> *Original Research Paper*

Prenatal massage is effective in reducing back pain in Third trimester pregnant women

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Abstrak

Pregnancy is a physiological process, which causes changes in adaptation to body systems including the musculoskeletal system. The discomfort that occurs due to these changes is back pain. The purpose of the study was to determine the effectiveness of prenatal massage therapy on reducing back pain for third trimester pregnant women in the working area of the Bineh Krueng Aceh Health Center in 2023. Quasi-Experimental *type of research*, with One *Group Pre Test—Posttest* design. The population of this study was 3rd Trimester Pregnant Women from December 2022 to February 2023, which was 53 people with a total sample of 15 3rd trimester pregnant women taken using purposive sampling techniques. The research instrument used was a Numerical Rating Scale (NRS) pain scale observation sheet to measure pain levels before and after prenatal massage therapy intervention. Data analysis with univariate and bivariate with *Wilcoxon test.* The average back pain before prenatal massage was 1.73 with an SD value of 0.704 and the average after *prenatal* massage *was 0.53 with an SD value of* 0.640. It can be concluded that there is an effectiveness of *prenatal massage* therapy on reducing back pain for third trimester pregnant women in the Bineh Krueng Health Center Work area in 2023 with *Wilcoxon* test results value p = *0.001 (*p value < α).

Keywords : Prenatal Massage; Pain; Third Trimester Pregnant Women

1. Introduction

The main concern of countries today is on maternal morbidity and mortality rates due to the importance of maternal health during pregnancy and childbirth in determining the future well-being of the baby. Maternal Mortality Rate (MMR) and Infant Mortality Rate (AKB) are used as key indicators to measure the level of accessibility and quality of health services available to mothers and newborns. In Indonesia, MMR has not experienced a significant decrease and is still high when compared to other Asian countries (Ministry of Health, 2020). According to WHO (2019), the maternal mortality ratio is the number of maternal deaths due to pregnancy, childbirth, used as an indicator of women's health status. The maternal mortality ratio (MMR) is one of the global Sustainable Development Goals (SDGs) to lower the maternal mortality ratio (MMR) to 70 per 100,000 live births by 2030 (World Health Organization, 2019).

During the 2017-2020 period, the maternal mortality rate in Aceh showed a fluctuating trend. The maternal mortality rate in Aceh in 2020 was in the low category. The maternal mortality rate at birth in 2017 was 143/100,000, but decreased to 138/100,000 in 2018. In 2019, the maternal mortality rate in Aceh again increased to 172/100,000 and the same situation occurred in 2020, which was 172/100,000. The main obstacle to achieving performance in this indicator is largely influenced by limited human resources in the health sector. Other factors include maternal reproductive age and socioeconomic status, as well as low public awareness of maternal health (LKj Aceh Health Office, 2021).

Pregnancy is a normal physiological process that begins with the results of conception and ends with childbirth (Hatini, 2019). During the third trimester of pregnancy, the levels of the hormones

progesterone and relax increase, causing physiological changes in the musculoskeletal system: relaxation of connective tissue and muscles. As in back and joint pain (Miratu, 2018)

During the adaptation process during pregnancy, the mother often experiences discomfort even though the condition is physiological. Therefore, it is necessary to provide proper prevention and treatment against various discomforts that are often experienced by pregnant women entering the third trimester, such as back pain which reaches around 70% (Tanjung Rejeki &; Fitriani, 2019).

Back pain often occurs in the lumbosacral region and sometimes its intensity can increase with increasing gestational age due to shifts in the center of gravity and changes in posture during pregnancy. Things to note in this musculoskeletal adjustment include weight gain, changes in the center of body weight due to the growth of the uterus that is getting bigger, and the need to relax and maintain mobility. The increasing instability in the sacroiliac joints and the increase in lumbar lordosis can cause discomfort and pain. This suggests that it is possible for the muscles to shorten as the abdominal muscles begin to stretch, which can produce imbalances in the muscles around the pelvis and lower back, and may have an impact on ligaments in those areas (Purnamasari, 2019)

Based on the results of research conducted by Fitriani (2018), around 70% of pregnant women experience pain in the waist area or low back pain (LBP) which may start at the beginning of the trimester and reach its peak when entering the second and third trimesters (Wulandari &; Wantini, 2021). According to research by Manyozo et al. (2019), the incidence of low back pain in pregnancy conducted in 404 pregnant women, the prevalence of low back pain during pregnancy was 62% (249 pregnant women).

Pregnancy massage can reduce discomfort and pain in the back during pregnancy, because the use of pregnancy massage can reduce fatigue and increase body energy by facilitating the removal of metabolic products through the lymphatic and circulatory systems.

