

Pelvic Rocking and Back Rub Can Reduce Back Pain in Third Trimester Pregnant Women

Elmi Rahmadania¹, Nur Elly², Asmawati³

¹Department of Nursing, Faculty of Nursing, Health Polytechnic of Bengkulu, Bengkulu, Indonesia

^{2,3} Politeknik Kesehatan Kemenkes Bengkulu, Bengkulu, Indonesia

Corresponding Author: Nur Elly

DOI: <https://doi.org/10.52403/ijshr.20240336>

ABSTRACT

Background: Back pain is the most common complaint among third-trimester pregnant women.

Objective: The purpose of this study was to determine the effect of pelvic rocking and backrub on the intensity of back pain in third-trimester pregnant women.

Methodology: This type of research is a quasi-experiment with a control group. The sample size was 52 third-trimester pregnant women who participated in the antenatal care program at the community health center in Bengkulu City. The sample was divided into the intervention group and the control group, each of 26 pregnant women. The sampling technique used purposive sampling. The instrument used to measure back pain is the numerical rating scale (NRS). The intervention group was given a combination of pelvic rocking and backrub while the control group was given pelvic tilt. Both groups were given treatment once for four consecutive days. The pain intensity has been evaluated on the first day (pre-test) and the fourth day of the post test. The data analysis used is the Mann-Whitney U test.

Results: There is a significant difference in the decreased pain scale before and after treatment between the intervention group 4.19 with (P-value = 0.000) and the control group 2.38 (P-value = 0.002).

Conclusion: Pelvic rocking and backrub are effective techniques to lower back pain intensity in pregnant women in their

trimester.

Keywords: Backrub, Pregnant women, Back pain, Pelvic rocking, Pelvic tilt

INTRODUCTION

Pregnancy is a natural process that occurs in women, mothers experience various physical and psychological changes during pregnancy that can cause hormonal changes and the development of physiological problems. The most common complaint of third trimester pregnant women is low back pain. [1]. In the third trimester, there will be physical discomfort that often bothers the mother such as frequent urination, constipation and back pain [2]. Low back pain is the most common complaint among pregnant women worldwide. Lumbar instability is a major contributing factor to low back pain. [3].

Studies that have been conducted [4] in 869 pregnant women in the US, UK, Norway, and Sweden it was found that about 70 to 86 % of pregnant women experience back pain during the third trimester. It has been reported in many countries that low back pain is common in third trimester pregnant women. Pregnant women who experience back pain during pregnancy report about 25% pain by week 24 and 75% by week 36. According to [5] In Indonesia, the prevalence of back pain in pregnant women in the third trimester is 70% to 80%. This indicates that more and more pregnant women suffer from low back pain in the third trimester. During pregnancy, hormones affect and can change

the base of the supporting tissue in the back which can reduce muscle elasticity and flexibility especially in the back. Back pain is caused by movements that affect the back resulting in changes in balance and increased load during pregnancy. During pregnancy, hormonal changes cause the pelvis to rotate slightly forward. It is usually due to weakness of the ligaments that create muscles that can cause back pain. [6].

One of the techniques in reducing back pain is massage which can reduce discomfort during pregnancy. Back pain can be resolved more quickly with a backrub because it can make the back muscles become more relaxed. [7] Backrub is a massage that can reduce muscle tension and back pain intensity in third trimester pregnant women [8].

A study conducted [9] The study of 60 pregnant women in West Java showed that backrub was effective in reducing the intensity of back pain with a decrease before the intervention (6.83) while after the intervention was (5.03) meaning that there was a decrease in the scale of 1.8 after the intervention was carried out for four days with a duration of 20 minutes for each third trimester pregnant woman.

The pelvic rocking technique is one of the light gymnastic movements that is also effective in reducing back pain which can minimize and even eliminate back pain in the third trimester and increase the body activity of third trimester pregnant women whose movement activities are often limited due to frequent back pain. This movement is useful to help pregnant women to relax [10]. Research conducted by [11] In 114 pregnant women, the intervention group of 57 people was given pelvic rocking with a gym ball and the control group of 57 people was given a gym ball without exercise with a p-value of 0.001 while the control p-value was 0.002. The study was conducted at a health center in Metro City District, Lampung, namely Yosomulyo. The results showed that pelvic rocking had a positive effect in reducing the intensity of back pain. Giving pelvic rocking four times for one week with a duration of 35

minutes has an effect on reducing the intensity of back pain. Based on literature searches conducted from various journals, there has been no intervention to reduce back pain by combining backrub and pelvic rocking.

