

## Effectiveness of Pregnancy Exercise on Relieving Lower Back Pain among Pregnant Women in the Third Trimester

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### ABSTRACT

Pregnancy exercise is very beneficial to do during pregnancy, one of which is to relieve lower back pain among pregnant women in the third trimester. This study aims to determine the effectiveness of pregnancy exercise on relieving lower back pain among pregnant women in the third trimester. This was a quasi-experimental study with one group pretest-posttest design. The study samples involved 15 pregnant women in the third trimester at Private Midwife Reni M.A, S.ST within the periods 15-19 January and 22-26 January 2025. The results of the study regarding the intensity of lower back pain among pregnant women in the third trimester before treatment (Pre-test) revealed that 10 respondents (66.7%) had moderate pain, 3 respondents (20.0%) had severe pain, 2 respondents (12.3%) had mild pain, and none (0%) had very severe pain. On the other hand, after treatment (Post-test), it was found that 10 respondents (66.7%) had mild pain, 5 respondents (33.3%) had moderate pain, and none (0%) had severe and very severe pain. It can be concluded that pregnancy exercise was effective on relieving lower back pain among pregnant women in the third trimester at Private Midwife Reni M.A, S.ST of Majalengka District in 2025 with a p-value of 0.001. It is expected that pregnant women in the third trimester can be more active in participating in pregnancy exercise, while midwives can also provide a forum, especially for pregnant women class which include pregnancy exercise. Furthermore, YPIB University of Majalengka is expected to be a reference for student learning. This study is expected to be a source of knowledge, experience, and self-development for researchers.

**Keywords:** Pregnancy Exercise, Lower Back Pain, Pregnant Women in the Third Trimester

### ABSTRAK

Senam hamil bermanfaat untuk dilakukan selama kehamilan, salah satunya yaitu untuk mengurangi rasa nyeri punggung bawah pada ibu hamil Trimester III. Penelitian ini bertujuan untuk mengetahui efektifitas senam hamil terhadap penurunan nyeri punggung bawah pada ibu hamil trimester III. Jenis penelitian ini yaitu penelitian quasi eksperimen dengan desain one group pretest- posttest. Sampel dalam penelitian ini 15 orang ibu hamil trimester III Di PMB Bidan Reni M.A,S.ST, dilakukan pada tanggal 15-19 Januari dan 22-26 Januari 2025. Pengumpulan datanya menggunakan kuesioner. Hasil penelitian menunjukkan bahwa intensitas nyeri pada ibu hamil trimester III sebelum diberi perlakuan (Pretest) responden dengan intensitas nyeri sedang sebanyak 10 orang (66,7%), dengan intensitas nyeri berat sebanyak 3 orang (20,0%), dengan intensitas nyeri ringan sebanyak 2 orang (12,3%), dan dengan intensitas nyeri sangat berat tidak ditemukan (0%). Sedangkan intensitas nyeri pada ibu hamil trimester III pada saat Posttest responden dengan Intensitas nyeri ringan sebanyak 10 orang (66,7%), dengan Intensitas nyeri sedang sebanyak 5 orang (33,3%), dengan intensitas nyeri berat dan sangat berat tidak ditemukan 0 (0%). Terdapat efektifitas senam hamil terhadap penurunan nyeri punggung bawah pada ibu hamil trimester III Di PMB Bidan Reni M.A,S.ST Kabupaten Majalengka tahun 2025 dengan nilai  $p=0,001$ . Sehingga diharapkan ibu hamil trimester III dapat lebih aktif mengikuti senam hamil dan bidan dapat terus memberikan wadah khususnya kelas ibu hamil yang didalamnya terdapat senam hamil, dan untuk Universitas YPIB Majalengka dapat menjadi referensi untuk pembelajaran mahasiswa, kemudian bagi peneliti dapat menjadi tambahan pengetahuan, pengalaman, serta pengembangan diri.

**Kata kunci:** Senam Hamil, Nyeri Punggung Bawah, Ibu Hamil Trimester III

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## 1. INTRODUCTION

Pregnancy is a process that occurs as a result of fertilization and implementation of the ovum in the uterus. During pregnancy, the woman's body experiences various physiological and anatomical changes to support fetal growth and childbirth preparation (Prawirohardjo, 2016). In Indonesia, there were 7,910,000 pregnancies per month in 2015-2019. Of these, 2,820,000 were unwanted pregnancies and 1,770,000 pregnancies ended with an abortion.

