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**Original Research** 

# The Combination of Benson Relaxation and Pelvic Tilting on the Scale of Low Back Pain in Pregnant Women

#### Rinda Harwidiana Rani<sup>1</sup>, Harmayetty Harmayetty<sup>2</sup>, Tiyas Kusumaningrum<sup>2</sup>

<sup>1</sup> Bachelor Student, Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

<sup>2</sup> Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

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#### **CORRESPONDING AUTHOR**

Rinda Harwidiana Rani <u>rinda.harwidiana.rani-</u> <u>2015@fkp.unair.co.id</u> Bachelor Student, Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

## ABSTRACT

**Introduction:** Lower back pain in pregnant women trimester II and III causes difficulty in standing or even moving from bed, and the lousy impact is difficulty in walking if it has spread to the lumbar or pelvic region. The study aimed to know the effects of the combination of Benson relaxation and pelvic tilting on back pain in pregnant women.

**Methods:** The research was Quasi-experiment. The population is secondtrimester pregnant women who experience lower back pain in the Public Health Center Mojo and Public Health Center Gading, Surabaya. Purposive sampling was used to gain 56 respondents. The independent variable of this study was the second trimester pregnant women with low back pain treated for two weeks. The dependent variable was the intensity of the pain level. Research data obtained by pre-test and post-test with VAS questioner. Analyzed using the Wilcoxon sign rank test and Mann-Whitney test.

**Results:** As a result of the combination of Benson's relaxation and pelvic tilting, there was an influence on the back pain of second-trimester pregnant women. Based on the Mann-Whitney test, there were significant differences in the treatment group or the control group with p = 0.000.

**Conclusion:** The combination of Benson relaxation and pelvic tilting decreases the scale of low back pain in pregnant women. Pelvic tilting is more influential because it can reduce the pain scale.

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#### 1. INTRODUCTION

Lower back pain is a common disorder in pregnancy (Carvalho *et al.*, 2017) Increasing gestational age increases the intensity of low back pain in pregnant women (Kokanalı and Çağlar, 2019), so that influence health problem amongst the population and a major cause of disability that affects work performances (Duthey, 2013). Low back pain can be felt at all levels of gestational age, but most occur in the second trimester and third trimester (Palupi, Kolifah and Afandi, 2017). Pregnancy is a time of tremendous musculoskeletal, physical, and emotional changes, but yet a condition of wellness (Deepthi, Ponmathi and Sivakumar, 2016).

In Pakistan, 53.9% of 1500 pregnant women experienced low back pain (Sencan et al., 2018). According to (Fithriana, Firdiyanti and Zilfiana. 2018) guoted from (Mafikasari and Kartikasari, 2015) in East Java, about 65% of all pregnant women experience back pain. A study (Ratnasari, 2017) in 31 trimesters II pregnant women complained of low back pain, 45% in the severe category. and 55% were in the light category. Respondents were categorized based on the Nordic Body Map questionnaire. Of the 21 respondents at Jogolanan I health center, Klaten, Central Java, most pregnant women aged 20-35 years experienced severe back pain with a range of 31-37 weeks' gestation, and 24 people experienced mild pain.

Lower back pain occurs, one of which is due to the increasing size of the fetus and the mother's body weight, which causes an increase in body weight, which is supported by the spine that is supporting the spine and pelvis (Delima, Maidaliza and Susanti, 2015). This causes an arch in the spine towards the front (lordosis) (Sukeksi, Kostania and Suryani, 2018).

This curve results in stretching of the back muscles and eventually causes pain in the back area (Kurniati, Suciawati and Aulia, 2017). Pregnant women who experience low back pain will have difficulty standing, even moving from bed, and the unfortunate impact will be difficulty walking if the pain has spread to the pelvis and lumbar (Aswitami and Mastiningsih, 2018).

Low back pain can be overcome through several treatments, both pharmacologically and non-pharmacologically. Common types of non-pharmacological management of pain include physiotherapy, belt stabilization, nerve stimulation, acupuncture, massage, relaxation, Transcutaneous Electrical Nerves Stimulation (TENS), and yoga (Khanna, Ranjana and Gupta, 2012). The management of pain in the lower back during pregnancy varies, including pharmacological management, by administering analgesics such as paracetamol, NSAIDs, and ibuprofen. Non-pharmacological pain management, according to Lukman and Ningsih (2009) (Gerhanawati, quoted from 2016) is performed by relaxation such as Benson relaxation, exercises such as pelvic tilting and cold or warm compresses.