MATERIALS & METHODS

This type of research is quantitative using a quasi-experimental approach. This study used a pre-test and post-test design and control group design. This study examines at how pelvic rocking and backrub interventions impact lowering back pain scale in pregnant women during the third trimester. The pain Data collection was carried out for 2 months in 2 different places shown to third trimester pregnant women who experienced low back pain. Pregnant women who experienced low back pain participated voluntarily after being given an explanation of the actions and procedures that would be carried out during the study.

Sample

The sample in the study were 52 pregnant women in each intervention and control group with low back pain are 26 pregnant in the third trimester at the Pasar Ikan Community Health Centre, Bengkulu City and the private midwifery clinic. The research sample was selected using purposive sampling technique. To calculate the number of samples is used the two mean different formula.

Instrument

The pain data collection was carried out using the numeric rating scale (NRS) instrument used to measure back pain intensity in pregnant women. The NRS is a validated instrument for measuring various types of pain, including low back pain, and consists of four pain scale category: no pain (0), mild (1-3), moderate (4-6) and severe (7-10).

STATISTICAL ANALYSIS

Pain measurements were made once in the pre-test and once times in the post-test. After

data being checked for completeness, is entered into SPSS software. Then do univariate and bivariate analysis to assess the effect of the intervention. Before the bivariate test applied, we do a normality test to analyze the data distribution. The Pair-T test was applied to know differences in variable values pain before and after the intervention and the Independent T-test was used for differences in variable values pain between two of intervention (combination pelvic rocking and backrub and pelvic tilt). The analysis was performed at a 95% confidence level ($\alpha = 0.05$)

RESULT

The characteristics of respondents in this study aim to describe the respondents surveyed including age, parity, gestational age, activity, and occupation. The characteristics of the respondents in the table below are described below:

a) Description of Respondent Characteristics

Characteristics of respondents

Variable	Group		p-value
	Intervention (n=26)	Control (n=26)	
Age (Years)			0.49
Mean	28.62	28.69	
Median	28.50	26.50	
Min	20	14	
Max	41	41	
SD	5.412	6.757	
CI 95%	26.43-30.8	25.96-31.42	
Occupation			0.568
Working	11 (43,3%)	9(34,6%)	
Not working	15 (57,7%)	17(64,4%)	
Disease			0.313
Available	1 (3,8%)	0 (0,0%)	
None	25 (96,2%)	26 (100%)	
Parity			.34
Multipara	16(61,5%)	20(76,9%)	
Grande ultipara	1(3,8%)	1(3,8%)	
Primipara	9(34,6%)	5(19,2%)	
Activity			0.135
Heavy	4(14,4%)	5(19,2%)	
Medium	22 (84,6%)	21 (80,8%)	

Describing the mean age of respondents in the intervention and control groups is the same, namely 28-29 years old. Respondents in both groups were unemployed, namely 14 people (57.7%) in the intervention group and 64.4% in the control group, almost all respondents had no history of illness. Parity status in both groups was mostly

multiparous. The category of physical activity in both groups was mostly moderate activity, namely (84.6%) and (80.8%).

b) Description of Back Pain Characteristics

Description of back pain before and after

Variable	Group		P- Value
	Intervention (n=30)	Control (n=30)	
Pain (Baseline)			0.689
Mean	6.77	6.88	
Min	5	5	
Max	9	8	
SD	.070	0.993	
CI95%	.34-7.20	6.48-7.29	
Pain (Post Intervention)			0.000
Mean	2.58	4.50	

Min	2	2	
Max	5	5	
SD	0.758	1.334	
CI95%	2.27-2.88	3.96-4.04	

That the mean low back pain scale before the intervention in the intervention group was 6.77 while after the intervention was 2.58. In the control group, the mean pain before intervention was 6.88 and after intervention was 4.50. It can be concluded that there is a

more significant decrease in value in the intervention group, namely 2.58 while in the control group 4.50.

