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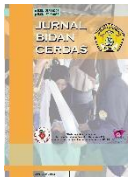

Effect of Prenatal Yoga on Lower Back Pain in Third Trimester Pregnant Women

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ABSTRACT

Background: Third trimester pregnancy is often accompanied by complaints of lower back pain due to hormonal changes and body mechanics. This pain is experienced by 60–80% of pregnant women in Indonesia. Non-pharmacological treatments such as prenatal yoga are considered effective in reducing pain without risk to the fetus. This study was conducted to assess the impact of prenatal yoga on lower back pain in pregnant women during their third trimester. **Method:** A quasi-experimental approach was implemented, utilizing a one-group pre-test post-test design with 28 third-trimester pregnant women at TPMB W Banjarmasin City between June and August 2024, selected through purposive sampling. The prenatal yoga sessions lasted 45 minutes per session over a four-week period, led by a certified midwife. Pain levels were evaluated using the Numeric Rating Scale (NRS) and analyzed through the Wilcoxon Signed Rank Test. **Results:** Before the intervention, the majority of respondents experienced moderate pain (46.4%) with an average pain scale of 2.32 (SD 0.66). After the intervention, most experienced mild pain (78.6%) with the average pain scale decreasing to 1.21 (SD 0.41). The Wilcoxon test results indicated a statistically significant change p = 0.001 (α = <0.05), between the pre- and post-prenatal yoga conditions. **Conclusion**: Prenatal yoga has been shown to effectively alleviate the pain of lower back suffered by pregnant women during their third trimester. To strengthen these findings, further studies utilizing a randomized controlled trial approach with a larger sample size are recommended.

INTRODUCTION

The third trimester marks the final stage of pregnancy, spanning from 29 to 40 weeks. During this time, the fetus undergoes significant growth, and the body prepares for childbirth (Ridhatullah & Afiah, 2023). In the third trimester of pregnancy, a lot of pregnant women usually undergo complaints or discomfort such as swelling, insomnia, back pain, and frequent urination (Widayati, Misnawati, Kristiningrum, & Nilawati, 2024).

Low back pain is a usual discomfort faced by pregnant women during their third trimester (Mayunita & Febriana, 2024).A study involving 869 pregnant women in the United States, England, Norway, and Sweden showed that the prevalence of back pain

among pregnant women ranged from 70% to 86% (Indah Dewi Ridawati, Jhon Feri, 2024). In Indonesia, between 60% and 80% of the 180 pregnant women studied experienced back pain (Girsang, 2022). The exact cause of back pain during pregnancy is still not fully understood. However, this condition is often associated with various natural factors related to hormonal changes, blood circulation, and body mechanics that occur during pregnancy (Simanjuntak, 2024).

The use of medications to manage lower back pain in pregnant women is generally discouraged as a result of potential risks to the fetus. As a result, safe and effective non-drug alternatives are essential, with prenatal yoga being one such option (Putri, Sopiah, & Ridwan, 2023).Research indicates promising outcomes regarding yoga's ability to alleviate low back pain during pregnancy. For instance, a pre-experimental study revealed that prenatal yoga can lessen both the intensity and occurrence of lower back pain suffered by pregnant females of trimester three (Budi Rahayu, 2023). Additionally, another study reported significant improvements in lower back comfort and functional ability among pregnant women who regularly participated in prenatal yoga classes compared to those who did not. These findings highlight the potential benefits of antenatal yoga in easing the pain and enhancing the quality of life during pregnancy (Widayati et al., 2024).

Derived from a preliminary study implemented by researchers in June 2024 at TPMB W in Banjarmasin City, data revealed that there were 35 pregnant women in their third trimester experiencing various discomforts. Among them, 2 individuals reported lower abdominal pain, 3 had trouble sleeping, 2 experienced leg cramps, and 28 suffered from lower back pain. In addition, the survey results also obtained the results of discussions with midwives that were not optimal in implementing Prenatal Yoga as an option for pregnant women who want to overcome discomfort during pregnancy. Building on this foundation, the study seeks to examine the impact of antenatal yoga on alleviating lower back pain among pregnant women in their trimester three.

METHODS

This study was conducted at TPMB W, Banjarmasin City in June - August 2024. The research design used a Quasy Experimental Design (Pseudo Experiment) with a one-group method (one group pre-test post-test) to measure the impact of antenatal yoga on alleviating lower back pain in pregnant women in the third trimester with no control group. The study focused on a population of 35 pregnant women in their third trimester who had undergone examinations at TPMB W in Banjarmasin City. The study utilized purposive sampling with a total of 28 participants, selected based on specific inclusion and exclusion criteria. The inclusion criteria specified women who were in their third trimester of pregnancy (28-36 weeks of gestation) who experienced lower back pain and were willing to engage in prenatal yoga during the study period. Exclusion criteria encompassed pregnant women in the third trimester who had complications, spinal abnormalities, twin pregnancies, or declined to participate as respondents.

