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The Effect of Prenatal Exercise on Lower Back Pain in Third Trimester Pregnant Women at Likupang Community Health Center

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Abstract: *Significant physical and psychological changes occur throughout pregnancy, especially in the third trimester (weeks 27–40). Lower back pain, frequently caused by poor posture, changes in the curvature of the spine, and increasing body weight that shifts the center of gravity forward, is a common issue during this time. Between 30% and 78% of pregnant women report experiencing lower back discomfort. Maintaining physical health, endurance, and mental preparedness for childbirth are key objectives of prenatal exercise. This study aimed to examine the effect of pregnancy exercise on lower back discomfort in third-trimester pregnant women at the Likupang Community Health Center. The study used a one-group pretest-posttest design and was pre-experimental in nature, with the Likupang Community Health Center serving as the research site. Fifteen pregnant women from the Likupang Community Health Center were chosen as the study sample. The results indicated that pregnancy exercise had a significant impact on reducing back pain (p-value 0. 000), showing a clear effect between pregnancy exercise and the reduction of lower back pain (p-value 0. 000), as confirmed by the bivariate statistical test. The findings suggest that pregnancy exercise can effectively alleviate lower back discomfort in third-trimester pregnant women.*

Keywords: *Community Health Center; Lower Back Pain; Pregnancy Exercise; Prenatal Exercise; Third Trimester.*

1. INTRODUCTION

The time between conception and delivery is known as the gestation period. Based on the first day of the most recent menstrual cycle, a typical pregnancy lasts 280 days (40 weeks or 9 months and 7 days). "Pregnancy is divided into three trimesters: the first trimester, from conception to three months, the second trimester from the fourth month to six months, and the third trimester from the seventh month to nine months". (Lina Fitriani 2018).

The physiological process of pregnancy alters both the mother and her surroundings. "With pregnancy, the entire female genital system undergoes fundamental changes to support the development and growth of the fetus in the womb during the pregnancy process". (Suci Fitriana Said, Senja Atika Sari HS 2022).

The first trimester, which lasts 12 weeks, the second trimester, which lasts from week 13 to week 27, and the third trimester, which lasts from week 28 to week 40, are the three trimesters of pregnancy. The third trimester, which starts at week 27 and lasts until full term, or 38 to 40 weeks, I the last month or third of pregnancy. The mother's sleep is frequently disturbed by fetal movement and physical pain. Most women in late pregnancy develop dyspnea, increased urination, back discomfort, constipation, and varicose veins.

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Pregnancy-related poor posture can increase the body's stretching and tiredness, particularly in the pelvic, spine, and weight-bearing joints, which can exacerbate aches and pains. (Nopiska Lilis Dewi, 2019) Pregnancy-related physical changes in the mother include a wider waist and an increase in the size of the pelvis, thighs, and breasts. The mother's self-esteem may be impacted by pregnancy-related symptoms such nausea or vomiting, exhaustion, heartburn, edema, altered bowel or urine patterns, and back discomfort. (Mera Delima, Maidaliza, 2019). A pain phenomenon known as "low back pain" is brought on by the body's gravity pushing forward in the lower back. This disorder is found in pregnant women. (Dewi Nopiska Lilis 2019).

Increased levels of the hormone relaxin increase the flexibility of ligament tissue, which increases joint mobility in the pelvis and can lead to pelvic and spinal instability. Constant stretching, a history of back pain, and weight increase, which alters body form, can all contribute to back discomfort. Eighty percent of pregnant women with back pain find it difficult to do regular tasks, including work and housework. “Back pain is often exacerbated by backache, often referred to as "old back pain. " Backache is found in 45% of pregnant women, increasing to 69% by the 28th week”. (Maliha Amin 2022).

Exercises that develop and preserve the flexibility of the pelvic floor muscles, ligaments, and abdominal wall muscles all of which are connected to childbirth include prenatal gymnastics. By strengthening core stability, these workouts contribute to the preservation of spinal health. A person's stability and balance can be enhanced by having a strong core, which also reduces the chance of falls or spinal injuries during pregnancy. “Prenatal gymnastics can alleviate back pain experienced by pregnant women because they include movements that strengthen the abdominal muscles”. (Beautiful Rahayu Widiarti 2021).

Besides helping to reduce lower back pain, prenatal exercises also offer other benefits, such as improving blood circulation, reducing muscle cramps, and preparing the body for labor. These exercises can be performed independently by pregnant women with appropriate guidance, making them a practical and efficient solution for managing symptoms during pregnancy. (Alaida et al. 2023).

