



The effectiveness of prenatal gentle yoga and effleurage massage on reducing back pain in pregnant women in the third trimester at PMB riska indraweni, Lumajang Regency

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ABSTRACT

Back pain in pregnant women can cause stress, thus increasing the risk of premature labor. Efforts to reduce pain are with prenatal gentle yoga and Effleurage Massage. This study aims to compare the effectiveness of prenatal gentle yoga and effleurage massage in reducing back pain in pregnant women at PMB Riska Indraweni, Lumajang Regency. The pre-experimental research design was Two Group Pretest-Posttest. The research method used was paired sample t-Test. The difference test of two paired samples was determined by purposive sampling and each group of prenatal gentle yoga and effleurage massage obtained 16 pregnant women who experienced back pain. The results of the study showed that the average test in each treatment group showed significant results ($p = 0.0001$) with a difference in the average decrease in back pain intensity in the prenatal gentle yoga group of 0.31 and the effleurage massage group of 0.6. The effleurage massage technique has a higher effectiveness than prenatal yoga in reducing back pain in pregnant women. Pregnant women are advised to apply effleurage massage and prenatal gentle yoga to overcome back pain and more in-depth research is needed regarding the causes of back pain in pregnant women.

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1. Introduction

The occurrence of lower back pain in pregnant women can cause chronic pain and stress in pregnancy, increasing the risk of premature birth. The impact of premature birth is low birth weight, intrauterine growth retardation, and premature birth complications in babies.

Back pain is a complaint that is mostly felt by pregnant women. In 2021, the World said that 28.9% of pregnant women in the world experience lower back pain, out of 478 pregnant women, 138 people complained of moderate pain, but were still able to do physical activities, most of whom experienced back pain in the third trimester (83%). In Indonesia in 2020 it was found that 68% of pregnant women experienced back pain. Back pain in pregnant women in various regions of Indonesia reaches 60-80% of people who experience back pain during their pregnancy. In East Java province, it is estimated that around 65% of 100% of pregnant women still experience back pain (Alaida, Rahmayani, and Setyarini 2023). According to research conducted by Megasari, et al., 2019, there were 46 pregnant women in the third trimester, 8 of whom experienced moderate back pain

and 30 mothers experienced mild back pain, and 8 mothers did not experience back pain (Megasari 2019).

Some ways to overcome lower back pain experienced by pregnant women can be given non-pharmacological therapy such as massage, relaxation, warm compresses and pregnancy exercises. This is in accordance with the 2023 Hidayah study that massage helps pregnant women feel comfortable and relaxed. Massage therapy is a touch that is done on parts of the body that can improve blood circulation and reduce muscle tension so that it can reduce pain (Hidayah et al. 2023).

Prenatal gymnastics is also a fitness program aimed at pregnant women in order to design the body system and prepare the muscles needed as additional support during pregnancy. (Br Pinem et al. 2021). Prenatal exercise can relieve lower back pain because in prenatal exercise movements there are movements that strengthen the abdominal muscles, thus preventing excessive tension on the pelvic ligaments, which can reduce the intensity of lower back pain. This is based on research (Toroh, 2021) Prenatal exercise serves to strengthen the core stability of the body which will help maintain spinal health. Pregnant women are advised to follow prenatal exercise when the pregnancy reaches 6 months. (Dea Nuraini 2021).

Massage and pregnancy exercise that is done where the body will produce more endorphin hormones. Endorphins function to provide calm, reduce stress, and are able to reduce lower back pain during pregnancy (Handayani et al. 2021). Based on a preliminary study at PMB Riska Indraweni in Yosowilangun Kidul Village, Yosowilangun District, Lumajang Regency in 2024 by interviewing pregnant women in the second and third trimesters, 80% of pregnant women said they had never done prenatal gentle yoga or back massage so that pregnant women experienced back pain.

Various efforts can be made to reduce complaints of back pain during pregnancy, one of which is by doing prenatal gentle yoga, because it can increase the flexibility and balance of the anterior and posterior lumbar muscles so that it can reduce back pain during pregnancy and Effleurage Back Massage for pregnant women given 2 times a week can reduce back pain in pregnant women.

Based on the description above, the researcher is interested in examining the differences in the effectiveness of prenatal gentle yoga and effleurage massage on reducing pain in pregnant women in the third trimester at PMB Riska Indraweni, Lumajang Regency.

