



Effect of Pelvic Rocking on the Relief of Pelvic Pain in Pregnant Women

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Abstract

Seventy five percent of pregnant women in the world is reported to experience pains in back and waist during their pregnancies. These pains are frequently worsening in the following months as the pregnancies are growing. A study conducted in Gresik on 13 pregnant mothers implementing pelvic rocking in their gyms found that 46.2% of the subjects could decrease the pain scale into no pain, 23.1% into moderate, 15.35% into slight pain, and 15.35% showed no pain decrease. A previous study on trimester-III-pregnant women in Private Midwifery Service in Palembang found that four of five pregnant women experienced pains in back and hip. These pains were relieved if the muscles of back and waist were stretched. This study aimed at knowing the effect of pelvic rocking on the relief of back pain in pregnant women. This study was a quasi-experimental design pre-post test with control group design. The sample of study was 60 pregnant women collected with purposive sampling technique. The steps taken to prepare data for analysis were editing, coding, processing and cleaning. Statistical analysis used independent *t*-test and the results were presented in the forms of univariate, bivariate, and multivariate analysis. The results revealed that there was a decrease in back pain in pregnant women after doing pelvic rocking with four-time exercises for ten minutes. From the study it can be concluded that pelvic rocking could be used as an alternative technique to relieve back pain for its practicality and low cost.

Keywords: Pelvic rocking; back pain; pregnant.

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1. Introduction

Pregnancy is a physiological process associated with dramatic changes in anatomy, especially reproductive organs, signs, and symptoms of pregnancy, and physiology. By understanding these changes midwife can give appropriate counseling and assists pregnant mother to adapt to the physiological changes [1].

As the uterus expands during pregnancy, the center of gravity moves forward. In order to compensate this change, the expectant mothers must adjust their standing position. They must depend on her muscle strength, weight gain, joint relaxation, fatigue and posture before pregnancy. Improper posture will force additional stretching and fatigue in the body especially in the spinal cord, and cause pains in the back and waist of pregnant women [2].

It is reported that three quarters of pregnant women experiences back pain at some points. The pain appears in the following months of pregnancy and becomes worst as pregnancy is getting bigger [3]. One of the technique in yoga that can relieve pain in the third-trimester pregnancy is pelvic rocking [4].

A qualitative study conducted in Canada on six databases using special exercise combining yoga and pregnancy exercise showed that physical warming exercises including yoga with pelvic movement and not depending on physical strength can save both mother and fetus [5]. And then, a similar study in Gresik, Indonesia revealed that from 13 pregnant women doing pelvic rocking, 46.2% of respondents was reported to have decreased pain scale to no pain, 23.1% was to moderate, and 15.35% showed no decrease in pain scale [3]. A study of in Delanggu Surakarta, Indonesia on 18 respondents stated that pelvic rocking could reduce the intensity of waist pain in pregnant women in the first stage of labor process when taken as a single treatment to relieve back pain in pregnant women [6].

At this time many methods such as pharmacology (using drugs) and non-pharmacology (traditional), are offered to reduce pains. One of the non-pharmacological or complementary methods that can be applied to help reduce pains is massage that relaxes back and hip muscles [1].

Less or not at all drugs use could reduce side effects of newborn baby [7]. A study in France used electronic data base in 2006, concluded that complementary therapy would be use full to overcoming the pain or as a distraction to the source of pain and also to reduce the pain in the last week of pregnancy [8].

A preliminary study conducted on third-trimester pregnant women in Private Midwifery Services in Palembang City, Indonesia found that four of five pregnant women experienced pains in back and waist.

The pains were reduced when the muscles of back and waist were stretched. Pelvic rocking can be suggested as an alternative technique to relieve pains during pregnancy for its economical and practical reasons.

2. Methods

This research was a quasi experimental study using pre-post test with control group design. The sample of this

study was 60 pregnant women visiting Private Midwifery Service taken by purposive sampling technique. The data for analysis were prepared through editing, coding, processing, and cleaning. The data were analyzed using univariate, bivariate, multivariate, and *t*-test.

