

The Effect of Endorphin Massage on Reducing Back Pain Intensity in Third-Trimester Pregnant Women at TPMB Luli Bahari, Purwakarta, 2026

Sekar Larasati*¹, Nova Rati Lova², Shinny Ria Pratiwi³

^{1,2,3} Bachelor of Applied Midwifery Study Program, Politeknik Bhakti Asih Purwakarta

* Email: sekarlarasati171@gmail.com¹, novaratilova@gmail.com², 01riapратиwi@gmail.com³

ARTICLE INFO

Article history:

Received: 27-08-2026

Revised: 28-08-2026

Accepted: 29-08-2026

Available online: 29-08-2026

Keywords:

Pregnant Women, Back Pain, Endorphin Massage, Third Trimester.

ABSTRACT

Back pain is a common problem experienced by pregnant women, particularly during the third trimester, due to natural bodily changes, weight gain, changes in balance, and stretching of muscles and ligaments. Endorphin massage is a non-pharmacological method that may help reduce this pain. This study aimed to determine the effect of endorphin massage on reducing back pain intensity among third-trimester pregnant women at TPMB Luli Bahari, Purwakarta, in 2026. A quantitative method with a quasi-experimental one-group pretest-posttest design was used. The study was conducted from January 15 to February 17, 2026, involving 30 third-trimester pregnant women. Back pain intensity was measured before and after endorphin massage. Data were analyzed using univariate and bivariate analyses, with the Wilcoxon Signed-Rank Test applied because the data were not normally distributed. Before the intervention, most respondents experienced moderate pain (22 respondents; 73.3%), while 5 respondents (16.7%) experienced mild pain and 3 respondents (10.0%) experienced severe pain. After the intervention, 25 pregnant women (83.3%) experienced mild pain, while 5 (16.7%) reported no pain. The Wilcoxon test produced a p -value of 0.001 ($p < 0.05$), indicating a significant effect of endorphin massage on reducing back pain intensity in third-trimester pregnant women. Endorphin massage can therefore be considered a non-pharmacological approach to help alleviate back pain during pregnancy.

This is an open access article under the [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license.

Copyright © 2026 by Author. Published by Universitas Bina Bangsa Getsempena



INTRODUCTION

Pregnancy is a natural physiological process in which a woman's body undergoes various changes to support fetal growth and development. These changes occur gradually throughout the first, second, and third trimesters and affect various body systems, including the musculoskeletal system. Physiological changes during pregnancy may cause various complaints and discomfort that can affect daily activities and the overall quality of life of pregnant women (Agustin et al., 2024).

During pregnancy, women experience many transformations involving the reproductive, digestive, urinary, endocrine, cardiovascular, respiratory, and musculoskeletal systems. Although these changes are part of the body's natural adaptation, some women may experience physical symptoms that affect their comfort. One common problem during pregnancy is back pain, which tends to become more pronounced as the third trimester approaches (Dewiani, 2022).

This type of pain is generally experienced as discomfort or aching in the lower back and sacral area. The complaint tends to occur more frequently during the third trimester as fetal growth increases the size and weight of the uterus. This condition changes the mother's balance and body position. Pregnant women often adjust their posture to maintain balance, causing the back muscles to work harder and potentially resulting in muscle tension and discomfort (Natalia et al., 2023). In addition to postural adjustment, increased body weight during pregnancy places greater pressure on the spine, tendons, ligaments, and joints. Increased levels of relaxin and estrogen may cause ligament laxity, potentially affecting joint stability. Uterine growth and breast enlargement also shift the body's center of gravity forward. These conditions place additional stress on the musculoskeletal system and may trigger back pain (Melati, 2022).

Back pain during pregnancy may also be influenced by psychological factors. Anxiety, stress, fatigue, and emotional pressure can increase an individual's perception of pain. Hormonal changes may also affect the soft tissues that connect and support the body, potentially altering muscle elasticity and flexibility (Melati, 2022).

If back pain is not managed effectively, it may interfere with the daily activities of pregnant women. Discomfort may make it difficult to walk, rise from a sitting position, bend, or lift objects. Prolonged pain may persist after childbirth and develop into chronic back pain (Kurniyati & Bakara, 2021).

Back pain during pregnancy can be managed using medical and non-medical approaches. Non-pharmacological methods are practical options because they can provide relief without the use of medication. One example is endorphin massage. Endorphin massage involves gentle touch intended to promote relaxation and stimulate the body's natural production of endorphins. Endorphins are naturally occurring chemicals that have analgesic effects and may help reduce perceived pain. In addition to reducing pain, massage can provide comfort and relieve muscle tension.

