

The Influence Of Prenatal Exercise On The Reduction Of Lower Back Pain In Pregnant Women In The Second And Third Trimesters In Puskesmas Banjarmasin Indah

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Abstract. Hormonal changes during pregnancy, especially increased levels of the hormone relaxin, can result in back pain because they affect the flexibility of the ligaments, which in turn increases the mobility of the joints in the pelvis. This can cause instability in the spine and pelvis and cause discomfort. One way to prevent back pain in pregnant women is to do special exercises for pregnant women. This study aims to assess the effect of pregnancy exercise on reducing lower back pain in pregnant women in the second and third trimesters who visit the Puskesmas Banjarmasin Indah. The research method used in this research is pre-experimental with a one-group pretest-posttest design. The research population consisted of 30 pregnant women who were in the second and third trimesters, and the research sample consisted of 15 respondents selected using the quota sampling method. The research results showed that before being given pregnancy exercises, the average pain scale felt by respondents was 3.93, which was included in the moderate category. However, after being given pregnancy exercises, the average pain scale dropped to 2.20, which is in the mild category. The Wilcoxon test results show that the p-value is 0.000, which is smaller than α (0.05), which shows that there is a significant difference in back pain before and after pregnant women undergo pregnancy exercise. Thus, it can be concluded that pregnancy exercise has a positive influence on reducing back pain in pregnant women in the second and third trimesters.

Key words: Pregnancy exercise, pregnant women, lower back pain

INTRODUCTION

Pregnancy is a condition where a fetus is conceived in the mother's body, which begins with the fertilization process, namely the meeting of sperm and egg cells in the fallopian tube, which is then implanted in the uterus, and will end with the birth process. Overall, the body organs of pregnant women experience changes and adapt their physical and chemical functions to support life. During pregnancy, physical and emotional changes in pregnant women can cause discomfort, especially in the second and third trimesters. Some of these feelings include difficulty breathing (dyspnea), difficulty sleeping (insomnia), gum problems (gingivitis) and increased gum growth (epulsion), frequent urination, pressure and discomfort in the perineal area, back pain, digestive problems such as constipation (constipation), swollen blood vessels (varicose veins), excessive fatigue, Braxton Hicks contractions, leg muscle spasms, swelling of the ankles that does not leave scars (non-pitting edema), as well as mood changes and increased anxiety.

In research conducted by Mualimah in 2021, the findings showed that as many as 50% of pregnant women who were survey subjects in the UK and Scandinavia experienced significant back pain. Meanwhile, Bullock-Saxton reported that around 70% of women in Australia experience back pain at various stages of pregnancy, it was even found that 45% of pregnant women experienced an increase in back pain reaching 69% in the 28th week of pregnancy.

The results of research in Indonesia show that as many as 68% of pregnant women experience lower back pain with moderate severity, while 32% of pregnant women experience lower back pain with mild severity. Based on research conducted by Fauziah and colleagues in 2021 at the Krakatau Clinic, Bandar Lampung, of the 10 pregnant women in the third trimester who were interviewed, it was found that 7 of them (70%) experienced back pain, while 3 people (30%) do not experience back pain. Lower back pain during pregnancy reaches its peak at week 24 until delivery. This back pain often gets worse and is known as "backache" or long-lasting back pain. It is known that 45% of women report experiencing backache during their pregnancy, and this figure increases to 69% by week 28, and tends to remain high after that. Therefore, complaints of back pain experienced by pregnant women should

not be ignored.

Lower back pain refers to discomfort that occurs in the lumbosacral area. Usually, the intensity of lower back pain increases as pregnancy progresses because the woman's center of gravity changes and her body posture changes due to the weight gain of the enlarging uterus. These changes occur due to increasing pressure from the uterus. Apart from that, back pain can also be triggered by excessive activity such as bending, walking long distances without rest, and lifting weights. This factor can be worse if done when the pregnant woman feels tired (Fitriani, 2021).

Back pain arises due to the growth of the uterus which affects the shift of the center of gravity towards the front and causes the standing position to become lordosis. Imperfections in body posture will cause additional stretching and fatigue in the body, especially in the back area (Putra, 2020). Wahyuni & Prabowo (2021) indicate that lower back pain experienced by pregnant women in the second and third trimesters can have a negative impact on their quality of life because it can hinder daily physical activities and result in motor disorders, insomnia and depression. Back pain can be managed with both pharmacological and non-pharmacological therapy. Although pharmacological therapy is considered more effective, it also has higher costs and potential side effects. The use of pharmacological methods also has an impact on pregnant women, fetal development and the progress of labor. One non-pharmacological approach that can reduce or eliminate pain, reduce or prevent muscle spasms, and provide comfort is through pregnancy exercises, including transverse exercises, pelvic floor exercises, and general stretching. These exercises aim to strengthen the deep transverse abdominal muscles, which have an important role in supporting spinal posture during pregnancy. Many pregnant women at the Banjarmasin Indah Community Health Center are reluctant to take part in pregnancy classes for various reasons, such as being busy at work and other reasons. Therefore, most pregnant women who come to the clinic just for their health check-up, often complain of discomfort in their back. In fact, in the pregnant women's class there is a pregnancy exercise program which has one benefit, namely that it can reduce back pain. However, there are also some pregnant women who choose to take part in pregnancy exercises in prenatal classes, and according to them, they do not experience severe back pain, so they can still carry out their daily activities comfortably.

