

ENDORPHINE MASSAGE INTERVENTION ON MOTHERS POST-SECTION CAESAREAN PAIN LEVEL CHANGES

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ABSTRACT

Background: Cesarean delivery is a surgical intervention frequently associated with postoperative discomfort stemming from abdominal and uterine incisions. Inadequately managed pain following this procedure may hinder early mobilization, interfere with lactation, delay overall recovery, and elevate the probability of adverse outcomes such as thromboembolism and compromised maternal-infant attachment. Endorphin massage serves as a viable therapeutic modality, utilizing gentle, rhythmic tactile stimulation designed to prompt the secretion of endogenous analgesic peptides known as endorphins. This technique functions by fostering relaxation, decreasing muscular rigidity, enhancing hemodynamics, and mitigating pain perception via specific neurophysiological pathways.

Purpose: The objective of this investigation was to evaluate the efficacy of endorphin massage in diminishing pain severity among postpartum women who have undergone a Cesarean section.

Methods: This inquiry utilized a case study framework grounded in the examination of clinical nursing practice. The intervention comprised a 15-minute endorphin massage session administered once daily over a consecutive three-day period. Data acquisition involved patient history taking, direct observation, and clinical documentation, with post-surgical pain assessments conducted utilizing the Numeric Rating Scale (NRS), the Visual Analogue Scale (VAS), and the Indonesian Nursing Outcome Standards (SLKI) criteria.

Results: The findings demonstrated that the application of endorphin massage effectively lowered pain intensity in patients recovering from Cesarean deliveries. Consequently, this technique represents a practical, non-pharmacological nursing strategy for managing post-cesarean pain.

Conclusion: Administering a 15-minute endorphin massage daily for three days successfully alleviated pain intensity in post-Cesarean section individuals. Pain metrics, as evaluated by the NRS and VAS, dropped from a baseline score of 5 on the initial day to a score of 1 following the final session on day three. Additionally, nonverbal pain indicators, including facial grimacing and guarding of the abdomen post-coughing, were notably diminished. Thus, endorphin massage is recommended as an adjunctive, non-pharmacological therapy for alleviating postoperative discomfort in post-Cesarean mothers.

Keywords: Cesarean Pain Management; Endorphin Massage Therapy; Post-Cesarean Section.

Received June 2nd, 2026; Revised June 28th, 2026; Accepted July 3rd, 2026

DOI:<https://doi.org/10.36720/nhjk.v15i1.915>

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BACKGROUND

The Indonesian Nursing Standards bifurcate pain into acute and chronic classifications. Acute pain is characterized as a sensory or emotional response linked to actual or potential tissue trauma, emerging suddenly or progressively with intensities ranging from mild to severe, and typically resolving within three months; conversely, chronic pain involves a similar experience but persists beyond the three-month threshold (Tim Pokja SDKI DPP PPNI, 2018). A Cesarean section (CS) is a surgical method employed to extract a fetus via incisions in both the abdominal wall and the uterus (Putri et al., 2022). The discomfort following a CS generally originates from tissue injury caused by the surgery, subsequent inflammatory reactions, peripheral and central neural sensitization, and the risk of acute pain progressing into a chronic condition (Michalska et al., 2025). Therefore, post-CS pain is characterized as the physical distress stemming from these surgical incisions, which can last for less than three months or potentially become protracted.

Recent epidemiological data provided by Demilew et al. (2024) highlights a substantial global incidence over the last ten years, projecting that roughly 58% of women experience acute discomfort following a CS. Moreover, the 2023 Indonesian Health Survey reported a national CS rate of 25.9%, with East Kalimantan province observing a rate of 22.1% ; in correlation with these statistics, the most prominent complication noted among postpartum patients is the emergence of pain within the initial 24 hours following the operation (Kementrian Kesehatan Republik Indonesia, 2023). Such post-surgical discomfort can severely obstruct maternal-infant bonding, restrict milk production, and interrupt early breastfeeding, ultimately threatening neonatal well-being (Sales & Astuti, 2025).

To manage this discomfort, a combination of pharmacological and non-pharmacological strategies can be strategically implemented. Pharmacological options frequently encompass non-opioid pain relievers, NSAIDs, and localized or regional opioid agents (Hidayatullah & Noviard, 2025), while non-pharmacological alternatives involve therapeutic touch, acupressure, massage therapies, distraction techniques, hypnotherapy, thermal applications, Transcutaneous Electrical Nerve Stimulation (TENS), and Benson relaxation exercises (Morita et al., 2020). One specific technique utilized in this study to mitigate post-CS pain is endorphin massage. Endorphin massage is a non-invasive therapeutic intervention that uses light physical contact to mitigate pain by suppressing signal transmission through small C fibers and A-delta fibers, thereby obstructing the neural pathways to pain stimuli. This physiological mechanism induces pain relief and instills a profound feeling of relaxation (Karuniawati, 2020).