c) Mean difference in back pain scale

Variable	Group	Mean (SD)	P-Value
Back Pain	Intervention		
	Before	6.77 (1.070)	0.000
	After	2.58 (0.758)	0.002
	Control		
	Before	6.88 (0.993)	
	After	4.50 (1.334)	
P Value		0, 689	0,000

The statistical results of the Wilcoxon test with a p value of $0.000 \leq \alpha 0.05$ in the intervention group, there is a difference in the mean back pain scale in the intervention group before and after the pelvic rocking and backrub techniques, while in the control group the p-value is 0.002, meaning that there is a difference in the mean back pain before and after the p-tilt intervention.

d) Effect of pelvic rocking and back rub on back pain

Back pain	N	Mean (SD)	Mean Difference	p-value
Intervention	26	4.19 (1.327)	1.808	0.000
Control	26	2.38 (1.299)		

Statistical test results using the Mann-Whitney test showed a p-value of $0.000 \leq \alpha 0.05$. This indicates a significant difference in the mean score between the intervention group and the control group. Thus it can be concluded that the provision of pelvic rocking and back rub techniques has an effect on reducing the intensity of back pain in third trimester pregnant women.

DISCUSSION

1. Overview of respondent characteristics

The results showed that the mean age of respondents in both groups was at a safe reproductive age for pregnancy, namely 28-29 years. This is because at that age the reproductive organs are mature, especially the uterus so that it is able to accept pregnancy both in terms of physical and psychological aspects, but there are some mothers whose age is still very young and mothers who are old.

In line with research [12] in 40 pregnant women in Mojokerto which states that pregnant women are prone to back pain at the age of 20-35 years, age is also a factor that can affect the incidence of back pain in pregnant women.

Supported by research [13] in 37 pregnant women in Karang Anyar, which proves that the age range in pregnant women, especially young age, has a risk of mild, moderate to severe back pain because the back is not used to bearing the burden of the foetus, in older mothers the back will become weak so that the back cannot withstand the burden of the foetus. This can be related to the condition of back pain during pregnancy, one of which is the age when pregnant is too young < 20 years and > 40 years which is at risk of back

pain due to unaccustomed back muscles and weakness of the pelvic muscles that cannot support an enlarged uterus.

Based on occupation, most pregnant women do not work. According to [14] in 106 pregnant women in West Java stated that pregnant women who do not work are at risk of experiencing back pain due to prolonged sitting, standing or lying down. The relationship between back pain and the work of pregnant women can occur because when pregnant women do not work it will make the back stiff especially in third trimester pregnant women so that it can make the back feel painful coupled with the increasing uterine load.

In this study, it was found that almost all respondents had no history of illness but there were several pregnant women who had a history of illness with back pain but it was rare. According to research [15] The study on 53 pregnant women in Kudus stated that there was no direct relationship between back pain and history of disease but there are several diseases that can cause back pain, among others, more caused by prolonged and repetitive activities so that pain will begin.

The parity of mothers in this study was mostly multiparous. According to [16] In 55 multiparous mothers in South Oku, informed that multiparous mothers are more at risk of back pain due to the strength of the back muscles that are getting weaker and the back cannot support the uterus because the uterus is getting bigger and gives more weight to the mother's back, causing pregnant women to experience pain. multiparous mothers are more at risk of back pain due to weakened back muscle strength, in the intervention group most multiparous mothers (61%) and control (76%) experienced back pain.

Almost all pregnant women in this study did moderate activities. Physical activity in pregnant women is very risky for back pain There is a relationship between back pain and the activity level of pregnant women. In line with research [15] in 30 pregnant women in Surakarta, stated that back pain can occur due to activities carried out by pregnant women both moderate and heavy, pregnant women

who have moderate activity during pregnancy are at risk of experiencing back pain.

2. Mean back pain before intervention

The mean back pain scale of pregnant women in the intervention group was 6.77 (moderate pain) and the control group was 6.88 (moderate pain). After being given pelvic rocking and backrub techniques, there was a decrease in the pain scale in the intervention group to 2.58 (mild pain) while the pain scale in the control group given pelvic tilt was 4.50 (moderate pain) and there was a decrease in the pain scale in both groups. The results of this study indicate that there is a significant difference in the mean back pain in the intervention group before and after the intervention on the application of pelvic rocking and backrub techniques carried out for 4 consecutive days once a day. Likewise, in the control group there was a significant difference in mean low back pain before and after the intervention for 4 consecutive days.

