Research Article

The Effectivity of Prenatal Massage Therapy in the Third Trimester of Pregnancy on Back Pain Complaints

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Abstract: Back pain is a common complaint among pregnant women, particularly during the third trimester, due to physiological changes such as increased body weight, shifting of the body's center of gravity, and hormonal influences that loosen ligaments, as well as biomechanical changes in posture and gait. If not managed properly, back pain can negatively affect maternal comfort, mobility, and quality of life during pregnancy. One non-pharmacological method that has been shown to alleviate such discomfort is prenatal massage, which aims to reduce muscle tension, improve circulation, and promote relaxation. This study aims to determine the effect of prenatal massage on back pain in third-trimester pregnancy at PHC Bulango. A quantitative approach was applied using a pre-experimental one-group pretest–posttest design. A total of 30 pregnant women in their third trimester participated as respondents, selected based on inclusion criteria. Data were collected through observation and structured interviews using a standardized pain scale to measure back pain intensity before and after the intervention. Prenatal massage was administered following recommended maternal health protocols to ensure safety and comfort. Data analysis was performed using the paired t-test to compare mean pain scores before and after the intervention. The results showed a statistically significant reduction in pain levels, with a p-value of 0.000 ($p < 0.05$), indicating that prenatal massage had a meaningful effect in alleviating back pain among participants. The findings support the conclusion that prenatal massage is an effective, safe, and easily applicable non-pharmacological intervention for reducing back pain in third-trimester pregnant women. Based on these results, prenatal massage can be recommended as a complementary practice in antenatal care services to enhance maternal comfort and well-being during pregnancy, alongside other supportive health interventions.

Keywords: Back Pain, Prenatal Massage, Third Trimester

1. Introduction

Pregnancy is a physiological process experienced by women, which also involves various physical and psychological changes. In the third trimester, pregnant women may experience anxiety, depression, disappointment, or even feelings of rejection. These emotional changes are influenced by hormonal fluctuations that affect mood. Meanwhile, common physiological changes in the third trimester include softening and loosening of connective tissue, which can cause back pain (Pagesti et al., 2022). During pregnancy, pregnant women experience various physical and psychological changes that can cause discomfort, especially in the second and third trimesters. Some complaints that often arise include shortness of breath (dyspnea), difficulty sleeping (insomnia), gingivitis and gum swelling (epulsion), frequent urination, pressure and discomfort in the perineum area, back pain, constipation, varicose veins, fatigue, Braxton Hicks contractions, leg cramps, ankle swelling (non-pitting edema), mood swings, and increased anxiety (Faraswati & Silvia, 2024). Pregnancy lasts about 10 lunar months, or 9 calendar months, or 40 weeks, or 280 days, counted from the first day of the last menstrual period. Pregnancy begins with the meeting

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of the egg and sperm (conception), which is then followed by physiological and psychological changes. The duration of pregnancy is generally about 200 days (40 weeks) and no more than 300 days (43 weeks). A pregnancy that lasts for 40 weeks is called a mature pregnancy (full term), while a pregnancy that lasts between 23 and 35 weeks is called a premature pregnancy.(Wulandari et al., 2020).

Back pain during pregnancy occurs because the growth of the fetus makes the uterus bigger, so that the center of gravity of the body shifts forward. To maintain balance, pregnant women naturally adjust their posture by pulling their backs back. As a result, the curvature of the lower spine (lordosis) increases, and the muscles around the spine become shorter (Dewiani et al., 2022). This condition occurs due to changes in body posture, increased load on the spine as the fetus grows, and excessive lordosis that puts pressure on the spinal joints and can cause dysfunction. One of the complementary and alternative medicine methods to improve health and well-being is massage. Massage can also help reduce levels of the stress hormone cortisol (Baljon et al., 2020). Back pain usually peaks at 36 weeks of gestation and will decrease thereafter. Usually, this condition will improve significantly within 3 months after delivery. Continued back pain can be experienced by women with lower back and pelvic pain, back pain in early pregnancy, weakness of the back extensor muscles, older women, and those who are dissatisfied with their jobs. During pregnancy, women experience physiological changes that are influenced by the anatomical and functional needs of the body. These changes affect the musculoskeletal system and often cause pain, including lower back pain.(Purnamasari, 2019).

The prevalence of lower back pain during pregnancy varies by region. Research conducted in the United States, Europe, and parts of Africa shows that around 30%-78% of pregnant women experience lower back pain. This condition is influenced by factors such as gestational age, heavy activity, and lifestyle.(Rahayu et al., 2024).About 50% of women experience lower back pain, and 10% of them experience chronic lower back pain that begins to appear during pregnancy (Hafid et al., 2022). In Indonesia, the incidence of lower back pain in pregnant women ranges from 20-90% and continues to increase every year along with population growth. Lower back pain usually begins to be felt at 22 weeks of pregnancy and peaks in the final trimester (Lestaluhu, 2022).