Prior investigations, such as the study by Lestari et al. (2024), have validated its clinical utility ; in their research, two participants exhibited moderate initial pain (scoring 5 and 6), which subsequently dropped by two points following the massage, shifting their pain into the mild bracket. These outcomes are corroborated by Emilia et al. (2024), who observed a notable decrease in the mean pain score—from 6.95 to 3.40—when endorphin massage was paired with pharmacological treatments. Consequently, evidence strongly supports the significant efficacy of endorphin massage in alleviating post-CS pain ($p\text{-value} = 0.000$).

An initial observational study performed at the Karang Mumus Ward of RSUD Inche Abdoel Moeis from December 22 to December 28, 2025, recorded five post-cesarean cases where all patients reported incisional pain, yet notably, none had received endorphin massage as a part of their pain management protocol. Motivated by these clinical observations, the authors aim to explore the therapeutic effects of endorphin massage on the fluctuation of pain levels among post-CS mothers at the Karang Mumus Ward of RSUD Inche Abdoel Moeis.

OBJECTIVE

The central aim of this investigation was to assess the clinical effectiveness of endorphin massage in modifying pain intensities among postpartum women recovering from Cesarean deliveries at RSUD Inche Abdoel Moeis, Samarinda.

METHODS

Study Design

This inquiry utilized a case study methodology, explicitly adopting an analytical framework focused on clinical nursing practice.

Setting

The clinical intervention took place in the Karang Mumus Ward at RSUD Inche Abdoel Moeis, Samarinda, during January 2026.

Research Subject

The study involved a single postpartum patient recovering from a Cesarean section who fulfilled all predefined inclusion criteria. These prerequisites mandated that the participant be fully alert, actively experiencing post-surgical discomfort, consenting to take part, and presenting no medical barriers to receiving endorphin massage. Before commencing, the participant received a comprehensive briefing on the study's aims, advantages, and procedures, which culminated in the execution of an informed consent document as a formal agreement.

Instrument

Data compilation was executed via observational checklists alongside validated pain measurement instruments, specifically the Numeric Rating Scale (NRS) and the Visual Analogue Scale (VAS), to quantify pain severity pre- and post-intervention. Furthermore, standard nursing care logs were employed to track the patient's clinical trajectory comprehensively.

Intervention

The therapeutic massage protocol was performed once daily for 15 minutes, spanning three consecutive days. The inaugural treatment session was initiated exactly six hours post-surgery.

Data analysis

The gathered data underwent descriptive analysis by contrasting the shifts in pain metrics documented before and after the therapeutic sessions throughout the monitoring phase. The results are delineated using both tabular formats and narrative summaries to demonstrate the effectiveness of endorphin massage for post-Cesarean section patients.

Ethical Consideration

Institutional approval was secured from the hospital administration, and informed consent was formally obtained from the subject prior to any intervention. The investigating team strictly upheld patient privacy and executed the procedures in accordance with fundamental nursing ethics.

RESULTS

In this clinical evaluation, the endorphin massage was delivered once per day for 15 minutes across a three-day timeline. Before initiating each massage, the subject's baseline

pain was meticulously evaluated utilizing two standardized instruments: the Numeric Rating Scale (NRS) and the Visual Analogue Scale (VAS). The corresponding clinical findings generated from these assessments are detailed below.

Tabel 1 Pre- and post-intervention pain level observations over three days utilizing the Numeric Rating Scale (NRS)

Day/Date	Pre-intervention	Post-intervention	Score Changes
Tuesday, 06/01/2026	5	3	2
Wednesday, 07/01/2026	4	2	2
Thursday, 07/01/2026	2	1	1
Average			1,6

The presented data illustrates that the systematic application of endorphin massage led to a steady reduction in pain severity. On the first day, the preliminary NRS score was 5; following the intervention, this metric decreased to 3, representing a 2-point alleviation in discomfort. On day two, the pre-treatment score stood at 4, which dropped to 2 post-massage, again showing a 2-point improvement. By the final day, the initial pain rating of 2 was further diminished to 1 following the therapy, achieving an additional 1-point reduction.

Tabel 2 Pre- and post-intervention pain level observations over three days utilizing the Visual Analogue Scale (VAS)

Day/Date	Pre-intervention	Post-intervention	Score Changes
Tuesday, 06/01/2026	5	3	2
Wednesday, 07/01/2026	4	2	2
Thursday, 07/01/2026	2	1	1
Average			1,6

Observation metrics gathered via the VAS strongly supported these favorable results. Before the initial therapy session, the subject's facial pain indicator was at a 5, which improved to a 3 post-intervention, marking a 2-point decline. During the second day, a pre-intervention VAS rating of 4 was effectively reduced to 2, indicating another 2-point drop. On the concluding day, the starting VAS scale of 2 fell to 1 post-treatment, confirming a final 1-point alleviation in pain intensity.