In this study, the variables studied include independent and dependent variables. Prenatal yoga serves as the independent variable, while lower back pain is the dependent variable. The yoga sessions were conducted by a midwife certified as a prenatal yoga facilitator for health professionals, holding qualifications from the Indonesian Ministry of Health under certification SKP NO 7943/P/SKP-IBI/IX/2022.The intervention procedure carried out was initiated by conducting informed consent to respondents according to the criteria, checking the lower back pain scale using a pain

scale observation sheet, the duration of prenatal yoga was carried out 4 times (for 4 weeks) with a duration of each meeting session of 45 minutes using a prenatal yoga movement guide compiled by (Yesie Aprillia, 2021). After prenatal yoga was completed, the researcher rechecked back pain using a pain scale observation sheet.

This study employed an observation sheet that utilized the Numeric Rating Scale (NRS) as a tool for measuring pain levels. Validity and reliability tests were not conducted, as the instrument had already been validated and proven reliable in prior studies. The data analysis utilized univariate and bivariate methods, applying the Wilcoxon Signed Rank Test. Results were displayed using tables and descriptive explanations. Ethical clearance was provided by the Ethics Commission of Sari Mulia University, under approval number No.214/KEP-UNISM/VI/2024, and all participants gave written consent.

RESULT

1. The findings of this study are outlined below:
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   Univariate analysis aims to evaluate research variables according to predetermined categories. The data processing process is carried out manually and the results are recorded in a table to understand the distribution of each variable, both before and after treatment is given.

Table 1. Characteristics of Respondents at TPMB W, Banjarmasin City

Characteristics	n	%
Age		
< 20 Years	12	42.9
20-35 Years	16	57.1
Education		
Junior High School	6	21.4
High School	13	46.4
College	9	32.1
Work		
Housewife	13	46.4
Private	5	17.9
Civil Servant	5	17.9
Self-employed	5	17.9

Based on Table 1, it is found that the characteristics of pregnant women based on age are mostly 20-35 years old, namely 16 people, based on education, most are high school graduates, namely 13 people and based on occupation, most are housewives, namely 13 people.

Table 2. Explanation of lower back pain experienced by pregnant women in the third trimester before participating in prenatal yoga

Pain Scale	n	%	Mean	SD	Min	Max
1-3 (Mild Pain)	3	10.7				
4 - 6 (Moderate Pain)	13	46.4	2.32	0.66	1.00	3.00
7 - 10 (Severe Pain)	12	42.9				

Based on table 2, the level of lower back pain in pregnant women in the third trimester before participating in prenatal yoga was mostly moderate pain at 13 people.

Table 3. Overview of the pain faced by third-trimester pregnant women following participation in Prenatal Yoga.

Pain Scale	n	%	Mean	SD	Min	Max
1-3 (Mild Pain)	22	78.6	1.21	0.41	1.00	2.00
4 - 6 (Moderate Pain)	6	21.4				

Sumber : Data Primer 2024

According to table 3, almost all pregnant women of third-trimester participating in antenatal yoga experienced mild pain, with a total of 22 individuals.

2. Bivariate Analysis

Analysis of Bivariate is conducted to examine the impact of prenatal yoga on back pain, with statistical evaluation performed using the Wilcoxon test to derive the resulting findings

Table 4. Effect of Back Pain Before and After Prenatal Yoga on Pregnant Women in the Third Trimester

Items	Mean	SD	Z-Score	P-Value
Pre Test	2.32	0.66	-4.625	0.001
Post Test	1.21	0.41		
Mean Difference	1.02			

According to Table 4, the bivariate analysis utilizing the Wilcoxon Test yielded a ρ value of 0.001 (α = <0.05), highlighting a notable variation in the severity of such pain third-trimester pregnant women experience prior and after engaging in prenatal yoga. The average pain level prior to prenatal yoga was 2.32 with a standard deviation of 0.66, whereas the average pain level after yoga decreased to 1.21 with a standard deviation of 0.41. Since the ρ value is less than 0.05, the alternative hypothesis (Ha) is accepted, and the null hypothesis (Ho) is rejected. This demonstrates a reduction in lower back pain among third-trimester pregnant women at TPMB W in Banjarmasin City following prenatal yoga.