Factors that affect back pain in pregnant women include activities during pregnancy, parity, and maternal age. Back pain in the third trimester can cause discomfort in activities, changes in body structure, and prolonged pain. This condition can also increase the risk of postpartum back pain and venous thrombosis (Maryati et al., 2024). Treatment of lower back pain during pregnancy is divided into two types, namely pharmacological and non-pharmacological therapy. One effective non-pharmacological method is prenatal massage, which aims to reduce pain intensity, stimulate relaxation, and improve blood circulation. Prenatal massage is done by applying hand pressure to soft tissue, tendons, or ligaments

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without changing the position of the joints. However, midwives need to understand the contraindications for prenatal massage so that this procedure can be carried out safely and effectively (Rismayanti & Wintarsih, 2020).

Prenatal massage is a method to overcome sleep quality disorders in pregnant women in the third trimester, by performing massage regularly twice a week for five weeks by a licensed and experienced midwife. Prenatal massage can be a solution for pregnant women who experience sleep problems, because it can prevent premature birth, low birth weight babies, and reduce anxiety in pregnant women who will face the labor process (Astuti et al., 2021). Prenatal massage can cause side effects and risks if done without proper preparation, such as pain, allergies, bruising, and swelling. Therefore, health workers, especially midwives, need to pay attention to contraindications before performing prenatal massage. This is important so that the procedure can achieve its goal, which is to reduce back pain in pregnant women in the third trimester (Hidayati et al., 2023).

Providing information about prenatal massage to pregnant women is important to increase their interest in using this method as an effort to reduce various complaints that are often experienced during pregnancy (Andriyani & Paryono, 2023). Therefore, researchers are interested in studying Prenatal Massage Therapy in Pregnant Women in the Third Trimester Against Back Pain Complaints.

2. Proposed Method

This study used a quantitative method with a pre-experimental one group pretest-posttest design. This design was used to determine the effect of prenatal massage on the level of back pain in pregnant women in the third trimester at PHC Bulango. The population in this study were all pregnant women in the third trimester who experienced back pain at PHC Bulango. The sampling technique used total sampling with a total of 30 respondents. The data obtained were analyzed statistically using a paired t-test to see the difference in pain levels before and after prenatal massage.

3. Results and Discussion

3.1 Univariat Analysis

a. Distribution of Respondents Chalralcharacteristics

Table 1. Age Frequency Distribution

Age	Frequency	Percentage (%)
<20 years	1	3.3%
20-35 years	28	93.3%
>35 years	1	3.3%
Total	30	100%

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Based on table 1, it describes the age distribution of respondents in this study. The majority of pregnant women are in the productive age group, which is between 20 to 35 years, with a percentage of 93.3%. On the other hand, only 3.3% of pregnant women are under 20 years old, and another 3.3% are over 35 years old.

Table 2. Frequency Distribution of Gravida

Gravida	Frequency	Percentage (%)
Primigravida	10	33.3%
Multigravida	19	63.3%
Grandmulti	1	3.3%
Total	30	100%

Based on table 2. Frequency Distribution of Gravida This presents the respondents' pregnancy status based on the history of the number of previous pregnancies (gravida). Most respondents were classified as multigravida (63.3%), followed by primigravida (33.3%), and only 3.3% were included in the grandemulti category.

Table 3. Frequency Distribution before prenatal massage

LBP	Frequency	Percentage (%)
Moderate pain	28	93.3%
Severe pain	2	6.7%
Total	30	100%

Based on table 3, it presents a picture of the level of low back pain (LBP) experienced by respondents before receiving prenatal massage therapy. The results show that most respondents, namely 93.3%, felt pain with moderate intensity, while the rest, as much as 6.7%, experienced pain with a more severe level. This indicates that before the therapy, the majority of respondents faced significant discomfort due to lower back pain.

Table 4. Frequency Distribution after prenatal massage

LBP	Frequency	Percentage (%)
Mild pain	25	83.3%
Moderate pain	5	16.7%
Total	30	100%

Based on table 4, it describes the changes in the level of lower back pain after respondents underwent prenatal massage therapy. The results showed that most respondents, namely 83.3%, experienced a decrease in pain intensity to a mild level. Meanwhile, as many as 16.7% of respondents still felt pain in the moderate category. These findings indicate that prenatal massage has a positive impact on reducing lower back pain in pregnant women, although some respondents still felt discomfort at a lower level than before.

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3.2 Bivariate Analysis

Table 5. Results of Analysis of the Effect of Acupressure Massage on the Frequency of Nausea and Vomiting in Pregnant Women in the First Trimester at the Ternate City Health Center

	Paired Differences			
	Mean	SD	df	p-value
LBP before Prenatal Massage-LBP after Prenatal Massage	-900	.305	.056	.000

Based on Table 5, the results of the analysis show that there is a significant difference between the level of back pain before and after prenatal massage is given to pregnant women in the third trimester. The mean value shows a change of -900, which indicates a decrease in the level of pain after the intervention. The standard deviation (SD) of 0.305 shows a relatively small variation in the data, which means that the results of the study are quite consistent among respondents.

