

## The Effect of Bitter Orange Aroma Therapy on Reducing Pain Intensity in Labor Multigravids at Klinik Masitah Year 2023

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### ABSTRACT

Pain labor can increase emotional stress on the birthing mother, and can cause fatigue and can have an impact on abnormal uterine muscle function during labor leading to birth complications. One of the non-pharmacological therapies to reduce labor pain is bitter orange aromatherapy, which is a non-pharmacological therapy to reduce or relieve pain in mothers who give birth in the first stage. The type of research used in this research is a quasi experiment with a nonequivalent control group design. Sampling used purposive sampling technique as many as 22 people. Data collection used a visual analog scale pain measuring instrument, data analysis used the Wilcoxon test. The results of the study showed that there was a difference in decreasing the intensity of the pain scale in stage 1 before and after administering bitter orange aroma therapy with a p-value (0.003) and an  $\alpha$  value (0.05). Labor pain is caused by contractions of the uterine muscles, stretching of the uterine muscles and psychological conditions, in this case fear, anxiety and tension which can trigger the production of prostaglandine hormones, causing stress. Stress conditions can affect the body's ability to withstand pain. One way to treat pain in birthing mothers is by using non-pharmacological methods by administering bitter orange aromatherapy. Bitter orange aroma therapy influence the decline intensity pain in the first stage of multigravida labor active in the clinic still in 2023

## INTRODUCTION

Childbirth is the time that all pregnant women look forward to experiencing the happiness they long for. However, for some women, labor is sometimes filled with fear and anxiety about pain during labor (Wiknjastro 2016).

Labor pain arises due to uterine contractions which cause dilatation and effacement of the cervix and uterine ischemia caused by contraction of the myometrial arteries. Excessive pain will cause anxiety and can trigger the production of prostaglandin hormones which can cause stress and affect the body's ability to feel pain (Maryunani, 2015).

The World Health Organization (WHO) estimates that every year 210 million pregnancies occur worldwide, and 20 million women experience pain during childbirth. During labor, the mother often experiences feelings of anxiety, panic and fear of excruciating pain which can disrupt the labor process and result in a prolonged labor process. Give rise to parturition traffic jam (Kurniasih in Handayani , 2014)

The prevalence of Maternal Mortality Rate (MMR) data from WHO (2019) in the world is 303,000 cases. The Maternal Mortality Rate (MMR) in ASEAN is 235 per 100,000 live births (ASEAN Secretariat, 2020). Data obtained from the Indonesian Demographic and Health Survey (SDKI) showed that the maternal mortality rate (MMR) in Indonesia increased from 228 per 100,000 live births in 2002-2007 to 359 per 100,000 live births in 2007-2012. The Maternal Mortality Rate (MMR) decreased in 2012-2015 to 305 per 100,000 live births and the number of maternal deaths in Indonesia in 2019 was 4,221 cases (RI Ministry of Health, 2019).

## LITERATURE REVIEW

Target Sustainable Development Goals (SDG's) to improve the health of mothers, newborns and children which must be achieved by 2030 are the Maternal Mortality Rate (MMR) reduced to 70 per 100,000 live births and the Infant Mortality Rate (IMR) reduced to 12 per 1000 live births. MMR and IMR are one of the main indicators of a country's health status. MMR and IMR also indicate the capability and quality of health services (Bappenas, 2017).

Labor pain can increase emotional stress on the mother in labor, and can cause fatigue and can have an impact on abnormal uterine muscle function during labor which leads to birth complications. Labor pain can make women afraid to give birth vaginally (Novfrida and Saharah, 2018).

One of the non-pharmacological therapies to reduce labor pain due to shortening of uterine muscle contractions which causes pain starting from the waist due to contractions. Aromatherapy is a non-pharmacological therapy that uses pure essence oil. Bitter orange aromatherapy is a non-pharmacological therapy to reduce or relieve pain in mothers in the first stage of labor (Kumalasari, 2012).

Based on data at the Masitah RM Clinic in 2021, the number of births was 144 patients, 44 Primigravida patients and 100 multigravida patients out of a total number of 144 patients, on average they had problems managing pain during labor, so that during labor the patient experienced restlessness and difficulty concentrating dealing with labor pain.