Discomfort that is often felt by pregnant women such as cramps, muscle tension, and muscle stiffness can be reduced after doing massage because smooth blood flow helps the heart work and lowers blood pressure, so pregnant women feel fresher. In addition, endorphins released during massage can make it easier for pregnant women to feel relaxed. In a study conducted by Pangesti et al. (2022), it shows that there is a significant effect of giving pregnancy massage on the back on back pain in 3rd trimester pregnant women, with a probability value (p) of 0.000 which is lower than 0.05.

This shows that pregnancy massage is effective in reducing back pain in 3rd trimester pregnant women. In addition, the study also revealed a significant difference in pain levels between the treatment group that received pregnancy massage and the control group, with a probability value (p) of 0.000 which was also lower than 0.05. Thus, the results of this study corroborate that pregnancy massage has a positive impact in reducing pain in 3rd trimester pregnant women.

2. Method

Table 1. Inclusion and Inclusion Criteria

Inclusion Criteria	Inclusion Criteria
3rd Trimester pregnant women	Third Trimester Pregnant Women with Complications
Have never received a back massage	Pregnant Women Who Gave Birth Before the Study Began
Willing to be a Respondent	

This research is a quantitative research with a *quasi-experimental* design, using the *One Group Pre-Test Post-Test design*. The population of study subjects consisted of third trimester pregnant women in the working area of the Bineh Krueng Health Center, in the period from December 2022 to February 2023, with a population of 53 pregnant women. The sampling technique used is *purposive sampling*, which is carried out based on consideration of the inclusion and exclusion criteria table 1.

Primary data collection by direct observation of 3rd trimester pregnant women by observing low back pain. Secondary data by listing the names and characteristics of respondents. Pain measurement is first carried out before intervention using the *Numerical Rating Scale (NRS)* pain scale observation sheet.Intervention was carried out to reduce back pain in third trimester pregnant women with massage carried out by researchers as much as 1x / day for 2 days within 15 minutes every morning based on standard operational procedures (SPO) for the management of *prenatal massage therapy.* Measurement of pain after intervention by returning using the observation sheet of the *Numerical Rating Scale (NRS) pain scale.* Data processing is done *editing, coding, processing.* Data analysis uses *univariate* to obtain data related to respondent characteristics. After that, to see *the effectiveness of prenatal massage* on reducing back pain using *bivariate* analysis using a parametric test, namely the T dependent *test provided that the data has been normally distributed, if the data data is not normally distributed, then the researcher conducts a* non-parametric *test, namely the* Wilcoxon *test with a* probability value of p-value < 0.05. Using the *Shapori-Wilk normality test* because the number of samples in the study was less than 50 people. In this study, researchers applied research ethics in the form of *informed consent and anonymity.*

3. Result and Discussion
3.1. Result

Of the 45 respondents of 3rd trimester pregnant women, the majority of third trimester pregnant women aged 25-35 years experienced back pain as many as 9 people (60.0%), the majority had 6 junior high school education (40.0%) and the majority of third trimester pregnant women did not work as many as 12 people (80.0%). All third trimester pregnant women experienced back pain with different pain intensity, namely the majority of respondents before the prenatal massage intervention experienced moderate pain as many as 7 people (46.7%) and the minority of mothers with severe pain of 2 people (13.3%).

Meanwhile, after the prenatal massage intervention, the majority of respondents did not have back pain as many as 8 people (53.3%), and the minority of pregnant women with moderate back pain as many as 1 person (6.7%). The characteristics of 3rd trimester pregnant women are as follows:

Table 2. Frequency Distribution of Characteristics of Third Trimester Pregnant Women

Characteristics	Respond		
	Category	Frequency	Presented
Age	<25	3	20.0
	25-35	9	60.0
	>35	3	20.0
Education	SD	0	0
	SMP	6	40.0
	SMA	4	26.7
	Bachelor	5	33.3
Work	Not Working	12	80.0
	Work	3	20.0
Back Pain before *Prenatal Massage Intervention*	No Pain	0	0
	Mild pain	6	40.0
	Moderate pain	7	46.7
	Severe Pain	2	13.3
	Very severe pain	0	0
Back Pain after *Prenatal Massage Intervention*	No Pain	8	53.3
	Mild pain	6	40.0
	Moderate pain	1	6.7
	Severe Pain	0	0
	Very severe pain	0	0

Source: Data Primer 2022 & 2023

Table 3. Normality Test Results Before and After *Prenatal Massage Intervention*

Characteristics	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	**Df**	**Say.**	*Statistic*	**Df**	**Say.**
Back Pain before *Prenatal Massage Intervention*	0,277	15	0,003	0,794	15	0,003
Back Pain after *Prenatal Massage Intervention*	0,346	15	0,000	0,717	15	0,000

