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RESEARCH ARTICLE Open Access

Comparison of the Effectiveness of Pregnancy Exercises and Prenatal Yoga on Reducing Back Pain in Pregnant Women at Majenang II Health Center Cilacap Regency

Lisa Yulianti[1], Sri Gustini[2], Qanita Wulandara[3]

[123]Tasikmalaya Applied Midwifery Undergraduate Study Program Affiliation, Tasikmalaya Health Polytechnic

[1*]Corresponding author: qanitawulandara@gmail.com

Back pain is one of the most common discomforts that occurs in pregnant women during pregnancy which begins to be felt when pregnancy enters the second trimester and will increase as the pregnancy progresses. To relieve low back pain that is felt by pregnant women is exercise. Pregnancy exercises and Prenatal Yoga are a form of exercise that can be done by pregnant women. This study aims to analyze the comparison of the effectiveness between Pregnancy Exercises and Prenatal Yoga on the Reduction of Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency. This study uses the research design used in this study is a Quasy Experiment research design using the equivalent time sample design model, which is a research design consisting of two groups of samples that are equivalent in time. Sample A was given the X1 treatment and the B sample was given the X2 treatment. The sampling technique used was purposive sampling so that a sample of 50 respondents was obtained. The results of this study showed that there was an effect of pregnancy exercises and prenatal yoga on reducing back pain in pregnant women at the Majenang II Health Center, Cilacap Regency with a p value of 0.000 smaller than alpha 0.05 each.

Keywords: Back Pain, Pregnancy Exercises, Prenatal Yoga

BACKGROUND

Pregnancy is a nine-month or more process in which a woman carries an embryo and a developing fetus in her womb. A normal pregnancy would last within 40 weeks or 10 months or 9 months according to the international calendar, if calculated from the time of fertilization to the birth of the baby. Pregnancy consists of 3 trimesters, where the first trimester lasts in 12 weeks, the second trimester is 15 weeks (13th to 27th week), and the third trimester is 13 weeks

(28th to 40th week). Pregnant women usually develop normally, but sometimes the development is not as expected, it is difficult to predict whether it will have problems or be fine during pregnancy (Fijri B 2021).

The Ministry of Health (Kemenkes) has created a program for pregnant women to conduct examinations or access services Antenatal Care (ANC) aims to monitor the health of the mother and fetus periodically and detect any problems or complications during pregnancy. Visit antenatal care in pregnant women it is determined 6 times, during pregnancy with the provision that 2 times in the first trimester or K1 (UK 0-12 weeks), 1 time in the second trimester (UK >12 weeks-28 weeks) and 3 times in the third trimester or K4 (UK>28 weeks-birth) (Wahyuningsih 2018).

In-service medical examination antenatal care Including anamnesis, physical examination, diagnosis, obstetric examination and supporting diagnostic examination. Quality antenatal services can detect risks in pregnancy, namely getting access to quality pregnancy care, getting opportunities for early detection of complications that may arise so that maternal mortality can be avoided. Quality of service antenatal care Administered during pregnancy periodically in accordance with predetermined service guidelines to maintain and improve maternal health during pregnancy according to needs so that they can complete pregnancy properly and give birth to healthy babies (Muflidah 2019).

During the pregnancy period, pregnant women experience physical and mental changes, especially in the second and third trimester, including difficulty sleeping, pressure on the perineum, and discomfort, which can lead to symptoms such as back pain. Back pain in pregnant women occurs in the second and third trimesters of pregnancy and can trigger muscle tension and fatigue. Back pain can also be caused by the aging process during pregnancy, abdominal growth, and back lordosis These changes will be seen at the end of pregnancy related to increased progesterone and relaxin (softening of connective tissue) as well as uterine position and weight gain (Potter & Perry 2017).

Back pain is a complex pain complaint that occurs most often in the world and Indonesia. Low back pain is a common complaint experienced by about 50-80% of pregnant women, especially in the second and third trimester. Causes include hormonal changes, weight gain, changes in posture, and stretching of the pelvic ligament. This condition can interfere with daily activities, sleep quality, and well-being of pregnant women, so it requires safe and effective interventions. According to WHO data, the prevalence of low back pain during pregnancy is reported to be 70%. The prevalence of low back pain in pregnant women at more than 21 weeks gestation was 36.5% with mild pain, 46% for moderate pain, and 17.5% for severe pain (Angita and Fitriahadi 2024).

Pain intensity (pain scale) is a description of how severe the pain is felt by the person, the measurement of pain intensity is very subjective and individual and it is possible that pain of the same intensity is felt very differently by two different people. Pain measurement can be done by various methods including descriptive pain intensity scale, numerical pain scale, visual analog pain intensity scale, pain scale according to bourbanais, and facial pain scale (Smeltzer, SC & Barre 2018). In this study, the researcher used the pain scale according to the bourbanais whose assessment can be done quickly and accurately, besides that the bourbanais pain scale is a standard questionnaire and there is no need to test the validity and reliability.

