Nurul Ilmi
Journal of Health Sciences and Midwifery
ISSN 2987-2804
Vol. 03 No. 02 Page. 57-64 ISSN 2987-2804 Prefix DOI: 10.52221/nuri

The Effect of Prenatal Yoga Exercise on The Back Pain of Pregnant Women in 3rd Trimester in The Kampung Jabi Health Centre Batam City

Nurul Hidayah[1], Desi Pramita Sari [1], Haqqelni Nur Rosyidah[2]
[1]*Department of Midwifery, Institut Kesehatan Mira Bunda*
[2]*Department of Nutrition, Institut Kesehatan Mira Bunda*

Correspondence Author: Desi Pramita Sari
Email: chypramitha24@gmail.com
Address: Jl. Seraya No. 01, Batam City, Indonesia, +6285268812200
Submitted: August 2025
Revised: September 2025
Published: 30 September 2025

ABSTRACT

Introduction: Back pain was a common disorder which occurred in pregnancy, pregnant women might have had a history of previous back pain. In order to overcome back pain could be done by yoga gymnastics which which was beneficial to forma strong posture, purifying the central nerves found in the spine. **Objective**: This reseach aimed to know the effect of Prenatal Yoga Exercise on the back pain of pregnant women in 3rd trimester In The Kampung Jabi Health Centre, Sub-District Of Nongsa, Batam City. **Method:** This research type was pre-experimental with the design of two group pretest posttest design. The populations of this research were all 3rd trimester pregnant In The Kampung Jabi Health Centre, Sub-District of Nongsa, Batam City which amounted to 51 pregnant women. The samples were 45 pregnant women which were taken by purposive sampling. The independent variable was yoga gymnastics and the dependent variable was back pain of pregnant women in 3rd trimester. The research instrument used a questionnaire. Data processing used editing, coding, scoring, tabulating with data analysis of spearman Rank. **Result**: The research result showed that's before being conducted Prenatal Yoga Exercise almost a half of pregnant women experienced back pain with scale 2 (a little more pain) as many as 44,4% with 20 respondent while after being conducted Prenatal Yoga Exercise almost a half of pregnant women experienced back pain with scale 1 (little pain) as many as 48,9% with 22 respondent. The statistical test of Spearman rank showed that's value = 0,001 < α (0,05) so H1 was accepted. **Conclusion**: There is an effect of Prenatal Yoga Exercise on the back pain of pregnant women in 3rd trimester. It was expected for pregnant women to follow if there would be yoga gymnastics, which would be useful to overcome back pain, if there are not pregnant women can do self at home.

Keywords: back pain of pregnant, prenatal yoga exercise, 3rd trimester

Introduction

Pregnancy is the meeting of an ovum and sperm inside or outside the uterus, ending with the delivery of a baby and placenta through the birth canal (Bangun, 2019). In the third trimester, there are several complaints that cause discomfort in pregnant women, one of which is back pain. Back pain during pregnancy refers to pain that occurs in the lumbosacral area. This condition typically arises in the second and third trimesters and may result in muscle tension and fatigue (Utami & Khoiriyah, 2020). Incorrect body posture forces additional stretching and fatigue on the body, particularly on the spine, which can lead to back pain in pregnant women. To address this problem, one method used is exercise, such as prenatal yoga. Prenatal yoga exercise is a type of non-pharmacological therapy that can help reduce pain (Ronalen & Vitriliana, 2020).

Back pain during pregnancy varies in prevalence, ranging from approximately 35–60%. Among all pregnant women, 47–60% report back pain occurring between the 5th and 7th months of pregnancy (Triyana, 2013). Among women who experience back pain during pregnancy, about 16% report it during the first 12 weeks, 67% at week 24, and 93% at week 36 (Wulandari & Wantini, 2021). A study of 869 pregnant women in the United States, the United Kingdom, Norway, and Sweden showed a prevalence of low back pain in pregnant women of around 70–86% (Gutke, 2017). Research by Ramachandra (2017) in India reported that the prevalence of low back pain in third-trimester pregnant women was 33.7%, affecting 261 women. In Indonesia, the prevalence is 18%. The prevalence of low back pain (LBP) increases with age (Diana & Iswara, 2019). According to Hakiki (2015), 47% of pregnant women experienced spinal pain out of 180 participants studied. Meanwhile, (Octavia & Ruliati, 2019) found that 58.1% of pregnant women complained of back pain, with mild pain (22.6%), moderate pain (29.0%), and severe pain (6.5%).