Source: Data Primer 2022 & 2023

Table 4. Average Back Pain for Third Trimester Pregnant Women Before and After Prenatal *Massage Intervention*

Characteristics	Wilcoxon				
	N	**Mean**	*Std. Deviation*	*Minimum*	*Maximum*
Back Pain before *Prenatal Massage Intervention*	15	1,73	0,704	1	3
Back Pain after *Prenatal Massage Intervention*	15	0,53	0,640	0	2

Source: Data Primer 2022 & 2023

Table 5. Effectiveness of *Prenatal Massage*

Variable			
	N	*P value*	*α*
Back Pain Before and After Prenatal Massage Intervention	15	0,001	0,05

Source: Data Primer 2022 & 2023

The results showed that most 3rd trimester pregnant women experienced back pain before prenatal massage intervention, with the majority experiencing moderate pain. However, after receiving the prenatal massage intervention, the majority of respondents no longer experienced back pain. Statistical analysis using the Wilcoxon test showed a significant reduction in the level of back pain after the intervention. With a p-value of 0.001, the results of this test confirm the effectiveness of prenatal massage therapy in reducing back pain in 3rd trimester pregnant women. The findings have positive implications in improving the well-being of pregnant women during their pregnancies.

3.2. Discussion

Discomfort during pregnancy, especially in the third trimester, is a frequent problem faced by future mothers. One of the most common problems is pain in the lower back. This discomfort, if not treated properly, can result in a wider impact on the well-being of pregnant women. In addition, lack of knowledge and experience in dealing with discomfort during pregnancy can also aggravate the anxiety of pregnant women. In this paragraph, we will further review the problem of back pain in third trimester pregnant women and its impact on anxiety, while integrating the relevant research results. When entering the third trimester of pregnancy, many women experience pain in the lower back. According to research conducted by (Arianti &; Restipa, 2019), back pain is one of the common discomforts in pregnant women in the third trimester. This pain can be caused by a number of factors, including physical changes that occur during pregnancy. In the study, it was found that about 80% of women experience back pain at some point during the third trimester of pregnancy.

Changes in muscles and spine during pregnancy have a significant role in the onset of back pain. Furthermore, (Purnamasari, 2019) states that most back pain during pregnancy, around 70%, can be

caused by changes in muscles and spine. As the fetus grows, the mother's body undergoes significant postural changes to accommodate fetal development. Unfortunately, it also causes tension and muscle changes that can result in back pain. About 30% of back pain can be attributed to problems in previous spinal conditions that pregnant women may have. During pregnancy, knowledge of the discomforts that may arise and how to manage them is essential. A lack of understanding of the issue can trigger anxiety, especially when the expectant mother has not had previous experience in dealing with discomfort during pregnancy. This anxiety is often the result of uncertainty, fear, and anxiety about the impact that the discomfort may have. In addition, if back pain is not treated properly, the production of the hormone adrenaline in the body of pregnant women can increase. This can result in greater physical and emotional strain, which in turn can affect the overall well-being of pregnant women (Wulandari & Andryani, 2019).

One non-pharmacological therapeutic approach that is effective in reducing discomfort during the third trimester of pregnancy is massage therapy for pregnant women. This massage therapy involves massaging the body of pregnant women with the aim of creating relaxation of muscles and nerves. In this process, the stimulus from massage stimulates an increase in endorphins and lowers the hormone adrenaline, which in turn contributes to the reduction of pain and anxiety of pregnant women (Suarniti et al., 2019).

During the third trimester of pregnancy, pregnant women often experience various discomforts, including body aches. This pain can be caused by significant physical changes that occur in the body of pregnant women, including increased load on muscles and bones. This discomfort can negatively impact the quality of life of pregnant women and even increase anxiety levels. (Resmaniasih, 2018) states that massage therapy for pregnant women can help overcome this problem by creating muscle and nerve relaxation. Pregnancy massage is a holistic approach that involves special massage for pregnant women, with methods that include effleurage, petrissage, accupressure, and love kneading on certain areas of the body, aiming to improve blood circulation and create feelings of relaxation (Nurul et al., 2018)

In the view of Maryani et al., (2020), pregnancy massage has significant benefits in reducing back pain. This massage technique is a non-pharmacological method that has proven effective and efficient to relieve back pain during the third trimester of pregnancy. The implementation of this massage technique can be done by trained practitioners, husbands, or family members (Maryani et al., 2020). Pregnancy massage, especially in the back area, is effective in reducing back pain in third trimester pregnant women. The pregnancy massage approach provides non-pharmacological benefits that can significantly reduce discomfort during pregnancy. Through massage, this therapy is able to stimulate the release of the hormone cortisol which is responsible for stress levels, thus creating a feeling of relaxation and comfort in pregnant women. As a non-pharmacological approach, pregnancy massage is a very promising alternative in reducing discomfort during pregnancy, helping pregnant women to live the third trimester better, and making a positive contribution to maternal well-being and fetal development. Researchers believe that the application of pregnancy massage can play an important role in caring for the health of pregnant women in a holistic and natural way (Pangesti et al., 2022).

