given citrus (lemon) aromatherapy inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, with a mean of 8.67, which means that respondents experienced controlled severe pain, with the lowest pain score is 8 and the highest pain score is max 9.

Posttest Control Group

From table 5 it is known that the average labor pain intensity in the first stage of the active phase after the group was not given citrus (lemon) aromatherapy inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, with a mean of 8.20, which means that the respondent experienced controlled severe pain, with the lowest pain score 7 and the highest pain score max 9.

**Table 5**
**Intensity of Labor Pain During the First Active Phase in the Group Not Given Citrus (Lemon) Aromatherapy Inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency In 2023**

| Nyeri | N | Mean | SD | SE | Min-Max |
|---|---|---|---|---|---|
| Posttest | 15 | 8,20 | 0, 561 | 0, 145 | 7-9 |

**Bivariat Analysis**

**Table 6**
**Effect of Citrus (Lemon) Aromatherapy to Reduce Pain Levels in Active Phase I Labor at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023**

| | Pain | N | Mean | SD | SE | Mean Rank | P –Value |
|---|---|---|---|---|---|---|---|
| Pretest | Intervention Group | 15 | 8,60 | 0,507 | 0,131 | 15,00 | 0,000 |
| | Control Group | 15 | 8,67 | 0,488 | 0,126 | | |
| Postest | Intervention Group | 15 | 6,40 | 0,507 | 0,131 | 8,20 | |
| | Control Group | 15 | 8,20 | 0, 561 | 0, 145 | | |

Table 6 shows the average intensity of labor pain during the first active phase in the intervention group before inhaling citrus (lemon) aromatherapy at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, with a mean of 8.60 which means that the respondent is in controlled severe pain, while after given the intervention, the average intensity of labor pain during the first active phase in the intervention group decreased to 6.40 in the category of moderate pain respondents.

In the control group, the intensity of labor pain in the first stage of the active pretest phase was 8.67, which means that the respondent had controlled severe pain, and in the second measurement of pain, it was 8.20, which means that the respondent remained in controlled severe pain.

The results of the statistical test obtained a p-value = 0.000 (<0.05) indicating the effect of citrus (lemon) aromatherapy to reduce pain levels in the first active phase of labor at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023.

## DISCUSSIONS

### Univariate Analyse

Average Intensity of Labor Pain During the First Phase of the Active Phase in the Intervention Group before Inhalation of Citrus (Lemon) Aromatherapy at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023

The intensity of labor pain during the first active phase in the intervention group before inhalation of citrus (lemon) aromatherapy at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, was 8.60, which means that the respondent was in controlled severe pain, with the lowest pain score being 6 and the highest being 9.

In line with the theory by Zakiyah (2015) Pain is an unpleasant sensory experience, the main element that must exist to be called pain is an unpleasant feeling. Without that element it cannot be categorized as pain, although on the contrary everything that is unpleasant cannot be called pain

In the opinion of researchers Labor pain is different for every woman. How he perceives and interprets pain is influenced by various physical, emotional, psychosocial, cultural and environmental factors. Discomfort or pain during labor is caused by the descent of the fetal head into the pelvic cavity, pressure on the cervix and stretching of the vaginal wall and pelvic floor muscles caused by the descent of the presenting part of the fetus.

### Labor Pain Intensity During the First Phase of the Active Phase in the Intervention Group After Being Given Citrus (Lemon) Aromatherapy Inhalation at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023

The average intensity of labor pain during the first active phase in the intervention group after inhaling citrus (lemon) aromatherapy at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023 was 6.40, which means that respondents experienced moderate pain, with the lowest pain score of 6 and the highest pain score 7. in accordance with the theory by Maryunani (2010) Pain during the opening is caused by the opening of the cervix, for example stretching smooth muscle is a sufficient stimulus to cause pain. There is a close relationship between the opening of the cervix and the intensity of pain (the more open the more painful), and between the onset of pain and the onset of uterine contractions (pain felt ± 15-30 seconds after the start of the contractions).

In the opinion of researchers, pain in the category of severe pain and after being given an intervention has decreased to mild pain. This is because labor pain is physiological. Labor during the 1st active phase, the mother will experience repeated contractions which cause uterine contractions to increase then stimulate pain to pain receptors which send signals to the spinal cord, pain signals from the spinal cord will be sent to the hypothalamus which conveys sensory information to the body so that the mother will feel pain .

