

## EFFECTIVENESS OF ROSEMARY ESSENTIAL OIL AROMATHERAPY ON PAIN POST SECTION CAESAREA

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### ABSTRACT

**Background:** Background: Caesarean section delivery is an alternative delivery, especially in complicated deliveries, but currently it is an option without indication chosen by mothers who give birth, so it can be seen that the number of SC deliveries is increasing. SC births in Indonesia have the highest incidence rate in DKI Jakarta at 31.3% and the lowest in Papua at 6.7%.<sup>10</sup> Meanwhile, based on the West Sumatra Provincial Health Service, the prevalence of cesarean section was 24.6% in 2020 and the prevalence for Padang City reached 23%.<sup>4</sup> Caesarean section delivery certainly has a higher impact than normal delivery. Post-SC pain is one of the discomforts felt by patients. One non-pharmacological method that can be applied to reduce post-SC pain is aromatherapy. Various flower extracts can be used for complementary therapy to suppress pain, including is rosemary essential oil. The research aims to see the effectiveness of giving rosemary aromatherapy on post-SC pain. **Method:** This type of quantitative research uses a quasi-experimental with one group pretest-posttest design. The population in this study was all Post Caesarean section patients at the Mentawai Islands Hospital in 2024 totaling 84 people and the sample used was 20 people. The sampling technique used consecutive sampling. The instrument used is the Numeric Rating Scale (NRS). Use rosemary essential oil by diffusion using a diffuser, at a dose of 5-10 drops diluted with 20 ml of water given over 2x60 minutes, given simultaneously after 24 hours Post-SC. Data analysis is presented univariate and bivariate by using the Wilcoxon test. **Results:** The average intensity of pain post-section Caesarea before being given rosemary essential oil aromatherapy with a mean of 8.70. The average intensity of pain post-section Caesarea before being given rosemary essential oil aromatherapy with a mean of 5.56 with a p-value 0.000. **Conclusion:** The statistical test results obtained p-value = 0.000 (<0.05) which means there was a reduction in post-cesarean section pain after giving rosemary essential oil aromatherapy. **Suggestion:** We hope that health workers, especially midwives, can apply rosemary oil essential aromatherapy as a complementary therapy in reducing post-SC pain.

**Keywords:** Rosemary Essential Oil Aromatherapy., Pain., Post Caesarean section

### INTRODUCTION

The birth of a baby is the time that all pregnant women wait for to be able to immediately meet the baby in the womb. Childbirth is a series of events where a baby is released from the mother's womb, followed by the release of the placenta and fetal membranes from the mother's body. Childbirth can be carried out normally or abnormally for the mother. Abnormal childbirth can be carried out using surgery which is often called surgery. caesarean section.<sup>15</sup>

Data from the World Health Organization (WHO) shows that there is an increase in births using the SC method throughout the world and exceeds the 10%-15% range recommended by WHO. America and the Caribbean are in the highest position contributing to the highest number of births with caesarean section, namely 40.5%, followed by Europe 25%, Asia 19.2% and Africa 7.3%.<sup>13</sup> The indications for CS include pelvic disproportion 21%, fetal distress 14%, placenta previa 11%, previous history of CS 11%, fetal abnormalities 10%, preeclampsia and hypertension 7%.

SC births in Indonesia are 17.6%, the highest in the DKI Jakarta area at 31.3% and the lowest in Papua at 6.7%.<sup>10</sup> Meanwhile, data from the West Sumatra Provincial Health Service, the prevalence rate for caesarean section was 24.6% in 2020 and the prevalence of SC in Padang City was 23% of mothers undergoing SC delivery.<sup>4</sup> Based on these data, it can be seen that the prevalence of SC deliveries far exceeds the limits set by WHO.<sup>3,4</sup>

The increase in the prevalence of SC births is motivated by the current maternity trend, fear of complications arising in the baby, bad experiences of regarding previous spontaneous births, fear of not being able to endure the pain of giving birth normally, and the desire to determine the date of delivery are also the causes of many mothers choosing SC births.<sup>12,16</sup>

Normal delivery or caesarean section will not prevent pain from occurring. Childbirth with SC surgery will cause severe pain on the first day when the anesthesia wears off and is more pronounced when the suture wound dries.<sup>5,14</sup> Many factors can influence the onset of pain, both physical and psychological, such as age, level of mobility, internal

and external self-motivation, the mother's experience and the mother's preparation for childbirth.<sup>9</sup>

Cesarean section surgery usually causes pain after giving birth, because during the process cesarean section, the doctor has used anesthesia. Generally the effect of the anesthetic will disappear around 4 hours after surgery. After the anesthesia wears off, pain in the stomach begins to be felt due to the wound in the stomach.<sup>11,14</sup>

