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LEARNING IN CLINICAL CASES

# Exploring the soothing power of endorphin massage as a natural pain reliever for pregnant women

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**Abstract**
Many pregnant women experience discomfort and pain in various body parts, particularly in the back, as their uterus and fetus grow. Endorphin massage, a gentle touch therapy, can provide relief and comfort for pregnant women approaching delivery. This study aims to overview nursing care for third-trimester pregnant women experiencing acute pain issues through the application of endorphin massage. The research utilized a case study design with a consecutive sampling technique. Participants included third-trimester pregnant women suffering from back pain, who received 15 minutes of endorphin massage once daily in the afternoon. Results indicate that the application of endorphin massage significantly reduced the pain scale for the participants, decreasing from an average of 8 to 1 over six consecutive visits. This suggests that endorphin massage effectively alleviates the intensity of back pain in third-trimester pregnant women.

**Keywords:** Acute pain; innovation in maternity care; endorphin massage; pregnant women; treatment

## Introduction

During pregnancy, women experience profound changes in anatomy, physiology, and psychology aimed at maintaining metabolism, supporting fetal growth, and preparing for labor and breastfeeding (Soma-Pillay, Nelson-Piercy, Tolppanen, & Mebazaa, 2016). These changes, which vary across trimesters, affect all body systems, including the cardiovascular, respiratory, hormonal, gastrointestinal, and musculoskeletal systems (Gangakhedkar, & Kulkarni, 2021). Among these changes, the third trimester is particularly impactful, as it marks a period of heightened physical and emotional adaptations, often referred to as the "waiting period" (Roberts, Belusa, Turok, Combellick, & Ralph, 2017). During this stage, the mother's posture shifts significantly to accommodate the growing weight of the uterus. Postural adaptations, including shoulder retraction, spinal curvature, and relaxation of the sacroiliac joints, frequently result in back pain (Katonis et al., 2011). Such discomfort can be exacerbated by tension, fatigue, poor posture, or lifting objects, making it a common complaint during the later stages of pregnancy. While these changes are part of the natural adaptation process, they can cause significant discomfort, particularly if preventive measures and appropriate care are not implemented. Back pain in pregnant women, if unmanaged, may progress into chronic pain or lead to complications such as venous thrombosis, sleep disturbances, and difficulty performing daily activities (Salari et al., 2023). Non-pharmacological pain management techniques like endorphin massage offer an effective alternative to pharmacological methods, which can be costly and may carry risks for both the mother and fetus. Endorphin massage involves gentle, light-touch techniques that provide relaxation and comfort (Astuti, Murwati, & Fitriani, 2022). This method stimulates the autonomic nervous system to induce a relaxation response, helping alleviate pain, reduce muscle tension, and improve blood circulation in the affected areas (Zelharsandy, Soleha, & Anggeriani, 2024).

Research supports the effectiveness of endorphin massage in managing lower back pain among third-trimester pregnant women. Handayani (2022) found that prior to receiving endorphin massage, nearly half (45%) of participants experienced severe pain, which was entirely alleviated post-treatment. Similarly, Saudia (2018) demonstrated that endorphin massage was more effective than warm compresses in reducing back pain, with an average pain reduction score of 1.933 compared to 0.733 for compresses. Diana (2019) further confirmed the efficacy of endorphin massage, reporting a significant decrease in moderate to mild back pain among pregnant

women after treatment. These findings highlight the potential of endorphin massage as a highly effective, non-invasive approach for reducing back pain in pregnant women **(Figure 1)**. Integrating this technique into nursing practice, healthcare providers can offer a holistic and patient-centered approach to alleviate back pain, promote comfort, and improve the overall well-being of pregnant women during this transformative stage. Endorphin massage plays a vital role in reducing pain and discomfort experienced by pregnant women, particularly in the third trimester.

