

THE EFFECTIVENESS OF PREGNANCY EXERCISE WITH KINESIO TAPING ON LOWER BACK PAIN IN PREGNANT WOMEN IN THE THIRD TRIMESTER

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ABSTRACT

Lower back pain is common for pregnant women. The back pain was caused by the shift of the center of gravity towards the front as the uterus enlarges. This study aims to determine the effectiveness of pregnancy exercise with the addition of Kinesio taping on low back pain in pregnant mother at third trimester. The study used a quasi-experimental method and it was conducted in a rural area under the coverage area of a puskesmas in Kebumen District. The population in this study was pregnant women in the area with a total of 247 pregnant women. This study involved 36 pregnant women in the third trimester selected using a purposive sampling technique with the criteria of primiparous and multiparous, 28-36 weeks of gestation, experiencing low back pain, and no history of comorbidities and complications during pregnancy. Data were analyzed using the Wilcoxon Signed Rank Test. The results showed that pregnancy exercise with the addition of Kinesio taping had a significant effect on reducing low back pain in pregnant mother in the third trimester indicated by a P-value of 0.001. Pregnancy exercise with the addition of Kinesio taping can reduce low back pain in pregnant women in the third trimester.

Keywords: *kinesio taping, low back pain, pregnancy exercise*

ABSTRAK

Nyeri punggung bawah gampang terjadi pada ibu hamil. Sakit punggung disebabkan oleh pergeseran pusat gravitasi ke arah depan saat rahim membesar. Penelitian ini bertujuan untuk mengetahui efektifitas senam hamil dengan penambahan Kinesio taping dengan nyeri punggung bawah ibu hamil trimester III. Quasi experimental yang digunakan pada penelitian yang di lakukan di Puskesmas di Kabupaten Kebumen. Populasi dalam penelitian ini adalah seluruh ibu hamil yang ada di wilayah tersebut dengan jumlah ibu hamil sebanyak 247 orang. Penelitian ini melibatkan 36 ibu hamil pada trimester ketiga yang dipilih menggunakan teknik purposive sampling dengan kriteria primipara dan multipara, usia kehamilan 28-36 minggu, mengalami nyeri pinggang, dan tidak ada riwayat penyakit penyerta dan komplikasi selama kehamilan. Analisis data pada penelitian ini menggunakan Wilcoxon Signed Rank Test. Hasil penelitian menunjukkan bahwa senam hamil dengan penambahan Kinesio taping berpengaruh signifikan pada penurunan nyeri punggung bagian bawah pada ibu hamil trimester III yang ditunjukkan dengan nilai P sebesar 0,001. Senam hamil dengan penambahan Kinesio taping dapat menurunkan nyeri pada punggung bagian bawah. pada ibu hamil trimester ketiga.

Kata kunci: *kinesio taping, senam hamil, nyeri punggung bawah*

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Introduction

Lower back pain is one of the discomforts or complaints in pregnant women with a prevalence of 35%-61%.¹ This complaint is increasingly felt at the 5-7 months of gestation (47%-60%).² Clinical symptoms due to lower back pain are increasingly felt in the third trimester.³ Lower back pain occurs as the center of gravity in pregnant women moves to the front due to the enlargement of the uterus and the fetus so that pregnant women must adjust themselves.⁴ One of the adjustments is the standing position.⁵ Additional stretching and fatigue, especially on the back will occur if the standing position is not correct.⁶ Lower back pain is also caused by hormonal changes during pregnancy which also change the helping and connecting tissues that result in muscle elasticity and flexibility.⁷

Lower back pain can be a serious complaint that can cause pregnant women to feel physically and emotionally tired and it also disturbs activities of daily living, rest or sleep, appetite, and concentration.⁸ Lower back pain during pregnancy can be at risk of becoming chronic back pain that is difficult to cure if it is not immediately handled after the delivery.⁹ Lower back pain on pregnant mother is influenced by some factors.² They are weight gain during pregnancy and spinal physiology, spinal curvature, and changes in body posture at the end of pregnancy, and an imbalance between the erector spine and lumbar spine muscles.¹ The enlargement of the uterus along with gestational age increases the degree of lordosis causing complaints of pain in the waist and lower back pain.¹⁰ Complaints of lower back pain can be caused by musculoskeletal problems or a problem in the pelvis such as infection.⁷ The complaint can be reduced pharmacologically and non-pharmacologically.¹¹ Pharmacological therapy can use non-steroidal anti-inflammatory drugs, muscle relaxants and analgesics, while non-pharmacological therapy can use some techniques such as relaxation, back exercise, physical exercise such as pregnancy exercise, and the use of Kinesio taping.¹²

