# BITTER ORANGE AROMATHERAPY FOR REDUCING LABOR PAIN IN ACTIVE PHASE I ON PRIMIGRAVIDA WOMEN

**Yulida Efendi Nasution[1]\*, Fina Kusuma Wardani[2], Putri Hamellya[3]**

[1,2]Faculty of Pharmacy and Health Helvetia Health Institute Medan
[3]D4 Midwifery Study Program Helvetia Health Institute Medan
\* Corresponding Email: yulidanasution596@gmail.com

**AROMATERAPI *BITTER ORANGE* TERHADAP PENURUNAN NYERI PERSALINAN FASE AKTIF KALA I PADA IBU PRIMIGRAVIDA**

Latar Belakang: Ibu primigravida merupakan ibu yang baru pertama hamil dimana ibu belum pernah menghadapi proses persalinan sehingga ibu primigravida belum mampu mentolerir rasa nyeri sehingga dapat meningkatkan kecemasan pada saat proses persalinan selain itu juga dapat meningkatkan angka persalinan dengan *section caesarea*. Salah satu terapi non farmakologis untuk mengurangi nyeri persalinan dengan aromaterapi *bitter orange* yang merupakan sebuah terapi non farmakologis untuk mengurangi rasa sakit pada ibu bersalin kala I.

Tujuan: Penelitian ini bertujuan untuk mengidentifikasi pengaruh aromaterapi *bitter orange* terhadap penurunan nyeri persalinan fase aktif kala I di Wilayah Kerja Puskesmas Langsa Timur Kota Langsa.

Metode: Penelitian ini menggunakan metode *Quasi Eksperimen* dengan pendekatan yang dipilih adalah *two group pretest-posttest control design.*

Hasil: Hasil penelitian menunjukkan bahwa rata-rata skala nyeri persalinan fase aktif kala I ibu primigravida adalah 6,53 dan sesudah diberikan aromaterapi *bitter orange* adalah 4,67. Hasil uji *wilcoxon test* memunjukkan nilai *p-value* 0,002 (p<0,05).

Kesimpulan: ada pengaruh yang signifikan aromaterapy *bitter orange* terhadap penurunan skala nyeri persalinan fase aktif kala I pada ibu primigravida dengan.

Saran: Diharapkan bagi profesi kebidanan dapat menerapkan ilmu pengetahuan selama menjalankan pendidikan dan sebagai pengalaman dalam melaksanakan penelitian khususnya berkaitan dengan pengaruh aromaterapi bitter orange terhadap tingkat kecemasan pada ibu bersalin kala I fase aktif

.
Kata Kunci : Aromaterapy *Bitter Orange,* Nyeri Persalinan, Primigravida

## ABSTRACT

Background : Primigravida women are mothers who are pregnant for the first time where mothers have never faced a labor process so that primigravida mothers have not been able to tolerate pain so that it can increase anxiety during the delivery process but it can also increase the number of deliveries by caesarean section.

Purpose : To Knows one of the non-pharmacological therapies to reduce labor pain is bitter orange aromatherapy which is a non-pharmacological therapy to reduce pain in the first stage of labor. East Langsa Langsa City.

Methods : This study uses a quasi-experimental method with the chosen approach is a two group pretest-posttest control design. The results showed that the average scale of labor pain in the active phase of the first stage of primigravida mothers was 6.53 and after being given bitter orange aromatherapy was 4.67.

Results : The results of the Wilcoxon test showed a p-value of 0.002 (p<0.05).

Conclusion : The conclusion is that there is a significant effect of bitter orange aromatherapy on reducing the pain scale of active phase I labor in primigravida women with.

Suggestion : It is hoped that the midwifery profession can apply science during education and as experience in carrying out research, especially with regard to the effect of bitter orange aromatherapy on the level of anxiety in maternity mothers during the active phase I.