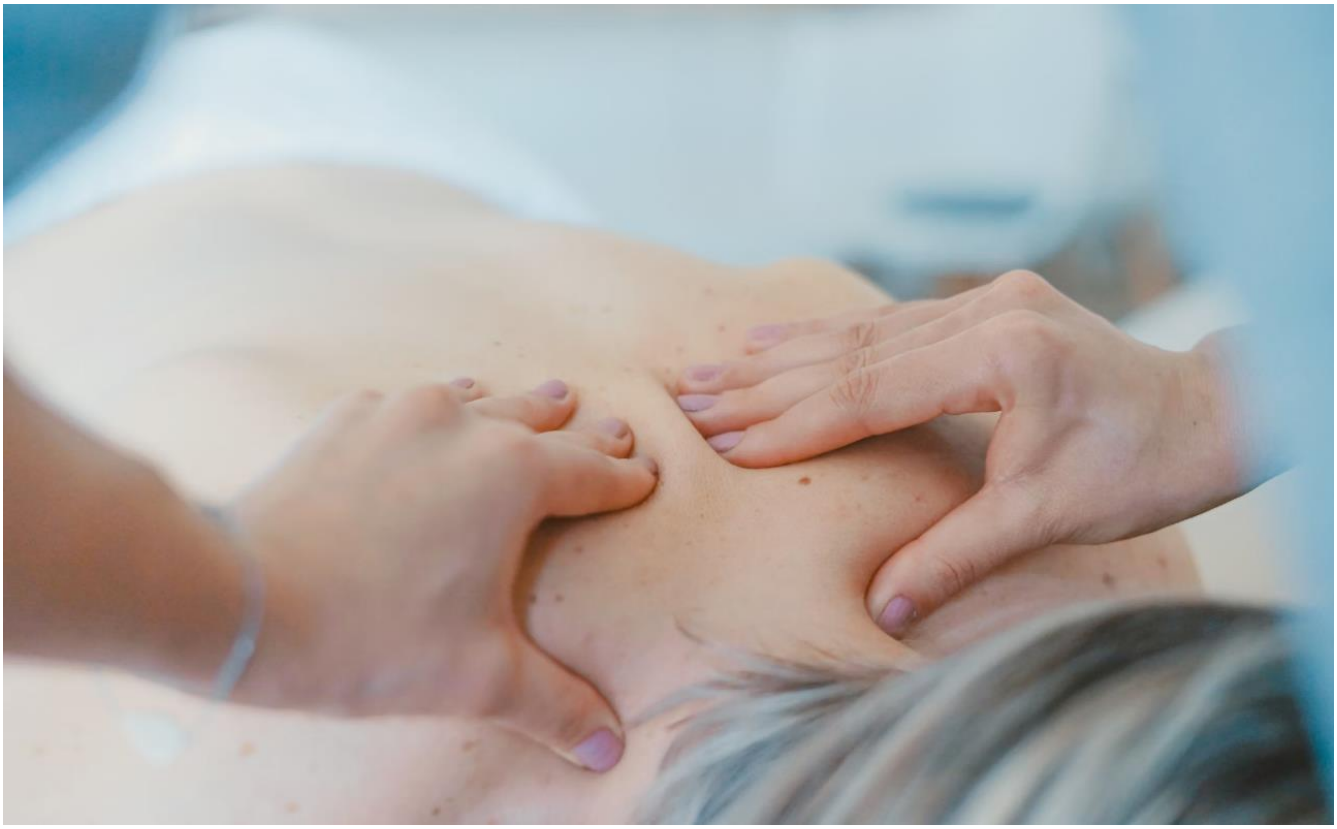

**Figure 1**. Illustration of massage (*Courtesy of www.unsplash.com*).

Pregnancy-induced physiological changes, such as increased spinal curvature and ligament relaxation, often lead to back pain, which can significantly impact a woman's daily activities, quality of sleep, and emotional well-being (Motosko, Bieber, Pomeranz, Stein, & Martires, 2017). Endorphin massage is a non-invasive, natural pain relief technique that stimulates the release of endorphins—neurotransmitters that act as the body's natural painkillers. This gentle massage technique helps reduce muscle tension, improve blood circulation, and alleviate discomfort, providing pregnant women with a sense of relaxation and well-being. Studies have shown that endorphin massage is more effective than other non-pharmacological interventions, such as warm compresses, in reducing back pain and restoring functionality (Astuti, Murwati, & Fitriani, 2022; Zelharsandy, Soleha, & Anggeriani, 2024). Addressing both physical pain and psychological stress not only improves maternal comfort but also prepares the mother emotionally and physically for labor and delivery. Incorporating endorphin massage into maternity nursing care requires a systematic and patient-centered approach. Nurses can educate expectant mothers about the benefits of this technique and offer hands-on training or demonstrations for caregivers and family members. This integration begins with assessing the mother's pain level, identifying areas of discomfort, and tailoring the massage to suit her needs. Endorphin massage can be provided as part of routine prenatal visits, emphasizing its role as a complementary therapy alongside standard care practices such as proper hydration, nutrition, and physical activity. Nurses must also ensure that caregivers understand the correct technique, duration, and frequency of the massage to optimize its effectiveness and safety. Additionally, nurses should collaborate with other healthcare professionals, such as obstetricians and physical therapists, to create a comprehensive pain management plan. Adopting endorphin massage as a standard component of maternity care can enhance maternal health outcomes, promote holistic well-being, and support a more comfortable pregnancy experience. Given these benefits, the author aims to provide an overview of nursing care for third-trimester pregnant women experiencing acute pain, emphasizing the application of endorphin massage.

