

# The Application of Deep-Breathing Relaxation Techniques with Lemon Aromatherapy to Reduce Pain in Post-Sectio Caesarea Mothers at RSUD dr. Adhyatma, MPH, Central Java Province

Febta Fatmia Ardani<sup>1</sup>, Witri Hastuti<sup>2</sup>

Fakultas Ilmu Keperawatan dan Kesehatan, Universitas Karyahusada Semarang, Jl. R. Soekanto No.46, Sambiroto, Kota Semarang, Indonesia

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## Article Info

### Keywords:

Deep-breathing relaxation,  
Lemon aromatherapy,  
Postoperative pain,  
Sectio caesarea.

## ABSTRACT

Post-sectio caesarea mothers often experience significant postoperative pain that interferes with mobility, breastfeeding initiation, and overall recovery. Pharmacological pain management such as analgesics provides rapid relief but may cause side effects when used long term. Therefore, non-pharmacological interventions are needed to complement pharmacological approaches safely. This study aimed to determine the effectiveness of deep-breathing relaxation techniques combined with lemon aromatherapy in reducing postoperative pain among post-sectio caesarea mothers at RSUD dr. Adhyatma, MPH, Central Java Province. This descriptive case study involved two respondents selected through purposive sampling based on inclusion and exclusion criteria. Data were collected using observation sheets, nursing documentation, interviews, and direct observation, while pain intensity was measured using the Numerical Rating Scale (NRS) before and after the intervention. The results showed a significant decrease in pain intensity after two consecutive days of intervention. In Patient 1, the pain scale decreased from 5 to 4 on the first day and from 4 to 2 on the second day, while in Patient 2, it decreased from 6 to 5 and from 4 to 3, respectively. Both patients reported improved comfort, relaxation, and self-control in managing postoperative pain. These findings indicate that deep-breathing relaxation combined with lemon aromatherapy is an effective, simple, and safe non-pharmacological nursing intervention to complement pharmacological pain management and enhance postoperative recovery among post-sectio caesarea patients.

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### Corresponding Author:

Febta Fatmia Ardani

Fakultas Ilmu Keperawatan dan Kesehatan, Universitas Karyahusada Semarang, Jl. R. Soekanto No.46, Sambiroto, Kota Semarang, Indonesia

[nyagemoy@gmail.com](mailto:nyagemoy@gmail.com)

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## INTRODUCTION

Childbirth is a process that begins with the opening of the cervix and ends with the delivery of the baby and placenta through the birth canal (uterus). Childbirth is classified into three types: normal delivery, assisted delivery, and induced delivery. Normal delivery occurs

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through the vagina (*per vaginam*). Induced delivery takes place after the rupture of membranes and the administration of pitocin or prostaglandins, while assisted delivery involves external assistance such as the use of forceps or through a surgical procedure known as *sectio caesarea* (Pamilangan et al., 2020). According to (Cunningham et al., 2018), there are two major delivery procedures: vaginal delivery and surgical delivery. *Sectio caesarea* (SC) is a surgical procedure in which the fetus is delivered by making incisions through the abdominal and uterine walls (Susanto et al., 2019). As stated by (Ayuningtyas & Ropitasari, 2018), *sectio caesarea* has become an alternative choice for some women who consider vaginal delivery to be risky and difficult in recent years.

Enhanced Recovery After Caesarean Surgery (ERACS) is a rapid recovery program following cesarean surgery that involves a series of treatments beginning with preoperative preparation, intraoperative care, and postoperative management until patient discharge. The ERACS protocol aims to provide comfort, ensure patient safety, enhance service quality, and accelerate recovery (Darmayanti et al., 2022). Thus, ERACS is considered an effective approach to encourage early rehabilitation and discharge (Sihombing et al., 2017).

According to the World Health Organization (2023), the rate of *sectio caesarea* in Mexico has increased over the past decade (2007–2023). The national rate of cesarean births reached 45.3%, with the remaining births being vaginal. The percentage rose from 43.9% to 45.5% over this period. In Indonesia, data from the *Basic Health Research* (Badan Penelitian dan Pengembangan Kesehatan, 2018) showed that the national rate of cesarean deliveries is 17.6%, with the highest in Jakarta (31.3%) and the lowest in Papua (6.7%). Medical records from Bhakti Wira Tamtama Hospital in Semarang revealed that over the past six months, there were 452 cesarean deliveries 304 using the conventional (non-ERACS) method and 148 with the ERACS method.