Bitter Orange Aromatherapy on Reducing Pain Intensity in Active Phase 1st Stage Multigravid Labor at the Masitah Clinic Year 2023”

**METHODOLOGY**

This type of research is quasi experimental with design nonequivalent control group design. Respondents were divided into 2 groups, namely the group that was given the intervention which was given bitter orange aroma therapy and the group that was not given the intervention. Population namely all Multigravida birth patients I period the active phase at the Masitah RM Muara Jawa Clinic in February-March was 11 people, a large sample size calculated using the Federer formula then sample totaling 22 people. Data analysis using tests Wilcoxon Signed Rank Test statistics.

**RESULTS**

**Pain Scale in the 1st Stage of *Multigravid* Labor in the Active Phase Before the *Bitter Orange Aromatherapy* Intervention is Given**

Table 1. Pain Scale in the 1<sup>st</sup> Stage of *Multigravida* Labor in the Active Phase Before and After Being Given Bitter Orange Aromatherapy Intervention at the Masitah RM Clinic in 2023

Skala Nyeri Pada Persalinan	Pretest N =11		Posttest N =11	
	F	%	F	%
Nyeri Ringan	6	54.5	0	0.0
Nyeri Sedang	9	81.8	5	45.5
Nyeri Berat	2	18.2	0	0.0

Sumber : Data Primer 2023

Pain scale in the 1st stage of *multigravida labor in the active phase before the bitter orange aromatherapy intervention was given* showed that the majority of respondents were in the pain category 6 people had mild pain (54.5), 9 people had moderate pain (81.8%), 2 people had severe pain (18.2%). The decrease in the intensity of the pain scale in the active phase of *multigravida labor in the 1st stage after being given bitter orange aromatherapy intervention* showed that the majority of respondents were in the moderate pain category, 5 people (45.5%)

**Data Normality Test**

The results of the data normality test on the *multigravida labor pain scale in the first stage of the Active Phase in the bitter orange intervention group* obtained *pretest-posttest values sig = 0.217-0.002 >0.05*, and the *sig value = 0.017-0.018* in the control group so the data is said to be not normally distributed .

## The Effect of Bitter Orange Aromatherapy on Reducing Pain Intensity in Multigravida Labor in the 1st Stage of the Active Phase F

Table 2. The Effect of Bitter Orange Aroma Therapy on Reducing Pain Intensity in Multigravida Labor in the 1<sup>st</sup> Active Phase at the Masitah Clinic in 2023

Kelompok Intervensi Aroma Terapi Bitter Orange	Df	Mean	Standar Deviasi	$\rho$ -value
Prefest	11	5.64	0.924	0.003
Posttest	11	3.64	0.809	

Sumber : Data Primer 2023

*Wilcoxon* statistical test, it shows that the  $\rho$ -value is 0.003, while the significance level used as a comparison is  $\alpha = 0.05$ , so the  $\rho$ -value is lower than 0.05 so the alternative hypothesis is accepted, which means that there is a difference in the reduction in intensity of the pain scale. In 1st Stage *Multigravida Labor, Active Phase Before and After Giving Bitter Orange Aroma Therapy* at the Masitah RM Clinic in 2023

### DISCUSSIONS

Pain Scale in the 1st Stage of Multigravid Labor in the Active Phase before the Bitter Orange Aromatherapy Intervention is given

Based on the research results, it can be seen that the pain scale in the 1st stage of multigravida labor in the active phase before the bitter orange aromatherapy intervention was given showed that the majority of respondents were in the pain category. 6 people had mild pain (54.5), 9 people had moderate pain (81.8%), 2 people had severe pain (18.2%).

The results of this research are in line with research conducted by Nurhayati and Santi (2020) which stated that the results of research on maternity before being given bitter orange therapy had an average pain score of 6.50. Meanwhile, after being given bitter orange therapy, the average pain intensity decreased, namely 5.70.

