

The Effectiveness of Aromatherapy Essential Oil Aroma Orange in Reducing Pain Scale 24 Hours Post Cesarean Section

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Abstract

Aromatherapy can help with post-Sectio caesaria (SC) pain. Aromatherapy orange is a sort of aromatherapy that can be used to alleviate pain and anxiety because it includes linalool, which helps to balance the nervous system and has a relaxing impact on those who inhale it. The purpose of this study is to investigate the efficacy of Aromatherapy Essential Oil Aroma Orange in lowering pain scale 24 hours after SC. The study's design was quasi-experimental, comprising a pre- and post-test with a control group. The research sample consisted of 74 people who were randomly assigned to one of two groups (treatment or control). The results showed that after receiving essential oil aromatherapy, the pain scale in the treatment group decreased from 4.141.669 to 2.591.334 (P value=0.000). Meanwhile, in the control group, the ratio was 2.860.419 to 2.780.479 ($P=0.373$). There is a difference in pain scale 24 hours after SC in moms who had a longer procedure (P -value=0.008). This indicates that essential oil aromatherapy with an orange scent can help alleviate discomfort. To be administered as a treatment to alleviate post-SC pain 24 hours after surgery.

Keywords

aromatherapy essential oil; pain scale; post sectio caesarea



I. Introduction

According to statistical data in 2000, it was reported in the world that women gave birth by cesarean section increased 4 times compared to the previous 10 years; wherein the United States, deliveries by cesarean section were 35% of all deliveries, Australia, 35%, Scotland 43% (Mirani, 2020). Previous research has discovered that the operation known as Sectio Caesarea (SC) can induce pain and result in alterations in tissue continuity as a result of the procedure (Pratiwi, 2012). Discomfort experienced by patients following a sectio Caesarea (SC) can increase the likelihood of problems for both the infant and the mother (Haniyah et al., 2016). In order to alleviate post-section Caesarea (SC) discomfort, pharmaceutical interventions are frequently employed. A pharmacological combination to regulate pain in order to lower the intensity of the pain while keeping the recovery period as short as possible (Fitrina, 2016).

Delivery with Sectio Caesaria will cause pain, making the patient uncomfortable. Aromatherapy is an example of non-pharmacological therapy that has been used to alleviate post-surgical pain (Utami, 2016). Using essential oils or pure oil extracts, aromatherapy can help enhance or maintain health, generate excitement, rejuvenate and relax the body and soul, among other things (Herlyssa & Theresia, 2020). Aromatherapy provides a variety of effects, ranging from first aid to inducing a sense of well-being and happiness (Rahmawati & Rohmayanti, 2015).

Several studies conducted in Indonesia reported that the average pain scale after giving aromatherapy to the control group was 4.65 ± 1.10 , while the average pain scale

after treatment in the lavender oil aromatherapy group was 2.53 ± 1.35 (Herlyssa et al., 2018). Karningsih, Jehanara & Winancy (2015) also reported that the average labor pain in the group given Essential Oil aromatherapy was slightly higher (mean $5.053 \pm 1,129$) than in the group given lavender oil aromatherapy (mean 3.5 ± 0.761). Lavender oil aromatherapy is more effective in reducing labor pain than essential oil aromatherapy (Winarsih & Idhayanti, 2017).

Another study by Dwijayanti, Sumatrini & Arianti (2014) reported that the pain scale in 32 post-section Caesarea patients given lavender aromatherapy inhalation experienced a significant decrease compared to those given lavender aromatherapy inhalation before being given treatment. Another study published in 2013 by Olapour et al. discovered that the placebo group received considerably more anti-pain medication in the form of diclofenac suppositories than the lavender aromatherapy group ($P = 0.008$). According to Tarsika (2008), aromatherapy has no influence on the intensity of pain experienced by delivery mothers. The Kolmogorov-Smirnov analysis test, pre-test, and post-test findings for the control and experimental groups all equaled $= 0.196$, indicating that there is no difference in pain levels between the control and experimental groups.

Aromatherapy acts on the human body via two physiological systems, namely the circulatory system and the olfactory system (Kristianti et al., 2018). Fragrances eventually affect other organs, having a significant effect on emotions (Karlina, 2014). Aromatherapy receptors in the nose capture aromatherapy and then provide additional information because the brain, which controls emotions and memory and communicates with the hypothalamus, which regulates the body's internal system, sexual system, body temperature, and reactions, can affect a person's psychological state, memory, and emotions (Maharani et al., 2016).