*C-section* procedures are typically performed due to disproportion between the fetal head and maternal pelvis, abnormal fetal position, placenta previa, large fetal size, multiple pregnancies, or advanced maternal age (Surmayanti et al., 2022). Additional indications include preeclampsia, eclampsia, previous cesarean history, specific maternal illnesses, or genital infections. This surgical procedure is intended to save both mother and baby when normal delivery is not possible (Rimadeni et al., 2022).

One of the most common nursing problems among post-*sectio caesarea* patients is acute pain and inflammation, which lead to discomfort and limited mobility (Oktaviani, 2020). The primary symptom experienced is pain originating from the abdominal incision. According to (Ni Wayan et al, 2023), pain is an unpleasant sensory and emotional experience resulting from actual or potential tissue damage. Pain is subjective, meaning each individual perceives and rates it differently. Unmanaged postoperative pain can lead to several complications, such as restricted movement, disrupted mother-infant bonding, delayed initiation of breastfeeding, and interference with daily activities (Oktaviani, 2020). Furthermore, pain can impair physical mobility, hinder breastfeeding effectiveness, and disturb sleep patterns (Syarifah et al., 2019).

Pain management for post-*sectio caesarea* patients can be carried out using both pharmacological and non-pharmacological therapies. Pharmacological methods, such as analgesic drugs, provide quick pain relief but may cause long-term side effects like kidney impairment. Non-pharmacological methods, on the other hand, gradually reduce pain intensity without adverse effects and are therefore considered safer. One effective non-pharmacological technique for pain reduction is relaxation training.

Previous nursing research supports the use of non-pharmacological therapies as alternative pain management methods. Such interventions include relaxation, hypnosis, movement and positioning, massage, hydrotherapy, heat/cold therapy, music, acupressure, aromatherapy, guided imagery, and distraction (Komann et al., 2019). Among these, deep-breathing relaxation techniques are particularly effective in reducing pain intensity in post-*sectio caesarea* patients, as they help regulate breathing, promote calmness, and enhance pain control (Amita et al., 2018).

In addition to relaxation, aromatherapy is another non-pharmacological approach used to relieve pain. Aromatherapy involves the therapeutic use of essential oils, which are typically inhaled for their physiological and psychological benefits (Ball et al., 2020). Aromatherapy has been recognized as an effective complementary therapy in maternal nursing care. One of the most beneficial aromas for relaxation is lemon essential oil, known for its antibacterial, antifungal, anti-stress, and antidepressant properties (Iswani et al., 2024). Lemon aromatherapy (*Citrus limon*) contains compounds such as linalool, which stabilize the nervous system, induce calmness, and reduce anxiety and pain.

A preliminary study conducted by the researcher in the Bougenville Inpatient Ward of RSUD dr. Adyatma, MPH, Central Java Province, revealed that nurses primarily administered ketorolac injections as pharmacological pain management for post-*sectio caesarea* patients. Non-pharmacological interventions were rarely implemented due to high patient loads, limited nursing staff, and the absence of a formal standard operating procedure (SOP) for aromatherapy relaxation. The only non-pharmacological intervention occasionally provided was deep-breathing relaxation. Therefore, the researcher intends to apply a non-pharmacological pain management intervention combining deep-breathing relaxation and lemon aromatherapy for post-*sectio caesarea* patients to reduce pain intensity in the Bougenville Ward of RSUD dr. Adyatma, MPH, Central Java Province.

Based on the above background, this study aims to determine the effectiveness of deep-breathing relaxation techniques combined with lemon aromatherapy in reducing postoperative pain among post-*sectio caesarea* mothers at RSUD dr. Adhyatma, MPH, Central Java Province.

## METHODS

This study employs a descriptive research method with a case study approach focusing on the application of deep breathing relaxation techniques combined with lemon aromatherapy for post-*sectio caesarea* mothers at RSUD dr. Adyatma, MPH, Central Java Province. The research involves two respondents selected through purposive sampling based on inclusion

and exclusion criteria. Data were collected using observation sheets and nursing care reports through interviews, direct observation, and document review. The Numerical Rating Scale (NRS) was used to assess pain intensity before and after intervention. Data analysis was conducted descriptively by categorizing subjective and objective findings, presenting them in tables and narratives, and comparing them with relevant theories. The research adhered to ethical principles, including informed consent, anonymity, confidentiality, and non-maleficence. Although limited by the small number of respondents, this study ensures data validity through triangulation methods and systematic documentation to enhance the reproducibility of findings.

