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Effectiveness of Warm Water Immersion Combination of Rose and Lavender Aromatherapy on Anxiety and Pain Scale of Laboring Mother in Independent Midwifery Practice

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Background: Labor is a physiological event that occurs in the life cycle of women, in this process contractions occur which cause discomfort in the form of anxiety and pain and are correlated with each other during labor. **Objective**: This study was conducted to determine the effectiveness of warm water immersion on anxiety and childbirth pain scale in Independent Midwifery Practice. **Methods**: This study included quantitative research with quasi-experimental research with pre and post test design of control group. The sample consisted normal laboring mothers with a simple random sampling method involving 35 people in each group. Data collection employed questionnaires and observation sheets. The research was conducted from January to October 2024. **Results**: Based on the results of statistical tests on the research group, the results of the posttest value of fetal heart rate, contraction duration, anxiety, and pain scale obtained *p*-value <0.05. Conclusion: There is an effectiveness of warm water immersion with a combination of rose and lavender aromatherapy on anxiety and childbirth pain scale.

Keywords: Anxiety, Childbirth Pain Scale; First Stage of Labor; Warm Water Immersion.

Introduction

Childbirth or labor is a physiological condition that occurs in a woman's life cycle, which is associated between anxiety and pain caused by contractions and cervical opening (Detty Afriyanti et al., 2022). The findings indicate that there is a correlation between anxiety and pain in labor. Additionally, the perceived intensity of labor pain is strongly correlated to the chosen birthing method (Tzeng et al., 2017).

According to Lowe (1996), anxiety can affect contractions and the opening of the birth canal during labor. Other research also states that anxiety in labor has an impact on the length of labor in stages I and II, increased blood pressure, and the risk of mild to moderate asphyxia (Wulandari et al., 2021). The results prove that there are 70% of severe anxiety during labor (Tan et al., 2021), and the average labor pain is described on a scale of 7 (severe pain) experienced by 72% of maternity respondents (Pietrzak et al., 2022).

An initial survey conducted at the Independent Midwifery Practice in the Curup Timur working area on 15 laboring mothers about anxiety and labor pain found nine mothers experiencing severe anxiety, four moderate anxiety, and two mild anxiety. On the pain scale, it found that nine mothers with pain scores between 7-9 (severe pain) and six mothers with pain scores 4-6 or (moderate pain). The results of this survey illustrate the high problem of pain in labor and the need to carry out labor pain management.

Non-pharmacological management of anxiety and labor pain becomes an option in providing obstetric care

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with minimal risk and acceptable to the various methods that were used in managing pain and anxiety, including massage therapy, aromatherapy, warm baths, and breathing exercises.

Warm water immersion at 35-40°c for 15-45 minutes was indicated to increase Beta endorphin after 15 minutes of immersion therapy (Benfield et al., 2010). Proven to reduce blood cortisol levels, warm water provides a vasodilating effect on blood vessels thereby improving blood circulation (heart, lungs, and brain). Immersion also reduces the burden on the body while in water, thereby reducing pressure on the pelvic area and reduce pain, such as labor pain (An et al., 2019).

Other research states that warm temperatures and water baths or hydrotherapy have been shown to block nociceptors by acting on thermal receptors and mechanoreceptors. Moreover, they have a positive effect on spinal segmental mechanisms, which is useful in back pain conditions (Mooventhan & Nivethitha, 2014). Labor using warm water immersion is stated to describe a liberating and transformative experience in welcoming birth. This condition supports that mothers are empowered, liberated, and satisfied with their labor (Feeley et al., 2021).

Aromatherapy is also an option in overcoming labor pain, including rose and lavender aromatherapy. Inhaling rose aromatherapy containing *geraniol* and *linalool* will transmit electro-chemicals to the *olfactory* tract into the limbic system, and this will stimulate memory and emotional responses (Aulya et al., 2021). Meanwhile, lavender aromatherapy contains and analgesic effect, including alcohol *linalool ketone esterzoaldehyde*. Researchers have demonstrated the efficacy of ketones present in lavender in alleviating labor pain. Furthermore, esters have been shown to exert stress-reducing and antidepressant effects (Kazeminia et al., 2020).

