



The Effect of Giving Endorphin Massage on the Level of Back Pain in Third Trimester Pregnant Women

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Abstract. Several psychological and physical physiological changes take place in pregnant women during the third trimester. Complaints of back pain, which can cause discomfort during pregnancy, are one of the frequent physical changes that occur. Endorphin massage, a light massage approach that may help alleviate these complaints, is one strategy that may be utilized to promote relaxation and comfort for expectant mothers, particularly during the later stages of pregnancy before delivery. The purpose of this research is to assess the impact of endorphin massage on the severity of back discomfort in expectant women during their third trimester. The study used a quantitative methodology with a sample size of 65 participants that were representative of the study population. The Wilcoxon Signed Rank Test was used to compare pain ratings before and after the intervention. According to the test findings, there is a substantial difference between the two measurement outcomes, as evidenced by a value of $Z = -8.062$ with $p = 0.000$. The study's results indicate that every subject's pain was reduced after receiving endorphin massage. In conclusion, endorphin massage is beneficial for alleviating back pain in pregnant women during the third trimester.

Keywords: Back Pain; Endorphin Massage; Pain Reduction; Pregnant Women; Third Trimester

1. INTRODUCTION

Pregnancy is a journey that commences when sperm and egg come together and lasts until the baby is delivered. Typically, a full-term pregnancy lasts about 280 days or 40 weeks, starting from the first day of the last menstrual period. This journey initiates with ovulation, which is when the egg matures, leading to the union of the ovum and sperm, resulting in fertilization. This is followed by the growth of the zygote, its attachment to the uterine wall, the development of the placenta, and ultimately, the ongoing growth and maturation of the pregnancy until delivery (Handayany et al. , 2020).

Every pregnant woman will experience various changes in the first, second and third trimesters, including the reproductive, urinary, cardiovascular, respiratory, digestive, endocrine, immunological and musculoskeletal systems. These various changes often cause discomfort, especially when the pregnancy enters the third trimester. One of the complaints that often arises during this period is changes in the musculoskeletal system which leads to back pain (Diana, 2019).

Worldwide, many women in the third trimester of pregnancy suffer from back pain. Surveys conducted in Scandinavia show that about half of pregnant women in their last trimester deal with serious back discomfort. Similarly, nearly 50% of expectant mothers in England have mentioned facing this issue, and in Australia, the rate is close to 70%. In

Indonesia, it's noted that back pain is the most frequent issue among women in late pregnancy, affecting as much as 70% of them (Fauziah et al., 2025).

Back pain is discomfort or pain that appears in the lumbosacral area. These complaints tend to increase in pregnant women in the third trimester due to increasing gestational age followed by an increase in fetal size. This condition affects the mother's activities due to changes in body posture, so it can trigger pain, especially when doing heavy activities such as walking continuously without rest, lifting weights or bending too often. As the womb enlarges, the mother's body posture adjusts to accommodate the increasingly heavy uterus (Rohma & Rejeki, 2023).

From a medical viewpoint, lower back pain arises when the body's center of gravity shifts forward. Furthermore, the increased size of the uterus can put pressure on the large blood vessels, which may decrease blood circulation to the spine, resulting in discomfort, particularly in the later stages of pregnancy. Joint looseness caused by a rise in the hormone relaxin is also considered one of the factors contributing to lower back pain and hip pain in pregnant women. If this issue is not addressed promptly, it may lead to adverse effects such as challenges in standing, sitting, shifting positions in bed, and difficulties in walking once the pain has extended to the pelvic and lower back regions (Siul et al. , 2023).

Several approaches have been created to manage back pain in pregnant women, utilizing both medication and non-drug treatments, including massage, acupuncture, and physical exercise. One non-drug treatment that is gaining popularity is endorphin massage. This massage method is recognized for its ability to encourage the release of endorphin hormones, which serve as the body's natural pain relievers. These hormones help create a soothing effect and lessen discomfort, thereby enhancing the well-being of pregnant women (Badriyah et al. , 2024).