## RESULTS AND DISCUSSION

### Case Study Results

The results of the case study on two post-*sectio caesarea* patients, namely Patient 1 (Mrs. U) and Patient 2 (Mrs. E), involved nursing care consisting of five stages: assessment, diagnosis, intervention, implementation, and evaluation.

**Table 1.** Case Study Result of Patient 1

No	Date	Pre-Condition Pain Scale	Lemon Aromatherapy Administration	Post-Condition Pain Scale
1	April 5, 2025	5	Given	4
2	April 6, 2025	4	Given	2

After two consecutive days of nursing interventions using relaxation techniques combined with lemon aromatherapy, a decrease in pain intensity was observed. On the first day, the pain scale decreased from 5 to 4 after the intervention, and on the second day, it decreased from 4 to 2.

**Table 2.** Case Study Result of Patient 2

No	Date	Pre-Condition Pain Scale	Lemon Aromatherapy Administration	Post-Condition Pain Scale
1	May 5, 2025	6	Given	5
2	May 6, 2025	4	Given	3

After two days of deep-breathing relaxation therapy with lemon aromatherapy, Patient 2 also experienced a reduction in pain. On the first day, the pain scale decreased from 6 to 5, and on the second day, from 4 to 3.

### Discussion

Based on the assessments of both patients in the Bougenville Ward at RSUD dr. Adyatma, MPH, Central Java Province, the same nursing diagnoses were established: *acute pain related to tissue injury from sectio caesarea surgery* and *risk of infection related to invasive procedures*. Subjective data from Patient 1 showed complaints of continuous stabbing

pain at the lower abdomen (pain scale 5), while Patient 2 reported intermittent cramping pain around the surgical incision (pain scale 6). Objectively, both patients exhibited facial grimacing during movement, indicating discomfort.

Pain is a condition that causes discomfort, often triggered by sensory nerve stimulation transmitted to the cerebral cortex, resulting in pain perception. The PQRST framework provocative/palliative, quality, region, severity, and time is used to analyze pain characteristics. Pain perception varies among individuals; it is subjective because each person experiences and interprets pain differently (Ni Wayan et al, 2023).

Pain was prioritized as the main diagnosis since it was the dominant complaint. According to Maslow's hierarchy of needs, comfort and safety are fundamental for well-being. Patient 1 exhibited greater pain sensitivity, likely due to fear and lack of prior surgical experience, whereas Patient 2 demonstrated higher pain tolerance, having undergone a previous cesarean section.

In this study, non-pharmacological interventions, specifically deep-breathing relaxation combined with lemon aromatherapy were applied to both patients to reduce pain. This intervention provides a calming effect, synchronizing breathing rhythm with the pulse, diverting attention from pain (distraction), reducing anxiety, and promoting relaxation. Inhaling lemon aromatherapy stimulates relaxation both physically and mentally, aiding in pain reduction.

After two days of intervention, both patients showed decreased pain intensity: Patient 1's pain scale decreased from 5 to 4 on the first day and from 4 to 3 on the second day; Patient 2's pain scale decreased from 6 to 5 on the first day and from 4 to 3 on the second day. Subjectively, both patients reported being able to manage their pain independently and move comfortably, while objectively they appeared more relaxed and no longer grimaced.

These findings indicate that deep-breathing relaxation with lemon aromatherapy effectively reduces postoperative pain intensity in *sectio caesarea* patients. The decrease from moderate to mild pain levels was further supported by pharmacological management through analgesics as indicated. The nursing care plans were implemented consistently for both patients (Mrs. E and Mrs. U), showing congruence between clinical observations and theoretical expectations.

Previous research also supports these findings, where deep-breathing relaxation combined with lemon aromatherapy reduced labor pain from a scale of 6 to 3 (Participant 1), 7 to 3 (Participant 2), and 7 to 3 (Participant 3 (Ratna, 2016).

## CONCLUSION

The application of deep-breathing relaxation techniques combined with lemon aromatherapy proved effective in reducing postoperative pain among post-*sectio caesarea* mothers at RSUD dr. Adhyatma, MPH, Central Java Province. Both patients showed a decrease in pain intensity and improved relaxation after two consecutive days of intervention, consistent with theoretical expectations regarding non-pharmacological pain management.

## RECOMMENDATION

Given that this study involved only two respondents and a short intervention duration, further research should include a larger sample size and extended observation to validate and generalize these findings. Hospitals are encouraged to develop standard operating procedures (SOPs) for implementing non-pharmacological pain management, such as relaxation and aromatherapy, to optimize postoperative nursing care.

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