2. Research Method

The design of this study is an experimental study using a pre-experimental design Two Group Pretest-Posttest. With purposive sampling technique, a sample of 16 Prenatal Gentle Yoga respondents and 16 Effleurage Massage respondents was obtained, the independent variables of prenatal gentle yoga and effleurage massage using questionnaires and the dependent variable of back pain with observation.

The research method used in this study is the Paired sample t-Test, namely the difference test of two paired samples used to analyze the research model before and after. This method is used to assess the effectiveness of the treatment so that the results obtained $p = 0.000 < 0.05$ then H_0 is rejected and H_1 is accepted which means there is a difference in the effectiveness of prenatal gentle yoga and effleurage massage on reducing back pain in pregnant women in the 3rd trimester at PMB Riska Indraweni, Lumajang Regency.

3. Result And Discussions

Table 1
Distribution of Respondent Characteristics

	Prenatal Gentle Yoga		Effleurage massage	
	Frequency (f)	Percent (%)	Frequency (f)	Percent (%)
Age				
<20	2	12.5	1	6.25
20-35	13	81.25	14	87.5
>35	1	6.25	1	6.25
Education				
Elementari School	1	6.25	0	0

	Prenatal Gentle Yoga		Effleurage massage	
	Frequency (f)	Percent (%)	Frequency (f)	Percent (%)
Junior High School	7	43.75	8	50
High School	6	37.5	7	43.75
College	2	12.5	1	6.25
Occupation				
Housewife	13	81.25	12	75
Self Employed	1	6.25	3	18.75
Private	2	12.5	1	6.25
Parity				
Primipara	5	31.25	4	25
Multipara	11	68.75	12	75
Participation				
Ever	0	0	0	0
Never	16	100	16	100
Amount	16	100	16	100

Source: 2024 Research Questionnaire

Table 2
Back Pain before prenatal gentle yoga and effleurage massage

Back Pain Scale	Prenatal Gentle Yoga		Effleurage massage	
	Frequency (f)	Percent (%)	Frequency (f)	Percent (%)
No Pain	0	0	0	0
Mild Pain	5	31,25	3	18.75
Moderate Pain	9	56,25	12	75
Severe Pain	2	12.5	1	6.25
Amount	16	100	16	100

Source: 2024 Research Questionnaire

Based on table 2, back pain before prenatal gentle yoga was performed in pregnant women in the third trimester at PMB Riska Indraweni, Lumajang Regency, totaling 16 respondents, most of them experienced moderate pain, as many as 9 respondents (56.25%). Based on table 4.12, back pain in pregnant women before effleurage massage was performed, most of them experienced moderate pain, as many as 12 respondents (75%).

The results of this study are in line with the research of Purborini (2023) which found that there is a relationship between gestational age and lower back pain (p value = 0.006; OR = 7.629), there is a relationship between parity and lower back pain (p value = 0.001; OR = 1.200), and there is a relationship between activity and lower back pain (p value = 0.000; OR = 5.556) (Purborini and Rumaropen 2023).

Research conducted by Halim 2020 stated that gestational age is a factor that influences lower back pain due to the increase in weight and size of the womb in line with the increasing gestational age (Halim 2020).

Back pain is a common disorder in pregnant women. This is because the enlarged uterus affects the center of gravity, stretching out and weakening the abdominal muscles, changing posture, and putting pressure on the back. Pregnancy hormones can loosen the joints and ligaments that occur in the pelvic bone to the spine. The older the gestational age, the more pregnant women experience back pain. Back pain is often experienced by mothers during pregnancy when entering the 3rd trimester of pregnancy with pain that often appears especially in the back, pelvis to the legs. Increased hormone production during pregnancy, especially the hormone estrogen which increases during pregnancy, this increase in estrogen will affect the back, especially when entering the age of 7 months of pregnancy, the muscle tissue and joints will develop and become flexible (Halim 2020).

According to researchers, back pain in pregnant women can be caused by the enlargement of the uterus which is getting bigger day by day due to the growth of the fetus, causing the mother's body to become lordosis. This puts pressure on the mother's body, causing the mother to experience back

pain. The mother's increasing weight can also affect back pain because increasing weight will affect the muscles to work harder, causing stress on the joints (Purnamasari and Widyawati 2019).

Based on table 1, pregnant women in the third trimester at PMB Riska Indraweni, Lumajang Regency in the prenatal gentle yoga group totaling 16 respondents showed that almost all respondents worked as housewives, as many as 13 respondents (81.25%), while pregnant women in the third trimester at PMB Riska Indraweni, Lumajang Regency in the effleurage massage group totaling 16 respondents showed that most of them worked as housewives, as many as 12 respondents (75%).