There are various ways to reduce back pain in pregnant women both pharmacologically and non-pharmacally, pharmacological treatment is often limited because the use of drugs needs to be minimized to avoid risks to the fetus, therefore non-pharmacological therapy is the safest

therapy to do, basically there are many ways to treat low back pain in pregnant women with non-pharmacological therapy either with warm compresses, relaxation, massage, exercise, etc., but non-pharmacological therapy that is safe and effective to overcome back pain, especially low back pain in pregnant women, can be done by doing prenatal yoga and pregnancy exercises (Lebang E 2017).

Prenatal yoga is a practice specifically designed for pregnant women, which involves stretching, breathing, and relaxation movements. Prenatal yoga helps improve posture, improve muscle flexibility, and reduce tension in the lower back. Prenatal yoga is broadly an effort to harmonize the spiritual and physical elements of a human being to achieve an ideal condition. In doing prenatal yoga, the human body is closely connected to the pattern of movement, breathing, and mind which allows balance, relaxation, and harmony in life (Finisia et al. 2023).

Scientifically, prenatal yoga has been proven to be able to repair, strengthen, and care for bone and muscle structures. From a physiological point of view, various yoga breathing movements and exercises have a positive effect on blood circulation, facilitate the absorption of nutrients, and cleanse toxins from various parts of the body. Meanwhile, from a psychological perspective, yoga improves concentration, focus, and improves soul balance, as well as a sense of satisfaction. Prenatal yoga is a type of modification of hatha yoga that is adjusted to the condition of pregnant women. The purpose of prenatal yoga is to reduce maternal complaints during pregnancy and prepare pregnant women physically, mentally, and spiritually for the delivery process. With careful preparation, the mother will be more confident and gain confidence to carry out childbirth smoothly and comfortably (Pratignyo, 2018).

In addition to prenatal yoga, the treatment of back pain complaints experienced by pregnant women is to do light exercise such as pregnancy exercises. Pregnancy exercises is a form of exercise to strengthen and maintain the elasticity of the muscles of the abdominal wall, ligaments, and pelvic floor muscles related to the labor process. This exercise serves to strengthen the stability of the body's core which will help maintain the health of the spine. Having good body strength can increase the risk of spinal trauma or falls during pregnancy (Fitriani 2023).

Previous research has shown that prenatal yoga can help reduce stress, improve sleep quality, and relieve back pain, prenatal yoga is effective in lowering back pain in pregnant women in the third trimester.(Wariyah 2023). In addition, based on research on the effect of pregnancy exercises on the reduction of back pain in the second and third trimester of pregnancy at the Kasihan I Health Center, Bantul, Special Region of Yogyakarta, it is known that based on data analysis using a non-parametric statistical test Wilcoxon sign rank with a result of 0.000, it can be concluded that pregnancy exercises has an effect on reducing back pain in pregnant women (Bihalia 2024).

Pregnancy exercises is one of the light exercise programs recommended for pregnant women. In the government program, namely the pregnant women's class, there are also pregnancy exercises activities in it. Pregnancy exercises is a program launched for maternal health during pregnancy because of the many benefits produced, one of which is to reduce back pain, especially low back pain in pregnant women (Finisia et al. 2023).

The results of a preliminary study conducted by the author on January 21, 2025 are known that the target of pregnant women in the Majenang II Health Center Working Area is 1087 people with the number of pregnant women in February 2025 as many as 330 people with details of the 1st trimester as many as 78 people, 150 people in the 2nd trimester and 102 people in the 3rd trimester as many as 102 people. In the region, there has also been a program for pregnant

women classes and health checks for pregnant women, but for the prenatal yoga program, it has never been carried out. Based on interviews with 10 pregnant women in the 3rd trimester, on average they complained of back pain on a scale of 5, 5 pregnant women were known to complain of pain on a scale of 7 from 0-10, 3 pregnant women complained of pain on a scale of 6 from 0-10, and 2 pregnant women complained of pain on a scale of 5 from 0-10.

Although prenatal yoga and pregnancy exercises have been known to have benefits for pregnant women, specific studies evaluating their effectiveness in reducing the intensity of back pain in Indonesia are still limited. Evidence-based research is needed to find out how significant its impact is on back pain during pregnancy. This study is expected to provide guidance for pregnant women and health workers to use prenatal yoga and pregnancy exercises as non-pharmacological methods in reducing back pain. The results of the study could support the development of specific fitness programs for pregnant women in health services.