During the first stage of normal labor, pain is caused by involuntary contractions of the uterine muscles. At the beginning of the labor process, the contractions felt by the mother in labor tend to be felt in the lower back. As labor progresses, the pain felt is in the abdomen and back. Labor contractions generally last around 45-90 seconds. When labor progresses, the intensity of the contractions increases so that the pain felt becomes stronger (Reeder, 2019).

During contractions and relaxation of labor, the mother in labor needs something that can relieve the pain she is feeling. One non-pharmacological therapy to reduce labor pain is aromatherapy. Aromatherapy is a non-pharmacological therapy that uses pure essence oil. Bitter orange aromatherapy is a non-pharmacological therapy to reduce or relieve pain in mothers in the first stage of labor.

The researcher's assumption is that practice is due to use bitter orange aroma therapy carried out by mothers in labor helps mothers reduce pain during

childbirth. A mother who is able to relax in rhythm with uterine contractions will feel comfortable during the birthing process.

Pain scale in multigravida labor during the 1st stage of the active phase after administering bitter orange aromatherapy

Based on the research results, it can be seen that the pain scale in the first stage of multigravida labor in the active phase after being given bitter orange aromatherapy intervention showed that the majority of respondents were in the moderate pain category, 5 people (45.5%).

A study revealed that the psychological benefits of using aromatherapy can reduce levels of pain and anxiety. Immunologically, aromatherapy can increase lymphocytes in peripheral blood vessels, increase CD8 and CD16 which play a role in immunity (Aswan & Abadi, 2021).

Bitter orange essential oil can be useful for reducing labor pain. Bitter orange has a calming effect. Bitter orange aromatherapy can provide calm, balance, and a sense of comfort. Aromatherapy has molecules that are released into the air as water vapor. When water vapor containing chemical components is inhaled, it is absorbed by the body through the nose and lungs and then enters the bloodstream. Simultaneously, when inhaled, water vapor will travel through the limbic system of the brain which is responsible for the systems of integration, learning, memory, expression of feelings, emotions and physical stimulation. Bitter orange oil is effective and beneficial externally when inhaled. When the bitter orange aroma is inhaled, the body will give a psychological response (Susilo & Hariyani, 2021).

In this research, the pain scale in multigravida labor in the 1st stage of active phase before being given bitter orange aromatherapy intervention showed that the majority of respondents in the moderate pain category were 9 people (81.8%) tending to have severe pain decreasing to mild, this is because bitter orange aromatherapy is one of the Alternative non-pharmacological therapy that can be given to reduce pain in mothers in the active phase of first stage of birth. Bitter orange has the effect of being resorptive, anti-septic, anti-spasmodic and mild sedative. Some of the components contained in bitter orange include limonene, linalool, linalyl acetate, geranyl acetate, geraniol, nerol, neryl acetate. Limonene functions to control cyclooxygenase I and II, reduce pain, stimulate the central nervous system, improve mood, lower blood pressure, and as an analgesic sedative (Irmawati et al, 2021).

The difference in the decrease in the intensity of the pain scale in stage 1 before and after administering bitter orange aroma therapy

Based on the research results, it was explained that the average decrease in the pain intensity of multigravid labor in the first stage of the active phase before being given bitter orange was (5.64) and the average after being given bitter orange was (3.64), meaning that there was a decrease in the intensity of the pain scale. Based on the results of the Wilcoxon statistical test, it shows that the  $p$ -value is 0.003, while the significance level used as a comparison is  $\alpha = 0.05$ , so the  $p$ -value is lower than 0.05 so the alternative hypothesis is accepted, which means that there is a difference in the reduction in intensity of the pain scale. In the 1st Stage of Active

Phase Multigravida Labor Before and After being given Bitter Orange Aroma Therapy at the Masitah RM Clinic in 2023.

The results of this research are in line with research conducted by Irmawati (2021) showing that the average value before treatment was 5.93, while the average value after treatment was 3.63. From these results it can be concluded that the average value after being given treatment is smaller than the average value before being given treatment. From the results of the Wilcoxon Test, the value obtained was  $p = 0.000 < \alpha = 0.05$ , from these results,  $H_0$  was rejected, which means that there was an effect of giving Bitter Orange Aromatherapy on labor pain in active phase 1 inpartum mothers at the Kulisusu Community Health Center in 2021.