The development of midwifery care for anxiety and pain management with one effective intervention is expected to create a major contribution for labor care. Based on this background, the researcher is interested in examining the utilization effect of the Effectiveness of Warm Water Immersion Combination of Rose and Lavender Aromatherapy on anxiety and pain scales of laboring mothers in independent midwifery practices.

Method

This is a quantitative study with a quasi-experimental research design using pre and post test design with control group. This study was conducted at the Independent Midwifery Practice in the working area of Curup Timur Health Center in Rejang Lebong Regency, started from January to October 2024. The population in this study involved all normal mothers with inclusion criteria who gave birth at PMB. The sampling method used in this study was simple random sampling, with a total sample of 35 people in each intervention group and control group. The inclusion criteria in this study included: willing to be a respondent; maternal age 17-40 years; live single fetus; low risk pregnancy; *inpartu* opening 5 cm; no history or current diagnosis of drug abuse or physical problems, genital herpes, depression, anxiety or severe psychosocial problems; gestational age 38-41 weeks; not with other labor complications such as heart, DM, Pre eclampsia / eclampsia; and not with vaginal bleeding, HIV, Aids, hepatitis, rupture of membranes. Meanwhile, the exclusion criteria in this study involved: fetal distress occurred; incomplete intervention in less than 15 minutes; complications of labor in the mother and fetus; and mother choosing SC delivery.

The implementation of the study in laboring women in both the intervention and control groups involved assessing anxiety levels before the intervention using the PRAQ-R2 questionnaire and Vas scale. When participants entered the labor room, anxiety and pain scales were measured, along with blood pressure and pulse using an electronic sphygmomanometer. Fetal heart rate was continuously monitored via a Doppler, while contractions were monitored manually. A portable pool (Aqua Eez 145 gal) was set up in the room, connected and partially filled with warm tap water.

The laboring mother was positioned on the bed at a 45° angle for 15-30 minutes before being assisted into the pool, which was continuously filled to 11-12 cm from the top. The mother reclined at a 45° angle until fully immersed in water at 35-40°C for at least 30 minutes. The water temperature was checked every 15 minutes and adjusted as necessary. During the bath, the mother was required to drink at least 500 cc of fluid, and 5 drops of lavender and rose aroma therapy in 100 cc distilled water was diffused 1 m away from her. After an hour of immersion, anxiety and pain scales were measured and vital signs, including blood pressure, pulse, respiration, fetal heart rate, and contractions were monitored every 30 minutes. After that, anxiety and pain scale were re-measured.

The dependent variables included anxiety, pain scale, blood pressure, pulse, fetal heart rate, contraction frequency, and contraction duration. In contrast, the control group was given the intervention of breathing techniques. The data were analyzed using the Wilcoxon test, T-test, and *Mann-Whitney* test according to the results of the normality test.

Result and Discussion

The following data characteristics of the research subjects are presented as follows:

Table 1. Characteristics of Research Subjects

Characteristics	Intervention	(n=35)	Control	(n=35)	P-value
	Mean ±SD	Min-Max	Mean ±SD	Min-Max	
Age	28.29±5.366	17-40	26.37±4.977	18-37	0.126*
Parity	1.66±.561	1-2	1.46±.505	1-3	0.150**
Cervical Dilation	5.29±.547	5-7	5.77±.547	5-7	0.000**

Notes: *) *Unpaired t* test **) *Mann-whitney test*

Table 1 shows the characteristics of the mean age ±SD of the respondents of 28.29±5.366 and the control group of 26.37±4.977 with a min-max age of 17-40 in the intervention group and 18-37 in the control group. In the characteristics of the number of deliveries, the average number of deliveries ± SD in the intervention group is1.66 ± 561 and the control group is1.46 ± 505 with a min-max number of deliveries of 1-2 people in the intervention group and 1-3 people in the control group. In the cervical dilation/opening, the mean opening ± SD in the intervention group is5.29 ± 547 and the control group is 5.77 ± 547 with a min-max of 5-7. The results of the unpaired t test and *Mann-whitney test* obtained p>0.05. It can be concluded that there is no significant difference in the characteristics of age and parity in the two research groups. At the cervical dilation, the p value is <0.05, thus it can be concluded that there is a significant difference between the opening groups.