The kind, frequency, and length of prenatal exercise can all affect its efficacy. Variations in exercise regimens, such as solo at-home exercise or supervised exercise, can impact the outcomes, according to research. As a result, it's critical that expectant mothers get the right advice when engaging in prenatal exercise. (Ariyanti Utari 2024).

The Indonesian Ministry of Health reports that there were 5,256,483 pregnant women in Indonesia in 2019 (Indonesian Ministry of Health, 2020). According to statistics from the

2018 Basic Health Research, the prevalence of pregnant women was 5. 3% in West Java and 4. 8% across Indonesia. Back discomfort was the most frequent complaint mentioned by expectant mothers during prenatal treatment (West Java Provincial Health Office, 2020). The prevalence of low back pain in Indonesia is 18%. The prevalence of Low Back Pain (LBP) increases with age and is most common in the middle and early decades of life. (Nurlitawati, Aulya, and Widowati 2022).

Pregnancy-related back pain has to be treated right away since it can lead to chronic back pain that is more difficult to treat or cure, postpartum back pain, and long-term back pain. Pregnancy- related pain is a prevalent issue, particularly in the second and third trimesters. (Widowati, Aulya, and Nurlitawati 2022)

Age and parity are two factors that contribute to back discomfort. An individual's age has a significant impact on their level of discomfort. All ages experience back discomfort during pregnancy, but those under 20 are most affected as the mother is not prepared to deal with it. But given the large number of pregnant women in the 20–35 age range, it's safe to assume that many of them also have back discomfort, particularly during the third trimester. (Aulya, Widowati, and Nurlitawati 2022).

The purpose of this study is to ascertain if lower back discomfort in third-trimester pregnant women is related to prenatal activity. Pregnant women's lower back discomfort can be relieved and their physical health maintained with regular prenatal exercise. (Amin Maliha, 2022).

2. RESEARCH METHOD

To evaluate the impact of prenatal exercise on back pain in third-trimester pregnant women, various studies have highlighted the effectiveness of prenatal physical activity in reducing musculoskeletal discomfort. Khatun and Islam (2021) reviewed the literature and found that prenatal exercise significantly reduces back pain and improves maternal mental health, particularly in the third trimester. Bukhari, Siddiqui, and Noor (2022) also noted that prenatal physical activity is associated with substantial reductions in back pain, especially among pregnant women in the final trimester. Similarly, Lopez, Gallo, and Oliveira (2023) conducted a systematic review and found that structured prenatal exercise programs alleviate lower back pain in pregnant women, emphasizing the importance of physical activity for managing pain during pregnancy. Furthermore, Hernandez and Chaves (2020) explored the effects of prenatal exercise and concluded that exercises such as stretching and strengthening significantly benefit women by reducing pain intensity in the third trimester. In a randomized

controlled trial, Williams and Green (2022) confirmed that women participating in prenatal exercise programs reported not only a reduction in lower back pain but also an overall improvement in their physical well-being during the third trimester. These findings collectively support the notion that prenatal exercise plays a critical role in managing back pain for expectant mothers, particularly in the later stages of pregnancy.

3. RESULTS AND DISCUSSION

Research Results

Fifteen respondents, all third-trimester pregnant women who visited the Likupang Community Health Center, participated in this study. The data were presented in univariate and bivariate formats to describe the respondents' characteristics.

Respondent Characteristics

Table 1. Respondent Characteristics (N: 15).

Characteristics	Frequency	%
Respondent Age		
15-19 years	2	13. 3%
20-35 years	11	73. 3%
>35 years	2	13. 3%
Respondent Education		
Elementary School	0	0
JUNIOR HIGH SCHOOL	0	0
High School/Vocational School	15	100%
PT	0	0
Respondent's Occupation		
housewife	14	93. 3%
ASN	0	0%
Private	1	6. 7%
Respondent Parity		
Primipara	6	40%
Multipara	9	60%
Grademulti	0	0
Total	**15**	**100%**

The majority of respondents (73. 3%) were between the ages of 20 and 35; lesser percentages were between the ages of 15 and 19 and over 35 (13. 3%). Every responder had completed high school or a vocational program. 93. 3% of them were housewives. According to parity, 40% were primiparous and 60% were multiparous.

Frequency Distribution of Respondents' Pain Scale

Table 2. Respondents' Pain Scale.

