Journal of Sports Nursing, Medical, And Health, 2025, 1(1): 16-24
https://doi.org/10.69606/sportnursmedhealth

Review Article Open Access

The Effect of Endorphin Massage on Back Pain Intensity in Pregnant and Laboring Women: A Literature Review

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Abstract

Background: Endorphin massage is a gentle massage technique aimed at stimulating the body to release endorphins. It has been shown to be effective in reducing pain intensity. **Objective:** To evaluate the effect of endorphin massage on back pain intensity in pregnant and laboring women based on research findings. **Methods:** A literature review was conducted by collecting credible research articles from databases such as Scopus, PubMed, Google Scholar, and SINTA. Articles that met the predetermined inclusion criteria were then subjected to data extraction. **Results:** Following data extraction from 110 articles, 5 articles were deemed eligible. Two of the studies involved endorphin massage combined with other interventions, while the remaining three involved endorphin massage alone. **Discussion:** Endorphin massage has been proven effective in reducing back pain in pregnant and laboring women. **Conclusion:** Although the preliminary findings are promising, further research is necessary to confirm the effectiveness of this intervention more comprehensively. It is recommended to use a Randomized Controlled Trial (RCT) design with a more homogeneous population and diverse study locations across various countries to enhance the validity and generalizability of the findings.

Keywords: Endorphin massage, pregnant women, pain

Article Info:

Received: 2025-07-06 | Revised: 2025-07-10 | Approved: 2025-07-23 | Published: 2025-07-27
J. Sport. Nurs. Med. Health (JSNMH)
eISSN: xxxx-xxxx | pISSN: xxxx-xxxx
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Cite this as: Ningsi, Y. S., & Mardliyana, N. E. (2025). The Effect of Endorphin Massage on Back Pain Intensity in Pregnant and Laboring Women: A Literature Review. *Journal of Sports Nursing, Medical, And Health*, *1*(01), 16–24. Retrieved from https://journal.pubsains.com/index.php/sportnursmedhealth/article/view/286

Introduction

During pregnancy, a woman typically gains between 10 to 15 kilograms of weight. This weight gain imposes additional pressure on the musculoskeletal structure, particularly the spine, which functions as the main support of the body. As a result, pregnant women frequently experience back pain, especially in the lower back (Maidawilis et al., 2022). Moreover, the growing fetus exerts pressure on blood vessels and nerves in the back area, which can further aggravate the pain.

Entering the third trimester, the discomfort experienced by pregnant women increases due to physiological changes, one of which is musculoskeletal pain—a common complaint during this period (Fraser, 2009). As labor approaches, the pain experienced is not only physical but is also influenced by the mother's emotional and psychological state (Alyensi, 2018). This pain can interfere with the labor process and increase anxiety and stress. To reduce such discomfort, various non-pharmacological approaches have been developed, one of which is endorphin massage. Endorphin massage is a gentle massage technique aimed at stimulating the body to release endorphins, which are natural compounds with analgesic effects that promote feelings of comfort and relaxation (Catur et al., 2020). This therapy is believed to boost the immune system, reduce anxiety, and decrease the intensity of physical pain, including back pain (Podungge et al., 2019; Pangkahila et al., 2016).

Previous studies have shown that endorphin massage is effective in reducing pain intensity**.** Research by Dian et al. (2019), Niua et al. (2019), and Christiana & Kusumawati (2021) demonstrated that endorphin massage interventions significantly reduced pain in pregnant and laboring women. However, most studies have focused on the general effects of massage on labor pain without specifically addressing back pain—one of the most prevalent types of musculoskeletal pain experienced during pregnancy.

Although numerous studies have supported the effectiveness of endorphin massage in alleviating labor pain, there remains a lack of literature that specifically examines its effects on back pain in pregnant and laboring women. In addition, the practice of providing endorphin massage has not yet been integrated into standard procedures for antenatal and intranatal care, especially in primary healthcare settings. Therefore, a systematic literature review is needed to examine the effectiveness of endorphin massage specifically for back pain in pregnant and laboring women. Such a review could serve as a foundation for the development of evidence-based, applicable interventions in midwifery care. This study aims to evaluate the effect of endorphin massage on back pain intensity in pregnant and laboring women based on existing research findings.