For that, researchers want to examine how much impact if Benson relaxation is in combination with pelvic tilting (pregnancy exercises) on pregnant women who experience low back pain.

#### 2. METHOD

#### 2.1 Design

This research was quantitative research with a Quasi-Experiment method. The sampling technique used is nonprobability sampling with purposive sampling (Nursalam, 2013).

2.2 Population, Samples, and Sampling

The population in this study was secondtrimester pregnant women at the Public Health Center Mojo, Gubeng, Surabaya in January - April 2019, Which were 244 pregnant women. Pregnant women in Public Health Center Gading, Kenjeran, Surabaya in January - April 2019 amounted to 284 pregnant women. The sample used is in accordance with the inclusion criteria, is trimester II pregnant women who experience low back pain, pregnant women with lowrisk pregnancies according to the Poedji Rochjati Score Card (KSPR), pregnant women with gestational age above 22 weeks to 27 weeks, and pregnant women who don't get pregnancy exercises. The sample used the Dahlan formula, 2009, and the results obtained were 24 people. To avoid the drop sample, 28 people were gathered. The sampling technique used is **a** nonprobability sampling type of purposive sampling. Thus, the sample chosen according to the inclusion criteria is the Public Health Center Mojo, Surabaya as the treatment group, and the Public Health Center Gading, control group, Surabaya, and each group will be given a pretest and post-test after treatment.

#### 2.3 Variables

The independent variable of this study was the second trimester pregnant women with low back pain treated for two weeks. The dependent variable was the intensity of the pain level.

#### 2.4 Instruments

The instrument in this research is the independent variable and the dependent variable. The independent variable

instrument used was a measuring instrument SPO (Sandar Procedure Operasional) combination of Benson relaxation and pelvic tilting. While the dependent variable was obtained using the questioner. The study's questioner for demographic, and questioner Visual Analogue Scale (VAS). Research on dependency using questioner Visual (VAS), Analogue Scale adapted from (Marantika, 2018). Demographic data contains six questions is age, gravida, end of education, never did a combination of Benson relaxation and pelvic tilting or not, and getting information on back pain or not. **Ouestioner Visual Analogue Scale applying** for measuring of pain represented score 0 "no pain" will get score 1-3 "mild pain," will get score 6-9 "moderate pain, and will get score 10 "very severe pain."

#### 2.5 Procedure

The study is carried out in the Public Health Center Mojo and Public Health Center Gading, Surabaya, on dates 27 Juni – 15 Juli 2019. Retrieval and data collection through midwife and caders at the Public Health Center Mojo, Gubeng, Surabaya and Public Health Center Gading, Tambaksari, Surabaya.

Data was collected by the door to door at the house pregnant women who were pregnant in the second trimester. Researches select respondents according to inclusion criteria that have been determined by researches—the namely groups, the treatment group. The treatment group was in the Public Health Center Mojo, Gubeng district. Researches visited respondents in their respective homes with cadres of Gubeng to explain the research objectives and procedures of prospective respondents, after 28 respondents were obtained, the researcher asked for fill out an informed consent form and filled in the demographic data questionnaire and then performed a pretest with the Visual Analogue Scale (VAS) questionnaire. The next step the researcher made was an appointment to gather in the Mojo village on 5,6,7 and 8 Jully 2019. The researcher divided the large group of 28 people into four small groups to be taught a combination of Benson relaxation and Pelvic Tilting with the Public Health Center Mojo Each group was midwife. shown a combination of Benson relaxation and Pelvic tilting my midwife until the respondent could do it independently at home. The activity was carried out for 20 minutes and was accompanied by cadres. Respondents were asked to do a combination of Benson relaxation and Pelvic Tilting 6 times for two weeks. Researches will remind respondents to carry out these activities with the short message service (SMS). Every time the respondent completes a combination of Benson relaxation and Pelvic Tilting, the supervisor will fill in the checklist provided. Then after doing it six times the next day, a post-test was made for changes in the intensity scale of low back pain in pregnant women.