Pain in post-SC mothers can cause various problems, around 68% of post-SC mothers experience difficulties with caring for the baby, moving in and out of bed and arranging a comfortable position during breastfeeding due to pain.<sup>2</sup> This pain will cause patients to delay giving breast milk to their babies from the start, because of discomfort during the breastfeeding process or increased pain intensity after surgery.<sup>3</sup>

Pain that is not treated adequately can cause a number of physiological and psychological disorders in women undergoing Cesarean Section. These disorders include impaired recovery, persistent pain, chronic pain, and increased treatment costs. Postoperative pain management is often found to be far below standard, with 30%–80% of patients experiencing moderate to severe pain post-surgery.<sup>15</sup>

Post operative pain results from direct tissue trauma and accompanying inflammation. Systemic inflammatory cytokines work to sensitize peripheral nerves and increase pain perception. Inflammation plays a particularly significant role in pain that occurs after childbirth because inflammatory cytokines increase as part of the labor process.<sup>5,6</sup>

There are various actions that can be taken to manage pain, both pharmacologically and non-pharmacologically. Therapy Pharmacologically, pain can be treated by administering analgesics, while various complementary therapies can be given as non-pharmacological treatments including relaxation techniques, postpartum massage, acupressure, warm compresses, essential oil aromatherapy, postnatal yoga and so on.<sup>1</sup>

Discomfort in post-SC pain is a condition that must be overcome with pain management, because comfort is a basic human need.<sup>5</sup> Various studies have been conducted to prove the effectiveness of complementary therapies for pain management. The use of essential oil aromatherapy is believed to be able to provide a relaxing effect on post-SC patients.<sup>1,5</sup>

Aromatherapy is a non-pharmaceutical therapy option because it is a complementary therapy that uses volatile plant fluids (essential oils). One type of essential oil that can be used as aromatherapy is rosemary essential oil.<sup>1</sup>

Rosemary (*Rosmarinus officinalis* L.) is a green spice-producing shrub that grows along the Mediterranean Sea and sub-Himalayan areas.<sup>7</sup> In Indonesia, rosemary is known as rosmarin, usually used as a cooking spice and herbal medicine. As a herbal medicine, rosemary is available in the

form of dry herbal tea or essential oil. In traditional medicine, rosemary is used as an antispasmodic, mild analgesic, for the treatment of intercostal neuralgia, headaches, migraines, emotional disorders, insomnia, and depression. Different studies have highlighted the neuropharmacological properties of rosemary as their main topic.<sup>8,12</sup>

Leaves and oil *rosemary* contains hundreds of typical plant compounds or phytochemicals. Some of them cineol, humulene, phellandrene pinene, terpinene, alpha-thujene, beta-caryophyllene, borneol, camphor, carnosic acid, carvacrol, cis-piperitol cis-sabinene-hydrate limonene, terpineol, dipentene, fenchol, flavone, linalool, myrcene, piperitone, rosmarinic acid, sabinene, thymol, and verbenone.<sup>12</sup> These compounds have significant antimicrobial, anti-inflammatory, anti-oxidant, anti-apoptotic and neuroprotective properties. In addition, rosemary shows important clinical effects on mood, learning, memory, pain, anxiety, and sleep.<sup>8</sup>

Many studies discuss the effectiveness of aromatherapy for reducing post-SC pain, but most of the essential oil used is lavender, while research using rosemary essential oil is still limited, this is the background for the author to choose rosemary essential oil.

The aim of this research is to see the effect and effectiveness of giving rosemary essential oil aromatherapy on post-SC pain.

## RESEARCH METHODS

This type of quantitative research uses a quasi-experimental design with a one group pretest-posttest design. The population in this study was all Post Sectio Caesarea patients at the Mentawai Islands Regional Hospital in 2024, totaling 84 people and the sample used was 20 people as the minimum sample for experimental research. The sampling technique uses consecutive sampling, sample selection is carried out by determining subjects who meet the inclusion criteria and are included in the research until the required number of samples is sufficient. The instrument used is the Numeric Rating Scale (NRS). The use of rosemary essential oil is by diffusing using a diffuser, with a dose of 5-10 drops diluted with 20 ml of water given over 2x60 minutes, given simultaneously after 24 hours after SC. Data analysis is presented univariately and bivariately using the Wilcoxon test

## RESEARCH RESULT

Table 1 shows the characteristics of respondents in the intervention group based on the highest number of ages not at risk (20-35 years) 14 respondents (70%), 12 respondents (60%) low school education, 15 respondents (75%) housewife, work 5 respondents (25%), primipara parity 12 respondents (60%).