Methods

This literature review was conducted from May to June 2025. The search for relevant studies was performed through four major electronic databases: Scopus, PubMed, Google Scholar, and SINTA. The keywords used during the search process included: *endorphin AND*

massage AND *labor OR childbirth AND pain AND back pain AND pregnant*. These terms were chosen to capture studies focusing on the use of endorphin massage as an intervention for back pain during pregnancy and childbirth.

An initial search yielded a total of 110 articles. These articles were then screened based on specific inclusion and exclusion criteria. The inclusion criteria were: (1) studies conducted on pregnant or laboring women; (2) studies utilizing endorphin massage as the primary intervention; (3) articles written in English and published between 2020 and 2025; (4) studies employing a quantitative design, either experimental or randomized controlled trial (RCT); and (5) availability of full-text access. On the other hand, exclusion criteria included: (1) articles available only in abstract form without full text; and (2) studies published in national journals ranked below SINTA-3.

After a thorough screening process, five articles were found to meet all eligibility criteria and were included in the review. These articles were then analyzed to assess the effectiveness of endorphin massage in reducing back pain intensity in pregnant and laboring women. The article selection process is described in further detail in the flow diagram presented in Figure 1.

Results

Based on the data extraction process, a total of five articles met the predetermined inclusion and exclusion criteria. Three of these articles were published in 2022, while the remaining two were published in 2021 and 2023, respectively.

The duration and frequency of the endorphin massage interventions varied across studies. One study reported that the intervention was administered over 18 sessions, while another described the massage technique as involving 20 strokes of pressure applied over 3 minutes to the back area. Another study implemented a 15-minute massage, delivered three times during the intervention period. However, one article did not provide detailed information regarding the dosage or frequency of the endorphin massage.

Of the five articles analyzed, two combined endorphin massage with other interventions, whereas the remaining three used endorphin massage as a standalone intervention. Overall, all reviewed studies demonstrated consistent results, indicating that endorphin massage is effective in reducing pain intensity, both in pregnant women and those undergoing labor. A detailed summary of the findings is presented in Table 1.