Here are some data regarding pregnancy in West Java Province. In 2023, the number of pregnant women in West Java reached 907,364, wherein 866,048 of which gave birth. Furthermore, there were 21,778 pregnant women in Majalengka District in 2023 and 50 pregnant women in Waringin Village in 2024. Data derived from the Private Midwife showed that there were 53 pregnant women in the Third Trimester in December 2024 - January 2025. Pregnant women will surely experience physiological changes due to pregnancy adaptation which may cause complaints or discomforts, especially in the third trimester, such as lower back pain due to shift in the center of gravity, weight gain, and an increase in urinary frequency due to uterine pressure towards the bladder (Prawirohardjo, 2016).

Lower back pain is often felt at the third trimester of pregnancy. Lower back pain in pregnant women does not directly cause death, but if not treated properly it may cause complications and can be a sign of dangerous medical conditions such as severe preeclampsia which is often accompanied by lower back pain, headache and high blood pressure. Lower back pain can also be a sign of preterm labor since consistent lower back pain is a sign of contraction. One of the treatments for lower back pain in pregnant women is pregnancy exercise. The movements in pregnancy exercise can strengthen the abdominal muscles. A study conducted by Dheby Firdayani & Evi Rosita (2019) showed that before the intervention of pregnancy exercise, most of respondents experienced lower back pain with a scale of 4 (very severe) as many as 19 respondents (54.3%), whereas after the pregnancy exercise, most of respondents experienced lower back pain with a scale of 3 (more pain) as many as 22 respondents (62.9%).

The formulation of the study problem is "Is pregnancy exercise effective to relieve lower back pain among pregnant women in third trimester at Private Midwife Reni M.A, S.ST of Majalengka District in 2025?" This study aims to determine the effectiveness of pregnancy exercise on relieving lower back pain among pregnant women in third trimester at Private Midwife Reni M.A, S.ST of Majalengka District in 2025.

## 2. METHOD

The study population refers to a generalization scope consisting of objects or subjects that have certain quality and characteristics determined by researchers to be studied and concluded (Sugiyono, 2018). In this study the population involved pregnant women the third trimester at Private Midwife Reni M.A, S.ST in December 2024 - January 2025 as many as 53 women.

Sample refers to part of the number and characteristics possessed by the population (Sugiyono, 2018). According to Gay and Diehl (2014), simple experimental research requires the minimum number of samples of 10-20 respondents. Therefore, the number of samples involved in this study was 15 respondents. Before the sampling process was performed, the inclusion criteria were determined so that the sample characteristics did not deviate from the population desired by the researcher.

Purposive sampling technique was applied in this study, which involved patients who came for pregnancy check up at Private Midwife Reni M.A, S.ST from January 10-14 January 2025. The study was conducted on 15-19 January and 22-26 January 2025 at Private Midwife Reni M.A, S.ST.

In this The current study used a questionnaire sheet as the data collection instrument to determine the effectiveness of pregnancy exercise on relieving lower back pain among pregnant women in the third trimester. Univariate analysis in this study aims to describe the decrease in the lower back pain score before and after pregnancy exercise. Univariate analysis applied frequency distribution since

the assessment used an ordinal scale (Sugiyono, 2019).

Bivariate analysis refers to an analysis conducted to determine the correlation between the independent and dependent variables (Arikunto, 2017). Bivariate analysis in this study aims to determine the effectiveness of pregnancy exercise on relieving lower back pain among pregnant women in the third trimester at Private Midwife Reni M.A, S.ST of Majalengka District in 2025. Statistical test used in this study was paired sample t-test, wherein one of the conditions that should be met is the data should be normally distributed. In contrast, Wilcoxon test should be applied if the data were not normally distributed.

### 3. RESULTS

This study was conducted to determine the effectiveness of pregnancy exercise on relieving lower back pain among pregnant women in the third trimester at Private Midwife Reni M.A, S.ST of Majalengka District in January 2025 which involved 15 pregnant women in the third trimester as the respondents. Pregnant women in this study received treatment of pregnancy exercise and assessments or observation regarding lower back pain intensity score before and after pregnancy exercise. The results of the study are explained as follows:

#### 3.1. Univariate Analysis

- a. Description of lower back pain before pregnancy exercise at Private Midwife Reni M.A, S.ST of Majalengka District in 2025

**Table 1.** Frequency Distribution of Lower Back Pain Intensity among Pregnant Women in Trimester III at the Pre Test (Before)

No	Pain Intensity	Pre-test	
		Frequency	%
1.	No Pain	0	0
2.	Mild	2	13.3
3.	Moderate	10	66.7
4.	Severe	3	20.0
5.	Very Severe	0	0
<b>Total</b>		<b>15</b>	<b>100.0</b>

Based on table 1, it can be observed the intensity of pain among pregnant woman in the third trimester before treatment (pre-test). Most of the respondents had moderate pain intensity as many as 10 people (66.7%), 3 respondents (20.0%) had severe pain intensity, 2 respondents (13.3%) had mild pain intensity and none (0%) had very severe pain intensity.