Labor pain is a physiological condition that occurs when the uterine muscles contract in an effort to open the cervix and push the baby's head towards the pelvis. Pain that cannot be overcome by the mother during birth can affect the mother's condition, such as fatigue, frustration and even stress. Stress caused by labor pain can increase the release of excessive catecholamine and steroid hormones. This can cause smooth muscle tension and vasoconstriction of blood vessels. This can result in a decrease in uteroplacental circulation, reduction in blood and oxygen flow to the uterus, as well as the emergence of uterine ischemia which makes pain impulses increase (Lestari & Andayani, 2021).

Bitter orange aromatherapy is an alternative non-pharmacological therapy that can be given to reduce pain in pregnant women during the first active phase. Bitter orange has the effect of being resessive, anti-septic, anti-spasmodic and mild sedative. Some of the components contained in bitter orange include limonene, linalool, linalyl acetate, geranyl acetate, geraniol, nerol, neryl acetate. Limonene functions to control cyclooxygenase I and II, reduce pain, stimulate the central nervous system, improve mood, lower blood pressure, and as an analgesic sedative (Susilo & Hariyani, 2020).

How bitter orange aromatherapy works in reducing labor pain in the first stage of the active phase is through body circulation and the olfactory system. The organ of smell is directly connected to the brain. Odors are molecules that easily evaporate directly into the air. If it enters the nasal cavity through breathing, it will be interpreted by the brain as a process of smell. The smell is received by the olfactory epithelium nerve which is a receptor containing 20 million nerve endings. The smell is transmitted as a message to the olfactory center which is located at the base of the brain, in this section various neuron cells interpret the smell and deliver it to the limbic system which is then sent to the hypothalamus for processing. When aromatherapy is inhaled, the vibrating hairs in the nose will deliver electrochemical messages to a person's emotional and memory centers. Then it will deliver messages back throughout the body through the circulatory system. Messages sent throughout the body will be converted into action by releasing neurochemical substances, namely feelings of happiness, calm and relaxation. So bitter orange aromatherapy can reduce labor pain (Nasution et al, 2021).

From the results of the research and theories put forward, the researchers assume that giving bitter orange aromatherapy is a non-pharmacological method that is effectively used to reduce pain if done correctly. In this study, there were 11 respondents who experienced a decrease in pain. Another researcher's assumption

is that there is a comparison of pain sensations before and after administering bitter orange aromatherapy to reduce pain in the first stage of labor. Bitter orange or citrus aurantium oil is commonly used in aromatherapy. Bitter orange (*C. Aurantium*) consists of an essential oil called neroli. There are more than 10 components of citrus aurantium oil, most of which are the following monoterpenes: limonene, linalool, linalyl acetate, geranyl acetate, geraniol, nerol, neryl acetate.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

1. The pain scale in multigravida labor during the 1st stage of the active phase before giving bitter orange aroma therapy was mostly mild pain for 6 people, moderate pain for 9 people and severe pain for 2 people and decreased after giving bitter orange aroma therapy to 5 people with moderate pain.
2. Bitter orange aroma therapy on reducing the intensity of pain in multigravida labor in the 1st stage of the active phase, most of it becomes moderate pain in 5 people. There was a difference in the decrease in the intensity of the pain scale in stage 1 before and after administering bitter orange aroma therapy with a p-value (0.003).

### **Recommendations**

1. Researcher

Researchers can use the research results to apply them to midwifery care in hospitals and share experiences with other health workers about the benefits of giving bitter orange aromatherapy to reduce labor pain.

2. For Educational Institutions

This research can be used as reference material for further research and as reference material in research on labor pain and the birthing process.

3. Masitah Clinic

Clinics can utilize the results of this research and create SOPs other than deep breathing to improve midwifery care in dealing with labor pain problems, thereby reducing the intensity of labor pain.

4. Midwife

Midwives can use the results of this research as input and additional information as well as evaluation for midwives to be able to implement care providing bitter orange aroma therapy.

5. Patient

Provides a feeling of comfort to the body so that the patient will feel more relaxed when facing childbirth.

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