Keywords : Aromatherapy Bitter Orange, Labor Pain, Primigravida

## INTRODUCTION

Sustainable Development Goals (SDGs) is a government program whose one goal is to accelerate improving maternal health, this program is expected to be realized in 2030. Maternal health problems are the main obstacle felt by the community, this is due to the high number of factors that can affect maternal mortality, one of which is caused by the birth process.(Sulaiman 2021)

Pain is an unpleasant condition due to physical stimulation or from the fibers in the nerve fibers in the body to the brain and is followed by physical, physiological, and emotional reactions. Labor pain is a subjective experience of physical sensations associated with uterine contractions, cervical dilatation and effacement, and fetal descent during labour. Physiological responses to pain include an increase in blood pressure, pulse, respiration, perspiration, pupil diameter, and muscle tension (Mander 2004)

The International Association for the Study of Paint defines pain as any of the subject's sensory and unpleasant emotional experiences related to actual or potential or potential tissue damage that is felt where the crusting occurs. Artur Curton (1983) says that pain is a production mechanism that arises when the tissue is damaged and causes the individual to react to relieve pain. (Sari, Rufaida, and Lestari 2018)

The World Health Organization (WHO) estimates that around 10% of live births experience complications of postpartum hemorrhage. As many as 160 million women around the world get pregnant every year and most of these pregnancies take place safely, but as many as 15% experience severe complications that can threaten the mother's life. (Akbarani and Pritasari 2020) Based on the Indonesian Demographic and Health Survey (IDHS) in 2017, the mortali

ty rate Mothers in Indonesia are still high at 359 per 100,000 live births. (Chasanah 2017)Labor and birth are normal physiological events in life. The birth of a baby is also a social event for the mother and family. Labor is also defined as stretching and dilation of the cervix, it occurs when the uterine muscles contract, pushing the fetus out so that a lot of energy is expended and can cause pain. (and Margaret 2013)

During the first stage of normal labor, pain can be caused by involuntary contractions of the uterine muscles. Contractions tend to be felt in the lower

back early in labour. Pain sensations surround the lower torso, which includes the abdomen and back. Contractions generally last about 45-90 seconds. As labor progresses, the intensity of each contraction increases, resulting in greater pain intensity. (Novita, Rompas, and Bataha 2017)

Physiologically, labor pain begins to arise in the first stage of labor, the latent phase and the active phase. Latent phase occurs dilatation to 3 cm, can last for 8 hours. The peak of pain occurs in the active phase, where the dilatation becomes complete to 10 cm and lasts for 6 hours. The pain comes from uterine contractions and cervical dilatation. In the active phase, uterine contractions become more flexible, longer, and stronger so that the sensation of pain is felt to increase. Handling and monitoring of labor pain, especially in the first stage of the active phase, is very important, because this is a determining point whether a mother in labor can undergo a normal delivery or end with an action due to complications caused by very severe pain. (Sinaga et al. 2020)

Pain reduction is one of the needs of mothers in the labor process. Each individual has a different perception of pain. Through the experience of pain humans develop mechanisms to cope with pain during labor. (Magfuroh 2012) Various effects, both physiologically and psychologically if there is excessive pain. The physiological impact of labor pain causes ischemia in the placenta so that the fetus will be deprived of oxygen resulting in anaerobic metabolism which causes metabolic acidosis. Another impact is that there can be a decrease in the effectiveness of uterine contractions so that it slows down the progress of labor that there is an effect of bitter orange aromatherapy on pain and anxiety in the first stage of active phase with a p-value of 0.000 (p<0.05). (Astuti, Rahayu, and Wijayanti 2015)

The results of this study are in line with research conducted by Utami, regarding the effectiveness of bitter orange aromatherapy on post partum sectio caesarea pain, that the results of bivariate analysis showed a p-value of 0.000 (P <0.05) which concluded that bitter orange aromatherapy could be recommended for scale reduction. painful. (Utami 2016)

Based on the data that the author got from the Langsa City Health Office, the number of mothers giving birth in 2020 was 3,629 people. Data for normal delivery mothers in the East Langsa Working

Area in 2020 were 628 people, while in January-May 2021 there were 155 people. (Langsa 2020)

The impact of labor pain in addition to increasing anxiety, can also increase the rate of delivery by caesarean section, especially for primigravida mothers who are unable to withstand labor pains. (Ayu and Supliyani 2019) The results of the initial survey that the author conducted in July 2021 by observing the pain scale at 5 Mothers who gave birth in normal active phase of the first stage in the Work Area of the Langsa Timur Health Center, Langsa City using the Face Pain Scale (FPS) scale, it was found that 1 (20%) experienced mild pain, 2 (40%) experienced disturbing pain and as many as 2 (40%). %) mothers experienced severe pain and after being given bitter orange aromatherapy using an electric vaporizer and advising the mother to inhale deeply for 5 minutes, the results showed that as many as 4 (80%) mothers experienced a decrease in pain scale.