In the Riau Islands Province, an estimated 65% of all third-trimester pregnant women experience back pain, while 35% do not. Preliminary studies in Batam City health centers showed that, out of 100 pregnant women, 12 women (60%) at Sambau Health Center experienced back pain, 11 women (64.7%) at Sekupang, 14 women (66.6%) at Tiban Baru, 9 women (72.7%) at Galang, and 24 women (77.4%) at Kampung Jabi. Data from the Batam City Health Office in 2021 show that, at the Kampung Jabi Health Center in Nongsa District, 96% of pregnant women attended the K4 antenatal visit, totaling 747 women, but only 720 actually came. This indicates a significant decline in third-trimester antenatal visits. At Kampung Jabi Health Center, 50% of third-trimester pregnant women experienced back pain in 2021. If interventions to address back pain are not implemented, complaints may increase among pregnant women in this area.

Back pain during pregnancy generally occurs due to stretching of bones, especially in the lower back, as pregnancy progresses. This is often caused by shifts in the mother's center of gravity and balance (Ersila & Zuhana, 2019). The effects of back pain during pregnancy include sleep disturbances, fatigue, irritability, and discomfort in daily activities. These issues may lead to fetal distress, limit mobility, hinder childcare for mothers with older children, and affect work. If the work cannot be adjusted, mothers may need to take early maternity leave (Robson, 2014). If back pain is not properly managed, it can lead to other pregnancy problems such as fatigue that disrupts rest, poor sleep quality, anxiety, and stress, potentially

threatening maternal and fetal health. This problem may persist as recurrent or chronic injury, worsening as pregnancy progresses toward delivery (Utami & Khoiriyah, 2020).

Efforts to relief back pain include both pharmacological and non-pharmacological therapies. Prenatal yoga is a non-pharmacological therapy shown to reduce pain . Pregnancy is also an excellent opportunity to relax the body. Yoga can help anticipate and adapt to the inevitable changes that come with the arrival of new life (Yesi Aprilia, 2021). The mechanism of yoga in reducing back pain lies in its relaxation techniques, which stimulate the body to release endorphins and enkephalins—compounds that block pain. This increases blood flow to painful areas, thereby reducing discomfort. Yoga also shifts pain perception toward a more calming phase, allowing the body to gradually recover. Regular yoga movements improve blood circulation, which can eliminate pain. The recommended frequency is 2–3 sessions per week, lasting about 30 minutes each (Katarina Lit & Megalina Limoy, 2020).

Research titled The Effect of Prenatal Yoga on Back Pain in Third Trimester Pregnant Women by Siskana Dewi Rosita et al. found that before prenatal yoga, pain levels were: mild (1–3) in 10 respondents (50%), moderate (4–6) in 6 respondents (30%), and severe (7–9) in 4 respondents (20%). After yoga, mild pain was reported in 12 respondents (60%), moderate in 6 respondents (30%), and severe in 2 respondents (10%). A Spearman rank statistical test yielded a p-value of 0.000 (< 0.05), indicating a significant effect of prenatal yoga on back pain in third-trimester pregnant women. Another study titled Prenatal Yoga for Back Pain and Cramps: Third Trimester Pregnant Women's Perceptions by Kudarti and Ratna Widhayanti found that most asanas (poses) can be performed during pregnancy with some modifications. Benefits include strengthening and maintaining flexibility of the body as pregnancy progresses, especially in the back muscles needed for support. Regular practice can reduce common pregnancy symptoms (Yesi Aprilia, 2021).

Objective

Based on the above background, the researcher is interested in conducting a study entitled: "The Effect of Prenatal Yoga exercise on Back Pain in Third Trimester Pregnant Women at Kampung Jabi Health Center, Batam City.

Method

This study is a quasi-experimental research with a two-group pretest–posttest design. The study population consisted of all third-trimester pregnant women at Kampung Jabi Health Center, Nongsa District, Batam City, totaling [number of respondents] pregnant women. The sample, consisting of [number of respondents] pregnant women, was selected using purposive sampling. The independent variable was prenatal yoga, and the dependent variable was back pain in third-trimester pregnant women. The research instrument used was a questionnaire. Data processing included editing, coding, scoring, and tabulating, followed by data analysis using the Spearman Rank test.