## Method

This research is conducted using a case study design that employs a nursing process approach, specifically focusing on acute pain experienced by third-trimester pregnant women through the application of endorphin massage. The significance of this study arises from the high prevalence of back pain among pregnant women, particularly in the later stages of pregnancy. Concentrating on this specific issue can aims to explore the efficacy of endorphin massage as a non-pharmacological intervention for alleviating pain. The study will utilize a comprehensive data collection strategy that includes interviews, direct observations, and physical examinations to gather relevant information on the participants' pain experiences and overall health status. Following the establishment of a suitable research focus, the next step involves designing a pre- and post-intervention study aimed at assessing the intensity of back pain in the participants before and after receiving endorphin massage treatment. This design allows for a clear comparison of pain levels, providing valuable insights into the effectiveness of the intervention. The study will be structured around a standardized Standard Operating Procedure for endorphin massage, ensuring that the application of the intervention remains consistent across all participants. This consistency is crucial for the reliability of the results, as variations in technique could influence the outcomes.

The research will employ a 13-domain NANDA assessment format, which provides a holistic approach to evaluating the participants' health status. Additionally, an observation sheet will be utilized to measure pain intensity using the Numeric Rating Scale (NRS), which allows participants to rate their pain on a scale from 0 to 10. This method of quantifying pain provides a clear and objective measure of the intervention's effectiveness. The sampling technique adopted for this research is consecutive sampling, which involves selecting participants based on their availability and willingness to participate in the study. The sample will consist of third-trimester pregnant women who are experiencing back pain, with the intervention consisting of endorphin massage administered for a duration of 15 minutes once daily in the evening. The criteria for evaluating the outcomes of the study include several key indicators of pain relief and overall well-being. A significant reduction in pain complaints is anticipated, with a target decrease from a pain scale rating of 8 to a scale rating of 1. Additional criteria for success will include a decrease in grimacing, a reduction in restlessness, and a decrease in protective behavior, which are all behavioral manifestations of pain. Furthermore, the resolution of sleep difficulties, often exacerbated by pain, will also be monitored as an important outcome of the intervention. Systematically measuring these parameters can aims to provide a comprehensive understanding of the impact of endorphin massage on back pain in third-trimester pregnant women, contributing valuable insights into effective pain management strategies during pregnancy.