This massage method uses a soft touch that aids in stabilizing heart rate and blood pressure, while also promoting a sense of relaxation in the pregnant woman's body by encouraging comfort on her skin's surface. According to research findings, this method has the potential to enhance the secretion of the hormone oxytocin, which is crucial for aiding the childbirth process. Thus, it is not unexpected that the endorphin massage method is a valuable skill for both pregnant women and their partners to comprehend, particularly as the pregnancy approaches 36 weeks. In addition, endorphin massage is beneficial for enhancing the emotional connection between the mother and her partner prior to childbirth (Handayani et al. , 2021). As stated by Harahap and Husada (2019), Endorphin Massage therapy can be administered daily for five consecutive days, with each session lasting 20 minutes.

According to a preliminary investigation carried out at the UPT Primaru Health Care Rum Balibunga in October 2025, it was found that out of the 65 pregnant women who presented themselves for examination, 34 mothers were in the third trimester of their pregnancies. Out of this total, nearly 80% indicated that they had experienced issues with back pain. Given these circumstances, the author was motivated to investigate the impact of endorphin massage on the intensity of back pain in pregnant women during their third trimester.

2. RESEARCH METHODS

A pre-experimental type one group pretest–posttest methodology is used in this quantitative study. In this experiment, the researcher begins by measuring the intensity of the pain before applying the intervention (pretest), then applies the intervention, and then measures the intensity of the pain in the same group once more (posttest), all without including the control group. Because all of the 65 participants satisfied the inclusion criteria, the whole population was sampled using a total sampling technique. The study population consisted of all pregnant women in their third trimester who met the inclusion criteria at the UPT Primary Health Care Rum Balibungan. The Wilcoxon Signed Rank Test, a nonparametric test, was used for data analysis in order to determine variations in pain ratings before and after endorphin massage. Data was gathered using pain level observation sheets.

3. RESULTS AND DISCUSSION

Univariate Analysis

Table 1. Frequency Distribution Based on Maternal Age.

Category	Frequency	Percentage (%)	Valid Percentage (%)	Accumulative Percentage (%)
<20 Years	4	6.2	6.2	6.2
20-35 Years	54	83.1	83.1	89.2
>35 Years	7	10.8	10.8	100.0
Total	65	100.0	100.0	

Of the 65 respondents, the majority of pregnant women, namely 54 people (83.1%) were in the age range 20-35 years. Meanwhile, there were 4 pregnant women under 20 years old (6.2%) and 7 people over 35 years old (10.8%). This data shows that the majority of respondents fall into the general productive age group for pregnancy.

Table 2. Frequency Distribution Based on Number of Children.

Category	Frequency	Percentage (%)	Valid Percentage (%)	Accumulative Percentage (%)
Primigravida	27	41.5	41.5	41.5

Multigravida	38	58.5	58.5	100.0
Total	65	100.0	100.0	

Table 2 indicates that most of the survey participants were in the multigravida group, consisting of 38 individuals (58.5%), compared to 27 primigravidas (41.5%). This means that over half of the mothers in the sample had experienced pregnancy prior to this study.

Table 3. Frequency Distribution Based on Mother's Education.

Category	Frequency	Percentage (%)	Valid Percentage (%)	Accumulative Percentage (%)
Elementary School	8	12.3	12.3	12.3
Junior High School	8	12.3	12.3	24.6
Senior High School	34	52.3	52.3	76.9
PT	15	23.1	23.1	100.0
Total	65	100.0	100.0	

Table 3 indicates that most of the participants completed upper secondary education, with 34 individuals (52.3%) finishing high school and 15 individuals (23.1%) graduating from college. In contrast, there were 8 individuals (12.3%) who only had elementary education and the same number for middle school education. This trend suggests that most pregnant women in their third trimester possess an upper secondary education, which could affect how well they grasp information about managing back pain.