The research procedures were as follows:

1. The researcher asked for letter of research from Director of Health Polytechnic Palembang.
2. The letter was forwarded to four Private Midwifery Services (*Bidan Praktik Mandiri/BPM*) in Palembang City, Indonesia.
3. Research data from pregnant women of ≥ 36 -week pregnancy were collected.
4. The research subjects were selected through randomization to group them into intervention or control group.
5. The selected pregnant women appropriated with inclusion criteria for sample were contacted.
6. All samples were measured for the intensity of waist pain.
7. One group of pregnant women were taught pelvic rocking technique by an instructor and asked them to do it at home.
8. These pregnant women were evaluated whether they had done pelvic rocking or not at least four times for 15 minutes each.
9. The pregnant women having done pelvic rocking were measured again for back pain intensity. The back pain intensity of those without pelvic rocking was also measured.

3. Results and Discussion

3.1 Results

This study was conducted for approximately three months in six Private Midwifery Services in Palembang City. The sample was 60 people consist of 30 in intervention group and 30 in control group. The respondent characteristics are presented in Table 1.

It can be seen from Table 1 that the difference in terms of ages between intervention group and control group was 3.4%, 40% of respondents was high school graduates, 80% were housewives, almost 80% of them had ≤ 2 children, 90% of the pregnancies was multigravida, 80% had pain history during pregnancies, nearly 80% of them had long gap between pregnancies, and 80% of respondents had normal body weight based on BMI (*Body Mass Index*) calculations.

In control group nearly 65% of respondents was in young category, 40% was high school graduates, 80% was housewives, nearly 75% had a few children, nearly 90% of the existing pregnancies was multigravida, more than 80% had a history of pain during pregnancies, nearly 70% with had long gap between pregnancies, and nearly 90% of respondents had normal body weight based on BMI.

Tabel 1: Respondent characteristics

Variables	Intervention group		Control group	
	N	%	n	%
Age				
Old (≥ 30 y.o)	13	43.3	11	36.7
Young (< 30 y.o)	17	56.7	19	63.3
Means (range)	28.67 (17-42)		27.57 (17-42)	
Variables	Intervention group		Control group	
	N	%	n	%
Education				
Primary school	5	16.7	5	16.7
Middle school	9	30	12	40
High school	12	40	10	33.3
Associate degree	2	6.7	2	6.7
Bachelor's degree	1	3.3	1	3.3
Master's degree	1	3.3	0	0
Occupation				
Housewife	24	80	24	80
	2	6.7	2	6.7
Private sector	2	6.7	4	13.3
Public servant	2	6.7	0	0
Number of children				
Many	7	23.3	8	26.7
A	23	76.7	22	73.3
Means (range)	1.80 (0-4)		1.84 (0-4)	
Pregnancy				
Primigravida	3	10	4	13.3
Multigravida	27	90	26	86.7
Means (range)	2.80 (1-5)		2.83 (1-5)	
Pain history during pregnancies				
Yes	24	80	25	83.3
No	6	20	5	16.7
Gap between pregnancies				
Far	23	76.7	20	66.7
Near	7	23.3	10	33.3
Means (range)	4.15 (0-12)		3.47 (0-8)	
Body weight				
Below normal	18	60	4	13.3
Normal	12	4	26	86.7
Means (range)	19.10 (18-22)			
Total	100	30	30	100

Table 2: Mean score of waist pain

Score of waist pain	Pre-Test		Post-Test	
	Intervention group	Control group	Intervention group	Control group
Mean (range)	3.13 (0-7)	3.33 (2-7)	0.97 (0-3)	2.43 (1-5)

In Table 2 there is comparison of mean scores of waist pain between Pre-Test and Post-Test. Based on Table 2 it is known that the average score of waist pain in the intervention group decreased from 3.13 to 0.97 after post-test. Based on the results of analysis it is known that the average score of waist pain in the control group decreased from 3.33 to 2.43 after post-test.

The results of data analysis using paired *t*-test showed that in the intervention group, the mean difference of waist pain score between pre-test and post-test was 2.167 with a standard deviation of 0.950 and *p* value of <0.0001. From these results, it can be concluded there was a significant difference in waist pain score of pregnant women between before and after given pelvic rocking.

Table 3: Mean difference score of waist pain

Score of waist pain	Mean	SD	SE	Pvalue	N
Intervention group					
Pre-Test	3.13	1.252	0.229	<0.0001	30
Post-Test	0.97	0.765	0.140		
Control group					
Pre-Test	3.33	1.028	0.188	<0.0001	30
Post-Test	2.43	0.971	0.177		

Table 3 shows the difference in mean score of waist pain between pre-test and post-test of 0.900 with standard deviation of 0.845 and *p* value of <0.0001. Therefore, it can be concluded that in control group there was a significant difference in waist pain score between that in pre-test and post-test.