A study by Sulistiyaningsih and Puspita Sari (2023) demonstrated changes in back pain symptoms among third-trimester pregnant women following endorphin massage. The group receiving endorphin massage showed decreased pain intensity after therapy, with statistical analysis producing a p-value of 0.003. Kartikasari and Aprilliya (2024) also found changes in back pain levels during late pregnancy. These findings indicate that endorphin massage may help reduce back pain during pregnancy.

This study was conducted to determine whether endorphin massage affects back pain intensity among third-trimester pregnant women at TPMB Luli Bahari, Purwakarta, in 2026. The study assessed pain levels before and after the intervention and examined the relationship of age and gravidity with back pain intensity.

RESEARCH METHODS

This study used a quantitative method with a quasi-experimental design, specifically a one-group pretest-posttest model without a control group. The design aimed to assess whether endorphin massage affected back pain intensity among third-trimester pregnant women. Pain intensity was measured before the intervention and again after the intervention.

The study was conducted at TPMB Luli Bahari, Purwakarta, from January 15 to February 17, 2026, and involved 30 third-trimester pregnant women as respondents. Back pain intensity was assessed before and after endorphin massage. Data were analyzed using univariate and bivariate analyses. The Wilcoxon Signed-Rank Test was used to examine differences before and after the intervention.

RESULTS AND DISCUSSION

1. Characteristics of Respondents

a. Respondent characteristics based on age

The characteristics of the respondents in this study including the pregnant womens age, and gravidity are presented in the following table.

Table 1. Frequency distribution of Respondent Based on Age in the third Trimester of Pregnancy at TPMB Luli Bahari in 2026

Age	Frequency (f)	Percentage (%)
< 20 years	3	10.0
21-35 years	22	73.3
> 35 years	5	16.7
Total	30	100

Based on Table 1, most participants were aged 21–35 years, totaling 22 respondents (73.3%). Five respondents (16.7%) were over 35 years old, while three (10.0%) were under 20 years old. Thus, most respondents were within the age range generally considered favorable for reproduction.

b. Respondent characteristics based on gravidity

Table 2. Frequency Distribution of Respondent Based on the Gravidity of pregnant women in the third Trimester at TPMB Luli Bahari in 2026

Gravidity	Frequency (f)	Percentage (%)
Primigravida	5	16.7%
Multigravida	25	83.3%
Total	30	100%

Based on Table 2, most respondents were multigravida, totaling 25 respondents (83.3%), while 5 respondents (16.7%) were primigravida.

2. Back Pain Intensity Before and After Endorphin Massage

Table 3. Distribution of Back Pain Intensity Before and After Endorphin Massage at TPMB Luli Bahari in 2026

Measurement	No Pain (%)	Mild Pain (%)	Moderate Pain f (%)	Severe Pain (%)	Total
Before	0 (0.0)	5 (16.7)	22 (73.3)	3 (10.0)	30 (100)
After	5 (16.7)	25 (83.3)	0 (0.0)	0 (0.0)	30 (100)

Before endorphin massage, most respondents experienced moderate pain, namely 22 respondents (73.3%). Meanwhile, 5 pregnant women (16.7%) experienced mild pain and 3 (10.0%) experienced severe pain. After endorphin massage, 25 pregnant women (83.3%) experienced mild pain and 5 (16.7%) reported no pain. No respondents experienced moderate or severe pain after the intervention.

3. Statistical Test of the Relationship Between Age and Back Pain

Table 4. Results of statistical tests on the effect of age on back pain in pregnant women

Age trimester III			
Age	N	Mean Rank	p-value
< 20 years	3	7.50	0.001
21-35 years	22	14.66	
> 35 years	5	24.00	
Total	30		
< 20 years	3	7.50	

The analysis produced a p-value of 0.001, which is less than 0.05, indicating a statistically significant relationship or difference between age groups and back pain intensity among the respondents.

4. Statistical Test of the Relationship Between Gravidity and Back Pain

Table 5. Results of statistical tests on the effect of gravida on back pain in pregnant women Gravida trimester III

Gravidity	N	Mean Rank	p-value
Primigravida	5	5.70	0.001
Multigravida	25	17.46	
Total	30		

The analysis produced a p-value of 0.001, which is less than 0.05. It can be concluded that there was a statistically significant relationship between gravidity and back pain intensity among third-trimester pregnant women.