Non-pharmacological therapy for bitter orange aromatherapy is not only cheap, affordable, easy to use and innovative and can reduce labor pain. This therapy has also never been used to reduce labor pain in the active phase of the first stage. So the authors are interested in conducting research on the effect of bitter orange aromatherapy on reducing labor pain in the active phase of the first stage in the Work Area of the East Langsa Health Center, Langsa City in 2021.

## RESEARCH METHODOLOGY

Quasi-experimental research using a one group pretest-posttest design, where in this design there is no comparison group (control) but at least the first observation (pretest) has been carried out which allows researchers to examine changes that occur after the experiment (posttest). The population in this study were all primigravida mothers during the active phase I in the Work Area of the East Langsa Health Center, Langsa City, as many as 36 people. Samples were obtained as many as 15 people with purposive sampling technique.

The tool used for data collection is an observation sheet using a pain scale measuring instrument Face Pain Scale (FPS). Data analysis using a computer program, univariate analysis to determine the frequency of each variable fistribuis, bivariate analysis using the Wilcoxon test.

## RESEARCH RESULTS

Univariate analysis: Based on table 1. the results of the study from 15 respondents were 7 respondents (46.7%) aged 20-25 years and had a high school education/equivalent and as many as 10 respondents (66.7%) and based on the work of most of the household heads as many as 13 respondents (86.6%).

**Table 1**
**Frequency Distribution of Primigravida Women's Characteristics in the Work Area of the East Langsa Health Center in 2021**

| Characteristics | Frekuensi (f) | Percentage (%) |
|---|---|---|
| Occupation | | |
| civil servant | 1 | 6,7 |
| Nonpermanent staff | 1 | 6,7 |
| House wife | 13 | 86,6 |

**Table 2**
**Frequency Distribution of Childbirth Pain during Active Phase 1 Before-after Treatment**

| Characteristics | Frequency (f) | Percentage (%) |
|---|---|---|
| Labor Pain Active Phase I Stage Before Treatment | | |
| Mild Pain | 0 | 0 |
| Annoying Pain | 2 | 13,3 |
| Troublesome Pain | 7 | 46,7 |
| Great Pain | 6 | 40 |
| Very Great Pain | 0 | 0 |
| Childbirth Pain Active Phase I After Treatment | | |
| Mild Pain | 3 | 20 |
| Disturbing Pain | 5 | 33,3 |
| Troublesome Pain | 6 | 40 |
| Great Pain | 1 | 6,7 |
| Very Great Pain | 0 | 0 |
| Total | 15 | 100 |

Based on table 2 the scale of labor pain in the active phase of the first stage, primigravida mothers before being given bitter orange aromatherapy were mostly in bothersome pain as many as 7 respondents (46.7%) and after being given bitter orange aromatherapy the most were in bothersome pain as many as 6 respondents ( 40%).

**Table 3**
**The Effect of Bitter Orange Aromatherapy on Reduction of Labor Pain in Active Phase I in Primigravida Women in the Work Area of the East Langsa Health Center in 2021**

| | Ranks | | | | P-Value |
|---|---|---|---|---|---|
| | | N | Mean Rank | Sum of Ranks | |
| Post experiment pain scale - preexperiment Pain scale | Negative Ranks | 11[a] | 6.00 | 66.00 | 0.002 |
| | Positive Ranks | 0[b] | .00 | .00 | |
| | Ties | 4[c] | | | |
| total | | 15 | | | |

**Bivariate Analysis**

Based on table 3. The results of the study found that of the 15 women who gave birth to primigravida in the active phase of the first stage who were given the bitter orange aroma therapy, 11 women experienced a decrease in labor pain, 4 women who did not experience a significant decrease in pain scale, namely the pain experienced was still in the range the same pain scale and no women experienced an increase in the pain scale. The results of the Wilcoxon test found a p-value of 0.002 (p<0.05) so it can be concluded that there is an effect of bitter orange aromatherapy on reducing labor pain in the first stage of active labor in primigravida women.