## Results

This study investigates how third-trimester pregnant women can manage acute back pain through endorphin massage, focusing specifically on a case involving Mrs. P from Sleman. The research employs a nursing process approach, structured around a case study design. Data collection involved six visits conducted in May 2023, during which assessments were made to build a comprehensive understanding of Mrs. P's condition. The nursing care process began with an initial assessment to gather data, followed by formulating nursing diagnoses, developing a nursing plan, implementing nursing actions, and finally evaluating the outcomes of those actions. The first assessment occurred on May 24, 2023, where Mrs. P, a 42-year-old woman in her 35th week of gestation, reported persistent back pain, particularly in the evenings, which she rated as an 8 on the NRS. Mrs. P resides in Dusun Ngangkruk, Sleman, and has a history of gastritis but no known allergies or hypertension. Her medical history includes one previous delivery without complications, and this pregnancy was planned. The assessment revealed her vital signs were stable, with a blood pressure of 129/93 mmHg and a hemoglobin level of 11 g/dL. Despite experiencing significant back pain, Mrs. P maintained an active lifestyle, managing her work and daily activities. The nursing diagnosis identified acute pain related to physical injury, supported by her subjective reports of discomfort and observable behaviors such as restlessness and grimacing. The study aimed to implement endorphin massage as a non-pharmacological intervention to alleviate her pain.

The nursing interventions were prioritized based on the identified problem of acute pain. The plan included daily endorphin massage sessions lasting 15 minutes each evening for six consecutive days. The expected outcomes were clearly defined, aiming for a reduction in pain complaints from a higher score of 5 to a lower score of 1, alongside improvements in associated symptoms such as restlessness and grimacing. The intervention involved educating Mrs. P and her family on the technique for performing endorphin massage, emphasizing the importance of family support in the process. Materials used during the massage included lotion to minimize friction, and the technique focused on gentle, rhythmic movements designed to stimulate endorphin release and promote relaxation. Throughout the six-day intervention, Mrs. P's pain levels were closely monitored using the NRS. Initial assessments indicated severe back pain, but subsequent sessions showed significant improvement. At the end of the study, Mrs. P reported a decrease in pain levels, with her final rating at 2 out of 10, indicating that the massage

had effectively alleviated her discomfort. Notably, the intervention also contributed to enhanced sleep quality and reduced protective behaviors. The findings suggest that endorphin massage can be an effective complementary therapy for managing acute back pain in third-trimester pregnant women, providing a valuable non-pharmacological option for pain relief during pregnancy **(Figure 2)**.

**Figure 2**. Illustration of pregnant women (*Courtesy of www.unsplash.com*).

**Discussion**

This research aims to explore the application of endorphin massage in alleviating acute pain in the back and lumbar region of third-trimester multigravida pregnant women. The assessment process is the first step in nursing care, involving systematic data collection to determine health status and functional responses both currently and historically. The purpose of conducting assessments is to gather foundational data regarding health issues and the client's response to these issues (Toney-Butler & Unison-Pace, 2023). The assessment begins with data collection through anamnesis, which includes maternal data, biological or physiological information, history of past and present pregnancies, and physical examinations based on the available assessment format. The data collected are relevant and applicable to the situation being reviewed. In this case study, the NANDA 13 domain assessment was utilized, focusing specifically on the comfort domain. The comfort assessment is conducted to understand the mental, physical, and social health of the client, as well as the tranquility or comfort they are experiencing in their current situation (Jones et al., 2012). The results of the assessment in this domain revealed complaints of pain in the back and lumbar region. Pain assessment was obtained using the PQRST method, where P (Provocative) refers to the cause or source of pain, Q (Quality or Quantity) describes the nature of the pain experienced, R (Regional) pertains to the location of the pain felt, S (Scale) indicates the severity of the pain, and T (Timing) refers to when the pain is felt (Soenarto, Sukmono, Findyartini, & Susilo, 2023).