5. Wilcoxon Test of the Effect of Endorphin Massage on Back Pain

Table 6. Wilcoxon test results on the effect of endorphin massage on back pain in third-trimester III

Change in Score	N	Mean Rank	p-value
Negative Ranks (Posttest < Pretest)	30	15.50	0.001

Change in Score	N	Mean Rank	p-value
Positive Ranks (Posttest > Pretest)	0	0.00	
Total	30		

All respondents had negative ranks, totaling 30 respondents, with a mean rank of 15.50, and there were no positive ranks. The Wilcoxon test produced a p-value of 0.001, which is less than 0.05. Therefore, there was a significant difference in back pain intensity before and after endorphin massage.

Discussion

Back Pain Intensity Before and After Endorphin Massage

The study results indicate that before receiving endorphin massage, the majority of third-trimester pregnant women (22 respondents or 73.3%) reported moderate pain. Five respondents (16.7%) reported mild pain, while three (10.0%) experienced severe pain. After endorphin massage, 25 participants (83.3%) reported mild pain and five (16.7%) reported no pain. This change indicates an overall reduction in pain intensity following the intervention.

Back pain during the third trimester is associated with several physiological changes. Uterine growth, increased body weight, changes in body balance, and postural changes place greater loads on the spine and supporting back muscles. Hormonal changes during pregnancy may also affect ligaments and other supporting tissues.

Endorphin massage involves physical touch that promotes relaxation. Relaxation may reduce muscle tension and create a sense of comfort. These findings are consistent with previous studies reporting decreased back pain intensity after endorphin massage among third-trimester pregnant women. Endorphin massage may therefore be considered a non-pharmacological intervention in midwifery practice, provided maternal condition and safety are carefully considered.

Effect of Age on Back Pain

Most participants were aged 21–35 years, totaling 22 respondents (73.3%). The analysis produced a p-value of 0.001, indicating a statistically significant difference among age groups.

Age is a factor associated with maternal physical health during pregnancy. Women under 20 years may not have reached optimal physical maturity for pregnancy, whereas women over 35 years may have different capacities to adapt to physical changes. Nevertheless, women aged 21–35 years can still experience back pain because it is primarily related to pregnancy-related physical changes such as weight gain and postural changes.

Effect of Gravidity on Back Pain

Most participants were multigravida, totaling 25 respondents (83.3%), while 5 respondents (16.7%) were primigravida. The analysis produced a p-value of 0.001, indicating a statistically significant difference related to gravidity.

Repeated pregnancies may contribute to changes in supporting tissues. Stretching of muscles and ligaments from previous pregnancies may contribute to musculoskeletal problems in subsequent pregnancies. However, gravidity is not the only determinant of pain intensity; gestational age, physical activity, posture, body weight, and psychological condition may also contribute.

Effect of Endorphin Massage on Reducing Back Pain

The results showed that back pain severity decreased after endorphin massage. Before the intervention, 22 pregnant women (73.3%) reported moderate pain, 5 (16.7%) reported mild pain, and 3 (10.0%) reported severe pain. After the intervention, 25 pregnant women (83.3%) reported mild pain, while 5 (16.7%) reported no pain. The Wilcoxon Signed-Rank Test produced a p-value of 0.001, below the 0.05 significance level, indicating that pain intensity decreased after massage.

Endorphin massage is a non-pharmacological technique involving touch to promote relaxation and comfort. Physical contact during massage may reduce muscle tension and improve overall comfort. A relaxed state may also reduce stress and anxiety, which can intensify pain perception. Therefore, endorphin massage may be considered an adjunctive non-pharmacological approach for reducing back pain in third-trimester pregnant women.

CONCLUSION AND RECOMMENDATIONS

Based on the study at TPMB Luli Bahari, Purwakarta, in 2026, before receiving endorphin massage, 22 pregnant women (73.3%) reported moderate pain. After

endorphin massage, 25 pregnant women (83.3%) were in the mild-pain category, while 5 (16.7%) reported no pain. The Wilcoxon Signed-Rank Test produced a p-value of 0.001, indicating a significant effect of endorphin massage on reducing back pain intensity among third-trimester pregnant women.

Endorphin massage may be considered a non-pharmacological approach to help relieve back pain in third-trimester pregnant women. Healthcare providers are encouraged to provide information about safe non-pharmacological approaches to pain management during pregnancy. Future studies should involve larger participant groups and include a control group, while also considering other factors that may influence back pain intensity.

ACKNOWLEDGEMENTS

The authors would like to thank Politeknik Bhakti Asih Purwakarta and TPMB Luli Bahari Purwakarta for their support and permission during the implementation of this research. The authors also express their appreciation to all respondents who participated in this study.

