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Differences in Back Pain Before and After Giving Pregnancy Exercises to Pregnant Women Third trimester

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ABSTARCT
Keluhan nyeri pada punggung ibu hamil merupakan suatu ketidaknyamanan yang timbul pada ibu hamil di TM III. Nyeri yang muncul pada punggung merupakan suatu kejadian fisiologis yang sering terjadi pada ibu hamil, namun bila tidak segera ditindaklanjuti akan menjadi masalah patologis. Salah satu cara untuk mengatasi masalah nyeri punggung adalah dengan memberikan intervensi senam hamil, dimana senam hamil dilakukan minimal 3 kali selama kehamilan. Tujuan: Untuk menganalisis perbedaan nyeri punggung sebelum dan sesudah diberikan senam hamil pada ibu hamil trimester III di Polindes Plerean Kecamatan Sumberjambe. Metode: Dalam penelitian ini metode yang digunakan adalah kuasi eksperimen kuantitatif dengan rancangan one group pre test and post test design. Populasi: populasinya adalah seluruh ibu hamil primigravida TM III yang berjumlah 27 responden dengan jumlah sampel sebanyak 12 ibu hamil yang mengalami nyeri pinggang TM III yang pemilihannya menggunakan teknik Accidental Sampling. Uji statistik yang digunakan adalah uji non parametrik Wilcoxon. Hasil: Hasil yang diperoleh dengan menggunakan uji non parametrik Wilcoxon dengan SPSS 27 diperoleh p-value = 0,014 ≤ α = 0,05 sehingga H1 diterima dan H0 ditolak yang berarti terdapat perbedaan nyeri pinggang sebelum dan sesudah diberikan senam hamil pada ibu hamil trimester ketiga. Kesimpulan: Terdapat perbedaan yang signifikan tingkat nyeri punggung ibu hamil antara sebelum intervensi dan sesudah intervensi senam hamil. Ibu hamil khususnya primigravida yang memasuki trimester ketiga diharapkan melakukan senam hamil minimal 3 kali selama hamil.

Keywords:
Pregnancy exercise; Back Pain; Pregnant mother

Background: Complaints of pain in the back of pregnant women are an inconvenience that arises in pregnant women in TM III. Pain that appears in the back is a physiological event that often occurs in pregnant women, but if it is not immediately followed up it will become a pathological problem. One way to deal with the problem of back pain is by providing pregnancy exercise intervention, where pregnancy exercise is done at least 3 times during pregnancy. Objective: To analyze the differences in back pain before and after being given pregnancy exercises to pregnant women in the third trimester at Polindes Plerean, Sumberjambe District. Method: In this research, the method used is quantitative quasi-experiment with a one group pre test and post test design. Population: the population is all TM III primigravida pregnant women totaling 27 respondents with a sample size of 12 pregnant women who experience TM III back pain whose selection used an accidental sampling technique. The statistical test used is the non-parametric Wilcoxon test. Results: The results obtained using the non-parametric Wilcoxon test with SPSS 27 obtained a p-value = 0.014 ≤ α = 0.05 so that H1 was accepted and H0 was rejected, which means there is a difference in back pain before and after being given pregnancy exercises to pregnant women in the third trimester. Conclusion: There is a significant difference in the level of pain in the back of pregnant women between before the intervention and after the pregnancy exercise intervention. Pregnant women, especially primigravidas entering the third trimester, are expected to do pregnancy exercises at least 3 times during pregnancy.

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INTRODUCTION

Pregnancy is a natural and normal process. Where during this period a woman will experience changes such as physical or psychological changes, especially during the first pregnancy (primigravida). Primigravida is a condition where a woman experiences pregnancy for the first time. The changes that occur can cause discomfort for pregnant women. The discomfort experienced by mothers often differs in each trimester. One of them is pain in the back(1). Back pain will increase as gestational age increases, because this pain is the result of a shift in the center of gravity and changes in body posture. Factors that cause pain in the back are the growing uterus, the hormone relaxin which affects the ligaments, parity, weight gain, history of complaints of back pain and activity. The peak incidence of back pain in pregnant women generally occurs at the age of 24 weeks to 28 weeks, precisely before abdominal growth reaches its maximum point.(2).