Table 2. Average Blood Pressure, Maternal Pulse, Fetal Heart Rate, Contraction Frequency, Contraction Duration, Anxiety, and Labor Pain Before and After Intervention

Variables	Intervention (n=35)		Control (n=35)	
	Mean ±SD	Min-Max	Mean ±SD	Min-Max
Blood Pressure				
Pretest				
Systolic	118.60±3.550	110-121	127.43±5.606	120-140
Diastolic	76.89±7.120	67-89	77.49±6.289	67-89
Posttest				
Systolic	122.17±3.460	117-128	123.20±4.425	120-130
Diastolic	80.83±5.732	70-90	80±0.000	80-80
Pulse				
Pretest	83.11±3.652	80-88	85.37±4.008	80-95
Posttest	89.09±6.797	80-100	88.26±2.049	85-94
Fetal Heart Rate				
Pretest	135.60±5.590	120-145	134.86±5.847	125-145
Posttest	146.03±6.478	131-156	138.57±8.136	125-152
Contraction Frequency				
Pretest	3.17±0.514	2-4	3.34±0.482	3-4
Posttest	3.83±0.382	3-4	3.66±0.482	3-4
Contraction Duration		30-56	44.74±7.196	30-56
Pretest	43.03±7.213			
Posttest	55.40±6.335	44-60	48.69±4.645	40-56
Anxiety				
Pretest	63.00±4.459	54-70	63.03±4.402	54-70
Posttest	66.63±4.102	52-72	68.23±1.374	65-73
Labor Pain				
Pretest	6.74±1.039	5-8	6.43±0.948	5-8
Posttest	4.29±1.100	3-6	6.29±1.017	5-8

Table 2 shows the mean values of various health parameters for both the intervention and control groups. In the intervention group, the average systolic blood pressure increased from 118.60 ± 3.550 before intervention to 122.17 ± 3.460 after the intervention. The diastolic blood pressure also increased from 76.89 ± 7.120 to 0.83 ± 5.732. In the control group, systolic blood pressure decreased from 127.43±5.606 before the intervention to123.20±4.425 after intervention, while diastolic pressure increased slightly from 77.49±6.289 to 80±0.000.

Regarding pulse rate, the intervention group showed an increase from 83.11±3.652 before the intervention to 89.09±6.797 after intervention. Meanwhile, the control group had a slight increase in pulse rate from 85.37±4.008 before the intervention to 88.26±2.049 after the intervention. Then, fetal heart rate in the intervention group increased from 135.60±5.590 before the intervention to 146.03±6.478 after intervention. For the control group, before intervention increased from 134.86±5.847 to 138.57±8.136 after the intervention. Contraction frequency in the intervention increased from 3.17±0.514 before the intervention to 3.83±0.382 after the intervention. Then, in control group, contraction frequency increased from 3.34±0.482 to 3.66±0.482.

Regarding contraction duration, the intervention groups showed an increase from 43.03±7.213 before the intervention to 55.40±6.335 after the intervention. While in control group, contradiction duration increased from 44.74±7.196 to 48.69±4.645. Then, anxiety level showed an increase from 63.00±4.459 before the intervention to 66.63±4.102 after the intervention, whereas in the control group, anxiety increased from 63.03±4.402 and after intervention with 68.23±1.374. Last, labor pain in the intervention group decreased from 6.74±1.039 before the intervention to 4.29±1.100 after the intervention, while control group experienced a slight reduction in labor pain from 6.43±0.948 to 6.29±1.017.