**DISCUSSION**

The results showed that the average labor pain in the active phase of the first stage of primigravida women before treatment was 6.53 and after treatment decreased to 4.67, after being given the bitter orange aroma therapy as many as 15 primigravida women found 11 women who experienced a decrease in labor pain, 4 women who did not experience a significant decrease in the pain scale, namely the pain experienced was still in the same pain scale range and no women experienced an increase in the pain scale.

The results of the Wilcoxon test found a p-value of 0.002 (p<0.05) so it can be concluded that there is an effect of bitter orange aromatherapy on reducing labor pain in the first stage of active labor in primigravida women. The results of this study are in line with research conducted by Irmawati, et al (2020) at the Kulisusu Health Center, North Buton Regency which concluded that there was an effect of bitter orange aromatherapy on labor pain in the active phase of the 1st stage with a p-value of 0.000 <0.05. (Aswan and Abadi 2021)

The results of this study are also in line with research conducted by Utami, regarding the effectiveness of bitter orange aromatherapy on post partum sectio caesarea pain, that the results of bivariate analysis showed a p-value of 0.000 (P <0.05) which concluded that bitter orange aromatherapy can be recommended for reducing pain. pain scale. (Utami 2016)

Aromatherapy is one of the non-pharmacological methods to reduce pain non-pharmacologically, which can be used to help reduce labor pain. In addition, the bitter orange oil essence used in aromatherapy is efficacious for reducing stress, improving blood circulation where this aromatherapy affects the limbic system in the brain which affect emotions, moods and memory, to produce neurohormones in endorphins and encephalin which function to relieve pain and serotonin which functions to relieve stress and anxiety during childbirth. (Soraya 2021)

The orange commonly used to make bitter orange aromatherapy is citrus aurantium which is characterized as a bright orange orange peel with an uneven orange peel surface. Bitter orange or sevilla orange which is rich in vitamin C is a mixture of pomelo orange and mandarin orange. One of the advantages of this bitter orange is its distinctive aroma, even for perfume and aromatherapy. (Eka Saputri 2019)

Bitter orange or citrus aurantium oils are commonly used in aromatherapy. Bitter orange (C. Aurantium) consists of an essential oil called neroli. (Ginting, Hutahaean, and Simatupang 2019) There are more than 7 components in bitter orange essential oil, namely: limonene, linalool, linalyl

acetate, geranyl acetate, geraniol, nerol and neryl acetate. This oil has a ressive, anti-septic, anti-spasmodic and mild sedative effect. The content found in bitter orange can control cyclooxygenase I and II, preventing the activity of prostaglandins which can reduce pain. (Ulya, Herlina, and Pratiwi 2021)

In addition, the main ingredients of bitter orange aromatherapy are linalyl acetate and linalool. Linalool in bitter orange is the main active ingredient that plays a role in anti-anxiety (relaxation) effects, the fragrance produced from bitter orange aromatherapy will stimulate the thalamus to secrete enkephalins, functioning as natural pain relievers. (Andarwulan n.d.) Enkephalins are neuromodulators that function to inhibit physiological pain. Enkephalins are the same as endorphins that are produced naturally by the body and have the ability to inhibit pain transmission, so that pain is reduced. (Hetia, Ridwan, and Herlina 2019)