- b. Description of lower back pain after pregnancy exercise at Private Midwife Reni M.A, S.ST of Majalengka District in 2025

**Table 2.** Frequency Distribution of Lower Back Pain Intensity among Pregnant Women in Trimester III at the Post Test (After)

No	Pain Intensity	Post-test	
		Frequency	%
1.	No Pain	0	0
2.	Mild	10	66.7
3.	Moderate	5	33.3
4.	Severe	0	0

5.	Very Severe	0	0
<b>Total</b>		<b>15</b>	<b>100.0</b>

Based on table 2, it can be observed the intensity of pain among pregnant woman in the third trimester after treatment (Post-test). It was found that 10 respondents (66.7%) had mild pain, 5 respondents (33.3%) had moderate pain, and none (0%) had severe and very severe pain.

**Table 3.** Mean Intensity of Lower Back Pain among Pregnant Women in Trimester III at the Pre-Test and the Post-Test

<b>Lower Back Pain Intensity</b>	<b>N</b>	<b>Mean</b>	<b>Min</b>	<b>Max</b>
Pre-test	15	5.27	2	9
Post-test	15	3.47	1	6

Based on table 3, it can be observed that the intensity of pain among pregnant woman in the third trimester before treatment (pre-test) showed a mean of 5.27, with the lowest scale of 2 (mild pain) and the highest scale of 9 (severe pain). On the other hand, the intensity of pain among pregnant woman in the third trimester after treatment (post-test) showed a mean of 3.47, with the lowest scale of 1 (mild pain) and the highest scale of 6 (moderate pain).

### 3.2. Bivariate Analysis

**Table 4** Normality Test of Lower Back Pain among Pregnant Women in Trimester III at the Pre-Test and the Post-Test

<b>Assessment</b>	<b>Group</b>	<b>Kolmogorov-Smirnov<sup>a</sup></b>	<b>Shapiro- Wilk</b>
Lower back pain intensity	Pre-Test	.000	.012
	Post-Test	.004	.012

Based on Table 4, the normality values in Kormogrov-Smirnova and Shapiro-Wilk among respondents before treatment (pre-test) were 0.000 & 0.012, and the normality values after treatment (post-test) were 0.004 & 0.012 (sign value < alpha 0.05) which meant that the data were not normally distributed. Thus, the further test applied was the Wilcoxon test.

**Table 5** Effectiveness of Pregnancy Exercise on Relieving Lower Back Pain among Pregnant Women in Trimester III at Private Midwife Reni M.A, S.ST in 2025

<b>Group</b>	<b>Lower Back Pain Intensity</b>		<b>Mean</b>	<b>SD</b>	<b>P value</b>
	<b>Category</b>	<b>f</b>			
Pre-Test	Mild	2	5.27	1.8	<b>0.001</b>
	Moderate	10		31	
	Severe	3			
	Very Severe	0			
Post-Test	Mild	10	3.47	1.7	
	Moderate	5		27	
	Severe	0			
	Very Severe	0			

Based on Table 5, it was revealed that the intensity of lower back pain among pregnant women in the third trimester before treatment (pre-test) had a mean scale of 5.27 with the standard deviation of 1.831, while the mean scale after treatment was 3.47 with a standard deviation of 1.727. Statistical test obtained a p-value of 0.001 ( $p < 0.05$ ), which indicated that there was a significant difference in the mean scales between the pre-test and the post-test. Based on the finding, it can be concluded that pregnancy exercise was effective on relieving lower back pain among pregnant women in the third trimester.

## **4. DISCUSSION**

### **4.1. Description of lower back pain before pregnancy exercise at Private Midwife Reni M.A, S.ST of Majalengka District in 2025**

The study finding showed that most of respondents or 10 pregnant women in the third trimester (66.7%) had moderate pain intensity with a mean of 5.27. Such finding is in line with a study conducted by (Febrianti, 2021) which found that before pregnancy exercise, most respondents or 20 women (66.7%) experienced lower back pain with moderate pain intensity. Lower back pain during pregnancy refers to pain that arises during pregnancy without a history of previous back pain, and is closely related to changes in body structure due to fetal growth, uterine dilation, and increased relaxin hormones that cause loosening in the ligament and pelvic joints. This study found that the highest prevalence of lower back pain occurred in the third trimester, with an incidence of more than 50% of pregnant women (Bishop 2023). Lower back pain among pregnant women is not life threatening but may cause negative impacts that can interfere with daily physical activity, such as standing after sitting, getting out of bed, sitting and standing positions in long duration, even lifting and moving objects which involve the movement of the back. In addition, it can also lead to stress or anxious feeling, and further the risk of difficult and prolonged labor. Pain can make pregnant women tense and difficult to relax when facing labor, which may increase the need for medical interventions such as induction or even caesarean section (Amalia et al., 2020). Scientifically and physiologically, pregnancy exercise was proven to be effective in relieving lower back pain among pregnant women in third trimester. Structured, safe and routine (2-3x/ week) exercise is highly recommended, especially starting from the gestational age 28 weeks and over to prepare for labor and maintain the comfort of pregnant women (Suarnti, 2024). Efforts that can be made to relieve lower back pain among pregnant women in third trimester, both non-pharmacologically (natural) and medical support, have been proven effective according to the theory and obstetric practices. Such efforts may involve providing information on the danger signs of pregnancy and information regarding the importance of physical activity during pregnancy such as pregnancy exercise along with recommendations from healthcare workers.