Based on the results of a preliminary study in the Carnation room of the Tangerang District Hospital of 10 Post SC patients, it was found that 20% had severe pain, and 80% had moderate pain. Based on the results of a medical record search in the Carnation Room of the Tangerang District Hospital, pain management in post-SC patients when entering the inpatient room uses analgesics in the form of Protopen suppositories 3 times/day, if after 24 hours the pain is still felt, continue with the administration of mefenamic acid 3x500 mg orally. The purpose of the study was to determine the use of Aromatherapy Essential Oil Aroma Orange in reducing pain scale 24 hours post-SC in Tangerang District Hospital.

II. Research Method

This is a quasi-experimental study featuring a control group and pre and post-test designs. The participants in this study were all mothers who had undergone a 24 hour sectio Caesarea at Tangerang District Hospital. This study's sample consists of 74 mothers who have had a Caesarean section within the last 24 hours at Tangerang District Hospital. The treatment group consisted of 37 mothers who were given Orange Aromatherapy Essential Oil, while the control group consisted of 37 moms who were not given Orange Aromatherapy Essential Oil (37 people). The sampling method used was sequential sampling. The dependent factors in this study were mother age, education, occupation, parity, ethnicity, duration of surgery, the meaning of pain, previous pain experience, anxiety, SC indication, coping style, and husband's support. A questionnaire was used to collect data on the characteristics of respondents, while the Numerical Rating Scale (NRS) observation sheet was used to measure pain. This study began by measuring the pain scale 24 hours post-SC. After that, the treatment group was given aromatherapy essential oil with 10% orange aroma through tissue media that had been dripped as much as 3 drops,

then inhaled the fragrance for 5 minutes at a distance of 10 cm. Aromatherapy is only given once 24 hours post-SC. Meanwhile, the control group was not assigned essential oil aromatherapy with an orange aroma. After 30 minutes of administering critical oil aromatherapy, the treatment and control groups continued to be observed and assessed for pain scale. Variable data were tested for normality and homogeneity test—data analysis with Univariate and Multivariate with multiple logistic regression.

III. Result and Discussion

3.1 Univariate Analysis

Univariate analysis is an analysis used on one variable to know and identify the characteristics of that variable. In addition, we can also use univariate analysis to conclude using a variety of inferential analyzes that may be used. The following is the distribution of respondents between the treatment and control groups.

Table 1. Distribution of Respondents between the treatment group and the control group

Variable	Category	Treatment		Control	
		n	%	n	%
Mother's Age	<20 years or >35 years	11	29.7	17	45.9
	20-35 years old	26	70.3	20	54.5
Mother's Education	Low	29	78.3	32	86.3
	Tall	8	21.6	5	13.5
Mother's work	work	5	13.5	2	5.4
	Doesn't work	32	86.5	35	94.6
parity	Primipara	13	35.1	14	37.8
	Multipara	24	64.9	23	62.2
Operation time	<75.72 minutes	27	73	35	94.6
	≥75.72 minutes	10	27	2	5.4
Attitude to the meaning of pain	< average	14	37.8	35	94.6
	≥average	23	62.2	2	5.4
Previous pain experience	no	20	54.1	0	0
	yes	17	45.9	37	100
worry	< average	11	29.7	32	86.5
	≥average	26	70.3	5	13.5
SC. indication	Mother indication	21	56.8	23	62.2
	Fetal indication	10	27.0	14	37.8
	No indication	6	16.2	0	0
Additional actions during the operation	yes	15	40.5	33	89.2
	no	22	59.5	4	10.8
Operation time	<75.72 minutes	27	73	35	94.6
	≥75.72 minutes	10	27	2	5.4
Coping style	< average	22	59.5	11	29.7
	≥average	15	40.5	26	70.3
Husband/family support	< average	16	43.2	29	78.4
	≥average	21	56.8	8	21.6

In table 1, it is known that the treatment group and the control group have almost the same characteristics in maternal age, education, occupation, parity, ethnicity, duration of surgery, the meaning of pain, previous pain experience, anxiety, SC indication, coping style, and husband's support.

3.2 Multivariate Analysis

Considering that this research has abnormal data, the researcher makes the dependent variable numeric into categorical data. For this reason, the researcher conducted a multivariate analysis with the Multiple Logistics Regression test. Before analyzing the Multiple Logistics Regression Multivariate Risk factor model, initial modeling was carried out. The results of the initial modeling of bivariate selection are as follows:

Table 2. Initial modeling results from Multivariate Analysis

variable	P-value
Mother's age	0.161
education	0.686
Profession	0.158
Tribes	0.119
parity	0.739
Operation time	0.003
Attitude towards the meaning of pain	0.971
Worry	0.980
Husband's support / Family	0.396
Coping Style	0.645
SC indication	0.514
Additional Actions during Operation	0.599
Previous pain experience	0.873

From table 2, it is known that the variable length of operation has a P-value <0.05 so that it can be continued to the subsequent modeling. However, considering the ethnic variable, pain experience, and additional procedures during surgery are essential factors on the 24-hour post-SC pain scale, so they are still included in the subsequent modeling. Next, the interaction test was conducted by removing the interaction variables that were not significant in stages (P-value > 0.05). After the confounding test, the variable length of operation was the confounding variable for the relationship between essential oil and essential oil aromatherapy with a pain scale 24 hours post-SC. Here are the results of the last modeling.