Table 4. Frequency Distribution Based on Pain Level Before Intervention.

Category	Frequency	Percentage (%)	Valid Percentage (%)	Accumulative Percentage (%)
Light	10	15.4	15.4	15.4
Currently	21	32.3	32.3	47.7
Heavy	34	52.3	52.3	100.0
Total	65	100.0	100.0	

According to Table 4, the distribution of pain levels prior to the intervention indicates that most respondents reported experiencing severe pain, specifically 34 individuals (52.3%). Twenty-one individuals (32.3%) reported experiencing moderate pain, while ten individuals (15.4%) noted experiencing mild pain. This shows that most pregnant women felt significant pain prior to the intervention, highlighting the necessity of providing support to lessen pain and enhance the comfort of those involved.

Table 5. Frequency Distribution Based on Pain Level After Intervention.

Category	Frequency	Percentage (%)	Valid Percentage (%)	Accumulative Percentage (%)
Light	34	52.3	52.3	52.3
Currently	21	32.3	32.3	84.6
Heavy	10	15.4	15.4	100.0
Total	65	100.0	100.0	

Based on Table 5, there is a noticeable shift in the frequency distribution of pain scores following the intervention as compared to the pre-intervention scenario. The majority of respondents (34, or 52.3%) now suffer mild pain, whereas 21 (32.3%) still report moderate pain, and only 10 (15.4%) experience severe pain. According to this, the endorphin massage therapy that was given was successful in lowering the pain levels of most participants.

Bivariate Analysis

Table 6. Effect of Endorphin Massage on Back Pain in Pregnant Women.

		N	Mean	Std. Deviation	Sum of Ranks	Z	P value
Endorphin Massage	Before Intervention	65	3.37	.741	2145.00	-8.062	.000
	After Intervention	65	2.37				

According to Table 6, administering endorphin massage has shown a notable impact on back discomfort in expectant mothers. The mean pain rating fell from 3.37 prior to the intervention to 2.37 following it. The results from the statistical analysis reveal a value of $Z = -8.062$ with $p = 0.000$, indicating a statistically meaningful decrease in pain. These results demonstrate that endorphin massage is beneficial in alleviating back pain among pregnant women.

Back Pain Levels of Pregnant Women in the Third Trimester Before Giving Endorphin Massage

Amir et al. (2022) found that several factors, including age, affect back pain in pregnant women. Because variations in physical and psychological development will impact how pregnant women respond to pain, those who are younger than 20 or older than 35 are considered high risk. Young mothers under the age of twenty experience challenges with pain management because they are not psychologically mature and their reproductive systems and physical preparedness are not yet at their best. In contrast, women over 35 who are pregnant experience a decline in bodily functions and body organs, particularly the reproductive system, which raises the likelihood of back discomfort.

In addition to that, the intensity of pain is significantly influenced by parity. Since each pregnancy and delivery can induce alterations in the uterus, such as harming the blood vessels of the uterine wall, which impairs the flow of nutrients to the foetus, as well as decreasing the function of muscles and reproductive organs, mothers with high parity (4 or more) are more prone to low back pain. Conversely, because primigravidas have never experienced stretching, their abdominal muscles are often stronger. As a result, the severity of back discomfort tends to rise with increasing parity. This supports the results of this research, which found that the

majority of pregnant women in the third trimester had between two and four children (Sari & Sulityaningsih, 2023).

Physical exercise is another element that contributes to back pain. Back pain can be brought on by engaging in too much physical activity, such as bending, walking continuously, and carrying weights, particularly when the mother is fatigued. The majority of pregnant women in the third trimester are housewives who engage in physically demanding tasks every day, like cooking, cleaning, washing, and taking care of their kids, which puts them at risk of experiencing back pain, according to research findings that support this fact (Safitri & Maita, 2021).