Back pain during pregnancy can be caused by pregnant women stress and physical changes in pregnant women during pregnancy, hormones also affect and cause changes in the substance of the support and connective tissue in the lower back, which can reduce muscle elasticity and flexibility, especially in the back. [17].

Research results [18] in Tasikmalaya Hospital in 42 patients showed that giving backrub to back pain by providing relaxation in the back area for 4 days with a duration of 10-15 minutes had an effect in reducing back pain. The intervention group received a back massage (7.33) and the control group received a warm compress (7.29). After the intervention, the intervention group was (3.90) and the control group (4.95). It can be concluded that back massage is more effective in reducing back pain in third trimester pregnant women.

Study results from [19] with 57 Pregnant women in Raja city who experience back pain can use pelvic rocking to release muscle tension. back because the movements are

varied and can be done flexibly, the researcher stated After the pelvic rocking technique exercise, the statement of pregnant women experiencing a decrease in the intensity of the back pain scale was 4.75 before the intervention and 1.55 after.

3. Effect of pelvic rocking and backrub techniques on back pain

The results of the study prove that there is a significant difference in reducing the scale of low back pain in pregnant women after combined with pelvic rocking and backrub and compared to the control group of pregnant women given pelvic tilt. The decrease in back pain scale is better in mothers who are given a combination of pelvic rocking and backrub compared to mothers who are given pelvic tilt.

Pelvic rocking is one of the movements that can relax the back muscles, tighten the ligaments and hold the uterus, by relieving muscle tension and improving blood circulation, relieving back pain in pregnant women during the third trimester. [20].

Study conducted [21] about the effect of giving pelvic rocking with pregnant gymnastics was conducted on 50 pregnant women in the intervention and control groups in Globogan district to reduce the intensity of low back pain in third trimester pregnant women. As a result, the group showed that: given pelvic rocking for 3 days 30 minutes was significantly more effective in reducing the intensity of back pain before being given 4.75 and after being given 1.55 than given pregnant gymnastics for 3 days with 4.70 and after being given 3.00. Changes in pain in the pelvic rocking group were greater at 3.2 while in the pregnant gymnastics group it was 1.7. Backrub techniques or back rubs are useful for reducing complaints of pregnant women such as back pain, backrub can relax tense muscles. In line with research conducted [9] on 60 pregnant women in Bogor, showed that backrub performed for 3 days for 30 minutes can significantly reduce the scale of back pain compared to the control group given counseling and massage. The decrease in pain scale before and after backrub was 6.83

down to 3.03 while in the control group 6.62 down to 5.83. There is a significant difference in the mean intensity of back pain between the intervention group and the group that was not given backrub.

CONCLUSION

Based on the results of research conducted at the Bengkulu City Health Center in 2024, the pelvic rocking technique and back massage are effective and proven effective in reducing the intensity of back pain in third trimester pregnant women.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: This research publication is supported by the Department of Nursing, Health Polytechnic of Bengkulu.

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Sari J, Fibrianti, Lestari S. Pengaruh teknik pelvic rocking terhadap pengurangan nyeri punggung bawah pada ibu hamil multigravida di desa Jeruk Manis wilayah kerja Puskesmas Kotaraja. 2019;154–62.
2. I, . M. The Effect of pregnancy exercises on the sleep quality of pregnant women in the third trimester of Ulaweng Health Center work area, Bone Regency. *Int J Sci Healthc Res.* 2021;6(4):198–204.
3. Pandya RP, Shukla YU. Effect of lumbar stabilization exercises on stable versus unstable surface on pain and function in mechanical low back pain-an evidence based study. *Int J Sci Healthc Res.* 2021;6(2):273–9.
4. Bryndal A, Majchrzycki. Risk factors associated with low back pain among a group of 1510 pregnant women. *J Pers Med.* 2020;10(2):1–10.
5. Riansih C. Pengaruh perawatan punggung terhadap penurunan tingkat rasa nyeri punggung bagian bawah pada ibu hamil trimester III di puskesmas Depok II. *J Permata Indonesia.* 2022;13(1):54–61.
6. Herman S, Saputra RA, Oliveira Im De, , et al. Gambaran keluhan nyeri punggung pada