Table 3. Last modeling results in Multivariate Analysis

No	Variable	Beta	P-value
1.	Aroma therapy	1.955	0.010
2.	Operation time	0.255	0.010

From table 3, it is known that the P-Value of 0.010 means that the 5% alpha states that the regression model can predict the pain scale of 24 hours post-SC. From the Beta value, it is known that aromatherapy is the most dominant factor in decreasing the 24-hour Post SC pain scale after being controlled by the variables of mother's age, education, occupation, parity, ethnicity, mother's attitude towards the meaning of pain, previous pain experience, anxiety, SC indication, additional measures, duration of surgery, coping styles, and husband's support.

After calculating the delta or the difference in pain scale after and before the intervention, an effectiveness test was carried out using the one-way Anova test. The following is a practical test between the Essential Oil aromatherapy treatment group between the treatment and control groups. Test the effectiveness by using the Independent T-Test.

Table 4. The effectiveness of aromatherapy candles on reducing pain scale 24 hours post-SC

Pain reduction scale	Mean ± SD	SE	p-value	Description
<mean	2.28±0.704	0.074	0.000	Significant
≥mean	4.43±0.676	0.148		

In table 4, it is known that aromatherapy candles are proven to be effective in reducing pain scale 24 hours post-SC (P-Value = 0.000).

3.3 Discussion

The findings revealed that the average 24-hour Post SC pain scale in the treatment and control groups prior to the intervention was different. The pain scale was more apparent in the treatment group than in the control group. However, after receiving aromatherapy, the treatment group saw a significant decrease in the average pain scale of 1.55, whereas the control group experienced just a 0.08 decrease in the average pain scale. This suggests that using aromatherapy can minimize discomfort 24 hours after SC. This is consistent with the findings of Hadi and Hamid (2011) and Herlyssa et al. (2018), who found that the pain scale was lower in the group using Essential Oil aromatherapy than in the control group.

The aromatherapy approach used in the sample differs slightly between the researchers and Hadi & Hamid (2011). The researchers employed essential oil aromatherapy, which was placed in the room for 30 minutes before measuring the pain scale (post-test) in the treatment and control groups; after 5 minutes, the aromatherapy was administered by exhibiting a pain scale image ranging from 1 to 10 on the observation sheet. Hadi and Hamid (2011), on the other hand, employed aromatherapy poured over an oxygen mask for 3 minutes after 3 hours of analgesic dosing.

This study also follows Dwijayanti et al. (2014), who reported that the pain scale in 32 posts SC patients given lavender aromatherapy inhalation experienced a significant decrease compared to before being given treatment. Likewise, another study by Olapour et al. (2013) resulted in the addition of an anti-pain in the form of diclofenac suppositories in the placebo group, which was significantly higher than the group given lavender aromatherapy (P = 0.008). In this study, additional painkillers were not shown because it was proven that the administration of Aromatherapy Essential Oil Aroma Orange effectively reduced post-SC pain. Based on the analysis results with an independent t-test, obtained a p-value of 0.000, smaller than = 0.05 (p>0.05). From this test, it can be concluded that essential oil aromatherapy effectively reduces pain scale 24 hours post-SC.

This study's results do not follow Tarsika (2008), which explains that aromatherapy does not affect the pain level in childbirth. This study proves that the Aromatherapy Essential Oil group with orange aroma obtained a p-value of 0.000 (p<0.05). The provision of essential oil aromatherapy has been shown to reduce post-SC pain significantly. Meanwhile, a p-value of 0.373 (p>0.05) was also obtained in the control group. From this test, it was shown that there was no significant reduction in post-SC pain in the control group.

This discrepancy may be caused by differences in the characteristics of pain that occur in the sample, namely between postpartum mothers and post-SC mothers. Prawirohardjo (2008) explained that labor pain or His is a physiological pain. This pain will occur from the beginning of the first stage, and its amplitude continues to increase to 60 mmHg at the end of the first stage. At the end of the first stage, the frequency of His can reach 4 times in 10 minutes with a duration of 60-90 ethic. Labor pain or His is essential so that labor can usually take place. During His abdomen will feel stiff and cause discomfort (pain). The pain is felt as back pain. In its development, His will become longer and more robust, which results in an increasing pain scale (Oxon & Forte, 2010). At the same time, post-SC pain arises due to a knife cut during surgery.