Back pain is a common complaint that occurs in pregnant women withreported incidents varying, with an estimated 50% of incidents in England, Scandinavia, and close to 70% of incidents in Australia. In Mantle's research, 16% of women complained of severe back pain and 36% complained of moderate and mild pain.(3). In Indonesia in 2020 there will be 5,221,784 pregnant women, where the percentage of back pain incidence ranges from 20% to 90%.(4). In 2020, data was obtained that the number of pregnant women in East Java Province was 574,193 people and 65% of them were estimated to experience complaints of back pain.(5). From the research results, it was found that 60% to 80% of pregnant women complained of back pain(6). Studies conducted by Purmasari(1). The incidence of back pain experienced by pregnant women is 88.2%. Entering 14 weeks to 22 weeks of pregnancy, around 62% of pregnant women will experience complaints of back pain. It is also reported that 47% to 60% say back pain occurs at 5months to 7 months of pregnancy. From the results of preliminary data, the incidence of back pain that occurs in TM III primigravida pregnant women who undergo ANC at 7 Posyandu in the Plerean Village Polindes, Sumberjambe District is still very high, namely 25 people (82%) of 30 TM III primigravida pregnant women said they experienced pain. back. Based on the data outlined above, it can be said that the incidence of back pain is quite high so that it can reduceand affect daily activities.

Back pain is a physiological event, but if it is not immediately treated, the back pain will cause long-term pain which can

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result in pathological pain, increased incidence of back pain before delivery and chronic back pain, mothers should be advised to have their condition checked by physiotherapist to obtain a medical examination and better individual assessment, to control the postural core muscles and maintain pelvic stability it is necessary to carry out appropriate rehabilitation(7). This pain in the back is musculosketal in nature so it can cause pelvic disorders which can lead to infection, the complications of which will cause difficulty walking if treatment is not immediately received. Worsening mobility that occurs in back pain sufferers is another complication that can interfere with activities such as doing housework, fatigue easily and can cause insomnia in pregnant women. There is a tendency for the abdominal muscles to stretch, so an abdominal muscle training intervention is needed, one of which is through pregnancy exercise(8).

The causes of back pain in third trimester pregnant women include changes in the musculosketal system during pregnancy, weight gain, increasing gestational age, the influence of the relaxin hormone on ligaments, previous history of back pain, parity, body mechanics and joint mobility. Pain usually peaks at 32 weeks of gestation and usually improves substantially after 3 months of labor. During pregnancy, women will experience physiological changes caused by anatomical and functional needs that affect the musculoskeletal system and usually cause pain, including back pain. In line with the gradual increase in body weight during pregnancy which results in changes in bodyposture in pregnant women as well as changes in the musculoskeletal system that occur as gestational age increases. These musculoskeletal adaptations include: increased body weight, shifting of the body's center of gravity due to the enlargement of the uterus, relaxation and mobility. The greater the likelihood of sacroiliac joint instability and increased lumbar lordosis, leading to pain (2).

Pregnancy exercise is a program inthe form of physical exercise to reduce complaints of back pain that occur in pregnant women, especially in the third trimester. Through the intervention of pregnancy exercise, mothers can train the muscles in the abdomen. The first is training the transverse muscle movement, where the movement This trains the muscles in the transverse abdomen, these muscles are the main postural support in the spine. Therefore, abdominal muscletraining is very necessary to reduce back pain during pregnancy, train the mother's ability to push