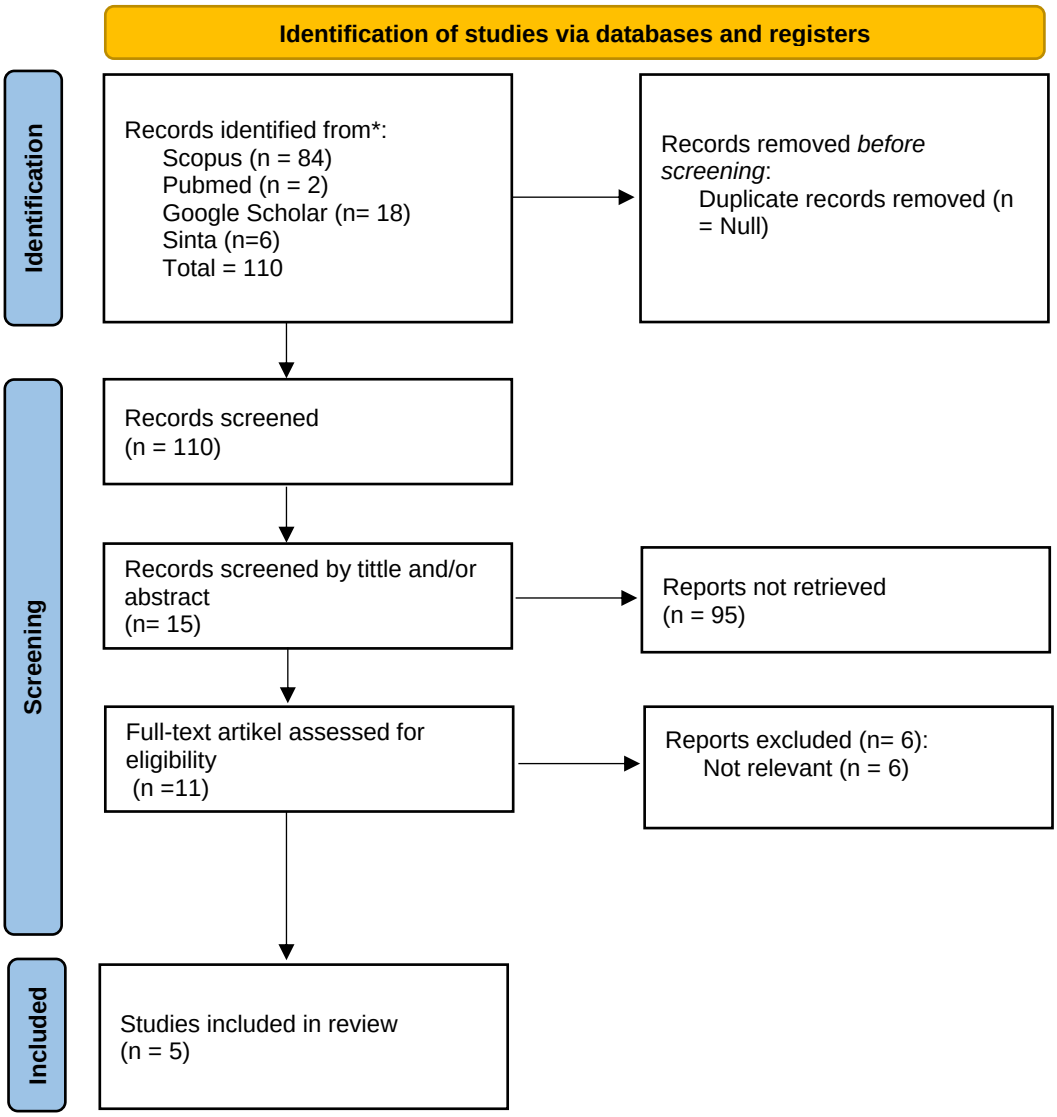

Figure 1. PRISMA Flow Chart of the Article Selection Process

Discussion

1. The Impact of Endorphin Massage on Pain Intensity

Endorphin massage is a non-pharmacological alternative therapy that can be used to reduce pain in pregnant women and during labor. Various studies have shown that endorphin massage has a significant effect in lowering pain intensity in both pregnant and laboring women (Maidawilis et al., 2022; Pujiastutik et al., 2021; Astuti et al., 2022; Khairunnisa et al., 2023; Darmayanti et al., 2022).

Although the findings indicate positive effects, several limitations should be acknowledged. Some studies employed suboptimal research designs, had relatively small sample sizes, and used intervention durations that varied and were not always clearly reported. Additionally, the heterogeneity of research settings limits the generalizability of the findings. As a result, it cannot yet be definitively concluded that endorphin massage is consistently effective in reducing back pain in pregnant and laboring women.

Table 1. Summary of Research Findings

Author(s)	Objective	Sample	Design	Massage Dosage	Findings
Maidawilis, et al., 2022; Indonesia	To determine the effect of endorphin massage and physical activity on the reduction of back pain intensity in pregnant women	34 participants	One-Group Pretest-Posttest Design	18 sessions	Endorphin massage intervention significantly reduced back pain intensity in pregnant women (p = 0.014; z = -2.449)
Pujiastutik, et al., 2021; Indonesia	To compare the effectiveness of endorphin massage, effleurage massage, and a control group on latent phase stage I labor pain in primigravida women	90 participants	One-Group Pretest-Posttest Design	**Endorphin massage:** 20 strokes of pressure on the back for 30 minutes every hour during the latent phase of labor. **Effleurage massage:** 20 minutes every hour during the latent phase of labor.	Endorphin massage vs. effleurage massage (p = 0.002); endorphin massage vs. control group (p = 0.000). The endorphin massage group was more effective than both comparison groups.
Astuti, et al., 2022; Indonesia	To examine the effect of endorphin massage in reducing pain during the active phase of normal labor in multiparous women	132 participants	Pretest-Posttest Control Group Design	Not Available (N/A)	Endorphin massage was effective in reducing pain levels (p = 0.004)
Khairunnisa, et al., 2023; Indonesia	To determine the effect of endorphin massage on pain intensity and anxiety levels in primigravida women during the active phase of the first stage of	40 participants	Pretest-Posttest Two-Group Design	Endorphin massage for 15 minutes	A significant difference was found in the mean pain intensity after endorphin massage was administered (p = 0.0001)