The degree of freedom (df) of 0.056 indicates the sample size used in the analysis. The results of the statistical test showed a p-value of 0.000 ($p < 0.05$), which indicates that the difference before and after prenatal massage is very statistically significant. In other words, prenatal massage has been proven effective in reducing back pain in pregnant women in the third trimester.

Table 6. Relationship between Type of Hormonal Contraceptive Device and Spotting Incidence

Types of Hormonal Alkon	Spotting Events						Total	P value
	Normal		Spotting		Amenorrhea			
	n	%	n	%	n	%		
Pill	5	100%	0	0%	0	0%	100%	
Inject	0	0%	19	82.6%	4	17.4%	100%	
Implant	0	0%	2	22.2%	7	77.8%	100%	0.000
Total	5	13.5%	21	56.8%	11	29.7%	100%	

Based on Table 6, it can be observed that all pill users (5 individuals or 100%) experienced normal menstruation and did not report any spotting or amenorrhea. In contrast, a large majority of injectable contraceptive users (19 out of 23, or 82.6%) experienced spotting, while 4 individuals (17.4%) experienced amenorrhea. None experienced normal cycles. Among implant users, the majority (7 out of 9, or 77.8%) experienced amenorrhea, and only 2 individuals (22.2%) reported spotting. None had normal cycles. The results of the chi-square statistical test showed a p-value of 0.000 ($p < 0.05$), indicating a statistically significant relationship between the type of hormonal contraceptive used and the incidence of spotting.

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4. Discussion

4.1 Effectiveness of Prenatal Massage in Reducing Back Pain in Pregnant Women in the Third Trimester

The results of this study indicate that prenatal massage has a significant impact in reducing lower back pain in pregnant women in the third trimester. Before the intervention, the majority of pregnant women experienced moderate back pain (93.3%) and a small number experienced severe pain (6.7%). After being given prenatal massage, 83.3% of pregnant women experienced a decrease in pain to mild, while 16.7% still experienced moderate pain.

These results are in line with research conducted by(Hidayati et al., 2023)which shows that prenatal massage can stimulate the release of endorphins which play a role in reducing pain and increasing relaxation.(Baljon et al., 2020)also explains that prenatal massage helps improve blood circulation, relieve muscle tension, and lower levels of stress hormones such as cortisol.

Prenatal massage works by applying gentle pressure to soft tissues, helping to reduce muscle spasms, and improving posture that changes due to increased fetal weight. In addition, this therapy also helps to increase joint flexibility, thereby reducing excess pressure on the lower back area. Therefore, prenatal massage can be used as an effective non-pharmacological intervention in overcoming complaints of back pain in pregnant women in the third trimester.

4.2 Mechanism of Prenatal Massage in Reducing Back Pain in Pregnant Women

Based on research data, the effectiveness of prenatal massage in reducing back pain in pregnant women in the third trimester can be explained through several physiological mechanisms. Increased body weight during pregnancy causes biomechanical changes that lead to increased lumbar lordosis curvature, which is one of the main causes of lower back pain.

Prenatal massage contributes to solving this problem by 1) Improve Blood Circulation. Prenatal massage increases blood flow to areas of muscle tension, helping to reduce inflammation and speed up the tissue healing process. 2) Reduce Muscle Tension. Tense back muscles due to changes in posture will be more relaxed after receiving a massage performed with the right technique. This reduces pressure on the spine and increases the comfort of pregnant women. 3) Increase Endorphin Hormone Production. Prenatal massage stimulates the release of endorphins, which are known as natural pain-relieving hormones, thus helping to reduce discomfort and improve the well-being of pregnant women. 4) Improve Sleep Quality and Reduce Stress. Back pain often causes sleep disturbances in pregnant women. With regular prenatal massage, relaxation levels increase, stress is reduced, and the quality of sleep of pregnant women improves.

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These results strengthen previous research by(Rahayu et al., 2024)who found that non-pharmacological therapies such as prenatal massage have a positive impact on reducing musculoskeletal pain during pregnancy. Therefore, prenatal massage can be a safe and effective complementary therapy option for pregnant women who experience third trimester back pain.

5. Conclusions

Based on the results of the study, it can be concluded that prenatal massage has a significant effect on reducing the level of lower back pain in pregnant women in the third trimester. Before the intervention, the majority of pregnant women experienced moderate to severe pain, while after prenatal massage, most respondents experienced a decrease in pain to mild.

The effectiveness of prenatal massage in reducing back pain can be attributed to increased blood circulation, decreased muscle tension, increased release of endorphins, and improved sleep quality. These results support the use of prenatal massage as a safe and beneficial non-pharmacological method in improving the well-being of pregnant women in the third trimester.

As an implication, midwives and health workers are advised to be more active in providing education to pregnant women about the benefits of prenatal massage as an effort to reduce complaints of back pain. In addition, further research can be conducted by considering additional variables such as duration and specific techniques that are most effective in implementing prenatal massage.

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