Oktasari (2018) discovered a substantial difference in pain intensity between the administration of bitter orange essential oil aromatherapy and guided visualization. The researchers compared the intensity of spinal anesthesia needle prick pain at PKU Muhammadiyah Hospital in Bantul to the delivery of aromatherapy with bitter orange essential oil and guided visualization. This researcher concurs with Purwandari and Sabrian (2012).

Karningsih et al. (2015) also reported that the average labor pain after being given aromatherapy in the Essential Oil and lavender oil aromatherapy group was lower than before. This indicates that the administration of aromatherapy can reduce labor pain in inpartum mothers. However, in the control group, it appears that there was an increase in labor pain at the time of the post-test. Karningsih et al. (2015) also reported that the average labor pain in the group given Essential Oil aromatherapy was slightly higher (mean $5.053 \pm 1,129$) than in the group given lavender oil aromatherapy (mean 3.5 ± 0.761). Lavender oil aromatherapy is more effective in reducing labor pain than essential oil aromatherapy. Likewise, research from Kundarti et al. (2014) explains that the presence of Lavender Aromatherapy affects labor pain in the first stage.

A research study by Hadi & Hamid in 2011 reported that in the treatment group using lavender oil with a thorough oxygen mask for 3 minutes given after 3 hours of intravenous analgesic administration, the Visual Analog Scale (VAS) was measured half an hour after the first intervention, then 8 hours after the first intervention. Hours and 16 hours later, aromatherapy was repeated, and half an hour after each intervention, the pain scale was measured for 30 minutes. As a result, the pain scale in the treatment group is lower than that of the control group. Giving lavender aromatherapy by inhalation for 15 minutes using tissue and with a deep breath, by increasing the NRS scale, there was a decrease in the intensity of post-SC pain. However, not all of them experienced a significant decline (Dwijayanti et al., 2014).

The effectiveness of orange aromatherapy essential oil on the 24-hour Post SC pain scale was carried out by calculating the average difference or delta of the pain scale after and before treatment. The test results show differences in pain scale before and after treatment. The research results show that essential oil aromatherapy can reduce the pain scale 24 hours post SC (Beta = 0.11). The effectiveness test results also prove that aromatherapy candles effectively reduce pain scale 24 hours post-SC (P-Value = 0.000).

One of the non-pharmacological methods for reducing post-SC pain is aromatherapy essential oil with an orange fragrance. This aromatherapy is placed in the corner of the room and inhaled by the patient 24 hours post-SC. Aromatherapy orange contains limonene which is helpful as an anti-tumor. Besides being liked by consumers, orange aromatherapy also includes Linalol, terpineol, a sedative, citronella as a sedative, mosquito repellent, limonene for blood circulation, helps neutralize acids in our body, and stimulates

the immune system to fight infection. Citrus aromatherapy has anti-depressant qualities and fosters a refreshing spirit (OGCCU, 2013).

Aromatherapy Essential Oil Aroma Orange is aromatherapy derived from essential oils that can help neutralize acids in our body and stimulate the immune system to fight infection, have anti-depressants, and foster a refreshing spirit (OGCCU, 2013). The aroma of lemon and bitter orange is effective in reducing pain scale in post-laparotomy patients, labor pain; Purwandari, Siti, and Febriana (2015) reported a significant decrease in pain scale in the experimental group after inhaling the lemon scent, while there was no decrease in pain scale in the control group. According to Astuti, Heni, and Kartika (2015), there was a significant difference in the level of labor pain after receiving bitter orange aromatherapy in the intervention and control groups, with a p-value of 0.000. As a result, orange aromatherapy essential oil is an alternative that patients can take to alleviate discomfort 24 hours after surgery.

IV. Conclusion

According to the study's findings, the control and treatment groups had significantly different outcomes on the average 24-hour post-SC pain scale after the intervention. The pain scale in the treatment group was considerably more significant than the control group. However, following the administration of aromatherapy, there was a statistically significant drop in the average pain scale of 1.55. In contrast, there was only a 0.08 decrease in the average pain scale in the control group. There is a statistically significant difference in the average 24-hour post-SC pain scale after the orange aromatherapy essential oil was administered to the treatment group, as demonstrated in this study. Essential oils having an orange scent, used in aromatherapy, help lower the pain scale—24 hours following the SC.

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