DISCUSSION

Following the preliminary clinical evaluation on day one, it was noted that the patient, Mrs. M, suffered from acute pain linked to her Cesarean delivery, which occurred between 09:48 and 10:50 on January 6, 2026. At six hours post-operation, clear indications of pain were evident, particularly localized discomfort at the surgical wound exacerbated by coughing or laughing. She characterized the sensation as a non-radiating, throbbing pain, assigning it an initial severity of 5 on both the NRS and VAS instruments. The inaugural endorphin massage was implemented exactly six hours post-delivery. Before this session, her pain was sporadic and paired with nonverbal behaviors, including facial grimacing and clutching the incisional area after a cough. Post-intervention evaluations revealed a decrease in both pain scores to 3, reflecting a two-point reduction. Moreover, defensive nonverbal actions, such as grimacing and guarding the abdomen, were completely eliminated following the treatment.

During the second day of monitoring, initial assessments recorded a pain score of 4 across both scales. From a clinical standpoint, the patient exhibited brief speech interruptions and defensive abdominal clutching post-cough. Upon completion of the massage, her pain ratings fell to 2, and the previously noted grimacing and guarding behaviors ceased. On the third and final day, pre-intervention pain levels were registered at 2, with no observable nonverbal pain indicators present. After the concluding massage, the scores dropped further to 1 on both the NRS and VAS, maintaining a relaxed state free from nonverbal pain cues.

Throughout the three-day study, a marked transformation in the patient's pain profile was documented. Overall, the comprehensive assessment highlighted a total four-point decrease in pain severity, transitioning from a baseline of 5 on day one to a minimal score of 1 by day three. This significant amelioration strongly implies that endorphin massage is a highly efficacious technique for relieving post-CS pain. The formal intervention concluded at this juncture due to the patient's discharge. Nonetheless, comprehensive instruction was provided to both the patient and her spouse, empowering them to self-administer the massage therapy at home for any residual discomfort.

Endorphin massage acts as a crucial adjunctive therapy for managing postoperative pain in postpartum women. Its primary objective is to trigger endorphin release, enhancing maternal comfort, mitigating psychological distress, and decreasing surgically induced nociception (Lestari et al., 2024). Physiologically, the deliberate, rhythmic strokes generate swift neural impulses from peripheral receptors that bypass slower pain signals, reaching the neural gate first. Consequently, the central nervous system processes these comforting somatic inputs rather than the painful stimuli. Endorphins themselves are composed of 30 distinct amino acid sequences, encompassing cortisol, corticotrophin, and catecholamines, all synthesized endogenously to mitigate both stress and pain (Aprilia, 2024). By employing light tactile engagement, the massage disrupts nociceptive signal transmission along A-delta and small-diameter C nerve fibers, effectively shutting the neural gate to pain (Karuniawati, 2020).

The fundamental analgesic mechanism of this technique is rooted in the stimulation of the body's natural pain-relieving systems. The rhythmic physical contact activates the limbic system and hypothalamus within the central nervous system. This activation promotes the secretion of endorphins, which function as intrinsic painkillers by thwarting the release of nociceptive neurotransmitters, thereby lowering overall pain sensitivity (Fitrianingsih & Yulis, 2025). Additionally, the massage facilitates profound relaxation, reducing muscular tension and substantially elevating the patient's sense of well-being. This relaxation response is intrinsically connected to parasympathetic nervous system arousal, which helps to further dampen conscious pain perception.

The findings from this single-case analysis align robustly with existing scholarly literature. For example, a study by Lestari et al. (2024) highlighted that individuals suffering from moderate pain (scoring 5 and 6) experienced a two-point drop after receiving endorphin massage, shifting them into a state of mild pain. Similarly, research conducted by Emilia et al. (2024) verified that combining pharmacological agents with endorphin massage dramatically reduced mean pain scores from 6.95 to 3.40. These aggregated studies solidify the premise that endorphin massage yields a statistically significant reduction in postoperative pain for women following a Cesarean section (p -value = 0.000). Lastly, it is imperative to recognize that external variables, such as past obstetrical history and proactive family involvement, can simultaneously shape an individual's subjective experience of pain.

CONCLUSION

The results of this clinical investigation involving a postpartum patient grappling with acute pain post-Cesarean section reveal that a 15-minute daily administration of endorphin massage over three consecutive days is highly effective in mitigating pain severity. Quantitative measurements derived from the Numeric Rating Scale (NRS) and Visual Analogue Scale (VAS) demonstrated a substantial drop in pain levels, decreasing from a pre-intervention peak of 5 on day one to an optimal score of 1 post-treatment on day three. Simultaneously, observable manifestations of distress, such as abdominal guarding and facial grimacing induced by coughing, were successfully eradicated. From a physiological perspective, this therapeutic massage cultivates profound relaxation and stimulates the endogenous release of endorphins, which act as natural pain suppressants to lower the subjective pain threshold in postpartum individuals. As a result, endorphin massage emerges as a highly practical and effective non-pharmacological adjunct for holistic postoperative pain care in women recuperating from Cesarean surgeries.

ACKNOWLEDGMENTS

The author extends deep gratitude to the academic advisors, relatives, and all contributing individuals whose mentorship and encouragement were vital to the execution and finalization of this study.

CONFLICTS OF INTEREST

The author affirms that there are no prospective conflicts of interest concerning the execution, authorship, or dissemination of this scholarly work.

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