This is in accordance with research by Arummega et al., 2022, back pain in pregnant women who enter the third trimester by doing too much and excessive physical activity, which is usually because pregnant women take more care of the household and have to work, can make the mother feel tired and lack sufficient rest (Maria Septiana, Ana Sapitri, and Nesi Novita 2024).

Changes in pathology are seen with increasing pain when performing movement (motion pain), and there is pressure pain (pressure pain), incorrect posture such as sitting, standing, or walking. Pain can be reduced by lying down (Veronica, Kumalasari, and Gustianingrum 2021). According to research by Donovan et al., 2021, there are some household chores such as sweeping, mopping, cleaning, fetching or carrying buckets of water, splitting and cooking using firewood, caring for children. This puts pressure on the lower back, and experiences changes in the load on the body and mechanics during pregnancy so that it is easy to settle and worsen lower back pain. The absence of a mechanism for the division of household labor and needs is often associated with cultural backgrounds with gender roles (Donovan 2019).

According to research by Amari et al., 2020, it is not a coincidence that the prevalence of back pain in pregnant women is higher, observed and found in the group of housewives because at home mothers have longer working hours, for example caring for small children, lifting or carrying heavy loads, doing tasks in uncomfortable positions, and the tools used are not adequate (A. Amayri ve D. H. Ali 2003).

According to the researcher's assumption, work that has a significant impact on bone, muscle and joint health is housework. The high level of back pain in pregnant women occurs due to biomechanical disorders, repetitive movements, and non-ergonomic movement positions when doing housework such as sweeping, mopping, preparing food, caring for children, cooking and washing dishes, shopping, and others. The length of housework and the amount of housework also provide a significant pain effect.

Based on table 1, pregnant women in the third trimester at PMB Riska Indraweni, Lumajang Regency in the prenatal gentle yoga group totaling 16 respondents showed that most of the respondents were multiparous, as many as 11 respondents (68.75%), while the effleurage massage group totaling 16 respondents showed that most of the respondents were multiparous, as many as 12 respondents (75%).

According to Lilis's research in 2019, there was a significant relationship between gestational age and the incidence of lower back pain with a p-value of 0.000 ($p < 0.05$). There was a significant relationship between parity and the incidence of lower back pain with a p-value of 0.000 ($p < 0.05$). It was concluded statistically that there was a significant relationship between parity and the incidence of lower back pain in pregnant women (D. N. Lilis 2019).

According to researchers, multiparous mothers are at greater risk of experiencing back pain than primiparas because the muscles of multiparas are weaker, causing the muscles to fail to support the enlarged uterus. The more often and more pregnancies or childbirths, the greater the risk of experiencing back pain than primiparas. Primiparous women usually have very good muscles because the muscles have never been stretched before. This problem can worsen if the woman's muscles are weak so that they fail to support the enlarged uterus. Without support, the uterus will sag, a condition that makes the back curve even longer. Weakness of the abdominal muscles often occurs in multiparas who do not exercise (Retnaningtyas 2021).

Tabel 3
Back Pain after prenatal gentle yoga and effleurage massage

Back Pain Scale	Prenatal Gentle Yoga		Effleurage massage	
	Frequency (f)	Percent (%)	Frequency (f)	Percent (%)
No Pain	11	68.75	15	93.75
Mild Pain	5	31.25	1	6.25
Moderate Pain	0	0	0	0
Severe Pain	0	0	0	0
Amount	16	100	16	100

Source: 2024 Research Questionnaire

Based on table 3, back pain in pregnant women after prenatal gentle yoga at PMB Riska Indraweni Lumajang, of which 16 respondents, the majority did not experience pain, as many as 11 respondents (68.75%).

Another study conducted by Gozali et al 2020 based on the results of the p-value calculation is $0.000 < \alpha (0.05)$. If the p-value $< \alpha (0.05)$ means that there is an effect of prenatal yoga on back pain in pregnant women in the third trimester. This shows that 0.000 is less than 0.05, thus H_0 which states that there is no effect of prenatal yoga on back pain in pregnant women in the third trimester is rejected and H_1 is accepted so that there is an effect of prenatal yoga on back pain in pregnant women in the third trimester (Gozali, Astini, and Permadi 2020).