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properly, the aim of which is to speed up the birthing process and this exercise also really helps return the abdominal muscles to their original shape, like before pregnancy.(3). The American Congress of Obstetricians and Gynecologists (ACOG) recommends that mothers during pregnancy do rhythmic aerobic exercise with moderate intensity,

such as moving large muscles, namely the arms and legs, for at least 2 hours 30 minutes a week. This aerobic duration can be divided into 30 minutes in 1 day and given regularly for 5 days with the aim of increasing heart rate enough. Moderate intensity aerobic activities include brisk walking, gardening and light exercise(7). Midwives can provide pregnancy exercise interventions with a frequency of implementation 4 times a month. Pregnancy exercise is a form of exercise that can strengthen and maintain the elasticity of the muscles in the abdominal wall, ligaments and muscles in the pelvic floor which are related to the birthing process. The movements in this exercise are also useful for maintaining stability in the body which can help maintain health in the spine(9). Pregnancy exercise is a physical movement carried out by prospective mothers so that mothers are better prepared, both physically and mentally, to carry out a safe and normal pregnancy and delivery.(10). Where pregnancy exercises are carried out at least 3 times during pregnancy with an intensity of 1 to 3 times a week with a duration of 60 to 90 minutes in one exercise(7). Pregnancy exercise will be done 4 times over 2 weeks with intervention 2 times a week for 1 hour.

METHOD

This research was conducted at Plerean Police, Sumber Jambe District from 28 February to 13 March 2024. The research design used in this research was a quantitative quasi-experimental design, with one group pre-test and post-test. The population in this study were all primigravida pregnant women in the third trimester with indications of complaints of back pain at the Plerean Sumberjambe Polindes, Jember Regency 2024. The total population in this study was 27 primigravid pregnant women in the third trimester. Where the sample selection used was an accidental sampling technique of 12 primigravida pregnant women who experienced back pain in the third trimester at the Plerean SumberJambe Police Station, Jember Regency. Data were collected using the pain scale method carried out by researchers, and analyzed using the non-parametric Wilcoxon statistical test with SPSS 27 data processing.

RESULTS

The following are the results of the frequency distribution of respondents' characteristics among pregnant womenbased

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on.

General data

Table 1: Frequency distribution of respondent characteristics based on parity of pregnant women who experience back pain in the third trimester at Plerean Polides, Sumberjambe District.

Parity	N	%
Primigravida	12	100
Multigravida	0	0
Total	12	100.0

Based on table 1, it shows that the parity of all 12 respondents (100%) is primigravida.

Table 2: Frequency distribution of respondent characteristics based on weight of pregnant women who experience back painTrimester III at Plerean Police, SumberJambe District.

BB increase	N	%
In accordance	10	83.3
It is not in accordance with	2	16.7
Total	12	100.0

Based on table 2, it shows that the weightgain of respondents according to recommendations was 10 people (83.3%) and the weight gain of respondents who did not comply with recommendations was 2 people (16.7%). This is shown intable 2 above. This data is the respondent'sweight data which was measured at the time the research was conducted, precisely in the third trimesterof pregnancy.

Table 3: Frequency distribution of characteristics of respondents based ongestational age who experienced backpain at Polindes Plerean, SumberJambeDistrict.

Gestational age	N	%
1- 12 weeks	0	0
13- 26 weeks	0	0
27- 42 weeks	12	100
Total	12	100

Based on table 3, it shows that the gestational age of all 12 respondents (100%) was > 28 weeks or had entered the third trimester of pregnancy.

Custom Data

Table 4: Frequency distribution of respondent characteristics based on level of back pain before providing intervention to primigravid pregnant womenTrimester III in Plerean Police, Sumber Jambe District.

Before being given pregnancy exercises	N	%
Mild pain	5	41,7 %
Moderate pain	7	58,3
Savere pain	0	0

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Pain is very severe	0	0
Total	12	100

Judging from the level of pain before being given pregnancy exercise, there were 5 respondents (41.7%) who complained of mild pain and 7 people (58.3%) who complained of moderate pain. This can be read in table 4.

Table 5: Frequency distribution of respondent characteristics based on level of back pain after giving pregnancy exercise intervention to primigravida pregnant womenTrimester III in Plerean Police, Sumber Jambe District.

Based on table 5, it can be seen that after being given pregnancy exercises the number of respondents who experienced mild pain increased to 10 respondents (83.3%) and the number who experienced moderate pain decreased to 2 respondents (16.7%). This change indicates the influence of pregnancy exercise on complaints of back pain experienced by pregnant women.