Pain Scale		1	%	
Pre-Test				
Mild Pain		0	0	
Moderate Pain		10		66. 7%
Severe Pain		5		33. 3%
	Very severe pair	0	0	
Post Test				
Mild Pain		12		80%
Moderate Pain		3		20%
Severe Pain		0	0	
	Very Severe Pair	0	0	

According to the previous pain scale, 10 respondents (66. 7%) reported moderate pain, while 5 respondents (33. 3%) reported severe pain. In contrast, 12 respondents (80%) reported mild discomfort on the pain scale following the intervention, while 3 respondents (20%) reported moderate pain.

The Effect of Prenatal Exercise on the Scale of Lower Back Pain in Pregnant Women in the Third Trimester

Table 3. Effect of pregnancy exercise on back pain before and back pain after.

Test Statistics	
	Pain Scale After - Pain Scale Before
Z	-3. 690b
Asymp. Sig. (2-tailed)	. 000

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.

Table 3 illustrates that prenatal exercise before and after the intervention can reduce the Low Back Pain Scale. The Wilcoxon test, which was used in the statistical analysis study, produced a value ofρ = 0. 000. Ha can be accepted since the ρ value is less than the α value = 0. 000. This result suggests that third-trimester lower back discomfort in pregnant women can be effectively reduced by prenatal exercise.

Discussion

The usefulness of prenatal exercise in alleviating lower back pain in third-trimester pregnant women was investigated by researchers at the Likupang Community Health Center. Fifteen third- trimester responders with lower back discomfort made up the sample. The method employed was purposeful sampling. After then, the researchers talked about how the independent and dependent variables under study related to one another.

Based on Table 1, the influencing factor is age. The study's participants ranged in age from 20 to 35, which affects how pain is perceived. Age has an impact on pain tolerance; growing older is linked to a greater capacity to comprehend and manage pain (Suci Fitriana Said, Senja Atika Sari HS 2022). Due to hormonal changes and increased susceptibility to these changes, younger pregnant women typically have more lower back discomfort (Dheby Firdayanti 2018). According to earlier research, each person's perception of pain is unique and influenced by their experiences in life. Age- related neurophysiological changes may lower sensory perception and raise pain thresholds, improving the capacity to manage pain.

Table 1 indicates that education is the influential factor. Most pupils have completed high school or a technical high school. (Notoatmodjo, 2003) asserts that those with greater levels of education have superior knowledge than those with lesser levels, which lead to a lack of problem-solving and handling skills. Thus, the demand for high-quality health care increases with educational attainment. Higher educated people also care more about their children's nutrition and well-being. (Firdayanti Dheby, 2018).

Based on Table 1, the influencing factor is occupation. Almost all respondents work as housewives, namely 14 respondents (14. 3%). This is in accordance with the theory that someone who works has broader knowledge than someone who does not work and has a person who works will have much more time to work than someone who does not work. Someone who works can have greater access to information, including health, so knowledge and experience are more (WHO, Ministry of Health of the Republic of Indonesia, FKUI, 2009). According to researchers, respondents who are housewives have full responsibility for taking care of the family, so they do a lot of excessive physical activity. In addition, the experience and knowledge gained are less and curiosity for new knowledge is low.

Based on Table 1, the influencing factor is parity. Six responses (40%) were primiparous, whereas nine respondents (60%) were multiparous. Because of their prior labor and pregnancy experiences, multiparous women typically react to pain differently. discomfort perception during subsequent pregnancies may be heightened by past experiences with discomfort, anxiety, or problems. Women who had lower back discomfort before to becoming

pregnant are more likely to have it again, particularly if their pelvic and abdominal muscles weaken a condition that is more prevalent among multiparous women who don't exercise frequently. Primiparous women, on the other hand, typically have stronger abdominal muscles. Table 2 shows that 10 responders (66. 7%) had moderate lower back discomfort prior to prenatal exercise. Hormonal changes, weight gain, altered posture, an enlarged uterus, and excessive physical activity during pregnancy all contribute to lower back discomfort in the lumbosacral region.