How bitter orange aromatherapy works in reducing labor pain in the first stage of the active phase through body circulation and the olfactory system. The organ of smell is directly related to the brain. Odor is a molecule that easily evaporates directly into the air. If it enters the nasal cavity through breathing, it will be interpreted by the brain as an olfactory process. The smell is received by the olfactory epithelium, which is a receptor containing 20 million nerve endings. (Namazi et al. 2014) The smell is transmitted as a message to the olfactory center which located at the base of the brain, in this section various neuron cells interpret odors and deliver them to the limbic system which is then sent to the hypothalamus for processing. When aromatherapy is inhaled, the vibrating hairs in the nose will send electrochemical messages to the center of one's emotions and memory. Then it will deliver messages back to the rest of the body through the circulatory system. Messages sent throughout the body will be converted into action by releasing neurochemical substances in the form of feelings of pleasure, calm, and relaxation. So that bitter orange aromatherapy can reduce labor pain. (Sharifipour, Baigi, and Mirmohammadali 2015)

Several studies have shown that bitter orange aromatherapy can affect central transmission neurons. A relationship between odor perception and emotional behavioral responses has been suggested, suggesting a neuroanatomical correlation. Clinical studies show that inhalation of various types of essential oils is effective in reducing psychological stress, pain and anxiety states. (Namazi et al. 2014)

Another problem that commonly arises during labor is anxiety. Anxiety is one of the main factors that affect the course of labor and results in less smooth cervical dilatation. (Difarissa 2016) The impact of anxiety can cause pain in labor and result in uterine contractions and cervical dilatation that is not good. So between pain and anxiety are interconnected. An increase in pain intensity will cause anxiety, and conversely an increase in anxiety also causes an increase in pain intensity. (Anita 2017)

Bitter orange has a calming effect. Bitter orange aromatherapy can provide calm, balance, a sense of comfort. Aromatherapy has molecules that the air releases as water vapour. when water vapor containing these chemical components is inhaled then it is absorbed by the body through the nose and lungs which then enters the bloodstream. Simultaneously when inhaled, water vapor will travel through the brain's limbic system which is responsible for systems integration, learning, memory, expression of feelings, and emotions. (Sulastri, Wahyuningsih, and Hapsari 2018)

Bitter orange oil is effective and beneficial on the outside when inhaled. When the bitter orange aroma is inhaled, the body will give a psychological response. However, the results showed that not all primigravida women experienced a decrease in labor pain after being given bitter orange aromatherapy this is because everyone has a different response to the pain they experience, according to the age and culture where they come from, because culture will teach the person how to respond to pain. . (Doloksarperempuan 2021) One drop of bitter orange oil contains 0.6 ml of pure essential oil which can stimulate the body to release endorphins so that it stimulates the muscles in the body.(Astutik 2019)

The body becomes relaxed and pain relief with as if resting a few hours. Bitter orange oil preparation is commonly used in aromatherapy. This oil has a reactive, antiseptic, anti-spasmodic and mild sedative effect. Limonele is one of the components of bitter orange that can reduce anxiety. A good

circulatory system delivery of acids and nutrients to the cells is enlarged and the disposal of unused substances will be improved. So there will be a better exchange process, increased cell activity can reduce pain. (Meti and Sri Wahyuni 2020)

The use of aromatherapy can be used to influence labor pain felt by women in labor because aromatherapy has healing powers that combine physiological and psychological effects, and is beneficial for the soul, body and emotions. (Rahmita 2018) One of the internal factors that influence labor pain is the psychological condition of women. . The use of aromatherapy can be used to influence labor pain felt by women giving birth because aromatherapy has healing powers that combine physiological and psychological effects.(Andarista 2019)

The researcher assumes that bitter orange essential oil can be useful for reducing labor pain in the first stage of active labor, the results of the observation of the scale of labor pain in the active phase of the first stage in primigravida women before and after treatment found that as many as 11 women experienced a decrease in labor pain after being given bitter orange aromatherapy and the remaining 4 women who did not experience a significant reduction in pain scale, namely the pain experienced was still in the same pain scale range after being given bitter orange aromatherapy. Where the age of the respondents are in the age range <25 years. The result is 1 respondent is 20 years old, 2 respondents is 22 years old and 1 respondent is 23 years old. At the time of the intervention, the four respondents had a pain scale of 4,6,8 before the intervention and after the intervention, the respondents' pain scale was still on the same scale range. Of these four respondents included in the category <25 years where the age is still relatively young have a psychological condition that is still unstable so that it will cause an anxiety response. This increased sense of anxiety will cause an increase in the stimulus intensity of pain at the time of delivery. Therefore, age can be used as a factor in determining pain tolerance (Magfuroh 2012)

## CONCLUSION

There was a significant effect of bitter orange aromatherapy on decreasing the pain scale of the first stage of active labor in primigravida women with a p-value of 0.002 ($p<0.05$).