Previous studies have explored either pregnancy exercises or prenatal yoga as separate interventions, but direct comparisons under the same study conditions remain limited in Indonesia. This study addresses that gap by evaluating both interventions in the same population and setting, providing evidence for antenatal program development. Uniquely, this research was conducted in a location where prenatal yoga had never been implemented, offering first-time local evidence.

Based on this background, the researcher is interested in conducting a study on the Comparison of the Effectiveness Between Pregnancy Exercises and Prenatal Yoga on the Reduction of Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency.

METHOD

This research is a type of quantitative research. The research design used in this study is a research design Quasy Experiment by using the model Equivalent Time Sample Design, i.e. a research design consisting of two groups of samples that are equivalent in time. This quantitative quasi-experimental study employed the Equivalent Time Sample Design with two intervention groups: pregnancy exercises (X1) and prenatal yoga (X2).

Population and Sampling: Fifty third-trimester pregnant women (28–36 weeks) were recruited via purposive sampling from Majenang II Health Center.

Inclusion criteria: Healthy singleton pregnancy, no obstetric complications, willingness to participate and complete sessions.

Exclusion criteria: High-risk pregnancy, musculoskeletal disorders, or missing ≥2 intervention sessions.

Intervention Protocols: Pregnancy Exercise: 3 sessions/week for 2 weeks, 30–45 minutes/session, led by a certified midwife. Included warm-up, stretching, pelvic tilts, squats, breathing exercises, and cool-down.

Prenatal Yoga: 3 sessions/week for 2 weeks, 45–60 minutes/session, led by a certified prenatal yoga instructor. Included breathing (pranayama), cat-cow stretches, modified warrior poses, pelvic floor exercises, relaxation, and meditation.

Bias Control: All sessions held in the same room, at similar times of day, with identical measurement tools and the same assessor.

Measurement: Pain assessed using the Bourbanis pain scale pre- and post-intervention.

Ethics: Approved by the Health Research Ethics Committee, Poltekkes Kemenkes Tasikmalaya (DP.04.03/F.XXVI.20/KEPK/149/2025). Written informed consent was obtained from all participants.

Sample A was given the X1 treatment and the B sample was given the X2 treatment. Then both were observed and carried out repeatedly. This form is a recurring form of Two Group Experiment namely prenatal yoga and pregnancy exercises (Judging 2022). The experiment was carried out on two different groups. Data collection was carried out using observation sheets, by recording the rate of reduction in back pain, after interventions to reduce back pain by doing prenatal yoga and pregnancy exercises

RESULT

1. Univariate Analysis

Table 1. Distribution of Back Pain Frequency in Pregnant Women at Majenang II Health Center, Cilacap Regency, before and after being given prenatal yoga and pregnancy exercises at Majenang II Health Center, Cilacap Regency.

Pain Scale	***Pre Pregnancy Exercises***		***Post Pregnancy Exercises***	
	F	*%*	***F***	*%*
No pain	*0*	*0.0*	*0*	*0.0*
Mild pain	*4*	*16,0*	*21*	*84,0*
Moderate pain	*18*	*72,0*	*4*	*16,0*
Controlled heavy pain	*3*	*12,0*	*0*	*0.0*
Uncontrolled severe pain	*0*	*0.0*	*0*	*0.0*
Sum	***25***	***100.0***	***25***	***100.0***
Pain Scale	***Prenatal Yoga***		***Post Prenatal Yoga***	
	F	*%*	***F***	*%*
No pain	*0*	*0.0*	*0*	*0.0*
Mild pain	*9*	*36,0*	*23*	*92,0*
Moderate pain	*14*	*56,0*	*2*	*8,0*
Controlled heavy pain	*2*	*8,0*	*0*	*0.0*
Uncontrolled severe pain	*0*	*0.0*	*0*	*0.0*
Sum	***25***	***100.0***	***25***	***100.0***

Based on the results of a study on back pain in pregnant women at the Majenang II Health Center, Cilacap Regency before being given prenatal yoga and pregnancy exercises, it can be seen that in the prenatal yoga group of 25 pregnant women, it is known that as many as 14 respondents (56.0%) experienced moderate pain, 9 respondents (36.0%) experienced mild pain, 2 respondents (8.0) experienced severe controlled pain. In the pregnant exercises group, as many as 18 respondents (72.0%) experienced moderate pain, 4 respondents (16.0%) experienced mild pain and 3 respondents (12.0%) experienced severe pain.

The results of the study on back pain in pregnant women at the Majenang II Health Center, Cilacap Regency after being given prenatal yoga and pregnancy exercises, it can be

seen that most of the respondents, namely 23 respondents (92.0%) experienced mild pain and 2 respondents (8.0%) experienced moderate pain. In the pregnant exercises group, as many as 21 respondents (84.0%) experienced mild pain, and 4 respondents (16.0%) experienced moderate pain.