Table 6: Frequency distribution of respondents' characteristics based on the level of back pain before giving the intervention and after giving the pregnancy exercise intervention to primigravida pregnant womenTrimester III at Plerean Police, SumberJambe District.

		Before pregnancy exercise										
		Mild Pain (1-3)	%	Painful Currently (4-6)	%	Painful Heavy (7-9)	%	Very Severe Pain (10)	%	Total	%	p-value
After being given pregnancy exercises	Mild Pain	5	41.7	5	41.7	0	0	0	0	10	83.4	
	Moderate Pain	0	0	2	16.6	0	0	0	0	2	16.6	
	Painful Heavy	0	0	0	0	0	0	0	0	0	0	0.014
	Very Painful Heavy	0	0	0	0	0	0	0	0	0	0	
Total		5	41.7	7	58.3	0	0	0	0	12	100.0	

Based on table 6, it can be seen that the results before giving the pregnancy exercise intervention were 5 people (41.7%) with mild level pain and 7 people (58.3%) with moderate level pain, then after giving the pregnancy exercise intervention the respondents with The condition of back pain decreased, to mild level pain in 10 people

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(83.3%) and moderate level pain in 2 people (16.7%).

The p-value obtained was 0.014 or less than 5%, so it can be concluded "The hypothesis is accepted". Which means there is a significant difference between the pre-category and post-category results, so it can be concluded "There is a significant difference between before being given pregnancy exercise and after being given pregnancy exercise for complaints of back pain in pregnantwomen in the third trimester at Plerean Police, Sumberjambe District".

DISCUSSION

1. **Back Pain in Pregnant Women in the Third Trimester Before Being Given Pregnancy Exercises at the Plerean Polindes, Sumberjambe District, Jember Regency.**

Based on the research conducted, it was found that the level of back pain experienced by 12 respondents before the pregnancy exercise intervention was

given was moderate pain, 7 people (58.3%), while 5 people (41.7%) had mild pain. This is in line with theory(1)that pregnant women will experience changes during pregnancy, from these changes there will usually be complaints such as nausea and vomiting, constipation, vaginal discharge, the appearance of varicose veins and hemorrhoids as well as polyuria and even swelling of the legs and back pain. Where these changes cause pregnant women to feel discomfort. The discomfort felt usually varies in each trimester(11). Pain in the back is causedby the growth of the uterus which resultsin changes in body posture such as weight gain, parity, the relaxin hormone which affects ligaments, a history of back pain in previous pregnancies and activity. Judging from the general data in this study, it was found that all respondents were primigravidarum pregnant women and primigravidarum mothers usually have better abdominal muscles, because these muscles have never been stretched before. So the number of parities will have more influence on the incidence of back pain(8). So there were no respondents with complaints of severe pain or very severe pain in this study.

The trigger factor for back pain in pregnant women is influenced by weight gain, where from table 2 it is found that 10 respondents experienced appropriate weight gain, while 2 respondents experienced inappropriate weight gain. This is because the gradual increase in body weight during pregnancy will change body posture which causes the body's center of gravity to move forward. Muscle imbalance in the pelvic area and also the tension that is felt above the ligaments is influenced by the abdominal muscles being stretched, causing the back muscles to tend to shorten, so that the back pain that occursusually originates from the

sacroiliac, with this happening if pelvic stability and muscle balance are not immediately recovery will cause long-term back problems after delivery(7).

The pregnancy process occurs around 40-42 weeks starting from the first period of the last menstruation(12). Based on gestational age, it was found that all respondents were 28 weeks pregnant or above. Ligament pain is a stabbing spasm that is felt by the motherand it feels very painful. This is due to the stretching of the supporting ligament muscles caused by the enlargement of the uterus which is in line with increasing gestational age. Pregnant women will feel back pain reaching its peak at 6 months - 7 months (24-28 weeks) of pregnancy, more precisely before abdominal enlargement reaches its maximum point.(2). As time goes by,the gestational age increases, the mother's posture will change according to the growth of the uterus, where the shoulders will fall further back due to the growing stomach enlargement, so that the mother will experience increasing back pain after experiencing tension. To maintain body balance and excessive lordosis, immediate treatmentis needed to overcome this problem, so that it does not interfere with the mother's daily activities. Complaints of pain in the back of pregnant women that are not immediately handled properly will make the condition of pregnant women worse(7).