Pregnancy exercise is a physical exercise to put pregnant women physically and mentally to have quick, spontaneous delivery and safety.¹³ Pregnant women should do pregnancy exercise after the sixth month of gestational.¹⁴ Pregnancy exercise is considered a good physical exercise for pregnant women in which the movements are adjusted to the changes that occur in the abdomen, pelvis, and genital organs during the pregnancy.¹⁵ Pregnancy exercise can maintain and strengthen and the elasticity of the abdominal wall muscles, pelvic floor muscles and the last ligaments, which are closely related to the birth process.¹⁶ The exercise also serves to maintain spinal health so that the risk of spine trauma due to pregnancy can be minimized states that pregnancy exercise is proven effective in reducing low back pain in pregnant women in the third trimester.¹⁷

Kinesio taping is a non-pharmacological treatment developed by Dr. Kenzo Tape in Japan.¹⁸ The characteristics of Kinesio taping are similar to human skin, so they can be used safely and effectively.¹⁹ Kinesio taping is an elastic rubber band without drugs addition that can overcome musculoskeletal problems.²⁰ Seyhmus Kaplan, et all (2016) mentioned that Kinesio taping is effective for reducing lower back pain in pregnant women as indicated by a P-value of <0.001. This study aims to identify the effectiveness of pregnancy exercise with Kinesio taping on low back pain in pregnant women in the third trimester.

Methods

Quasi-experimental design used in this research. It was conducted in a rural area in the area of a puskesmas in Kebumen District. The population in this study was all pregnant women in the area with a total of 247 pregnant mothers in December 2020. This study involved 36 pregnant women in the third trimester as participants. They were selected using purposive sampling technique. In intervention group researcher conducted in primary health care with the assistant. In intervention group used 3 times of therapy. Firstly, researcher gave Numeric Rating Scale (NRS) questionnaires to the participant in intervention group, afterward pregnancy exercise with kinesio taping and participant will fill the NRS again after intervention. Therapy conducted 3 times in respondent. The independent variable was pregnancy exercise with Kinesio taping, while the dependent variable was lower back pain in pregnant women. This study used the pain measurement instrument of the Numeric Rating Scale Instruction (NRS) with a scale of 0-10. The categorization of the scale was based on McCaffery, M., Beebe, A., et al. covering no pain (0), mild pain (1-3), moderate pain (4-6), and severe pain (7-10). The study used univariate analysis with frequency distribution and bivariate analysis with Wilcoxon Signed Rank Test.

This study was ethically approved by Ethics Committee of STIKES Muhammadiyah Gombong (041.6/II.3.AU/F/KEPK/III/2020). Informed consent was obtained from each participant prior to data collection.

Results

Based on the results of this study, the majority of the pregnant women's age was 20-35 years old (66.7%), have primary education level (66.7%), unemployed (75%), and multipara (69.4%).

Table 1. Characteristics of Respondents

Variable	n=36	%
Age		
20-35 years old	24	66.7
<20 years old or > 35 years old	12	33.3
Education level		
Primary	24	66.7
Secondary	10	27.8
High	2	5.6
Occupation		
Unemployed	27	75.0
Employed	9	25.0
Parity		
Primipara	11	30.6
Multipara	25	69.4

Table 2 shows that age, education level, and parity of pregnant women affect lower back pain with a p-value of <0.05, while occupation has no effect on back pain as the p-value is 0.493 which is higher than 0.05.

Table 2. Comparison of Variables to Low Back Pain (Post-Test)

Characteristics	Low Back Pain						P-Value
	Mild		Moderate		Severe		
	n	%	n	%	n	%	
Age							
20-35 years old	11	78.6	13	76.5	0	0.0	0.003
<20 or > 35 years old	3	21.4	4	23.5	5	100.0	
Education level							
High	1	7.1	1	5.9	0	0.0	0.002
Secondary	9	64.3	1	5.9	0	0.0	
Primary	4	28.6	15	88.2	5	100.0	
Occupation							
Unemployed	9	64.3	14	82.4	4	80.0	0.493
Employed	5	35.7	3	17.6	1	20.0	
Parity							
Primipara	11	78.6	0	0.0	0	0.0	0.001
Multipara	3	21.4	7	100.0	5	100.0	

Based on table 3, the results of the Wilcoxon Signed Rank Test between the pre-test and the post-test, positive means that after treatment there is 0 respondent who experiences pain. Then, negative means that after the post-test treatment, the pain level decreases by 22 respondents. Zero means that after the post-test treatment, there are no changes with a total of 14 respondents.

Table 3. The Effect of The Application of Pregnancy Exercise on Lower Back Pain Before and After Treatment

Sign	Obs	Sum ranks	pvalue
Positive	0	0	<0.001
Negative	22	561	
Zero	14	105	
	36	3916	

This means that clinically the lower back pain decreases after the treatment with a p-value of <0.001 meaning that it is statistically significant. Based on the practical/clinical results after the

treatment between the pretest and posttest groups, 22 respondents experienced a decrease in lower back pain.