DISCUSSION

Most respondents in the research showed moderate levels of pain intensity prior to engaging in prenatal yoga, with an average pain scale of 2.32. Pregnant women commonly experience back pain, which is often linked to physiological changes during pregnancy. One such change is the enlargement of the uterus (Mualimah, 2021) .As the uterus expands, the body tends to lean forward, pushing the spine backward into a lordotic posture. This adjustment forces the back muscles to work harder to maintain body support and balance, resulting in frequent back pain (Windi Alvita, Budiasri, & Saefira, 2024).These findings are consistent with previous research, where 76.7% of respondents reported experiencing moderate pain before practicing prenatal yoga (Anggasari, 2021)

After participating in antenatal yoga sessions, most pregnant women experienced a reduction in pain intensity to mild levels. This finding aligns with research from (Widayati et al., 2024), which showed that prenatal yoga practice consistently helped reduce lower back pain in pregnant women in their third trimester. These

findings confirm that prenatal yoga has a positive effect in significantly reducing pain levels experienced by pregnant women.

Similarly, research by showed that after participating in prenatal yoga, pregnant women experienced a significant reduction in pain levels compared to before the intervention. These results confirm that prenatal yoga is effective in helping reduce pain complaints experienced by pregnant women, particularly pain arising from physiological changes during pregnancy.

Antenatal yoga is a modified form of yoga exercise movements that are specifically designed for pregnant women. In prenatal yoga, each movement is done at a slower pace, adjusted to the pregnant woman's body capabilities. This activity involves not only the physical, but also the mind and mental, so it helps the mother to flex the joints, calm the mind, and create a more peaceful atmosphere during pregnancy. In this way, the mother's physical condition will feel better, and the mother can also build a closer bond with her baby (Yesie Aprillia, 2021).

Prenatal yoga is useful for reducing and eliminating complaints felt during pregnancy (Setyoputri & Ismiyati, 2023). If pregnant women routinely do prenatal yoga, they will find movements that can minimize complaints or discomfort that are often felt by pregnant women. In addition, yoga can improve overall health and provide therapeutic effects for those who experience illness, depression, stress, and anxiety. This physical activity is very suitable for pregnant women compared to other types of sports, because it has a low exercise intensity and minimal risk of injury (Dewi & Febriyanti, 2022)

This aligns with the findings of (Octavia & Ruliati, 2020), which demonstrate that prenatal yoga significantly alleviates lower back pain in third-trimester pregnant women. The study found that regularly practicing prenatal yoga once a week for approximately 40 to 45 minutes can significantly improve maternal comfort levels. Moreover, research by (Rustiningsih, Asih, & Solihin, 2022) highlights that prenatal yoga serves as a safe complementary and alternative therapy, effectively preventing and alleviating lower back pain in pregnant women.

The role of prenatal yoga in pain management and maternal health is very effective in reducing lower back pain during pregnancy. This is because pregnant women in the third trimester do prenatal yoga exercises for 40-45 minutes, with a frequency of once a week for four weeks (Talita Putri Idasa Richa Nur Pratama & Nur Azizah Indriastuti, 2023). This decrease in pain occurs because the body experiences more relaxed muscle stretching, so that blood circulation runs well and the body produces endorphins. Endorphins are natural hormones produced by the human body, making them one of the best pain relievers. Endorphin production can be done naturally through various activities, such as meditation and deep breathing (Mustofa, 2023).

Pregnant women who routinely and correctly do prenatal yoga can relieve or even reduce pain in the lower back. This prenatal yoga activity helps improve the posture of pregnant women and strengthens the abdominal muscles and spine, especially in the lower back area. In addition, prenatal yoga can also train stiff and tense muscles and joints, so that they become more relaxed, flexible, and strong (Y. Sari, Hajrah, & Zain, 2023).

This study's findings validate and strengthen earlier research, highlighting the beneficial impact of antenatal yoga in alleviating lower back pain among pregnant women.This practice helps reduce muscle tension and stiffness, thereby reducing pain. In addition, various movements in prenatal yoga also affect the endocrine glands; they suppress the production of stress hormones (cortisol) and increase relaxation

hormones, which in turn create a calming effect and maintain emotional stability. Overall, the available evidence suggests that prenatal yoga is a beneficial and secure method for diminishing the pain in pregnant women during their third trimester,.which can improve quality of life and comfort during pregnancy (Kalpana Patni & Gaurav Sinha, 2023).

The limitations of this study are the lack of a control group during the study, the sample in the study was still in a small category, and the difficulty in determining the schedule for implementing prenatal yoga because prenatal yoga was carried out in groups and each research subject had their own activities.

CONCLUSION

The study concludes that antenatal yoga is impactful in alleviating lower back pain experienced by third-trimester pregnant women at TPMB W, Banjarmasin City, with a substantial p-value of 0.001 < 0.005. The findings are intended to serve as a reference for health service providers. Researchers recommend that health professionals, particularly midwives in Indonesia, organize prenatal yoga sessions for pregnant women to help prevent lower back pain. In addition, further research with this theme in Indonesia should use a randomized controlled trial design and the implementation of prenatal yoga can be done 2 times every week.

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