According to Eltrikay Wulandari 2019, using the Wilcoxon test, the p-value calculation value was $0.000 < \alpha (0.05)$, which shows that there is an effect of prenatal gentle yoga on reducing lower back pain in pregnant women in the third trimester (Indrayani and Muhayah 2020).

Complaints of back pain during pregnancy can be reduced by doing regular physical activities such as prenatal yoga. Prenatal yoga is a form of moderate exercise, which is done by pregnant women from 20 weeks of pregnancy. Prenatal yoga can reduce complaints during pregnancy such as back pain. In prenatal yoga there are exercises to strengthen and maintain the elasticity of the abdominal wall muscles, ligaments, and pelvic floor muscles related to the labor process. This exercise serves to strengthen the core stability of the body which will help maintain spinal health (Lucin and Resmaniasih 2022). Doing prenatal yoga regularly can reduce lower back pain, one of which is by kneeling and rotating the pelvic bone, bending the buttocks, bending the knees, chest (Elina, Sugesti, and Yolandia 2024).

According to researchers, prenatal gentle yoga can reduce back pain in pregnant women because yoga movements can strengthen and stretch the spine, maintain the elasticity and strength of the pelvic ligaments, hips and leg muscles, and stimulate the body to produce endorphin hormones which can trigger a feeling of comfort and reduce pain. Based on table 3, back pain in pregnant women in the third trimester at PMB Riska Indraweni, Lumajang Regency, as many as 16 respondents after effleurage massage were given, almost all of them did not experience pain as many as 15 respondents (93.75%).

According to Putu Ayu's research in 2018, the level of lower back pain in pregnant women in the third trimester based on the Numerical Rating Scale pain scale before being given effleurage massage treatment experienced an average of 5.8 lower back pain (moderate pain). The level of lower back pain in pregnant women in the third trimester based on the Numerical Rating Scale pain scale after being given effleurage massage treatment experienced an average of 4.07 lower back pain (mild pain). Effleurage massage has an effect on lower back pain in pregnant women in the third trimester in the Sempor Health Center Area. The decrease in the pain scale before and after effleurage massage treatment was 1.733. The conclusion is that effleurage massage is effective in reducing the level of lower back pain in pregnant women in the third trimester (Putu Ayu Meka Raini, Anak Ayu Nyoman Trisna Narta Dewi 2018).

According to Andriani et al., 2021, the average result of lower back pain in pregnant women in the third trimester before the intervention was 3.25 and after the intervention it became 0.75. The results of the Wilcoxon sign rank test with a 95% confidence level showed that there was a difference in

the average lower back pain in pregnant women in the third trimester before and after effleurage massage (p -value = 0.000). Conclusion: Effleurage massage can reduce lower back pain (Andriani et al. 2023).

According to Desi Firiani and Yulita Elvira Silviani 2023, the results of univariate analysis showed that back pain in pregnant women in the third trimester before effleurage massage was given, out of 13 respondents, 1 person experienced mild pain and 12 people experienced moderate pain, after effleurage massage was given, out of 13 respondents, 6 people had mild pain and 7 people experienced moderate pain. Bivariate analysis showed that there was effectiveness of effleurage massage on back pain in pregnant women in the third trimester at PMB Fitri Andri Lestari, Bengkulu City (Elina, Sugesti, and Yolanda 2024).

Effleurage massage is one of the massage methods that can also help mothers reduce back pain discomfort, namely a massage technique on the back or sacrum area using the base of the palm of the hand. Massage is in the form of increasing muscle relaxation, calming the nerve endings and relieving pain. The effleurage massage technique is in the form of long, uninterrupted, soft strokes so that it causes a relaxing effect. Effleurage massage has a distraction that can increase the formation of endorphins in the descending control system so that it can make it more comfortable because of muscle relaxation (Ariningtyas et al. 2023).

According to researchers, effleurage massage can reduce back pain during pregnancy because effleurage massage can reduce fatigue and make the body more energetic by removing metabolic products in the lymphatic body and circulatory system. Discomfort in pregnant women such as cramps, muscle tension, and muscle stiffness can be reduced after massage. Smooth circulation makes it easier for the heart and blood pressure to work so that pregnant women feel fresher. In addition, the endorphin hormone produced makes the mother more relaxed and can reduce pain.