Researchers assume that based on this research and the theory obtained, the weight of pregnant women reflects the nutritional fulfillment of the mother during the pregnancy phase, therefore there is a need for monitoring every month through Antenatal Care (ANC). ANC is a service that pregnant women receive, such as examinations to monitor physical or psychological health, as well as examinations of fetal growth and development to prepare for the birth process later.(13). If there is an excess of maternal weight gain, it can lead to risks experienced by pregnant women, such as complaints of back pain that occur in pregnant women, especially in TM III.

2. Back Pain in Pregnant Women in the Third Trimester After Being Given Pregnancy Exercises at the Plerean Polindes, Sumberjambe District, Jember Regency.

Based on the results of the research,it was found that complaints of back pain were experienced by 12 pregnant women respondents, the level of pain after being given pregnancy exercises, most of them felt pain at a mild level, 10people (83.3%) and 2 people felt pain ata moderate level. (16.7%)). In this case, there were 2 respondents who still experienced moderate pain, but it shouldbe noted that these 2 respondents experienced a decrease in the intensity of their pain. So it can be concluded that the 2 respondents experienced a decline after being given the pregnancy exercise intervention. This is because the 2 respondents

experienced inappropriate weight gain (more). To deal with back pain complaints from pregnant women, it is necessary to provide treatment, one of which is by providing pregnancy exercise. Pregnancy exercise is a form of exercise that includes movements to strengthen and maintain the elasticity of the muscles of the uterine walls, pelvic floor muscles and ligaments related to the birthing process. The function of this movement is to strengthen the stability of the muscles in the body which helps maintain healthy spinal bones. Another benefit of pregnancy exercise is that it relieves complaints of back pain experienced by pregnant women because it contains movements that can strengthen the abdominal muscles.(14). Pregnancy exercise training is usually given when the mother enters 7 months of pregnancy, which is around 28-30 weeks of gestation. Within 1 month, thepregnancy exercise intervention can be carried out 4 times, guided by a professional midwife(9). To get the maximum benefits of pregnancy exercise, pregnancy exercise is carried out at least 3 times during pregnancy at intervals of 1 to 3 times a week with a maximum time of 60 to 90 minutes in one session.(3).

Based on the research above, to reduce back pain complaints experienced by pregnant women is by

providing pregnancy exercises at least 4 times during pregnancy. In this study, it can be seen that complaints of pain experienced by pregnant women decreased after being given pregnancy exercises. Pregnant women's exercise isan exercise program that functions to reduce complaints of back pain experienced by pregnant women because in pregnancy exercise there is a movement that can strengthen the abdominal muscles. Through efforts to provide pregnancy exercise training, it makes it easier for pregnant women to overcome their back pain complaints. Itcan be seen that after giving pregnancy exercise, a post-test pain level evaluation was carried out, showing a decrease in back pain complaints after being given the intervention (post test). This research is also in line with research conducted by Rista Novitasari and Hidayatun Nufus in Krenceng Village, Kec. Siege District. Kediri in December 2023 who said that the movements from pregnancy exercise are very beneficial for mothers, namely that mothers can gain good muscle tone and have a big impact on the health of the baby they are carrying.(15).

The scale of pain experienced by pregnant women all decreased after being given pregnancy exercises, although there were some respondents who remained in the moderate pain category, but they experienced a decrease in the intensity of their pain levels. This is influenced by the respondent's weight gain which is not according to recommendations by calculating the respondent's BMI, BW before

pregnancy and BW when doing pregnancy exercises.