Based on preliminary research conducted at the Banjarmasin Indah Community Health Center on December 25 2022, data was found from 50 pregnant women in the third trimester. Of this number, 25 pregnant women complained of lower back pain, 10 pregnant women experienced frequent urination, 8 pregnant women experienced swelling of the legs (odema), and 7 pregnant women experienced constipation. From the results of the study carried out, it was seen that as many as 11 pregnant women who experienced lower back pain chose to relieve it by massaging the painful area. Apart from that, 8 other pregnant women chose to use analgesics such as paracetamol to relieve back pain. Meanwhile, 6 pregnant women who experienced back pain chose not to take any action and hoped that the pain would go away by itself. None of the pregnant women took steps to do pregnancy exercises as an effort to overcome the pain they experienced. Based on this problem, researchers are interested in conducting research on the effect of pregnancy exercise on reducing lower back pain in TM II and III pregnant women.

METHODS

This type of research uses a pre-experimental method, with the design used being a one-group pretest-posttest design. Population of 30 TM II and III pregnant women, sample of 15 respondents using quota sampling technique. The analysis test uses the Wilcoxon signed rank test.

RESULTS AND DISCUSSION

1. Frequency Distribution of Respondent Characteristics

Tabel 1. Characteristics of respondents from TM II and TM III pregnant women

Variabel	Amount (n)	Persentase (%)
Age		
20-35 th	11	73,3
>35 th	4	26,7
Amount	15	100
Kehamilan		
1	4	26,7

2	4	26,7
3	7	46,7
Amount	15	100
Education		
SMP	4	26,7
SMA	9	60,0
PT	2	13,3
Amount	15	100
Work		
IRT	10	66,7
Wiraswasta	2	13,3
Swasta	1	6,7
PNS	2	13,3
Amount	15	100

Based on table 1, it shows that of the 15 respondents, the majority of respondents were aged between 20-35 years, 11 people (73.3%). The majority of pregnancies in respondent 3 (multiparous) were 7 people (46.7%). The majority had a high school education level of 9 people (60.0%). Meanwhile, based on occupation, the majority of housewives (IRT) are 10 people (66.7%).

The research results indicated that the majority of respondents were in the age range of 20 to 35 years, which amounted to 11 people (73.3%). This finding is in line with the view of the BKKBN (2022) which revealed that the optimal age for women to undergo pregnancy is in the range of 20 to 35 years. In this age range, the risk of birth and fertility is at a relatively safe and optimal level. Women under 20 or over 35 often have a higher risk of pregnancy complications, which can affect fetal growth and development.

Carvalho *et al.* (2020) also noted that age is one of the main risk factors for lower back pain during pregnancy. The younger the patient, the more likely they are to experience lower back pain during pregnancy.

The majority of pregnant women who were respondents, namely 7 people (46.7%), had experienced 3 pregnancies, which are known as multiparous pregnancies. This finding is in line with the results of research conducted by Chang *et al.* (2019), which shows that having a high number of pregnancies can increase the likelihood of experiencing lower back pain. Anatomical and physiological changes that occur during pregnancy cannot always be completely restored to the condition before pregnancy, especially in terms of changes in muscle tone that stretch during pregnancy if not supported by appropriate physical exercise. Lack of strength in the abdominal muscles to support the enlarged uterus during pregnancy can further increase the risk of lower back pain. According to Yuniarsih (2020), mothers with high parity tend to have better experience and knowledge about pregnancy compared to mothers who have no experience so that mothers with high parity are better able to overcome the discomfort of their current pregnancy. Based on education level, the majority were high school, 8 people (53.3%). The higher a person's education, the better their knowledge of the importance of maintaining health and a better understanding of the benefits of participating in pregnancy exercise (Notoatmodjo, 2018).

Individuals with higher levels of education tend to receive information more easily, which in turn can increase their level of knowledge. By having good knowledge, pregnant women tend to be more inclined to carry out activities that are beneficial to their health during pregnancy, one of which is doing pregnancy exercises. This can be done both in health facilities and at home (Yuniarsih, 2020).