Table 3
Cross tabulation of Pretest-posttest Prenatal Gentle Yoga and effleurage massage

Prenatal gentle yoga	Effleurage massage					
	No Paint		Mild Pain		Total	
	N	%	N	%	N	%
No Pain	10	62,5	1	6,25	11	68,75
Mild Pain	5	0	0	0	5	31,25
Amount	15	93,75	1	6,25	16	100

Source: 2024 Research Questionnaire

Based on table 3, the pain scale after prenatal gentle yoga, most respondents experienced no pain, namely 11 respondents (68.75%), and after effleurage massage, almost all respondents experienced no pain, namely 15 respondents (93.75%).

According to research by Yulia Sari et al. 2022, the study showed that the mean test in each treatment group showed significant results ($p = 0.0001$) with a mean difference in the decrease in the intensity of lower back pain in the acupressure group of 3.5 and the yoga group of 2.3. Conclusion: Acupressure techniques are more effective than prenatal yoga in reducing lower back pain in pregnant women (Sari and Farida 2021).

Another study by Puji Astutik et al in 2022 Based on the results of the study with Spearman correlation analysis for hypothesis testing, a significant value (p value) of $0.000 < 0.05$ can be seen, which means that there is a significant relationship between the implementation of prenatal massage and yoga therapy with the level of sleep quality of pregnant women in the third trimester. Conclusion: This study can be concluded that "There is a significant relationship between prenatal massage and yoga therapy with the sleep quality of pregnant women in the third trimester (Masluroh 2025).

Massage is a massage method that can increase body relaxation, so it is effective, safe, simple and does not cause adverse effects on the fetus and mother. Giving massage to the back can stimulate points along the spinal cord which are transmitted through large nerve fibers to the reticular formation

and thalamus so that the body's limbic system will release endorphins, where endorphins function as neurotransmitters or neuromodulators that can inhibit the transmission of pain stimuli by attaching to opiate receptors on the nerves and spinal cord so that they can block pain messages to higher centers so that they can reduce pain (Ariningtyas et al. 2023).

The gentle, regular effleurage motion helps to stimulate the blood vessels in the massaged area. This causes increased blood flow bringing more oxygen and nutrients to the body's cells in the massaged area. This is essential for maintaining healthy cells and tissues. Increased blood flow also helps to carry metabolic waste products such as lactic acid and toxins out of the tissues. This can help to reduce muscle fatigue and improve recovery after intense physical activity (Andriani et al. 2023).

According to researchers, effleurage massage is more effective in reducing pain compared to prenatal gentle yoga because the gentle and rhythmic movements of effleurage help relax tense muscles. This massage stimulates the release of endorphin hormones, which are natural substances from within the body that function to create a sense of comfort and as a pain reliever.

Table 4
Results of Data Analysis

		Me an	Paired Differences		95% Confidence Interval of the Difference Lower Upper	t	df	Sig. (2-tailed)
			Std. Devia tion	Std. Error Mean				
Pair 1	yoga pain scale - yoga pain scale	4.00	1.155	.289	3.385 4.615	13.856	15	.000
Pair 2	massage pain scale - massage pain scale	4.438	1.031	.258	3.888 4.987	17.220	15	.000

Source: 2024 Research Questionnaire

The analysis showed that the average value of lower back pain of pregnant women before and after the intervention, the average value of the prenatal gentle yoga group before the intervention was 4.3 and after the intervention was 0.31, which means that lower back pain in the prenatal gentle yoga group decreased by 3.9 and the average value of the effleurage massage group before the intervention was 4.5 and after the intervention was 0.06, which means that lower back pain in the effleurage massage group decreased by 4.4. So based on the comparison of the average pain scale values, effleurage massage is more effective in reducing back pain compared to prenatal yoga.

4. Conclusion

Back pain of pregnant women before prenatal gentle yoga was done, 9 respondents (56.25%) experienced moderate pain and after 2x prenatal gentle yoga intervention, 11 pregnant women (68.75%) experienced no pain. Back pain of pregnant women before effleurage massage was done, 12 pregnant women (75%) experienced moderate pain and after 2x effleurage massage, 15 pregnant women (93.75%) experienced no pain. Effleurage massage is more effective than prenatal gentle yoga. The analysis showed that the average value of lower back pain of pregnant women before and after the intervention, the average value of the prenatal gentle yoga group before the intervention was 4.3 and after the intervention was 0.31, which means that lower back pain in the prenatal gentle yoga group decreased by 3.9 and the average value of the effleurage massage group before the intervention was 4.5 and after the intervention was 0.06, which means that lower back pain in the effleurage massage group decreased by 4.4. So based on a comparison of the average pain scale values, effleurage massage is more effective in reducing back pain compared to prenatal yoga.

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