### **4.2. Description of lower back pain after pregnancy exercise at Private Midwife Reni M.A, S.ST of Majalengka District in 2025**

The study finding showed that more than half of respondents or 10 pregnant women in the third trimester (66.7%) had mild pain intensity with a mean of 3.47. The decrease in the intensity of the back pain was due to pregnant women performed pregnancy exercise according to SOP or instruction. The study finding is in line with a study conducted by (Utari Ariyanti, 2023) among pregnant women in the third trimester which found that after pregnancy exercise, 8 respondents (66.7%) had a mild pain intensity. Pregnancy exercise is very necessary to do in pregnant women, especially in the third trimester. Pregnancy exercise was proven to be safe and effective to relieve physical discomfort such as lower back pain, constipation, and sleep disorders (Acog, 2020). Pregnant exercise performed in the third trimester has many benefits, not only to relieve lower back pain but also to encourage women's physical and mental health, facilitate a smooth delivery, and improve the quality of life of pregnant women as a whole before birth (Acog & WHO, 2020). Efforts that can be made by midwives are to provide information to pregnant women mothers about proper sitting position, appropriate sleep so as not to burden the back, guide pregnant women to perform pregnancy exercise or teach mild and safe movements to help strengthen the back and abdominal muscles, and inform the women to consult with a doctor or midwife before starting any exercise program.

#### **4.3. Effectiveness of pregnancy exercise on relieving lower back pain among pregnant women in the third trimester at Private Midwife Reni M.A, S.ST in 2025**

The study finding showed that pregnancy exercise was effective to relieve lower back pain among pregnant women in the third trimester at Private Midwife Reni M.A, S.ST in 2025 with a p value of 0.001. It was also revealed that there was a change in the mean intensity of lower back pain among pregnant women in the third trimester before and after pregnancy exercise by 1.8. It indicated a decrease of 1.8 point after the intervention of pregnancy exercise was performed. Such finding is in line with a study conducted by (Puspitasari, 2013) on the relationship between pregnancy exercise and lower back pain among pregnant women at Kendangsari Hospital in Surabaya with a p value of 0.001 which meant that  $H_0$  was rejected and there was a significant relationship between pregnancy exercise and lower back pain intensity. The more regular pregnancy exercise, the better the lower back pain felt by pregnant women. Pregnancy exercise was proven to be effective in relieving lower back pain among pregnant women in the third trimester. It has been proven through physiological theories regarding the body's anatomy during pregnancy, and is supported by many scientific studies. Pregnancy exercise can strengthen the supporting muscles such as abdominal, back, and pelvis muscles, so as to reduce biomechanical burden on the spine (Cunningham, 2018). The effectiveness of pregnancy exercise to relieve lower back pain among pregnant women in the third trimester was proven in the current study. Therefore, effort that can be made by healthcare workers is to provide education and motivation to pregnant women to do physical exercise to relieve lower back pain and prevent complications during childbirth. In addition, pregnant women are expected to immediately consult with healthcare workers when they experience complaints or danger signs during pregnancy.

#### **5. CONCLUSION**

Based on the results of study on the effectiveness of pregnancy exercise on relieving lower back pain among pregnant women in the third trimester at Private Midwife Reni M.A, S.ST of Majalengka District, there were some conclusions:

1. Before pregnancy exercise among pregnant women at Private Midwife M.A, S.ST. Majalengka District, most of respondents (66.7%) as many as 10 women experienced lower back pain with a scale of 3 (moderate pain), there were 2 respondents with mild pain (13.3%) and 3 respondents (20.0 %) with severe pain with a mean of 5.27
2. After pregnancy exercise among pregnant women at Private Midwife M.A, S.ST. Majalengka District, more than half of respondents (66.7%) as many as 10 people had a scale of 2 (mild pain) and 5 respondents (33.3%) had moderate pain with a mean of 3.47
3. Pregnancy exercise was effective on relieving lower back pain among pregnant women in the third trimester at Private Midwife Reni M.A, S.ST Majalengka District in 2025 with a p value of 0.001.

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