Meanwhile, based on occupation, the majority of respondents, namely 10 people (66.7%), were housewives (IRT). Daily tasks carried out by housewives involve activities such as sweeping, mopping, cleaning the bathroom, washing clothes, ironing, washing dishes, cooking, gardening, and taking care of children. All of these activities often require the body to bend, rotate, sit in an incorrect position, lift and pull heavy objects. These activities can cause tension in the lower back muscles during activity, which can then cause pain in the lower back.

2. Intensity of Lower Back Pain Before Pregnancy Exercises for Pregnant Women in Trimester II and Trimester III

Table 2. Intensity of Lower Back Pain Before Pregnancy Exercises for Pregnant Women in Trimester II and Trimester III

Variabel	N	Mean	Median	Modus	SD	Min- Max
Pain Before (Pretest)	15	3,93	4,0	3	0,884	3- 5

Based on table 2, it shows that from 15 respondents before being given pregnancy exercises, the intensity of lower back pain for pregnant women in the second and third trimesters obtained a mean (average) value of 3.93, the median (middle value) was 4.00, the mode (back pain scale that often occurs) was 4 (Moderate Pain), the standard deviation is 0.884, the minimum value for the back pain scale is 3 (Mild Pain) and the maximum value for the back pain scale is 5 (Moderate Pain).

The results of the study showed that before carrying out pregnancy exercises, the intensity level of lower back pain in pregnant women in the second and third trimesters had an average value of 3.93, with a median value of 4, and the mode (the highest value). occurs frequently) of 4 (Moderate Pain category). The standard deviation is 0.884, with a minimum value on the back pain scale of 3 (Mild Pain category) and a maximum value of 5 (Moderate Pain category). These results indicate that before participating in the pregnancy exercise program, respondents experienced back pain with an intensity level that was included in the moderate category.

Many women experience lower back pain during pregnancy, which is often an uncomfortable symptom experienced during pregnancy (National Health System, 2019). Dartiwen (2019) also noted that the discomfort often felt by pregnant women in the second and third trimesters includes symptoms such as frequent urination (BAK), varicose veins, hemorrhoids, constipation, dyspnea (difficulty breathing), edema (swelling), back pain, and back pain. Lower back pain is a common form of discomfort experienced by pregnant women in the second and third trimesters.

Lower back pain tends to increase in intensity as pregnancy progresses, due to a shift in a woman's center of gravity and changes in her body posture. These changes are caused by the increasing weight of the uterus, excessive bending, walking without rest, and lifting weights (Mualimah, 2021).

Walyani (2020) states that lower back pain in pregnant women is caused by increased body weight, joint instability due to softening of the ligaments, changes in the spinal curve, and stretching of the abdominal muscles. The research results are in line with the findings of Lilis (2019) showing that before undergoing the pregnancy exercise program, respondents experienced different variations of back pain. A total of 3 people (10%) experienced severe pain, 21 people (70%) experienced moderate pain, and 6 people (20%) experienced mild pain. This indicates that 100% of pregnant women experience pain, although the severity varies. Based on the results of research that has been carried out, there is no gap between the care that has been provided and existing theory, where it is known that pregnant women in the third trimester experience back pain discomfort.

3. Intensity of Lower Back Pain After Pregnancy Exercises for Pregnant Women in Trimester II and Trimester III

Table 3. Intensity of Lower Back Pain After Pregnancy Exercises for Pregnant Women in Trimester II and Trimester III

Variabel	N	Mean	Median	Modus	SD	Min- Max
Pain after (Posttest)	15	2,20	2,00	2	0,862	0 - 3

Based on table 3, it shows that from 15 respondents after being given pregnancy exercises, the intensity of lower back pain for pregnant women in the second and third trimesters obtained a mean (average) value of 2.20, median (middle value) was 2.00, mode (scale of back pain that often occurs) is 2 (Mild pain), the standard deviation is 0.862, the minimum value of the back pain scale is 0 (No Pain) and the maximum value of the back pain scale is 3 (Mild Pain).

Based on the research results, after participating in the pregnancy exercise program, the intensity level of lower back pain in pregnant women in the second and third trimesters had an average value of 2.20. The median value (middle value) is 2, and the mode (the most frequently occurring value) is 2 (Mild Pain category). The standard deviation is 0.862, with a minimum value on the back pain scale of 0 (No Pain category) and a maximum value of 3 (Mild Pain category). These findings indicate that after participating in the pregnancy exercise program, there was a decrease in the average level of intensity of lower back pain. One way to reduce the discomfort that arises from lower back pain is to do light physical activity such as pregnancy exercises. According to Pinem and colleagues (2022), pregnancy exercise is one of the activities that is integrated in care during pregnancy. Pregnancy exercise is a form of structured exercise that has benefits, one of which is reducing back pain during the second and third trimesters of pregnancy.