## SUGGESTION

To East Langsa, especially village midwives, to develop a method of reducing labor pain by using bitter orange aromatherapy as management to reduce labor pain in the first stage of active labor.

## REFERENCES

Akbarani, Riski, and Widyasih Pritasari. 2020. "Profil Karakteristik Dan Status Kesehatan Ibu Yang Mengalami Komplikasi Obstetri Terhadap Kejadian Near Miss Di Kabupaten Boyolali." *Kendedes Midwifery Journal* 2(6):36–45.

Andarista, Siska. 2019. "Pengaruh Aromaterapi Cendana Terhadap Nyeripersalinan Di Rsud Tidar Magelang Tahun 2019."

Andarwulan, S. n.d. *Terapi Komplementer Kebidanan*. GUEPEDIA.

Anita, Wan. 2017. "Techniques of Pain Reduction in the Normal Labor Process: Systematic Review." *Jurnal Endurance: Kajian Ilmiah Problema Kesehatan* 2(3):362–75.

Astuti, Wiji, Heni Setyowati Esti Rahayu, and Kartika Wijayanti. 2015. "Pengaruh Aromaterapi Bitter Orange terhadap Nyeri Dan Kecemasan Fase Aktif Kala 1." in *Prosiding Seminar Nasional & Internasional*.

Astutik, Linandha Dewi. 2019. "Pengaruh Pemberian Aromaterapi Jeruk (Bitter Orange) Terhadap Intensitas Nyeri Pada Ibu Inpartu Kala I Fase Aktif Di Puskesmas Wajak Kabupaten Malang"."

Aswan, Ros Diana, and Andi Baharuddin Abadi. 2021. "Pengaruh Aromaterapi Bitter Orange Terhadap Nyeri Persalinan Pada Fase Aktif Kala 1 Di Puskesmas Kulisusu Kabupaten Buton Utara Tahun 2020." *Window of Health: Jurnal Kesehatan* 151–60.

Ayu, Nimade Gusti, and Elin Supliyani. 2019. "Karakteristik Ibu Bersalin Kaitannya Dengan Intensitas Nyeri ersalinan Kala 1 Di Kota Bogor." *JKM (Jurnal Kebidanan Malahayati)* 3(4).

Chasanah, Siti Uswatun. 2017. "Peran Petugas Kesehatan Masyarakat Dalam Upaya Penurunan Angka Kematian Ibu Pasca MDGs

2015." *Jurnal Kesehatan Masyarakat Andalas* 9(2):73–79.

Margaret, Sukarni. 2013. "Kehamilan, Persalinan, Dan Nifas." *Yogyakarta: Nuha Medika, Hal* 257–62.

Difarissa, Ristra Retrianda. 2016. "Hubungan Tingkat Kecemasan Dan Lamanya Partus Kala I Fase Aktif Pada Primigravida Di Pontianak." *Jurnal Mahasiswa PSPD FK Universitas Tanjungpura* 3(1).

Doloksaribu, Meli. 2021. "Pengaruh Bitter Orange Terhadap Kecemasan Ibu Hamil." *Jurnal Mutiara Kebidanan* 8(1):58–62.

Eka Saputri, Dian. 2019. "Pengaruh Aromaterapi Bitter Orange (Citrus Aurantium) Terhadap Penurunan Nyeri Persalinan Kala I Fase Aktif Di Bidan Praktik Wilayah Kerja Puskesmas Yosomulyo."

Ginting, Laurena, Masta Melati Hutahaean, and Lenny Lusia Simatupang. 2019. "Efektifitas Aromatherapy Lemon Terhadap Pengurangan Nyeri Persalinan, Lama Persalinan Kala Ii Dan Fetal Outcome Di Klinik Heni Kasih." *Jurnal Kebidanan Kestra (JKK)* 2(1):44–50.