Low back pain can arise at any time during pregnancy. However, women who enter the third trimester have a higher risk of experiencing low back pain. This is triggered by changes in posture, increased load on the spine due to fetal growth, as well as excessive lordosis resulting in physical imbalances in the joints of the spine and dysfunction (Manyozo et al., 2019). In addition, massage is a form of complementary and alternative treatment that aims to improve health and well-being. Through the use of massage, the hormone cortisol responsible for stress levels can be released (Baljon et al., 2020). Through the use of proper massage techniques, this therapy can stimulate the release of the hormone cortisol which is responsible for stress levels. Thus, massage therapy might help in reducing pain and improving the health and well-being of pregnant women who experience low back pain during

the third trimester. Researchers believe that combining this method with appropriate medical approaches can provide significant benefits for pregnant women who face pain problems during their pregnancy.

Massage for pregnant women can have a positive impact on pregnant women by reducing tension on nerves and muscles, improving blood circulation, and increasing endurance. The immediate benefits of massage therapy involve reducing back pain, improving sleep quality, and creating a better feeling of happiness (Suarniti et al., 2019). Massage therapy helps to reduce tension in the back muscles and improve posture, thereby reducing the intensity of back pain that is often felt. In addition, quality sleep is very important for pregnant women, and massage can help improve sleep quality by relaxing the body and mind. The feeling of happiness induced by endorphins during massage also has a positive effect on the emotional state of pregnant women, helping to reduce anxiety and stress. In order to achieve well-being during pregnancy, many pregnant women are looking for alternative treatments such as massage to reduce frequent discomfort. This therapy can be a valuable addition to the health care of pregnant women, especially when performed by trained therapists who understand the special needs during pregnancy. (Suarniti et al., 2019).

The results of research by Yeni Zahara Harahap (2019) showed that pregnant massage therapy using pre and post massage therapy methods was effective in reducing back pain in pregnant women with high statistical significance ($\rho = 0.0001$). Maternity massage, as a gentle massage technique, focuses on specific areas of the body that aim to provide a sense of physical and emotional well-being to pregnant women. In addition to reducing physical pain, this therapy also has a positive impact on the psychological well-being of pregnant women, creating a feeling of freshness and comfort. The use of this non-pharmacological approach as a treatment for pregnant women not only pays attention to physical aspects, but also takes into account the emotional and psychological state of the mother which contributes to an overall healthier pregnancy (Harahap, 2019)

Based on research that has been analyzed by researchers, it can be concluded that massage techniques are one of the effective and efficient non-pharmacological methods to reduce back pain that is often experienced by 3rd trimester pregnant women. This massage technique can be a very effective option in dealing with discomfort during pregnancy. This massage technique can be an important part of health care during pregnancy, as it can have a positive impact on the well-being of pregnant women. In addition, the role of the family, especially the husband, in giving this massage becomes very important. The husband as the main support of pregnant women has a very meaningful role in helping mothers overcome back pain and maintain the health of the mother and fetus. Massage during pregnancy can help in relieving muscle tension, improving blood circulation, as well as stimulating the release of endorphins that can reduce pain and increase feelings of happiness. Thus, massage can provide real benefits in reducing discomfort during the 3rd trimester of pregnancy. The importance of family support, especially husbands, in providing this massage technique cannot be ignored. Husbands can play a very meaningful role in helping pregnant women feel more comfortable and happy during pregnancy. In this case, the role of the husband as an attentive and caring companion is very necessary to maintain the health and well-being of pregnant women and fetuses. Thus, massage techniques during pregnancy are an approach that can provide great benefits in reducing back discomfort and improving the quality of life of pregnant women in the third trimester

4. Conclusion

The provision of prenatal massage therapy to third trimester pregnant women in the working area of the Bineh Krueng Aceh health center is considered effective in reducing back pain during pregnancy. The limitation of this study is that there are some respondents who feel tingly to the point of wriggling their bodies when touched by their lower back, thus eliminating the concentration of researchers to do massage to the next stage. There was 1 respondent with the same level of pain after prenatal massage,

this is likely due to the different comfort levels of respondents during prenatal massage.

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