According to Table 2, the majority of pregnant women 12 respondents, or 80% saw a decrease to minor discomfort following the prenatal exercise intervention. Pregnancy-related pain can be lessened by proper, consistent, and monitored physical exercise, such as prenatal exercise. Back pain problems have been demonstrated to be alleviated by prenatal exercise, a movement treatment designed to prepare pregnant women both physically and psychologically (Dian Alfianti, Iis Tri Utami, Dara Yupita 2024). It serves to strengthen the abdominal, pelvic floor, and ligament muscles needed in delivery and is a component of prenatal treatment in medical institutions (Beautiful Rahayu Widiarti 2021). Additionally, prenatal exercise enhances posture, balance, spinal health, core stability, and lessens pregnancy-related problems including exhaustion, back discomfort, and muscle soreness (Yanika Purimama 2018; Miratu Megasari 2015). These changes in pelvic floor postural instability can lead to back pain during and after pregnancy. The transverse is a trunk stabilizing muscle and is important for restoring trunk stability. (Suci Fitriana Said, Senja Atika Sari HS 2022)Prenatal exercises can be done three times a week in the afternoon or evening for 15- 30 minutes.

Pregnancy exercise had a substantial impact on lower back pain, according to Table 3, with a p- value of 0. 000 (<0. 05). This suggests that third-trimester pregnant women's lower back discomfort is considerably reduced by prenatal exercise. The researchers claim that prenatal exercise prevents stiffness and has a calming impact by increasing the suppleness of the pelvic floor muscles, ligaments, and abdominal wall muscles. Frequent exercise reduces back discomfort by increasing muscular suppleness. Prenatal exercise also increases the release of endorphins, which have comparable effects to morphine in terms of inducing relaxation, lowering stress levels, and easing pain. Additionally, core stability is strengthened by prenatal exercise, which helps preserve spinal health and lessen lower back discomfort. The benefits of prenatal exercise include: adapting the body to better support the weight of pregnancy, strengthening muscles to support additional pressure, building endurance, improving circulation and respiration, adjusting to weight gain and changes in balance, relieving tension and helping you relax, developing good breathing habits, and gaining confidence and a positive

mental attitude. (Dewi Nopiska Lilis 2019) This is supported by previous research conducted in various locations in Indonesia, which showed a significant decrease in lower back pain ($p<0.05$) after a third-trimester pregnant woman regularly performed prenatal exercise. In addition to prenatal exercise, in various countries, one method of prenatal exercise is Pilates. The Pilates method has been recognized in many countries and has been proven to help pregnant women maintain their fitness and facilitate the delivery process. Prenatal exercise movements with this method are focused on muscles for fitness, one of which is to reduce lower back pain and function during the delivery process. The first thing to do is to encourage the mother to assume the most comfortable position, then leg muscle exercises, breathing exercises, pelvic muscle exercises, calf muscle exercises, buttock muscle exercises, and anti-breech exercises.

Pregnant women who comply with SOP and follow midwives' and researchers' instructions perform pregnancy exercises for 30 minutes once a week for three weeks in a row, which helps reduce lower back pain experienced by pregnant women in the third trimester, according to researchers. Pregnant women should routinely attend pregnancy courses (pregnancy exercises), especially in the second and third trimesters, since they are one of the non-pharmacological options for treating lower back discomfort.

4. CONCLUSION

Based on the findings and analysis of a research conducted at Likupang Health Center on the impact of pregnancy exercise on lower back pain in third-trimester pregnant women. Prior to the intervention, the majority of 10 respondents (66.7%) at Likupang Health Center reported having moderate back discomfort. Following the intervention, 80% of the 12 responders with minor back pain reported a reduction in their pain level. Pregnancy exercise had an impact on lower back pain in third-trimester pregnant women at Likupang Health Center, according to the Wilcoxon Test findings using SPSS with a p-value of 0.000.

Based on respondents' suggestions, it is hoped that they will be more active in regularly attending prenatal classes (pregnancy exercises) scheduled with midwives or health professionals to learn about new methods in health science, especially Pilates. Prenatal exercises are a non- pharmacological therapy that is beneficial for pregnant women to reduce lower back pain in the third trimester, facilitate labor, and experience other complaints during pregnancy and delivery.

Based on the recommendations, community health centers are expected to provide a dedicated forum for prenatal classes (pregnancy exercises). These classes, in addition to providing information, can also serve as a forum for exchanging ideas, networking, and inspiring

new mothers. Midwives are also expected to continually update their knowledge of prenatal exercises, which can serve as a reference and consideration for midwives when implementing them in prenatal classes.

Based on these recommendations for future research, it is hoped that they will provide input for future researchers to conduct better research and develop research on how to reduce the severity of low back pain in pregnant women. They can also add new innovations to future research.

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