- ibu hamil trimester III di puskesmas Karang Tengah Kabupaten Cianjur. *Jur Tek Kim Usu*. 2019;3(1):18–23.
7. Mueller SM, Grunwald M. Effects, side effects and contraindications of relaxation massage during pregnancy: A systematic review of randomized controlled trials. *J Clin Med*. 2021;10(16).
 8. Sanggu FAM, Suyani. Pengaruh back massage terhadap nyeri punggung ibu hamil trimester III. *Prosiding Seminar Nasional Peneliti dan Pengabdian Kpd Masy LPPM Univ 'Aisyiyah Yogyakarta*. 2023;1:125–31.
 9. Ampera Y, Nawati N, Sriningsih N, Manurung I. Pengaruh back rub terhadap nyeri punggung dan kualitas tidur ibu hamil trimester III. *Malahayati Nurs J*. 2022;4(6):1520–32.
 10. Suwanti S, Marliana Y, Setyawati I. Effect of pelvic rocking technique on the relief of low back pain among multigravida pregnant women. *Embrio*. 2023;15(1):91–9.
 11. Supr, Herlina, Wulandari LA, Retno SN, Kanedi M. Effect of pelvic rocking exercise using the birth ball on fetal lie, attitude, and presentation. *Int J Women's Heal Reprod Sci*. 2019;7(4):461–6.
 12. Mardiana HR. Perbedaan penurunan skala nyeri punggung pada ibu hamil trimester iii dengan senam hamil dan tanpa senam hamil di desa Seduri Kecamatan Mojokerto. 2020;4283.
 13. Ratih P. Gambaran ketidaknyamanan ibu hamil trimester III pada nyeri punggung di puskesmas Jenawi Kabupaten Karanganyar. 2022;5(2):28–37.
 14. Amin DR. Analisis Faktor-faktor yang mempengaruhi nyeri punggung pada ibu hamil di desa Karang Raharja. *J Ilmu Kebidanan Kandung* [Internet]. 2023;15(3):348–53. Available from: <https://stikes-nhm.e-journal.id/OBJ/index>
 15. Bumi Pangesti C, Dwi Agussafutri W, Anggrawati Y. Pengaruh physical activity ibu hamil terhadap nyeri punggung bawah pada ibu hamil trimester III. *J Kebidanan Indonesia*. 2024;15(1):19.
 16. Elkhapi N, Minata F, Yulizar Y, Anggraini A. Hubungan usia kehamilan, paritas, aktivitas dengan terjadinya nyeri punggung bawah pada ibu hamil trimester II dan III di puskesmas Kemu Kabupaten Oku Selatan Tahun 2023. *Innov J Soc Sci Res* [Internet]. 2023;3(5):6411–25. Available from: <https://j-innovative.org/index.php/Innovative/article/view/4868>
 17. Ella Khairunnisa, Eka Riana, Dwi Khalisa Putri, Sella Ridha Agfiani. Gambaran derajat nyeri punggung pada ibu hamil trimester III. *WOMB Midwifery J*. 2022;1(2):13–7.
 18. Imaniar MS, Sundari SW. Effectiveness of warm compress in reducing low back pain during the third trimester. *J Res Midwifery Politek Tegal*. 2020;9(2):103–4.
 19. Puspitasari I, Indrianingrum I. Backrub therapy to reduce low back pain in pregnancy. *Proc 1st Paris Van Java Int Semin Heal Econ Soc Sci Humanit (PVJ-ISHESSH 2020)*. 2021;535:681–4.
 20. Anna L. Pelvic rocking exercise untuk penurunan nyeri punggung bawah pada ibu. 2023;4(2):312–21.
 21. Saptyani PM, Suwondo A, Runjati R. Utilization of back movement technique to intensity of low back pain in third trimester pregnant women. *Str J Ilm Kesehat*. 2020;9(2):535–42.

How to cite this article: Elmi Rahmadania, Nur Elly, Asmawati. Pelvic rocking and back rub can reduce back pain in third trimester pregnant women. *International Journal of Science & Healthcare Research*. 2024; 9(3): 296-302. DOI: <https://doi.org/10.52403/ijshr.20240336>