The population in this study comprised all pregnant women in their third trimester at Kampung Jabi Health Center, Nongsa District, totaling 747 pregnant women within the last three months. The sample consisted of third-trimester pregnant women who experienced back pain and met the inclusion criteria. Sampling was conducted using a non-probability sampling technique. The inclusion criterion for this study was third-trimester pregnant women experiencing back pain. The study was conducted at Kampung Jabi Health Center, Batam City.

Result

Univariate Analysis

1. Respondents Characteristics Based on Age

Table 1. Respondents Characteristics Based on Age

No	Age	Frequency (F)	Percentage (%)
1	Age at risk (< 20 and > 35)	0	0
2	Age not at risk (20 – 35)	30	100
	Total	30	100

Table 1 shows the frequency distribution of respondents based on the age of third-trimester pregnant women at Kampung Jabi Health Center. The results show that the majority of respondents were aged 21–35 years, totaling 30 respondents (100%)

2. Respondents Characteristics Based on Education

Table 2. Respondents Characteristics Based on Education

No	Education	Frequency (F)	Percentage (%)
1	Low Education	11	33,33
2	High Education	20	66,66
	Total	30	100

Table 2 shows the frequency distribution of respondents based on the Education show almost two-thirds of the respondents had a high education level, amounting to 20 respondents (66.66%).

3. Respondents Characteristics Based on Occupation

Table 3. Respondents Characteristics Based on Occupation

No	Occupation	Frequency (F)	Percentage (%)
1	Not Working	19	63,33
2	Working	11	36,67
	Total	30	100

Table 3 shows the frequency distribution of respondents based on the Occupation show that the majority of respondents were housewives, totaling 19 respondents (63.33%).

4. Respondents Characteristics Based on Parity

Table 4. Respondents Characteristics Based on Parity

No	Occupation	Frequency (F)	Percentage (%)
1	Primipara	9	30,0
2	Multipara	14	46,67
3	Grand Multipara	7	23,33
	Total	30	100

Table 4 shows the frequency distribution of respondents based on the Occupation show that the majority of respondents were housewives, totaling 19 respondents (63.33%).

5. Implementation of Prenatal Yoga

The study involved 30 respondents divided equally into two groups: 15 respondents in the prenatal yoga group and 15 respondents in the control group (no intervention).

Table 5. Implementation of Prenatal Yoga

No	Group	Frequency (F)	Percentage (%)
1	Prenatal Yoga	15	100
2	Control	15	100
	Total	30	100

6. Observation of Back Pain in Third-Trimester Pregnant Women Before Prenatal Yoga

Table 6. Frequency Distribution of Back Pain Intensity Before Prenatal Yoga Exercise

No	Group	Pain Scale Description	Frequency (F)	Percentage (%)
1	Intervention	1 (Moderate Pain)	1	6,66
		2 (Severe Pain)	4	26,6
		3 (Unbearable Pain)	10	66,6
2	Control	1 (Moderate Pain)	3	20
		2 (Severe Pain)	0	-
		3 (Unbearable Pain)	12	80
	Total		30	100

Based on the table above, before prenatal yoga, almost three-quarters of third-trimester pregnant women experienced back pain at scale 3 (more severe pain), totaling 22 respondents (73.33%).

Bivariate Analysis

Table 7. Bivariate Analysis

No	Group	Pain Intensity	Before Prenatal Yoga		After Prenatal Yoga		P Value
			Frequency (F)	Percentage (%)	Frequency (F)	Percentage (%)	
1	Intervention	0 (Not Pain)	0	0	9	60	
		1 (Moderate Pain)	1	6,66	6	40	
		2 (Severe Pain)	4	26,67	0	0	
		3 (Unbearable Pain)	10	66,67	0	0	
2	Control	0 (Not Pain)	0				0,001
		1 (Moderate Pain)	3	20			
		2 (Severe Pain)	0		6	40	
		3 (Unbearable Pain)	12	80	9	60	

The research show after prenatal yoga, back pain decreased, with 19 respondents reporting an FPS-R score of 0 (no pain). Statistical analysis using the Spearman Rank test at a 5% significance level showed a p-value of 0.001 < α (0.05), indicating a significant effect of prenatal yoga on back pain in third-trimester pregnant women.

H_0 (no effect of prenatal yoga on back pain) was rejected, and H_1 was accepted. The conclusion is that prenatal yoga significantly reduced back pain in third-trimester pregnant women at Kampung Jabi Health Center.