	labor				
Darmayanti, et al., 2022: Indonesia	To determine the effect of endorphin massage in reducing labor pain	26 participants	One-Group Pretest-Posttest Design	Endorphin massage administered 3 times	Endorphin massage was effective in reducing labor pain intensity ($p = 0.0001$). Pain score decreased from 8.38 before intervention to 4.19 after intervention

All five articles included in this review originated from Indonesia. In several studies, endorphin massage was applied as a standalone intervention, while in others, it was combined with additional therapies. This combination may have influenced the final outcomes and made it more difficult to interpret the specific effects of endorphin massage (Maidawilis et al., 2022; Pujiastutik et al., 2021; Khairunnisa et al., 2023).

Beyond its impact on pain, several studies also linked endorphin massage to increased comfort and reduced anxiety among pregnant women. Research by Hartati et al. (2019), Sari & Anissa (2023), and Nikma et al. (2022) demonstrated that endorphin massage can promote a sense of comfort and decrease anxiety during pregnancy, potentially supporting a smoother labor process.

Overall, endorphin massage shows promise as a beneficial non-pharmacological therapy for reducing back pain and enhancing the psychological well-being of pregnant and laboring women. However, further research with more robust study designs, larger sample sizes, and standardized intervention protocols is necessary to produce more valid and generalizable findings.

2. Duration of Endorphin Massage Administration

The five articles included in this review demonstrated variation in the duration and frequency of endorphin massage interventions. Some studies reported that the intervention was administered over 18 sessions, while others described the massage being applied with 20 strokes of pressure for 3 minutes on the back area, or for 15 minutes three times during the intervention period (Maidawilis et al., 2022; Pujiastutik et al., 2021; Khairunnisa et al., 2023; Darmayanti et al., 2022). However, one article did not provide detailed information regarding the dosage or duration of the endorphin massage administered (Astuti et al., 2022).

Moreover, these studies did not specify in detail which body parts were the focus of the endorphin massage for pregnant women. Information regarding the procedures for administering the endorphin massage was also insufficient, making it difficult for readers or future researchers to accurately replicate this intervention in patients.

3. Combination of Endorphin Massage with Other Interventions

Several studies included in this review reported that the endorphin massage intervention was combined with other therapies. Two studies combined endorphin massage with additional interventions, namely effleurage massage and physical activity (Maidawilis et al., 2022; Pujiastutik et al., 2021), while three other studies applied endorphin massage as a standalone intervention without combinations (Astuti et al., 2022; Khairunnisa et al., 2023; Darmayanti et al., 2022).

Effleurage massage and physical activity are known to have positive contributions in reducing pain. For example, Fatmawati (2017) demonstrated that effleurage massage effectively reduces labor pain during the active phase of the first stage of labor. Additionally, back pain

during pregnancy can be prevented through regular physical exercise (Kuswandi, 2013).

Although effleurage massage and physical activity have potential in pain reduction, further research is needed to evaluate the effectiveness and mechanisms of these interventions, particularly in combination with endorphin massage, to obtain stronger and more comprehensive evidence.

Conclusion

Endorphin massage has been proven effective in reducing back pain among pregnant and laboring women. Although preliminary results indicate positive effects, further research is necessary to comprehensively confirm the effectiveness of this intervention. Future studies are recommended to employ Randomized Controlled Trial (RCT) designs with more homogeneous populations and diverse research locations across different countries to enhance the validity and generalizability of the findings.