2. Bivariate Analysis

a. Normality Test

Table 2. Normality Test of Pregnancy Exercises Variables with Shapiro Wilk Test

Variable	*N*	*Statistics*	*Df*	*Sig*
Pre Pregnancy Exercises	*25*	*0,777*	*25*	*0,000*
Post Pregnancy Exercises		*0,863*	*25*	*0,003*

From the results of the output test of normality, it is known that the sig values for pre and post pregnancy exercises are 0.000 and 0.003, the rule is that the number is smaller than alpha 0.05, it can be concluded that the data is not distributed normally. Based on the results of the normality test because the data was not distributed normally, the researcher conducted a wilcoxon test. After the normality test was carried out a statistical test using the Wilcoxon test to find out the difference in the scale of back pain in pregnant women, a bivariate analysis was carried out using the Wilcoxon test, for more details can be seen in table 3 as follows:

Table 3. Bivariate Analysis of the Effect of Pregnancy Exercises on Reducing Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency

Variable	*N*	*Negative Ranks*	*Positive Ranks*	*Mean Rank*	*Ties*	*Sum Of Rank*	*P Value*
Pre Test Pregnancy Exercises	*25*	*0*	*25*	*13.00*	*.00*	*325.00*	*0.000*
Post Test Pregnancy Exercises							
Total				**25**			

Based on Table 3, the results of the Wilcoxon Signed Ranks Test show that there is a significant influence of pregnancy exercises on the reduction of back pain in pregnant women. The negative rank value is known to be 0, this value indicates that there is a decrease (reduction) in back pain in pregnant women from pre test to post test, while the positive rank results have 25 positive data (N) which means that 25 pregnant women experience a decrease in back pain before and after doing pregnancy exercises. The mean rank or average of the decline is 13.00, while the sum of the ranking is 325.00, there is no tie value (0) in the analysis results showing that there is no equal value between the pre test and the post test.

Based on the hypothesis test using the Wilcoxon test, a p value of < 0.000 was obtained, so that ($p < 0.05$) which means that there is an effect of pregnancy exercises on the reduction of back pain in pregnant women at the Majenang II Health Center, Cilacap Regency.

b. Prenatal Yoga

Table 4. Yoga Prenatal Variable Normality Test With Shapiro Wilk Test

Variable	*N*	*Statistics*	*Df*	*Sig*
Prenatal Yoga	*25*	*0,761*	*25*	*0,000*
Post Prenatal Yoga		*0,780*	*25*	*0,000*

From the results of the output test of normality , it is known that the sig value for pre and post prenatal yoga is 0.000, the rule is that the number is smaller than alpha 0.05, it can be concluded that the data is not distributed normally. Based on the results of the normality test because the data was not distributed normally, the researcher conducted the Wilcoxon test.

After the normality test was carried out a statistical test using the Wilcoxon test to determine the effect of pregnancy exercises on the reduction of back pain in pregnant women at the Majenang II Health Center in Cilacap Regency, bivariate analysis was carried out using the Wilcoxon test, for more details can be seen in table 5 as follows:

Table 5 Bivariate Analysis of the Effect of Prenatal Yoga on Reducing Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency

Variable	*N*	*Negative Ranks*	*Positive Ranks*	*Mean Rank*	*Ties*	*Sum Of Rank*	*P Value*
Prenatal Yoga Pre Test	*24*	*0*	*24*	*12.50*	*.1*	*300.00*	*0.000*
Prenatal Yoga Post Test							
Total			***25***				

Based on Table 5, the results of the Wilcoxon Signed Ranks Test show that there is a significant influence of pregnancy exercises on reducing back pain in pregnant women. The negative rank value is known to be 0, this value indicates that there is a decrease (reduction) in back pain in pregnant women from pre test to post test, while the positive rank results have 24 positive data (N) which means that 24 pregnant women experience a decrease in back pain before and after doing prenatal yoga. The mean rank or average of the decline is 12.50, while the sum of the ranking is 325.00, the value of ties (1) in the analysis results shows that there is the same value between the pre test and the post test.

Based on the analysis in table 4.5, it shows that the results of the statistical test using the Wilcoxon test were obtained with a p value of < 0.000, so that (p < 0.05) which means that there is an influence of prenatal yoga on the reduction of back pain in pregnant women at the Majenang II Health Center, Cilacap Regency.

c. Comparison of the Effectiveness Between Pregnancy Exercises and Prenatal Yoga on Reducing Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency

To determine the effectiveness of pregnancy exercises and prenatal yoga on reducing back pain in pregnant women at the Majenang II Health Center, Cilacap Regency, the author used bivariate analysis using the Wilcoxon test.For more details, you can see table 6 as follows:

Table 6 Bivariate Analysis of the Effectiveness Between Pregnancy Exercises and Prenatal Yoga on the Reduction of Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency.