3. Differences in Back Pain Before and After Being Given Pregnancy Exercises to Pregnant Women in the Third Trimester at the Plerean Polindes, Sumberjambe District,Jember Regency.

Based on the research results obtained from the cross table before being given pregnancy exercise, it was found that 5 respondents complained of mild pain, and 7 respondents complained of moderate pain, then after being given the pregnancy exercise intervention there was a decrease in the pain level of pregnant women from moderate pain to 2 respondents. and 10 respondents had mild pain. There were 2 respondents who remained in moderate pain, but these 2 respondents experienced a decrease in the intensity of their pain. This is because the 2 respondents experienced inappropriate(more) weight gain. From the results of the Wilcoxon Test, it is known that the pre-test and post-test values are 0.014, indicating a result of less than <0.05, which means that there is a significant difference between before being given the pregnancy exercise intervention and after being given the pregnancy exercise intervention for complaints of back pain in mothers. pregnant with TM III at Plerean Police, Sumberjambe District, Jember Regency. Providing pregnancy exercise has significance in reducing back pain. Thus, it is hoped that pregnant women, especially TM III, will routinely do pregnancy exercises to effectively reduce back pain. Therefore, there is a significant difference before and after being given pregnancy exercises to TM III pregnant women who experience back pain in Plerean Polides, Sumberjambe District, Jember Regency.

Back pain is pain in the lumbosacral area. The intensity of pain in the back tends to increase with increasing gestational age, at the beginning of pregnancy the baby will be located in the pelvic bones, so strong pelvic bones are needed to support the baby's weight. However, as the baby grows, the baby's

weight will press more forward, over the pelvic bones. If this happens, the earth's gravitational force will pull the heavy load forward and down, this incident will put pressure on the muscles in the lower back, so it will feel very painful.(7). Pregnancy exercise is a series of transversus muscle movements intended for pregnant women which cantrain the strength of the inner transverse abdominal muscle tone which functions to support the posture of the spine. Likewise with pelvic floor exercises, muscle tone will function well if pelvic floor movement exercises are carried out because through these movements you can maintain and increase the resilience of the postural muscle fibers in the pelvic floor. Therefore, it is very necessary to teach abdominal muscle

exercises to mothers during the antenatal period, because this exercise is useful for speeding up the return of muscle shape to its pre-postnatal form as well as reducing back pain during pregnancy and helping mothers to push effectively during the birth process later.(7). Pregnant women's exercise is also an important method for pregnant women to improve and maintain the mother's physical health. This exercise is also a movement exercise therapy

carried out by pregnant women in the hope of achieving an easy, fast and safe delivery process and compensating for changes in the body's center of gravity.(16).

Back pain that occurs in pregnant women in the third trimester can be overcome with pregnancy exercise intervention, because the movements in pregnancy exercise can strengthen the abdominal muscles which can prevent excessive tension on the pelvic ligaments, so that complaints of back pain can be reduced. This is in line with research by Dewi Nopiska Lilis in 2019 which stated that routine pregnancy exercise can reduce back pain because the movements contained in it can strengthen the abdominal muscles.(17).

CONCLUSION

1. Before doing pregnancy exercise, 5 people (41.7%) experienced mild pain and 7 people (58.3%) experienced moderate pain.
2. After being given exercise, pregnant women who complained of mild pain increased to 10 respondents (83.3%) and those who complained of moderate pain became 2 respondents (16.7%).
3. The results show a P-value of 0.014, indicating a result of < 0.05, which means there is a significant difference in back pain before and after being given pregnancy exercises.

SUGGESTION

1. As a form of follow-up, it is hoped that midwives as health workers will play an active role in preventing and handling complaints of back pain, by providing education, counseling and providing pregnancy exercise interventions at least 3 times during pregnancy, especially in their area.
2. Future researchers are expected to furtherexpand and develop the thesis on pregnancy exercise and the length of the labor process in primigravida pregnant women.
3. Pregnant women, especially primigravidas entering the third trimester of pregnancy, are expected to do pregnancy exercises at least 3 times during pregnancy.

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