As revealed in Putri's research (2017), out of a total of 34 respondents, the most common reduction in pain scale was on scale 1 (Mild Pain category), with 14 people (41.2%). A study conducted by Firanika and colleagues (2018) showed similar results after carrying out Pilates intervention, where the most dominant level of pain was mild pain, with 15 respondents (100%). Apart from that, research conducted by Aryunani & Wiliyanarti (2019) also indicated that after undergoing the Pilates exercise program, 6 people (40%) from the treatment group did not experience pain, while 7 people (46.7%) experienced mild pain. The results of this research indicate that there is no significant difference between the care practices provided and existing theory. This shows that pregnant women in the second and third trimesters, after undergoing a pregnancy exercise program, generally experience a decrease in back pain.

4. Differences in Back Pain Before and After Being Given Pregnancy Exercises to Pregnant Women in the Second Trimester and Third Trimester

Table 4. Differences in Back Pain Before and After Pregnancy Exercises for Pregnant Women in the Second and Third Trimesters

Intensity pain	Mean	Min-Max	SD	P-value	Z
Pretest	3,93	3-5	0,884	0,000	-3,508
Posttest	2,20	0-3	0,862		

Based on table 4 showing the differences before and after being given pregnancy exercises, the mean value (average back pain scale) was 3.93 (SD +0.884). The minimum value on the pain scale was 3 and the maximum value on the pain scale was 5. Meanwhile, after being given pregnancy exercises, The mean (average) value of the pain scale is 2.20 (SD +0.862), the minimum value of the pain scale is 0 and the maximum value of the pain scale is 3.

Based on this table, the results show a p value of $0.000 < \alpha 0.05$, so H_0 is rejected and H_1 is accepted, meaning that there is a significant difference in back pain before and after being given pregnancy exercises to pregnant women in the second trimester and third trimester. The Z value was -5.028, which means that it shows a decrease (reduction) in the level of pain before and after being given pregnancy exercises.

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Pregnancy exercise is a type of light exercise recommended for pregnant women as preparation for the birthing process. The aim is to improve and maintain physical balance in pregnant women, with the hope that this will facilitate the birthing process (Inding, 2019). Research conducted by Siahaan and his colleagues (2022) used a quasi-experimental research design with a pre-post test design with one test group. The population that was the subject of this research were all pregnant women in the second and third trimesters at the Panei Tongah Community Health Center, with a total of 30 people. The sample used in this research consisted of 28 people.

The data analysis used was univariate analysis and bivariate analysis using the Paired-Samples T Test. The average low back pain before treatment was 3.32 and the Std Deviation was 0.772. The average lower back pain after the procedure was given was 2.25 and the Std Deviation was 1.005. There is an effect of pregnancy exercise on reducing lower back pain in second and third trimester pregnant women at the Panei Tongah Community Health Center in 2021 with a value of $p = 0.000$ $p < 0.05$.

The results of this study are in line with research by Lilis (2019), the results of which showed that before being given pregnancy exercise, 10% of respondents experienced severe pain (3), 70% (21) moderately, and 20% (6) mildly. After being given pregnancy exercises, no one experienced severe pain, moderate pain was reduced to just 1 person (3.3%), mild pain was reduced to 19 people (63.3%), and 10 people no longer felt pain (33.3%). The average pain level obtained before pregnancy exercise was 2.90 and after pregnancy exercise was 1.70, so there was a decrease of 1.2 and this decrease was significant with a p value of 0.0001. The mother's role in participating in pregnancy exercise is very important for pregnant women. Participating in Pilates exercises regularly can maintain body health and can relieve back pain felt by pregnant women because in Pilates exercises there are movements that focus on the muscles for fitness and function during the birthing process.

Based on the results of research that has been carried out, there is no gap between the care that has been provided and existing theory, where it is known that there is an effect of providing Pilates exercises on reducing back pain in pregnant women in the third trimester.

CONCLUSION

The majority of respondents were 30-35 years old, had a high school education and worked as housewives (not working). Before being given pregnancy exercises, the average pregnant woman in the second trimester and third trimester experiences lower back pain with moderate intensity. After being given pregnancy exercises, the average pregnant woman in the second trimester and third trimester experiences lower back pain with mild intensity. There are differences in back pain in pregnant women in the second and third trimesters before and after being given pregnancy exercises. Where there is an effect of providing Pilates exercises on reducing back pain in pregnant women in the second and third trimesters.

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