Table 3. Comparison of Mean Blood Pressure, Maternal Pulse, Fetal Heart Rate, Contraction Frequency, Contraction Duration, Anxiety, and Labor Pain Before and After Intervention

Group research	Pretest (n=35)		Posttest (n=35)		p value
	Mean±SD	Min max	Mean±SD	Min max	
Systolic Blood Pressure					
Intervention	118.60±3.550	110-121	122.17±3.460	117-128	0.000*
Control	127.43±5.606	120-140	123.20±4.425	120-130	0.000*
Diastolic Blood Pressure					
Intervention	76.89±7.120	67-89	80.83±5.732	70-90	0.000*
Control	77.49±6.289	67-89	80±0.000	80-80	0.009*
Pulse					
Intervention	83.11±3.652	80-88	89.09±6.797	80-100	0.000*
83.11±3.652					
Control	85.37±4.008	80-95	88.26±2.049	85-94	0.001*
85.37±4.008					
Fetal Health Rate					
Intervention	135.60±5.590	120-145	146.03±6.478	131-156	0.000**
Control	134.86±5.847	125-145	138.57±8.136	125-152	0.012*
Contraction Frequency					
Intervention	3.17±0.514	2-4	3.83±0.382	3-4	0.000*
Control	3.34±0.482	3-4	3.66±0.482	3-4	0.008*
Contraction Duration					
Intervention	43.03±7.213	30-56	55.40±6.335	44-60	0.000*
Control	44.74±7.196	30-56	48.69±4.645	40-56	0.010*
Anxiety					
Intervention	63.00±4.459	54-70	66.63±4.102	52-72	0.003*
Control	63.03±4.402	54-70	68.23±1.374	65-73	0.000*
Pain					
Intervention	6.74±1.039	5-8	4.29±1.100	3-6	0.000*
Control	6.43±0.948	5-8	6.29±1.017	5-8	0.290*

Table 3 shows the results of the analytical test, showing the p-value for various health parameters in both the intervention and control groups. For systolic blood pressure, the p-value in both intervention and control groups was 0.000 or $p < 0.05$, indicating a significant difference between *pre-test* and *post-test* systolic blood pressure values in both groups. Similarly, for diastolic blood pressure, the *p-value* was also 0.000 or p value <0.05 in both groups, suggesting a significant difference in pre-and post-test diastolic blood pressure.

Regarding pulse rate, the intervention group obtained a p-value of 0.000, while in the control group obtained a p-value of 0.001 or a p value <0.05, meaning significant differences between pre- and post-tests pulse rates in both groups. The fetal heart analysis showed a p-value of 0.000 in the intervention group and 0.012 or p <0.05 in the control group, confirming significant differences in pre-post fetal heart rates in both groups. For contraction frequency, the p-value in the intervention group was 0.000 and the control group, it

was 0.008 or p value <0.05, suggesting significant differences in contraction frequency between the pre- and post-tests in both groups. The p-value for contraction duration was 0.000 in the intervention group and 0.008 or p value <0.05 in the control group, so it is concluded that there is a difference in contraction duration in both groups.

In the anxiety score, the intervention group showed a p-value of 0.003, while the control group had a p-value of 0.000 p <0.05, suggesting significant changes in anxiety levels before and after the intervention and control groups. For labor pain, the intervention group obtained a p-value of 0.000 or <0.05, so it was concluded that there was a difference in pain scale in the intervention group, while in the control group, the p-value was 0.290 p> 0.05, indicating that there was no difference in pain scale in the control group.