Table 4: Mean score distribution of waist pain based on respondent groups

Score of waist pain	Mean	SD	SE	Pvalue	N
Pre-test					
Intervention group	3.13	1.252	0.229	0.502	60
Control group	3.33	1.028	0.188		
Post-test					
Intervention group	0.97	0.765	0.140	<0.0001	60
Control group	2.43	0.971	0.177		

In order to find out the mean difference of waist-pain score between intervention group and control group, independent *t*-test was used. In pre-test, the *p*value was 0.502. It meant that on 95% confidence level there was no significant difference in mean score of waist pain after pre-test between intervention group and control group. In post-test, the *p*value was <0.0001. It meant that on 95% confidence level there was a significant

difference in mean score of waist pain after post-test between intervention group and control group. After that the respondent characteristics to waist pain score in post-test or after intervention were explored in bivariate analysis. The independent *t*-test was selected as statistical test because the data in independent variable was categoric and that independent one was numeric.

The results of bivariate analysis using the independent *t*-test showed that pregnant women aged ≥ 30 years old were 0.05 times earlier to have waist pain compared with those aged less than 30 years old. From statistical analysis it was found that there was no significant correlation between waist pain of young pregnant women and that of young ones (p value = 0.855).

The results of analysis indicated that pregnant women with high education level were 0.42 times earlier to experience waist pain compared with those with lower one. The results of statistical test revealed that there was no significant correlation between pregnant women's education level and the incidence of waist pain. This confirmed that there was no significant difference in waist pain between pregnant women with high education level and those with lower one (p value = 0.155).

The results of the analysis showed that employed pregnant women were 0.15 times earlier to have waist pain compared with unemployed ones. The results of statistical test showed no correlation between pregnant women's job and the incidence of waist pain. It indicated that there was no significant difference in waist pain between employed and unemployed pregnant women (p value = 0.695).

The results of analysis showed that pregnant women with many children were 0.31 times earlier to have waist pain than those with littleones. The statistical test showed no correlation between the number of children and the incidence of waist pain. This confirmed that there was no significant difference in waist pain between pregnant women with many children and those with little ones (p value = 0.364).

The results showed that primigravid pregnant women were 0.34 times earlier to experience waist pain compared with multigravid ones. From statistical test it was found that there was no correlation between history of pregnancy and the incidence of waist pain. This indicated that there was no significant difference in waist pain between primigravid pregnant women and multigravid ones (p value = 0.463).

The results of the analysis showed that pregnant women who had a history of gestational pain were 0.26 times earlier to experience waist pain than those with no history. The result of statistical test showed that there was no correlation between history of gestational pain and waist pain. This indicated that there was no significant difference in waist pain between pregnant women with history of gestational pain and those with no one (p value = 0.505).

The results of analysis showed that pregnant women with long gap between pregnancies were 0.34 times earlier to have waist pain than those with short one. The result of statistical test showed that there was no correlation between gap between pregnancy and the incidence of waist pain. This indicated that there was no significant difference in waist pain between pregnant women with long gap between pregnancies distance with those with short one (p value = 0.307).

The results of analysis showed that underweight pregnant women were 0.6 times earlier to have waist pain than those with normal body weight. The results of statistical tests found that there was a correlation between body weight and the incidence of waist pain. This indicated that there was a significant difference in waist pain between pregnant women with underweight and those with normal one (p value = 0.047).

Table 5: Mean score of waist pain based on respondent characteristics

Score of waist pain	Mean	SD	SE	Pvalue	N
Age				0.855	60
Old (≥ 30 y.o)	1.67	1.274	0.260		
Young (< 30 y.o)	1.72	1.059	0.176		
Education level				0.155	60
High	1.98	1.090	0.202		
Low	1.90	1.165	0.209		
Occupation				0.695	60
Employed	1.58	0.996	0.288		
Unemployed	1.73	1.180	0.170		
Number of children				0.364	60
Many	1.93	1.335	0.345		
A few	1.62	1.072	0.160		
Gravidity				0.463	60
Primigravida	2.00	1.155	0.436		
Multigravida	1.66	1.143	1.157		
Pain history				0.505	60
Yes	1.65	1.165	0.166		
No	1.91	1.044	0.315		
Gap between pregnancy				0.307	60
Wide	1.60	1.158	0.177		
Closed	1.94	1.088	0.264		
Body weight				0.047	60
Below normal	1.32	1.211	0.258		
Normal	1.92	1.050	0.170		