The intensity of the pain was measured using the NRS, a simple linear scale commonly used to measure pain intensity. The NRS is typically explained to the client verbally but can also be presented visually (Nugent, Lovejoy, Shull, Dobscha, & Morasco, 2021). When presented visually, the NRS can be displayed either horizontally or vertically. The NRS was employed to assess pain levels both before and after the endorphin massage. The client was asked to report their pain sensations and indicate a number between 0 to 10 that best describes the pain they were experiencing. On this scale, 0 indicates no pain, 1-3 indicates mild pain, 4-6 indicates moderate pain, 7-9 indicates fairly severe pain, and 10 indicates severe pain. The pain experienced by Mrs. P was attributed to her daily activities, which were further complicated by her status as a multigravida in the 35th week of gestation. As pregnancy

progresses, the increasing uterine load leads to stretching in the back, contributing to discomfort. According to Handayani (2020), weight gain during pregnancy can cause the bones responsible for supporting the body to experience issues. Additionally, the mother's posture changes as a compensation for the increasing duration of pregnancy, which is a common cause of back pain in third-trimester pregnant women (Diana, 2019). Daily activities performed by Mrs. P, such as working and managing household tasks, can lead to pathological changes characterized by pain that worsens with movement (movement pain) and pressure pain, particularly due to improper sitting, standing, and walking positions. When engaging in household chores, these activities often place pressure on the lower back area, negatively impacting the pregnant mother's ability to perform daily tasks effectively **(Figure 3)**.

**Figure 3**. Illustration of womens' daily task (*Courtesy of www.unsplash.com)*.

The nursing diagnosis identified acute pain related to physical injury, supported by observable behaviors such as restlessness and grimacing. The primary goal of the intervention was to enhance safety and comfort while addressing the physiological issues presented. The intervention involved implementing endorphin massage, a non-pharmacological approach designed to stimulate endorphin release, thereby reducing pain and promoting relaxation. The massage sessions were scheduled for 10-15 minutes each, focusing on areas of discomfort and utilizing techniques that align with the gate-control theory, which posits that cutaneous stimulation can block pain signals. Throughout the six-day intervention, Mrs. P's pain levels were closely monitored using the NRS. Initial assessments indicated severe back pain, but subsequent sessions demonstrated significant improvement. By the end of the study, Mrs. P reported a decrease in pain levels, with her final rating at 1 out of 10, indicating that the massage had effectively alleviated her discomfort. Furthermore, behavioral indicators such as grimacing and restlessness diminished, and her sleep quality improved markedly. These findings underscore the effectiveness of endorphin massage in managing back pain among third-trimester pregnant women, offering a valuable non-pharmacological option for pain relief and enhancing overall well-being during pregnancy.

## Conclusion

Endorphin massage emerges as a highly effective and natural approach for alleviating pain in pregnant women, particularly during the third trimester when physiological and psychological changes are most pronounced. Stimulating the release of endorphins—natural pain-relieving hormones—this gentle massage technique not only reduces physical discomfort but also promotes relaxation and emotional well-being. Its non-invasive nature and lack of adverse side effects make it an appealing alternative to pharmacological interventions, which may pose risks to both the mother and fetus. The integration of endorphin massage into maternity care provides a holistic approach to managing pain, enhancing maternal comfort, and preparing women for labor and delivery. To further establish its efficacy and expand its applications, future nursing studies should explore the use of endorphin massage in diverse populations and settings. Research could focus on determining the optimal duration, frequency, and techniques of endorphin massage to maximize its benefits. Additionally, comparative studies examining its effects alongside other non-pharmacological pain management strategies would provide valuable insights. Investigating the impact of endorphin massage on labor pain, postnatal recovery, and maternal-infant bonding could also enhance its integration into broader maternity care practices.

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**Author's perspective**

**Key points**

- Endorphin massage stimulates the body's natural production of endorphins.
- This type of massage helps reduce stress and anxiety in pregnant women, promoting relaxation and overall well-being.
- Endorphin massage enhances blood circulation, which can alleviate swelling and discomfort.

**Potential areas of interest**

- What techniques are commonly used in endorphin massage to maximize the release of endorphins for pain relief during pregnancy?
- How does endorphin massage compare to other pain relief methods available for pregnant women, such as medication or physical therapy?
- Are there any contraindications or safety concerns that pregnant women should be aware of before receiving endorphin massage?

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