REFERENCES

- Alghadir, A. H., Anwer, S., Iqbal, A., & Iqbal, Z. A. (2018). Test-retest reliability, validity, and minimum detectable change of visual analog, numerical rating, and verbal rating scales for measurement of osteoarthritic knee pain. *Journal of Pain Research*, 11, 851–856. <https://doi.org/10.2147/JPR.S158847>
- Afni, R., & Ristica, O. D. (2024). Endorphin massage dan senam hamil terhadap penatalaksanaan ketidaknyamanan nyeri punggung pada kehamilan di wilayah kerja Puskesmas Payung Sekaki Kota Pekanbaru. *Jurnal Kesehatan Ilmiah Indonesia*, 9(1), 243–252.
- Amir, A. Y., Meysetri, F. R., Herayono, F., Fransisca, D., & Manila, H. D. (2022). Pengaruh endorphin massage terhadap intensitas nyeri punggung pada ibu hamil trimester III di Klinik Setia Padang Pariaman. *Jurnal Kesehatan Medika Saintika*, 13(1).
- Bishop, A., Holden, M. A., Ogollah, R. O., & Foster, N. E. (2024). Effectiveness of conservative therapy on pain, disability and quality of life for low back pain in pregnancy: A systematic review of randomized controlled trials. *Brazilian Journal of Physical Therapy*, 28, 100654. <https://doi.org/10.1016/j.bjpt.2024.100654>
- Chiarotto, A., Maxwell, L. J., Ostelo, R. W., Boers, M., Tugwell, P., & Terwee, C. B. (2019). Measurement properties of visual analogue scale, numeric rating scale, and pain severity subscale of the Brief Pain Inventory in patients with low back pain: A systematic review. *The Journal of Pain*, 20(3), 245–263. <https://doi.org/10.1016/j.jpain.2018.07.009>

- Munir, M., Utami, A. P., Sari, D. K. P., & Sholikhatin, I. (2022). Endorphin massage effect on back pain in third trimester pregnant women. *Indonesian Midwifery and Health Sciences Journal*, 6(2), 163–171. <https://doi.org/10.20473/imhsj.v6i2.2022.163-171>
- Novita, N., Asmalinda, W., & Setiawati, D. (2020). Pemberdayaan ibu hamil trimester III dan keluarga menggunakan endorphin massage untuk mengurangi nyeri pinggang pada kelas ibu hamil. *JPPM*, 4(2), 265–273. <https://doi.org/10.30595/jppm.v4i2.6255>
- Nur Amanda, N. D., Nuryuniarti, R., & Nurdianti, D. (2023). Penatalaksanaan endorphine massage untuk penurunan intensitas nyeri punggung ibu hamil trimester III. *Jurnal BIMTAS: Jurnal Kebidanan Umas*, 7(1), 44–50. <https://doi.org/10.35568/bimtas.v7i1.4109>
- Rohma, A. C., & Rejeki, S. (2023). Implementasi endorphin massage terhadap penurunan skala nyeri punggung ibu hamil trimester III. *Holistic Nursing Care Approach*, 3(2).
- Sari, E. R. P., & Sulistyaningsih, S. H. (2023). Pengaruh endorphin massage terhadap penurunan intensitas nyeri punggung ibu hamil trimester III. *Jurnal Kebidanan*, 15(1), 102–112. <https://doi.org/10.35872/jurkeb.v15i01.606>
- Sari, I. N. W. (2023). Pengaruh endorphin massage terhadap pengurangan nyeri punggung pada ibu hamil trimester III di PMB wilayah Kecamatan Pasar Rebo Jakarta Timur. *Indonesian Journal of Midwifery Scientific*, 2(1).
- Suwandi, L. P. E. S., Adhiestiani, N. M. E., Purnamayanthi, P. P. I., & Udayani, N. P. M. Y. (2023). Pengaruh endorphin massage dan kompres hangat terhadap penurunan intensitas nyeri punggung pada ibu hamil trimester III. *Jurnal Kesehatan Al-Irsyad*, 16(2). <https://doi.org/10.36760/jka.v16i2.272>
- Viana, M. O., Mulyani, S., & Meinarisa. (2025). Perbandingan pengaruh endorphin massage dan effleurage massage terhadap intensitas nyeri punggung bawah ibu hamil trimester III di Puskesmas Kenali Besar. *Jurnal Ners*, 9(2). <https://doi.org/10.31004/jn.v9i2.30933>
- Widhi Astuti, K. E., Murwati, & Fitriani, N. (2022). The effect of endorphin massage on reducing the intensity of back pain in third trimester pregnant women: A systematic review. *Journal of Maternal and Child Health*, 7(2). <https://doi.org/10.26911/thejmch.2022.07.02.04>