Table 6: Final modelling of multivariate analysis

Variable	Coef. B	SE	Pvalue	95% CI	r	Adj.R square
Body weight	0.603	0.298	0.047	0.007 – 1.198	0.257	0.050

Table 6 indicated that there was positive and moderate correlation between body weight of pregnant women and waist pain in post-test ($r=-.257$). The coefficient of determination (adjusted R square) was 0.050. It meant that regression model obtained that body weight could explain 5% variation of dependent variable (waist pain) in post-test and the remaining 95% was explained by other factors. The results of statistical test showed no correlation between body weight and waist pain in post-test. This indicated that underweight pregnant women were 0.661 times earlier to have waist pain compared with those with normal body weight (Coefficient B=0.661; 95% CI between 0.007 to 1.198; p value=0.047).

3.2 Discussion

The mean score of waist pain in the intervention group decreased from 3.13 to 0.97 after post-test. Based on the results of the analysis, it was found that the mean score of waist pain in the control group decreased from 3.33 to 2.43 after post-test. According to authors in [9], pain is a protective mechanism to raise awareness to the fact that necrosis is or will be occurring. Because of its value for life, nociceptors (pain receptors) do not adapt to repetitive or prolonged stimulation. The expectant mothers will feel these gradual. These pains will come and go, and become more frequent and reach its climax when the child birth is almost complete. These pains can develop unexpected conditions such as fatigue, fear, worry, and stress. Stress can cause weak uterine contractions and result in prolonged labor process [1].

According to authors in [10], the waist pain occurring in pregnant women is commonly caused by the changes of body posture in advanced pregnancy because the center of body gravity moves forward due to an enlarged abdomen. This change is also balanced by excessive lordose and this attitude can lead to spasmuson waist muscles. The pain in the upper part of the back can arise due to wrong posture and weak muscles. The weight of fetus makes the body of pregnant mother pushed forward, and to keep up with it the shoulders and the muscles of upper back must be upright. The pain that arises in the last trimester is occurred because the weight of fetus that depresses pelvic floor bone. Exercise given on pelvis can help fetus move toward a more pleasant position [11]. During pregnancy, women had gain weight periodically. The increase body weight makes pregnant women tired so easily and they tend to take body posture wrongly. Sometimes there are instability of joints due to flexing of ligaments, spinal cord disturbance and stretching of abdominal muscles that may cause lower back pain. First aid for these problems is by taking bed rest in a comfortable position and sleeping to the left or right with elevated feet. When the pain is relieved, the pregnant women can be taught about how to rotate and lift the pelvis [12]. Pelvic rocking exercises can be used to reduce back pain. Doing pelvic rocking during pregnancy with birthing ball can keep the muscles supporting the spine and can give sense of comfort for pregnant women [13]. This study showed a decrease in back pain intensity in pregnant women after pelvic rocking. The result of this study was in line with study of authors in [7], that which pelvic rocking excercise can strengthen the muscles of waist and abdomen. This exercise can reduce the pressure on waist by moving the fetus forward temporarily from the waist of mother so that the waist pain in the second stage of labor can be decreased. According to authors in [11], shaking and rotating pelvis back and forth for ten times and rotating pelvis from left to right for ten times can relieve pain and stiffness in pregnant women. Besides, twisting pelvis can also help reduce pressure in abdominal cavity and relieve back and hip pains. Under professional training, pelvic rocking can be used as one of the alternatives to reduce back pain in pregnant women since it is easy and low-cost exercise.

4. Conclusion and Suggestions

4.1 Conclusion

1. There was a decrease in waist pain in pregnant women after pelvic rocking.
2. Underweight pregnant women will experience back pain earlier than normal ones.

4.2 Suggestions

1. Pelvic rocking can be used as an alternative technique to reduce back pain in pregnant women because it is practical and economical.
2. It is expected that health workers can educate pregnant women to do pelvic rocking.

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