Table 4. Effectiveness of Warm Water Immersion Combination of Rose and Lavender Aromatherapy on Anxiety and Pain Scale of Laboring Mothers

Research Variables	Intervention		Control		p-value
	Min-max	Mean ±SD	Min-max	Mean±SD	
Systolic Blood Pressure					
Pretest	110-121	118.60±3.550	120-140	127.43±5.60	0.354[b]
Posttest	117-128	122.17±3.460	120-130	123.20±4.42	0.463[b]
Diastolic Blood Pressure					
Pretest	67-89	76.89±7.120	67-89	77.49±6.289	0.600[b]
Posttest	70-90	80.83±5.732	80-80	80±0.000	0.100[b]
Pulse					
Pretest	80-88	83.11±3.652	80-95	85.37±4.008	0.092[b]
Posttest	80-100	89.09±6.797	85-94	88.26±2.049	0.966[b]
Fetal Health Rate					
Pretest	120-145	135.60±5.590	125-145	134.86±5.84	0.589[a]
Posttest	131-156	146.03±6.478	125-152	138.57±8.13	0.000[b]
Contraction Frequency					
Pretest	2-4	3.17±0.514	3-4	3.34±0.482	0.803[b]
Posttest	3-4	3.83±0.382	3-4	3.66±0.482	0.103[b]
Contraction Duration					
Pretest	30-56	43.03±7.213	30-56	44.74±7.196	0.323[a]
Posttest	44-60	55.40±6.335	40-56	48.69±4.645	0.000[b]
Anxiety					
Pretest	54-70	63.00±4.459	54-70	63.03±4.402	1.000[b]
Posttest	52-72	66.63±4.102	65-73	68.23±1.374	0.032[b]
Pain					
Pretest	5-8	6.74±1.039	5-8	6.43±0.948	0.242[b]
Posttest	3-6	4.29±1.100	5-8	6.29±1.017	0.000[b]

Table 4 shows the results of data analysis for pretest measurements of systolic blood pressure, diastolic blood pressure, pulse, fetal heart rate, contraction frequency, contraction duration, anxiety, and pain. The p-value for these variables were all greater than 0.05, indicating no significant difference between the intervention and control groups at baseline. However, the analysis of posttest values for fetal heart rate, contraction frequency, anxiety, and pain scale revealed p-value <0.05, suggesting significant differences between the two groups. Therefore, it can be concluded that the combination of warm water immersion combination of rose and lavender aromatherapy is effective in reducing anxiety and pain during labor.

Labor is frequently a physically and emotionally challenging experience for mothers. The combination of fatigue, pain, and fear can trigger anxiety and stress, which in turn affects the course of labor. High anxiety during labor, especially during the second stage, has been shown to have a close relationship with the duration of the process. A study conducted by Yurinawardani & Wulandari (2019) showed that high levels of anxiety can prolong labor, as emotional tension tends to inhibit the body's physiological processes.

Anxiety during labor is a natural emotional response that often arises from a mother's concern for the well-being of herself and the fetus. However, if this anxiety is not managed well, it can develop into a serious condition that affects the mother's mental health. Kholifah et al. (2019) stated that anxiety that is not properly managed has the potential to trigger mental disorders due to long-lasting emotional changes.

Warm baths or hydrotherapy have long been used as one of the non-pharmacological methods to reduce

pain and anxiety during labor. Warm water can help increase body temperature, stimulating dilation of blood vessels (vasodilation) thereby increasing blood flow to muscles and body tissues. This increased blood flow reduces tension, which contributes to decreased pain perception during labor contractions. The muscle relaxation that occurs also has a positive impact on reducing anxiety, helping the laboring mother to cope better with contractions (Mellado-García et al., 2024).

In addition, warm water also stimulates the release of endorphins, which are the body's natural neurotransmitters that function as pain relievers while providing a feeling of comfort. Reviriego-Rodrigo et al. (2023) also explain that the release of endorphins can significantly reduce anxiety and provide a sense of calm in laboring mothers. This process supports the body to stay focused and in control during labor (Reviriego-Rodrigo et al., 2023).