Conflicts of Interest

Generated from the conflict of interest forms by each author.

Funding Sources

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Acknowledgment

Not applicable

References

Alyensi, A. (2018). Pengaruh Terapi Murottal Qur'an Terhadap Intensitas Nyeri Persalinan Kala I Fase Aktif Di Bidan Praktik Mandiri (BPM) Ernita Kota Pekanbaru Tahun 2017. 8(1), 1–9.

Amalia Khairunnisa, A., Aulya, Y., & Widowat, R. (2023). Endorphin Massage Against Pain Intensity and Anxiety Levels in Primigravida Maternity Mothers During 1 Active Phase. JKM (Jurnal Kebidanan Malahayati), 9(1): 23-40.

Astuti, S., C., D. & Sari, R., T. (2022). The Effect of Using Endorphin Massage for Decreasing Pain at First Stage in Normal Labor. Jurnal Info Kesehatan, 20(2): 194-205. DOI: 10.31965/infokes.Vol20Iss2.877

Christiana, I., & Kusumawati, D. (2021). Pengaruh Kombinasi Pijat Endorphin Dan Murrotal Terhadap Nyeri Persalinan Kala I Di PMB Ny. N Paspan Kabupaten Banyuwangi

Darmayanti, P. A. R., Ariani, N. K. S., & Santhi, W. T. (2022). The effect of endorphin massage on reducing the intensity of childbirth pain Kala I in maternity mothers. International Journal

of Health Sciences, 6(S9), 2038–2045. https://doi.org/10.53730/ijhs.v6nS9.12878

Fatmawati, Arifiani FP. Efektifitas Masase Efflurage Terhadap Pengurangan Sensasi Rasa Nyeri Persalinan Pada Ibu Primipara. J Issues Midwifery. 2017; Vol. 1(No.2):42–9.

Fraser, D. 2009. Buku Ajar Bidan. Jakarta. EGC. Henderson, Christine & Katheleen Jones. 2010. Buku Ajar Konsep Kebidanan. Jakarta. EGC

Hartati R, dkk. (2019). Increasing the Comfortable Feel for Pregnant Women Through the Endorphin Massage. Journal of Physics: Conference series. 1351. doi:10.1088/17426596/1351/1/012091

Kuswandi, Lanny. Hypnobirthing A Gentle Way to Give Birth. Jakarta: Pustaka Bunda; Manuaba, Ayu Ida C.H Bagus, Ida G.F. 2013

Maidawilis, Dewi, S., Welis, W., Alimuddin & Chaeroni, A. (2022). The Effect of Endhorpin Massage and Physical Activity on Reducing Back Pain Intensity of Pregnant Women. International Journal of Human Movement and Sports Sciences, 10(4): 633-637. DOI: 10.13189/saj.2022.100401

Nikmah., A., N., dkk. (2022). Effect Endorphin Massage on Anxiety Labor Levels of First Stage. 5(2): 261-265. https://doi.org/10.30994/jnp.v5i2.219

Pujiastutik, Y., K., Gayatri, P., R., & Isnaeni, E. (2021). Comparison of Endorphine Massage And Effleurage Massage on Primigravida 1st Stage Latent Phase Pain In Indonesia. Malaysian Journal of Public Health Medicine. 21(2): 45-51

Rokhilah, Ratna, T. (2023). Hubungan Pengetahuan Ibu, Pendamping Persalinan, dan Massage Effleurage terhadap Penurunan Nyeri Persalinan Kala I di PMB Ruswanti, S. ST Cibeureum Bogor Tahun 2022. 02, 455–461. https://doi.org/10.53801/sjki.v2i4.155

Sari, L., L & Anissa, K. (2023) Effect of Endorphin Massage on the Level of Anxiety among >36 Weeks Pregnant Women. Embrio Jurnal kebidanan. 15(1): 49-56. doi:10.1088/1742-6596/1351/1/012091