Variable	*N*	*Negative Ranks*	*Positive Ranks*	*Mean Rank*	*Ties*	*Sum Of Rank*	*P Value*
Prenatal Yoga Pre Test	*50*	*0*	*49*	*25.00*	*.1*	*1225.00*	*0.000*
Prenatal Yoga Post Test							
Total	***50***						

Based on Table 6, the results of the Wilcoxon Signed Ranks Test show that the negative rank value is known to be 0, this value shows that there is a decrease (reduction) in back pain in pregnant women, both using pregnancy exercises and prenatal yoga, while the positive rank results have 49 positive data (N) which means that 49 pregnant women experienced a decrease in back pain both in the pregnant and prenatal yoga exercises groups. The mean rank or average of the decrease is 25,000, while the sum of rank is 1225.00, the tie value (1) in the analysis results shows that there is a similar value between the pregnancy and prenatal yoga exercises groups. The results of the Wilcoxon test obtained a p value of 0.000 < 0.05 which means that pregnancy exercises and prenatal yoga are significant and effective in reducing back pain in pregnant women in the third trimester.

DISCUSSION

Pain Scale in the Pregnant Exercises Group

The results of the pain scale analysis before being given pregnancy exercises were 72.0% experienced moderate pain, 16.0% experienced mild pain and 12.0% experienced severe pain, and after being given pregnancy exercises experienced a decrease in pain scale, namely 84.0% experienced mild pain, and 16.0% experienced moderate pain.

From the results of the analysis, it can be seen that the average value of the decrease in the pain scale in pre and post pregnancy exercises is 4,400 and 2,200, from the results of the value Mean It can be seen that the scale of low back pain before and after pregnancy exercises has a significant difference. The results of this study are in accordance with the opinion Amin & Novita (2022) which says that Pregnancy exercises can increase the oxygen requirement in the muscles, stimulate the lungs and heart as well as muscle and joint activity, with regular exercise, the condition of the muscles and joints involved in the birth process can be maintained, the strength and elasticity of the muscles of the abdominal wall, pelvic floor muscles, ligaments, as well as the tissues that play a role in the labor process can be strengthened, the joints associated with the labor process can be flexed, and maintaining good posture, so that it can help overcome problems, fetal position, and reduce shortness of breath, related to breathing techniques during childbirth and help achieve self-calm.

Back pain in pregnant women decreases before and after being given pregnancy exercises, this proves that pregnant women are more disciplined in attending pregnant women's classes,

making appropriate movements in practicing pregnancy exercises. The researcher's research results are strengthened by the theory Yulia (2024), which suggests that the discipline of doing pregnancy exercises will contribute to reducing back pain. This is because pregnancy exercises movements are designed to help reduce discomfort during pregnancy.

Low back pain is pain that occurs in the lumbosacral area. Low back pain will usually increase in intensity as pregnancy increases because this pain is due to a shift in the woman's center of gravity and posture. These changes are caused by the weight of the enlarged uterus (Rinata 2022).

Exercises for pregnant women need to be done regularly every day so that the complaints felt are significantly reduced. The duration of pregnancy exercises is at least 15 minutes per day. When the mother enters the pregnancy beyond 24 weeks and her pregnancy is considered normal without complications, it is recommended that the mother regularly perform pregnancy exercises, even if she does not feel complaints of back pain. This step is taken to avoid muscle tension due to a decrease in body mechanics that can cause back pain.

Pain Scale in the Prenatal Yoga Group

The results of the pain scale analysis before prenatal yoga were 56.0% experienced moderate pain, 36.0% experienced mild pain, 8.0 experienced controlled severe pain and after being given prenatal yoga experienced a decrease in pain scale, namely 92.0% experienced mild pain and 8.0% experienced moderate pain.

From the results of the analysis, it can also be seen that the average value of the reduction in pain scale in pre and post prenatal yoga is 3,880 and 2,000, from the results of the mean value it can be seen that the pain scale before and after prenatal yoga has a significant difference, in other words prenatal yoga is quite effective in reducing low back pain in pregnant women.

Based on theory Arummega (2022), said that along with increasing gestational age which makes shifting in the center of gravity, as well as posture changes during pregnancy are not uncommon for pregnant women to experience back pain, low back pain in pregnant women can also be caused by daily activities in pregnant women which will ultimately affect the quality of life in pregnant women. Pregnant women are expected to be able to do activities that do not aggravate the condition of low back pain, participating in health activities such as prenatal yoga is a non-pharmacological action to overcome low back pain.