Research shows that a warm bath can reduce the activity of the sympathetic nervous system, which plays a role in the "fight or flight" response. As sympathetic nerve activity decreases, the body relaxes, resulting in less anxiety and pain during labor. In addition, warm water can also improve blood circulation and reduce pressure on muscles and joints, which plays a role in relieving pain (Shaw-Battista, 2017).

The sensation of warm water provides a sense of security and comfort that can provide emotional support for pregnant women. This can help reduce feelings of fear and anxiety that often arise during labor. In this condition, pregnant women tend to be more focused and can face labor process better (Reviriego-Rodrigo et al., 2023).

Aromatherapy using lavender and rose essential oils has been shown to be effective in lowering anxiety levels. The mechanism of action involves the olfactory system affecting the limbic system in the brain, an area that regulates emotions and stress responses. Lavender essential oil contains linalool and linalyl acetate, which have calming effects. When inhaled, these molecules stimulate olfactory receptors that send signals to the limbic system, specifically amygdala and hippocampus, used in the regulation of emotions and anxiety. This stimulation increases alpha wave activity in the brain, resulting in feelings of relaxation and decreased anxiety (Chairiyah & Irmaya, 2024). Meanwhile, rose essential oil rich in citronellol and geraniol has anxiolytic properties, which helps lower the release of stress hormones, such as cortisol (Kholifah et al., 2019).

This combination of aromatherapy not only provides physical comfort, but also emotional soothing. It was observed that mothers who underwent this intervention had lower blood pressure and a more stable heart rate, indicating that they were able to manage their anxiety better than the control group (Hakamata et al., 2017).

In stressful situations, the body activates the "fight or flight" response through activation of the sympathetic nervous system. The hypothalamus sends signals to the adrenal glands to release catecholamines, such as epinephrine, which causes an increase in heart rate and blood pressure. If continued during labor, this response can exacerbate anxiety and prolong the labor process. However, effective therapies, such as hydrotherapy and aromatherapy help suppress this sympathetic response by activating the parasympathetic nervous system, which supports relaxation and body stability (Blaine, 2020).

Physiologically, when the body obtains a stimulus, it will perceive the stimulus as a threat, as a result the hypothalamus activates the HPA axis. Subsequently, cortisol is released from the adrenal cortex and allows the body to continue to be on high alert (Lee et al., 2015). Other studies have mentioned that physical and emotional stress during labor can cause a significant increase in blood pressure, but this condition usually returns to normal after physical activity ends (El Sayed et al., 2016).

Overall, the combination of hydrotherapy as well as lavender and rose aromatherapy provided significant benefits in reducing anxiety and pain during labor. The therapy not only supports the body to better cope with contractions, but also provides a more comfortable and controlled labor experience for the mother. With a growing body of supporting scientific evidence, these methods are worth implementing as part of evidence-based childbirth care to improve the well-being of mothers and babies.

The use of warm water soak combined with lavender and rose aromatherapy separately has been investigated as a non-pharmacological method to reduce pain intensity during labor. The results showed that this approach provided significant benefits in reducing the pain scale of labor, especially in the active phase of the first stage.

Warm baths have a mechanism of action that can increase blood flow to body tissues. This improves the supply of oxygen and nutrients to the uterine muscles that work hard during contractions, thereby reducing muscle tension, promoting relaxation, and decreasing the production of stress hormones, such as cortisol. The stable temperature of the water also stimulates the release of endorphins, as the body's natural analgesic, which helps to naturally calm the body (Burns et al., 2022).

In addition, the gentle pressure of warm water on the skin surface stimulates pressure receptors that inhibit pain signals to the brain, in accordance with the

principle of "gate control" in pain management. Thus, the pain sensation during contractions can be significantly reduced (Yurinawardani & Wulandari, 2019).

Scented rose aromatherapy pleasantly can maintain balance, cause feelings of comfort and reduce pain. Rose aromatherapy has been known to provide a relaxing effect and reduce pain. Roses contain various compounds, such as vitamins C, A, B1, B2, flavonoids, and carotenoids that have antidepressant, pain relieving, and anxiolytic benefits (Maliya, A & Siti, NF, 2019). Rose essential oil works through the limbic system in the brain, helping to lower cortisol release and provide a feeling of well-being. A study showed that the use of rose oil can reduce anxiety by 71% during labor, with only a small percentage of mothers requiring local anesthesia (Aulya et al., 2021).