Hetia, Evi Nira, M. Ridwan, and Herlina Herlina. 2019. "Pengaruh Aromaterapi Lavender Terhadappengurangan Nyeri Persalinan Kala I Aktif." *Jurnal Kesehatan Metro Sai Wawai* 10(1):5–9.

Langsa, Dinas Kesehatan Kota. 2020. "Dinas Kesehatan Kota Langsa 2020."

Magfuroh, Annisa. 2012. "Faktor-Faktor Yang Berhubungan Dengan Nyeri Persalinan Kala I Fase Aktif Di Ruang Bersalin Rumah Sakit Umum Kabupaten Tangerang Tahun 2012."

Mander, Rosemary. 2004. "Nyeri Persalinan." EGC.

Meti, Patimah, and Sundari Sri Wahyuni. 2020."Aromaterapi Untuk Mengurangi Nyeri Persalinan."

Namazi, Masoumeh, Seddigheh Amir Ali Akbari, Faraz Mojab, Atefe Talebi, Hamid Alavi Majd, and Sharareh Jannesari. 2014. "Effects of Citrus Aurantium (Bitter Orange) on the Severity of First-Stage Labor Pain." *Iranian Journal of Pharmaceutical Research: IJPR* 13(3):1011.

Novita, Kalalo Ribka, Sefti Rompas, and Yolanda B. Bataha. 2017. "Pengaruh Teknik Relaksasi Nafas Dalam Trhadap Respon Nyeri Pada Ibu Inpartu Kala I Fase Aktif Di Puskesmas Bahu Kota Manado." *Jurnal Keperawatan* 5(1).

Rahmita, Hirza. 2018. "Efektivitas Aromaterapi Untuk Menurunkan Nyeri Persalinan Di Bpm Rosita Kota Pekanbaru." *Al-Insyirah Midwifery: Jurnal Ilmu Kebidanan (Journal of Midwifery Sciences)* 7(2):52–57.

Sari, Dyah Permata, Zulfa Rufaida, and Sri Wardini Puji Lestari. 2018. "Nyeri Persalinan." *EBook Penerbit STIKes Majapahit* 1–30.

Sharifipour, Forozan, Sarah Sohail Baigi, and MANDANA Mirmohammadali. 2015. "The Aromatic Effect of Citrus Arantium on Pain and Vital Signs after Cesarean Section." *International Journal of Biology, Pharmacy, and Allied Sciencies* 4(7):5063–72.

Sinaga, Elvalini Warnelis, Rahmawani Fauza, Wahyuni Wahyuni, Eva Nirwana Hutabarat, Nova Linda Rambe, Debora Lestari Simamora, Ratih Kumala Dewi, Qonita Ulfiana, and Wellina Sebayang. 2020. *Mutu Pelayanan Kebidanan*. Yayasan Kita Menulis.

Soraya, Sonya. 2021. "Pengaruh Pemberian Inhalasi Aromaterapi Lemon Citrus Terhadap Penurunan Nyeri Persalinan Kala I Fase Aktif." *Jurnal Ilmiah Kesehatan* 13(2):184–91.

Sulaiman, Endang Sutisna. 2021. *Pemberdayaan Masyarakat Di Bidang Kesehatan: Teori Dan Implementasi*. UGM PRESS.

Sulastri, S., Mae Sri Hartati Wahyuningsih, and Elsi Dwi Hapsari. 2018. "Efek Pemberian Aromaterapi Jeruk Masam Terhadap Intensitas Nyeri Pasca Bedah Sesar." *Proceeding of The URECOL* 227–35.

Ulya, Yadul, Siskha Maya Herlina, and Yopi Suryati Pratiwi. 2021. "Aromaterapi Bitter Orange." *Journal of Fundus Midwifery STIKES Yarsi Mataram* 1(1):16–21.

Utami, Sri. 2016. "Efektivitas Aromaterapi Bitter Orange Terhadap Nyeri Post Partum Sectio Caesarea." *Unnes Journal of Public Health* 5(4):316–23.