Hormonal changes during pregnancy will result in relaxation of the pelvis and lower back in pregnant women, so that pain will arise in the lower back, in addition to the gradual shift of the center of gravity in pregnant women in pregnancy also worsens back pain in pregnant women. From the statement, it was concluded that back pain in pregnant women occurs more often in the third trimester of pregnancy, apart from changes in posture during pregnancy, back pain is also caused by daily activities and hormonal changes during pregnancy (Purnamasari 2019).

The results of the study on the pain scale of pregnant women after prenatal yoga were carried out 92.0% experienced mild pain and 8.0% experienced moderate pain, the author's

research is in line with research conducted by Wariyah, (2023), which states that back pain can be lowered in intensity by doing prenatal yoga. Prenatal Yoga which is done regularly 2 times a week with a duration of 30-60 minutes can reduce the intensity of back pain in pregnant women, especially pregnant women in the third trimester.

Complaints of back pain with a mild pain scale are caused by maternal activity or an increase in gestational age in the third trimester and fetal development which causes the load in the uterus to increase so that it causes back pain. Researchers advise mothers who experience back pain to routinely do prenatal yoga to health workers who provide prenatal yoga services.

Based on the results of the study and its relationship with theory, it can be concluded that back pain in pregnant women in the third trimester is something that must occur frequently, while non-pharmacological therapy that can be done to reduce these complaints is to do prenatal yoga regularly 2 times a week with a frequency of 30-60 minutes.

The Effect of Pregnancy Exercises on Reducing Back Pain in Pregnant Women at Majenang II Health Center, Cilacap Regency

The results of the bivariate analysis are known to be negative rank value of 0, this value indicates that there is a decrease (reduction) in back pain in pregnant women from pre test to post test, while the positive rank results have 25 positive data (N) which means that 25 pregnant women experienced a decrease in back pain before and after doing pregnancy exercises. The mean rank or average of the decline is 13.00, while the sum of the ranking is 325.00, there is no tie value (0) in the analysis results showing that there is no equal value between the pre test and the post test. The results of the hypothesis test with the wicoxon test obtained a p value of 0.000 (P< 0.005) so that it was concluded that pregnancy exercises were effective in reducing back pain in pregnant women in the third trimester of the Majenang II Health Center, Cilacap Regency.

The findings of this study are in line with the opinion of Aviram (2021), that pregnancy exercises can significantly reduce the intensity of pain in the back and have a major effect on spinal flexibility . Pregnancy exercises are a type of exercise for pregnant women to strengthen and maintain the elasticity of the muscles of the abdominal wall, ligaments, and pelvic floor muscles related to the childbirth process. Pregnancy exercises can reduce back pain experienced by pregnant women because in pregnancy exercises there are movements that can strengthen the abdominal muscles. The main role of the abdominal muscles is to regulate the pelvis when lying on your back. When the ligaments around the pelvis become strained and no longer provide strong support to the joint, the muscles serve as a second protector to prevent excess pressure on the pelvic ligaments.

Complaints of back pain felt by pregnant women should be taken seriously and should not be ignored, keeping in mind that excessive pressure on the pelvis and decreased strength of the abdominal muscles are the causes. Therefore, it is necessary to do this exercise to maintain optimal abdominal muscle tone. Some mothers who do not feel low back pain when entering pregnancy in the second and third trimesters are advised to continue doing pregnancy exercises

to prevent the possibility of back pain due to the muscles around the abdomen that are less stretched.

Based on research by Bihalia (2024), regarding the effect of pregnancy exercises on the reduction of back pain in the second and third trimester of pregnancy at the Kasihan I Health Center in Bantul, Special Region of Yogyakarta, found p value = 0.000, which indicates that Ho was rejected, so there was a significant influence between pregnant women participating in pregnancy exercises and back pain. The more regularly you undergo pregnancy exercises, the more this can reduce back pain experienced by pregnant women. Therefore, the more a woman experiences pregnancy and childbirth, the risk of experiencing back pain during pregnancy will increase and tend to be more severe than in previous pregnancies.

The Effect of Prenatal Yoga on Reducing Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency

The results of the bivariate analysis showed that the negative rank value was known to be 0, this value showed that there was a decrease (reduction) in back pain in pregnant women, both using pregnancy exercises and prenatal yoga, while the positive rank results showed 49 positive data (N) which means that 49 pregnant women experienced a decrease in back pain both in the pregnant and prenatal yoga exercises groups. The mean rank or average of the decrease is 25,000, while the sum of rank is 1225.00, the tie value (1) in the analysis results shows that there is a similar value between the pregnancy and prenatal yoga exercises groups. The results of the hypothesis test with the wilcoxon test obtained a p value of 0.000 (P< 0.005) so that it can be assumed that prenatal yoga has an effect in reducing back pain in pregnant women in the third trimester of the Majenang II Health Center, Cilacap Regency.