After being given lemon aromatherapy, the pain decreased to become mild, this is because the content of lemon essential oil can stimulate the hypothalamus nerves to release endorphrine

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substances so that the respondent can feel relaxed, and results in a decrease in pain.

Lemon citrus aromatherapy can be used to treat pain and anxiety. One of the substances contained in lemons is linalool which is useful for stabilizing the nervous system so that it can have a calming effect on anyone who inhales it. Linalool in aromatherapy causes a feeling of relaxation, increases circulation and transmits electrochemical messages to the central nervous system. Furthermore, this linalool will cause spasmolytic and reduce the flow of nerve impulses that transmit pain. Linalool functions as an anxiolytic or a substance that can reduce anxiety, its main activity is to increase the body's immunity and improve circulation and increase the excitation response of cells. Limonene contained in citrus lemon aromatherapy can inhibit prostaglandins so that it can reduce pain. (Purwandari & Sabrian, 2014)

Average Intensity of Labor Pain During the First Active Phase before the Non-Inhalation Citrus (Lemon) Aromatherapy Group at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023

The average pretest pain intensity during the first stage of labor in the active phase in the non-inhalation group at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, was 8.67, which means that respondents experienced controlled severe pain, with the lowest pain score being 8 and the maximum pain being 9.

Sayiner et al (2009; Istiani, 2020) Pain is a condition that affects a person and its existence is known if someone has experienced it. There are three general factors that influence labor pain, namely anxiety and fear and worry. The long duration of labor will add to the mother's anxiety and fear so that it affects the activity of the hormone oxytocin. Besides that, if the delivery has complications and there is excessive intervention in the delivery process it will increase the mother's anxiety (Syalfina 2017; Zulperitha, Nababan, and Hutauruk 2021).

According to researchers, the pain experienced during labor is unique to each mother. In primigravida women, severe pain is felt more dominantly because the mother has not experienced pain like during childbirth. The pain that the mother feels indicates an opening in the cervix. Increasing the volume and frequency of uterine contractions, the pain you feel will get stronger.

**Average posttest Intensity of Labor Pain During the First Stage of the Active Phase in the Non-Inhalation Citrus (Lemon) Aromatherapy Group at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023**

The posttest of labor pain intensity during the first active phase in the non-inhalation group at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, was 8.20, which means that the respondent had severe pain under control, with the lowest pain score of 7 and the highest pain score of 9.

Acute pain occurs after an acute injury, illness, or surgical intervention and has a rapid onset of varying intensity (mild to severe) and lasts for a short time. The function of acute pain is to warn of impending injury or illness. Acute pain will usually go away with or without treatment once the damaged area has healed (McCaffery (2010).

Labor pain is pain due to myometrial contractions accompanied by mechanisms of physiological and biochemical changes. In addition to physical, psychological and emotional factors, motivation also influences the incidence of labor pain. As many as 90% of labor is accompanied by pain, even to severe pain. Stress on the mother will cause the release of stress hormones such as catecholamines and steroids, resulting in a reduction in maternal blood flow to the fetus. Pain that cannot be tolerated by the mother can stress the mother resulting in more pain impulses and weak uterine muscle contractions resulting in prolonged labour. This can cause distress to the fetus.

**Bivariate Analysis**

Effect of Citrus (Lemon) Aromatherapy to Reduce Pain Levels in Active Phase I Labor at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023

The statistical test results obtained a p-value = 0.000 (<0.05) which means that there is an influence of citrus (lemon) aromatherapy to reduce the level of pain in the active phase of labor in the first stage of labor at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023.

Aromatherapy is a therapeutic action using essential oils which is useful to improve one's physical and psychological condition to be better. Each essential oil has unique pharmacological effects, such as antibacterial, antiviral, diuretic, vasodilator, sedative, and adrenal stimulating. (Runiari & Ana, 2010).

The average intensity of labor pain during the first active phase in the intervention group before inhaling citrus (lemon) aromatherapy at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, with a mean of 8.60, which means that respondents experienced controlled severe pain, whereas after being given the intervention the average the average labor pain intensity during the first active phase in the

intervention group decreased to 6.40, which means that the respondent had moderate pain.