Discussion

Based on the results of the study, pregnancy exercise therapy using Kinesio taping can reduce the intensity of lower back pain in pregnant women in the third trimester. The Wilcoxon Signed-Rank Test produces a p-value of <0.001 meaning that there is the smallest decrease in the intensity of lower back pain after pregnancy exercise with the addition of Kinesio taping. Therefore, pregnancy exercise with the addition of Kinesio taping is more effective in reducing the intensity of low back pain, compared to pregnancy exercise only.

Lower back pain is common for pregnant women, but the intensity of pain is relative in each individual and is caused by many factors.¹² Lower back pain often occurs in the second and third trimesters.²¹ In the second trimester, there is an increase in intensity along with increasing gestational age due to the shifting of the center of gravity and body posture as the uterus enlarges.²² It can be overcome by carrying out daily activities carefully and correctly to avoid wrong posture.²³ Meanwhile, in the third trimester, stretched muscles or compressed nerve roots will cause pain, tenderness, tension, or stiffness in the lower back.²⁴

Lower back pain is influenced by stress/strain of back muscles, tendons, ligaments which occurs when daily activities are carried out excessively.³ During pregnancy, the pelvis will experience softening of the joints, collagen tissue, connective tissue, and an increase in sex steroid hormones, so that the joints will become relaxed and there is also be hip joint mobility.¹² Besides, lower back pain in pregnant women can be overcome by pregnancy exercises in accordance with the abilities of pregnant women.²⁵

Pregnancy exercise is an exercise aimed at reducing lower back pain in pregnant women due to the increased angle of the curve.²⁶ Regular pregnancy exercise makes the joints and body tissues flexible and balanced so that lower back pain can be resolved.²⁷ However, performing exercise exceeding the recommended time will cause harm.²⁸ The recommended time is 15-60 minutes for all exercises. In this study, pregnancy exercise was carried out for ± 20 minutes and a maximum of 30 minutes considering the fatigue after the exercise can affect the pregnancy.²⁹

Doing pregnancy exercise will activate endogenous opioids hormone that functions as morphine. One of the endogenous opioid hormone systems is b-endorphin which will come out and be captured by receptors in the hypothalamus and limbic system which functions to regulate emotions.²⁸ An increase in b-endorphins has been proven closely related to natural sedatives, memory enhancement, increased appetite, sexual ability, blood pressure, and breathing, creating a sense of comfort, and reducing lower back pain in pregnant women.²⁰

Kinesio taping (Kinesio tape) is an adhesive plaster in the form of tape and made of latex material.³⁰ Some studies explained that Kinesio Taping therapy can also treat lower back pain with pressure on the skin and external load of the Kinesio tape which can stimulate skin mechanoreceptors (myelinated nerve fibers) which inhibit pain transmission according to the theory of gate control.²² The benefits of Kinesio taping are also explained by researcher in which it can stabilize and support the soft tissue structure of the body (muscles, tendons, ligaments) and joints that are injured/painful so that they can be actively moved without pain.²¹ Therefore, the blood flow and Lymphatics remain smooth resulting in a faster proper natural healing process³¹. Besides, it can also increase the range of motion of the joints.³²

Compared with pregnancy exercise therapy with the addition of Kinesio taping, pregnancy exercise therapy has a quite influential working mechanism in dealing with lower back pain.²² Regular exercises for \pm 20 minutes can stimulate the body to produce endorphins which provide a relaxed and comfortable effect.⁶ Explained that pregnancy exercise therapy with the addition of Kinesio taping has a combination of working mechanisms that are directly directed to the hurt part, namely, the lower back.²² This combination provides double protection.²¹ Besides providing a relaxing effect on the body's movement system, it also provides protection from outside the peripheral skin by having a recoil effect that makes the skin lift as the flexibility of the tape will create a wider space between the skin and muscles which result in improving blood circulation and lymphatic fluid drainage and stimulating skin mechanoreceptors (myelinated nerve fibers) which are sent to the hypothalamus which stimulating the pituitary gland to produce endorphin.⁶ Therefore, it can inhibit pain transmission based on the theory of gate control. Thus, pregnancy exercise with the addition of Kinesio taping is more effective than pregnancy exercise only.²⁶

Conclusion

It can be concluded that the pregnancy exercise affects the reduction of lower back pain in pregnant women and pregnancy exercise with the addition of Kinesio taping can reduce low back pain in pregnant women. So it is necessary for health worker to add Kinesio taping for pregnancy exercise to reduce lower back pain.

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Conflict of Interest

The authors declared that there is no conflict of interest.

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