The pregnancy process can cause discomfort as well as a decrease in the elasticity and flexibility of the back and abdominal muscles and the effect is the reassurance of low back pain in pregnant women. According to Alvionita et al (2025), stated that factors that aggravate the condition include gestational age, occupation, posture, weight gain during pregnancy, as well as posture and previous history of back pain are triggers and contributing factors to the largest incidence of back pain in pregnant women.

In this study, the subject of the study was a pregnant woman in the third trimester, Ainiyah (2022), said that as the gestational age increases, back pain tends to get worse. In this study, back pain was significantly reduced after being given 2 yoga prenatal interventions with a duration of 60 minutes. The author's research results are in line with the research conducted by (Koukoulithras et al. 2021) which states that complementary therapy with yoga does not increase pain intensity and prevents the appearance of low back pain complaints in pregnancy. Based on the results of the research and its relationship with theory and research, it can be concluded that prenatal yoga is quite effective in reducing low back pain in pregnant women.

Prenatal yoga is done by flexing the muscles and ligaments around the back and pelvis of pregnant women, so that tense and stiff muscles are reduced and pain is reduced. In addition, prenatal yoga can also affect the endocrine glands by suppressing the release of stress

hormones (cortisol) and increasing relaxation hormones, thereby causing the effect of calmness and emotional stability (Koukoulithras et al., 2021).

The results of this study are in line with the research conducted by Setyoputri & Ismiyati (2023), stated that there was an effect of prenatal yoga on the reduction of back pain in pregnant women in the third trimester after prenatal yoga was performed. Back pain can be overcome by doing prenatal yoga, as can be seen from the results of the scale change before prenatal yoga and after prenatal yoga, with results Post test that has decreased p-value =0.003 and the value Mean which is 0.367. So prenatal yoga is very effective in reducing back pain

From the study and the results of the author's research, it can be concluded that prenatal yoga can significantly reduce back pain in pregnant women, especially pregnant women in the third trimester. Back pain in pregnant women in the third trimester of pregnancy is influenced by various factors, including the size of the fetus, the gradual increase in the mother's weight, the mother's posture, age, and the type of work the mother can worsen back pain. One way to deal with back pain in pregnant women in the third trimester is through prenatal yoga by doing prenatal yoga, the mother's flexibility and posture will be trained, which is expected to reduce pain in the back of pregnant women.

Comparison of the Effectiveness Between Pregnancy Exercises and Prenatal Yoga on Reducing Back Pain in Pregnant Women at the Majenang II Health Center, Cilacap Regency.

The results of the comparison of the effectiveness between pregnancy exercises and prenatal yoga on reducing back pain in pregnant women at the Majenang II Health Center, Cilacap Regency, showed that the two interventions were equally effective in reducing back pain in pregnant women, the results of the test were known to be negative rank values of 0, this value showed that there was a decrease (reduction) in back pain in pregnant women, both using pregnant and Prenatal Yoga, meanwhile, the results of the positive rank were 49 positive data (N) which means that 49 pregnant women experienced a decrease in back pain both in the pregnancy and prenatal yoga groups. The mean rank or average of the decrease is 25,000, while the sum of rank is 1225.00, the tie value (1) in the analysis results shows that there is a similar value between the pregnancy and prenatal yoga exercises groups. The results of the hypothesis test with the wilcoxon test also showed a p value of 0.000 (P< 0.005) so it can be assumed that pregnancy exercises and prenatal yoga are effective in reducing back pain in pregnant women in the third trimester of the Majenang II Health Center, Cilacap Regency.

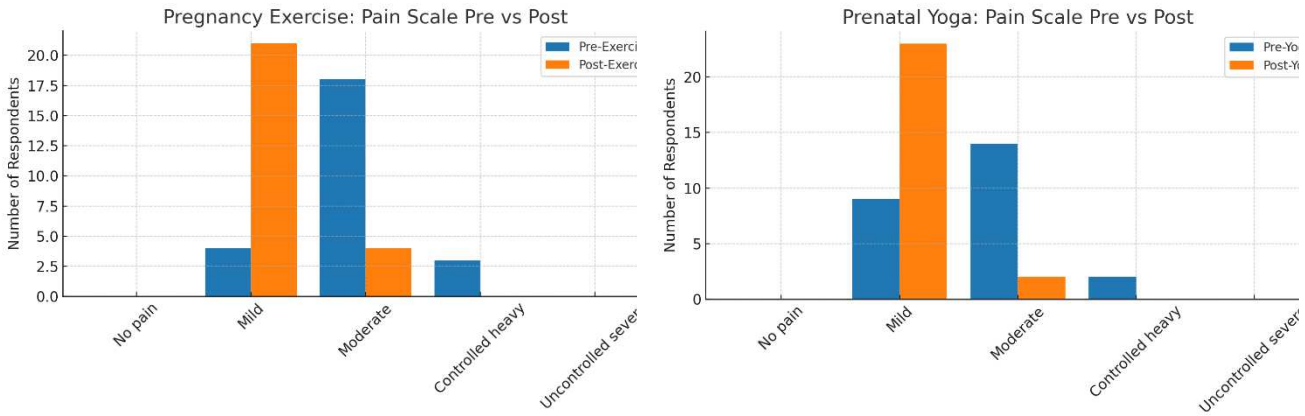
Back pain in pregnancy is back pain that occurs in the back area lumbosacral. Back pain will usually increase in intensity As the pregnancy age increases, this pain is due to a shift in the center of gravity and posture (Yulianti et al, 2018). To relieve back pain that is often felt by pregnant women is to do exercise and the most effective exercises are pregnancy exercises and prenatal yoga. Pregnancy exercises and prenatal yoga are one of the sports that can be done by pregnant women, because with these exercises the body becomes flexible, comfortable in addition to supporting circulation, blood, overcoming back pain, back pain, aches and pains.