Back Pain Levels of Pregnant Women in the Third Trimester After Giving Endorphin Massage

Endorphin massage is a technique that encourages the production of endorphins, which are natural substances in the body that help alleviate pain. In women who are in their third trimester of pregnancy, this type of massage is used to ease back pain caused by weight gain, shifts in posture, and alterations in the center of gravity. By employing gentle and rhythmic motions on the back and waist, this massage alleviates muscle tightness, enhances circulation, and induces relaxation without relying on medications. In addition to lowering pain levels, endorphin massage can also help to lessen stress and enhance sleep quality, making it a safe and beneficial alternative therapy for expectant mothers (Nabila et al. , 2025).

A separate investigation by Agustin et al. (2024) describes endorphin massage as a gentle technique suitable for pregnant women leading up to childbirth. This massage activates specific points along the spinal cord, which send signals through nerve fibers to brain areas such as the reticular nucleus, limbic system, and thalamus. The endorphins that are released can inhibit pain signals from reaching the central nervous system, thereby decreasing pain intensity. Additionally, endorphin massage promotes the secretion of the hormone oxytocin, which, in conjunction with endorphins, fosters feelings of comfort and relaxation for pregnant women.

The findings from the study mentioned above reveal that most people felt less pain after getting an endorphin massage, with 34 individuals (52. 3%) reporting only mild discomfort. A study by Pauziah and colleagues in 2024 also found that more pregnant women in their third trimester reported mild pain after receiving an endorphin massage, along with a decrease in pain levels for those who had previously dealt with moderate pain. This is supported by the results of Sari and Sulityaningsih in 2023, which indicated that after an endorphin massage, 18 pregnant women (64. 3%) felt moderate pain, 9 pregnant women (32. 1%) felt

mild pain, 1 pregnant woman (3.6%) reported severe pain, and no mothers said they felt very severe pain.

The Effect of Giving Endorphin Massage on the Level of Back Pain in Third Trimester Pregnant Women

The information acquired indicates that pregnant women experienced a notable decrease in the severity of their back discomfort following endorphin massage. Most participants reported less discomfort following the treatment, as evidenced by the reduction in the average pain score from 3.37 prior to the treatment to 2.37 after the treatment. Statistical analysis of the data ($Z = -8.062$, $p = 0.000$) supported the conclusion that endorphin massage is an effective method for reducing back pain in pregnant women because it showed that this decrease in pain was statistically significant.

This conclusion is consistent with the work of Siul et al. (2023), who investigated the impact of endorphin massage on lowering the severity of lower back pain in third trimester pregnant women at PMB Ni Gusti Putu Sutreptininghati, A.Md.Keb. The majority of pregnant women suffered from extreme pain prior to receiving endorphin massage, but this pain was lessened to moderate pain following the intervention, according to this study. With $\alpha = 0.05$, the Wilcoxon Signed Rank Test's results revealed that $p = 0.001$, indicating that $p < 0.05$, which implies that endorphin massage has a considerable impact on lowering the severity of back pain.

This is consistent with research by Nuryanti et al. (2023) titled The Effect of Endorphin Massage on Back Pain in Pregnant Women in the Third Trimester at TPMB Sumariyah S.Tr. Keb, Cemorokandang. According to the study's findings, the experimental group's back pain ratings varied between before and after the endorphin massage. Endorphin massage can be shown to be useful in relieving back discomfort in expectant mothers because its value is $p = 0.000$ ($p < 0.05$).

4. COCLUSION

Based on the research conducted at UPT Primary Health Care Rum Balibunga, endorphin massage has been found to be an effective regular treatment for alleviating back pain in women during their third trimester of pregnancy. This type of massage does not involve medication, is safe, and is straightforward to perform, which improves the comfort of expectant mothers and enhances their quality of life while pregnant. Furthermore, it is essential for healthcare providers at Primary Health Care facilities to receive training on the techniques of endorphin massage to ensure that this treatment is applied consistently and effectively.

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