Lavender aromatherapy works by stimulating the limbic system in the brain, which is associated with the regulation of emotions. Volatile compounds, such as linalool and linalyl acetate in lavender help to increase serotonin production while suppressing the release of cortisol. As a result, anxiety is reduced, allowing the mother to more calmly face the labor process (Yoo & Park, 2023).

Physiologically, lavender has an analgesic effect by inhibiting the transmission of pain signals in the central nervous system. It also helps relax muscles, which plays a role in reducing pain from contractions (López et al., 2017). Besides the psychological effects, lavender also has physical effects in reducing muscle tension. This is important as muscle tension can increase pain during labor. By relaxing the muscles of the body, lavender helps reduce the intensity of the pain felt (Yoo & Park, 2023).

Other research results by Mohebitabar (2016) stated from five research studies evaluating the physiological relaxation effects of rose oil. Anti- depressant, psychological relaxation, improving sexual dysfunction, and anti- anxiety effects as other clinical properties reported for rose oil. Rose oil has physiological and psychological relaxation, analgesic and anti-anxiety effects (Dagli et al., 2019).

Combining a warm immersion with lavender and rose aromatherapy creates a synergistic effect that works on different aspects of labor pain. Hydrotherapy provides physiological benefits by promoting muscle relaxation and reducing pain, while aromatherapy offers psychological support by calming the nervous system. Research indicates that this combination can reduce the pain scale by 30-50% compared to a single pharmacological method (Vora et al., 2024).

This study conducted in several maternity clinics, pregnant women who underwent a warm water immersion with the addition of lavender and rose aromatherapy reported a decrease in pain scale from an average of 6.74 (severe pain) to 4.29 (moderate pain). This was compared to the control group who were only given breathing techniques.

The results of the researcher's observations during the intervention process showed that mothers who were given warm water immersion with additional aromatherapy looked more relaxed and experienced a decrease in pain complaints. In fact, some mothers even fell asleep while undergoing warm water soak therapy. Another interesting phenomenon found during and after the intervention was an increase in the duration of contractions, although the frequency of contractions remained stable. This is thought to contribute to the shorter duration of the first stage in the group that received the intervention.

In addition, mothers in the intervention group considered more comfortable and calm during labor. Some of them expressed satisfaction with their childbirth experience. However, this satisfaction could not be quantitatively proven in this study. Therefore, further research is required to explore the correlation between this therapy and the duration of labor as well as the level of satisfaction of mothers in undergoing the labor process. These observations are in line with the results of research that states the use of warm baths, describing a liberating and transformative experience in welcoming birth.

The combined method of warm water immersion and lavender-rose aromatherapy becomes an effective approach to reduce labor pain while supporting emotional relaxation. This combination provides dual benefits by physiologically managing pain and psychologically calming anxiety, helping laboring mothers cope better with the labor process.

Conclusion

Based on the statistical analysis of the study group, the findings demonstrate the effectiveness of warm water immersion with a combination of rose and lavender aromatherapy in reducing anxiety and pain scale of laboring mothers. These results suggest the potential for health workers and the Health Office in order to apply the provision of therapeutic intervention in managing anxiety and pain scale during labor. Further researchers are needed to explore the implementation of this method with additional variables, such as labor duration and benefits in the second stage of labor, to further develop its efficacy and broader utility.

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Author Contributions
Conceptualization, E. S.; methodology, E. S; validation, E.S., and L. F.; formal analysis, E. S; investigation, E. S resources, E. S.; data curation, E. S, and L. F: writing original draft preparation, E. S.; writing—review and editing, E. S.; visualization, E. S. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest
The authors declare no conflict of interest.

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