Based on the results of the analysis test, although both interventions between pregnancy exercises and prenatal yoga are equally effective in reducing back pain in pregnant women, it is known that prenatal yoga is slightly superior in reducing pain intensity, this can be caused by several factors, including the accuracy of movements in doing prenatal yoga that perform movements properly and correctly because they are carried out by certified prenatal yoga instructors.

The author's research results are in line with the research Nugraheni & Romdiyah (2019), where in the study the number of subjects was 34 respondents which were divided into 2 groups, namely pregnancy exercises and prenatal yoga. Data collection by scaling Visual Analog Scale (VAS) and data analysis using statistical tests Wilcoxon and Mann Whiteney. The results of the Yoga preantal treatment group were greater 1.29 0.47 than the pregnant exercises group 2.06 0.74 with an average decrease in point difference of 0.71 and P-value 0.01 but based on the hypothesis test, the two interventions were significant so that the hypothesis was acceptable.

In line with the research, this research is strengthened by research conducted by Fitriani (2023), which states that pregnancy exercises and pregnancy yoga are effective in reducing low back pain in pregnant women in the third trimester as seen from the results Pre-test until Post test that have decreased with the results of pvalue = 0.000. There is a significant difference in effectiveness between pregnancy exercises and pregnancy yoga on lower back pain complaints in pregnant women in the third trimester seen from the average value of pregnant exercises which is 26 and the average value of pregnant yoga which is 29. Thus, pregnant yoga is more effective in lowering low back pain.

Visualisation 1: Pregnancy Exercise dan Prenatal Yoga – Pain Scale Pre vs Post



Based on this graph, both interventions significantly reduced pain intensity ($p < 0.05$). Prenatal yoga yielded a slightly greater mean rank reduction than pregnancy exercise.

This study confirms that both pregnancy exercises and prenatal yoga effectively reduce back pain in the third trimester, consistent with previous findings (Bihalia, 2024; Wariyah, 2023). However, the direct comparison highlights prenatal yoga's marginal superiority, potentially due to its integration of relaxation and posture correction. These findings support incorporating structured prenatal exercise programs into antenatal care services.

Both pregnancy exercises and prenatal yoga are effective non-pharmacological interventions for reducing back pain in the third trimester, with prenatal yoga showing slightly better results. Regular implementation within antenatal programs is recommended.

With the effectiveness of these two interventions, it is hoped that pregnant women can carry out pregnancy and prenatal yoga exercises properly and correctly and regularly, because both interventions are very effective in reducing the intensity of back pain in pregnant women, especially in the third trimester. The role of health workers, especially midwives, is expected to be able to provide appropriate and effective interventions in reducing back pain in pregnant women in the third trimester, in addition, the provision of health counseling and insights, especially in pain pharmacological therapy for pregnant women, must still be provided so that there is synchronization between knowledge and actions taken.

KESIMPULAN

1. The scale of back pain in pregnant women at the Majenang II Health Center, Cilacap Regency before being given prenatal yoga and pregnancy exercises, it can be found that in the prenatal yoga group of 25 pregnant women, 56.0% were known to experience moderate pain. In the pregnant exercises group, 72.0% experienced moderate pain.
2. The scale of back pain in pregnant women at the Majenang II Health Center, Cilacap Regency after being given prenatal yoga and pregnancy exercises was known to be 92.0% experiencing mild pain. In the pregnant exercises group, 84.0% experienced mild pain.
3. There was an effect of pregnancy exercises on the reduction of back pain in pregnant women at the Majenang II Health Center, Cilacap Regency with a p value of 0.000 smaller than alpha 0.05.
4. There was an effect of prenatal yoga on reducing back pain in pregnant women at the Majenang II Health Center, Cilacap Regency with a p value of 0.000 smaller than alpha 0.05.

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