In the control group, the average postest intensity of labor pain during the first active phase in the control group at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023, was 8.67 respondents with controlled severe pain, and in the second measurement, an average pain of 8.20 respondents was obtained. controlled severe pain. In this study it was proven that there were differences in pain reduction in the intervention and control groups, where the results of post-test pain in the intervention group were relatively lower compared to the control group.

Based on the characteristics of the respondents in the intervention group, the highest number was not at risk (20-35 years) 13 respondents (86.7%). The age of the respondents in this study was dominated by young people or those who were not in the risk zone, that is, 20-35 years old is a healthy age for pregnancy and childbirth. Age determines a mother's health, the mother is said to be at high risk if the pregnant woman is under 20 years old and over 35 years old. (Afritayeni, 2017). Maternal age < 20 years and > 30 years is a risk factor for labor complications. Women who become pregnant at a high risk age can cause complications for both the mother and the baby. Age is related to the unpreparedness of the mother in reproduction, women under the age of 20 are still in the stage of growth and development, so their reproductive organs are immature. (Hariyani, Murti, & Wijayanti, 2019)

In the education category, Senior High School Education 7 respondents (46.7%). The education in this study was the last formal education attended by the respondent and received a diploma. According to Notoatmodjo (2010), the higher a person's education, the easier it is to get information and ultimately influence a person's behavior. The characteristics of the respondents who were the subject of this study most had a recent history of high school education. Education for a person is a dynamic influence in the development of body, soul, feelings so that different levels of education will provide different types of experiences as well. The level of education is associated with an increase in the pain scale resulting from a lack of coping strategies so that someone with a low level of education is less able to adapt to pain (Thomten et al, 2012).

Occupation of housewives 8 respondents (53.3%). The majority of mothers who were respondents were mothers who did not work or were housewives. The same research conducted by Budiman et al., (2017) shows that mothers who work outside the home can do their jobs if the work cannot interfere with their pregnancy.

Primipara parity 9 respondents (60.0%). In this study, the average respondent has primipara parity, which means that they have not had childbirth experience. A mother who has experienced childbirth will understand how the pain will be felt during labor. Meanwhile, mothers who have never given birth do not know how the pain will be felt for the first time during labor, especially in primiparas. The cervix in primiparas requires greater force to stretch it, thus causing a greater intensity of contractions during the first stage of labour. Research states that most multiparas experience moderate pain levels, whereas primiparas tend to experience severe pain levels. However, in this study, more respondents experienced severe pain in multiparas, this was because the number of multiparas in this study was higher than primiparas.

Decreased pain after giving lemon-orange aromatherapy due to the presence of linalil acetate in lemon-orange aromatherapy is very useful for normalizing emotional states and unbalanced body conditions, and has properties as a sedative and tonic, especially for the nervous system. So it can be concluded that lemon-orange aromatherapy is a type of aromatherapy that can be used to treat pain and anxiety. The effects of aromatherapy are very complex and subtle due to their complex chemical structure and properties. The mechanism of action of aromatherapy involves the integration of essential oils into biological signals from receptor cells in the nose when inhaled. Signals sent to the limbic and part of the brain,the hypothalamus through the bulb. These signals cause the brain to release olfactory neuro messengers such as olfactory serotonin, endorphins etc., to connect the nervous system with other body systems that are believed to bring about the desired changes and provide feelings of relief.

Lemon aromatherapy can be used to treat pain and anxiety. One of the substances contained in lemons is linalool which is useful for stabilizing the nervous system so that it can have a calming effect on anyone who inhales it. Linalool in aromatherapy induces feelings of relaxation, increases circulation and sends electrochemical messages to the central nervous system. Furthermore, this linalool will cause spasmolytic and reduce the flow of nerve impulses that transmit pain. Linalool functions as an anxiolytic or a substance that can reduce anxiety, its main activity is to increase the body's immunity and improve circulation and increase the excitation response of cells. Limonene contained in lemon

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aromatherapy can inhibit prostaglandins so that it can reduce pain. (Purwandari & Sabrian, 2014)

## CONCLUSION

there was an effect of citrus (lemon) aromatherapy to reduce the level of pain in the active phase of labor in the first stage of labor at Mutiara Bunda Hospital, Tulang Bawang Regency in 2023.

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