Discussion

Prenatal Yoga exercise is part of a non-pharmacological therapy that can reduce pain (Bruno L, 2019). Yoga is also a practical effort to harmonize the body, mind, and soul, with benefits including improving posture, strengthening and increasing the flexibility of muscles, and purifying the central nerves located in the spine (Bangun, 2019). Prenatal yoga is a modified form of hatha yoga that is adapted to the condition of third-trimester pregnant women. Performing yoga during the third trimester can help reduce discomforts experienced during this period, one of which is back pain (Fithriyah et al., 2020). The purpose of prenatal yoga is to prepare pregnant women physically, mentally, and spiritually for childbirth. With proper preparation, the mother will be more confident and feel assured of going through labor smoothly and comfortably (Wulandari & Wantini, 2021).

According to the researcher, prenatal yoga can reduce back pain in third-trimester pregnant women. The recommended duration is 1–2 hours, and it must be performed according to standard operating procedures (SOP) to maximize the benefits and ensure comfort during pregnancy. Preparations include wearing loose clothing, practicing barefoot on a yoga mat, ensuring the stomach is neither too full nor too empty, and practicing in the morning or evening when the stomach is empty. It is performed 1–2 hours after meals, one to two times per week, while also drinking plenty of water.

The effect of yoga exercise on back pain in third-trimester pregnant women was analyzed before and after the intervention. Based on the cross-tabulation table of the study conducted at Kampung Jabi Public Health Center involving 30 respondents, it was shown that there was a decrease in back pain after yoga exercise. Before the exercise, 73.34% or 22 respondents experienced back pain with a score of 3 (moderate pain) on the FPS-R scale. After the exercise, 19 respondents reported a pain score of 0 (no pain).

Based on the above data and the Wilcoxon statistical test using SPSS version 16 at a 5% significance level, the p-value obtained was $0.001 < \alpha$ (0.05). Since $p < \alpha$, it can be concluded that there is a significant effect of prenatal yoga on reducing back pain in pregnant women. Thus, the null hypothesis (H0), which states that there is no effect of yoga exercise on back pain, is rejected, and the alternative hypothesis (H1) is accepted. In conclusion, prenatal yoga significantly reduces back pain in third-trimester pregnant women.

Prenatal yoga exercise as a modification of hatha yoga, aims to prepare pregnant women physically, mentally, and spiritually for childbirth. With adequate preparation, the mother gains more confidence and assurance to undergo a smooth and comfortable delivery. The yoga sequence begins with breathing awareness, which includes natural breathing, abdominal breathing, and full breathing. The second stage is full-awareness warm-up movements, including neck warm-up exercises. The third stage consists of the main yoga postures, such as the child pose, cat stretch, flowing cat stretch, tiger pose, standing postures, triangle pose, standing side stretch, and extended triangle pose (Ronalen & Vitriliana, 2020).

The researcher believes prenatal yoga benefits third-trimester pregnant women by reducing discomfort and back pain during pregnancy. With a duration of 1–2 hours, mothers can feel more comfortable and experience the full benefits of the practice. Yoga can be performed when the mother experiences back pain. The recommended preparations include wearing loose clothing, practicing barefoot on a yoga mat, ensuring the stomach is neither

too full nor too empty, and drinking plenty of water. The sessions should be conducted 1–2 hours after meals, once or twice a week, for three weeks.

A study by Candra Resmi (2017), using a quasi-experimental design, aimed to examine the effect of yoga on lower back pain in third-trimester pregnant women. The study was conducted in the working area of Kalikajar I Public Health Center, Wonosobo District, with 14 pregnant women as respondents. The pre-intervention mean ± SD was 4.14 ± 1.127 with p = 0.000, while the post-intervention mean ± SD was 2.71 ± 1.204 with p = 0.000 (p < 0.05). This indicates a significant difference in mean pain intensity before and after yoga. It was concluded that yoga is effective in reducing lower back pain in third-trimester pregnant women. In the control group, there was also a slight decrease in pain, although not significant, likely due to rest and reduced daily physical activity (Candra Resmi et al., 2017).

Conclusion

There is an effect of prenatal yoga exercise on the back pain of pregnant women in 3rd trimester. It was expected for pregnant women to follow if there would be yoga gymnastics, which would be useful to overcome back pain, if there are not pragnant women can do self at home.

Acknowledgement

I wanna say thank you to all respondents, Kampung Jabi's Public Heatlh and Mitra Bunda Health Institute.

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