**Table 1** Characteristics of Respondents at the Mentawai Islands Hospital in 2024

Characteristic	<i>f</i>	%
Age		
No. Risk	14	70.0
Risk	6	30.0
Education		
bachelor	4	20.0
Senior High School	4	20.0
Junior High School	12	60.0
Paritas		
Multipara	8	40.0
Primipara	12	60.0

**Univariate Analysis**

**Table 2** Pain Intensity of Post Sectio Caesarea Before Being Given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in 2024

Pain	N	Mean	SD	Min-Max
Pretest	20	8.70	0.523	8-9

From table 2 it is known that the average post SC pain before being given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in

2024, with a mean of 8.70, which means that the respondent experienced controlled severe pain, with the lowest pain score of 8 and the highest pain score max 9.

**Table 3.** Pain Intensity of Post Sectio Caesarea After Given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in 2024

Pain	N	Mean	SD	Min-Max
Posttest	20	5.67	0.323	3-6

From table 3 it is known that the average pain intensity of Post SC after given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in 2024, with a mean of

5.67, which means that respondents experienced controlled severe pain, with the lowest pain score is 3 and the highest pain score is max 6.

**Analysis Bivariate**

**Table 4.** Effectiveness of Rosemary Essential Oil Aromatherapy on Pain Post Sectio Caesarea at the Mentawai Islands Hospital in 2024

Pain	N	Mean	SD	Min-Max	P Value
Pretest	20	8.70	0.523	8-9	
Posttest	20	5.67	0.323	3-6	0.000

Table 4 shows the average pain of post SC before being given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in 2024, with a mean of 8.70 in the category high pain, while after given the intervention, the average pain of post SC before being given Rosemary Essential Oil Aromatherapy decreased to 5.67 in the category of moderate pain respondents.

The results of the statistical test obtained a p-value = 0.000 (<0.05) indicating the effect of Rosemary Essential Oil Aromatherapy to reduce pain levels of post section caesarea at the Mentawai Island Hospital in 2024.

## DISCUSSIONS

The intensity of post section caesarea pain before inhalation of rosemary aromatherapy at the Mentawai Island Hospital in 2024, was 8.70, which means that the respondent was in category of high pain.

Based on table 1, we can find most of the respondent is primipara, there are several trigger factors the occurrence of pain originating from psychologically bigger because it hasn't get enough experience compared to multiparous mothers. This is appropriate with the research that Most post partum mothers are primiparous experiencing stress and change emotional (Pratiwi et al., 2021).

Beside of that, in the education category, almost respondent is he majority of respondents had a junior high school education level, namely 12 people (60%). The education in this study was the last formal education that the respondent attended and received a diploma. According to Notoatmodjo (2010), the higher a person's education, the easier it is to obtain information and ultimately influence a person's behavior. The characteristics of the respondents who were the subjects of this research were that most of them had a history of high school education. Education for a person is a dynamic influence on physical, mental and emotional development so that each level of education will provide a different experience. The level of education is related to an increase in the pain scale due to a lack of strategies in dealing with pain complaints so that someone with a low level of education is less able to adapt to pain.

The average pain intensity of Post SC after given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in 2024, with a mean of 5.67. The results of this study showed that there was a significant reduction in the average post-SC pain, from severe pain reduced to moderate pain after intervention.

Based on bivariate data analysis which was carried out using the Wilcoxon test with p value of 0.000 was obtained, this means that the administration of rosemary essential oil was proven to be effective in reducing the intensity of post caesarean section pain.

According to researchers, pain was in the severe pain category and after being given intervention decreased to

mild pain. This is related to the sensation of pain which is suppressed by administering rosemary essential oil, where rosemary leaves and oil contain hundreds of typical plant compounds or phytochemicals which have significant antimicrobial, anti-inflammatory, anti-oxidant, anti-apoptotic and neuroprotective properties. By inhaling rosemary, it will give a signal to the hypothalamus which conveys sensory information to the body so that the mother will feel comfortable and this feeling of comfort will suppress pain in post-SC mothers.

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

Rosmary Essential Oil is effective for reducing post caesarean section pain because it contains neuropharmacological oils which are useful as anti-stress, eliminating mental fatigue, dizziness, anxiety, nervousness, nervous tension and reducing pain, apart from that it also refreshes the mind by creating positive thoughts and eliminating emotions. negative.

Essential oils are used with techniques inhalation can increase awareness and reduce anxiety. Smell molecules is an ingredient in essential oils has a positive effect on the nervous system central, which can hinder expenditure ACTH (Adreno Corticotropic Hormone) where this hormone causes it to occur someone's anxiety. When given rosemary essential oil aromatherapy, the HPA axis which is activated due to pain will be suppressed, causing a relaxing effect in post-SC patients.

## 1. CONCLUSION

- a. The average post SC pain before being given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in 2024, with a mean of 8.70
- b. the average pain intensity of Post SC after given Rosemary Essential Oil Aromatherapy at the Mentawai Islands Hospital in 2024, with a mean of 5.67
- c. There was an effect of rosemary essential oil aromatherapy to reduce pain levels of post section caesarea at the Mentawai Island Hospital in 2024.

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