The control group was conducted on 1-4 Researchers Iulv 2019. searched for prospective respondents in their respective homes (door to door) by taking and collecting data through the help of **a** midwife at Public Health Center Gading, Tambaksari, Surabaya. The control group was not given a combination of Benson relaxation and pelvic tilting but using an intervention or program from the Public Health Center, namely deep breathing and rest exercise. Researches observed the implementation of interventions given by the Public Health Center 3 times a week, all respondents were revisited, and a post-test was conducted to measure the level of pain. The group was taught a combination of Benson relaxation and pelvic tilting at the end of the study by going to the house (door to door) so that the control group and the treatment group had the same knowledge. In addition, the researcher will ask for a checklist sheet to check whether the control card carried by the respondent has been filled in full according to the date specified or not and to measure the level of pain using the Visual Analogue Scale (VAS). After the research is completed, the next step is data processing and analysis.

#### 2.6 Analysis

Data obtained at the pre-test and post-test in the treatment group were analyzed using the Wilcoxon sign rank test to determine the difference between before and after treatment. Mann Whitney test to compare data between the treatment group and the control group.

#### 2.7 Ethical Clearance

The study is done with ethical research covering informed consent, anonymity, and confidentiality. The study conducted ethics in the medical research commission of the department of nursing Airlangga University with number ethical test 1514-KEPK on the date 1 July 2019.

## 3. RESULT

In table 1 shows demographic data distribution of respondents age was 26-35 vears in the intervention group (75.0) and in the control group (82.1%). The level of education of respondents in both the intervention groups was (50.0%) and control groups (46.4%). Parity of pregnant or second child pregnant (multipara) shows the majority both in the intervention groups (46.4%) and control groups (57.1%). The majority or majority of occupations are housewives in the intervention groups (85.7%) and control groups (78.6%). Factors causing back pain were also the majority in intervention groups were tired (39.3%) and control groups (46.4%). The intensity of back pain ranged from 4 - 6.

In table 2, out of 28 respondents in the treatment group, the minimum scale before the intervention was one means "mild pain" and the maximum (the highest pain scale value) was six means "moderate pain." After treatment, the minimum scale was 0 means "no pain," and the maximum or the largest scale is a scale of three means "mild pain." In the control group, the pain scale after treatment was one means "mild pain." and after treatment was five means "moderate pain." After treatment, the pain scale of 28 respondents in the control group was four means "moderate pain." The average number in the treatment group before the intervention was 3.0671 and decreased after the intervention to 1.9643. From this figure, the difference is 1.6428. The average control group was 2.9286. After the respondent made a midwife or obstetrician's advice that is rest or practice deep breathing, the average number was 2.33939 with a difference of 0.5357. The control group experienced a slight change in pain level.

In the treatment group, the pre-test value of 15 (53.6) respondents indicated moderate

pain intensity with a scale between 4-6. The quality of pain in these 15 respondents was mostly like being pressed and appeared most often at night before going to sleep. The cause of the pain is tired because the majority of respondents are housewives who clean the house every day and always lift heavy loads (laundry buckets). After a combination intervention of Benson's relaxation and pelvic tilting (pre-test) was carried out, a decrease in the intensity of pain to mild pain in 26 (92.9%) respondents, the intensity of mild pain appeared on a scale between 1-3. The quality of pain is pinched, and most often occurs at night when the mother is no longer active. Duration from back pain for about 5-10 minutes.

Of the 28 respondents in the control group, 21 (75.0%) respondents complained mild pain on a scale of 1-3. The quality of pain was like being pinched; the pain disappears and arises. Most of the respondents are housewives who take care of the house every day. The cause of pain is tired because some respondents have children under five.

Pain occurs most often also at night. As many as 14 (14.3%) respondents did not experience pain at all because most did not do any activity, some respondents also received help from their parents in terms of taking care of the house and children. In the control group, moderate pain on a 4-6 scale was complained of by 4 (17.3%) respondents. The cause of pain is due to work; some of them are civil servants or teachers who stand or sit for too long every day.

Wilcoxon sign rank test in pre-test and post-test in the treatment group resulted in p = 0.00 with  $\alpha \le 0.05$ , which means that there was a significant difference between before and after giving a combination of Benson relaxation and pelvic tilting. In the control group, the Wilcoxon test rank sign test results in the pre-test and post-test were p = 0.011 with  $\alpha \le 0.05$ , which means there was a difference between before and after the intervention of midwives or obstetricians.

The results of pain changes in the treatment group and control group showed that there were significant differences between the two groups using the Mann Whitney test with p = 0.00 with  $a \le 0.05$ . There was an effect of Benson's relaxation and pelvic tilting on the scale of low back pain

Deependent Changetonistics	Interv	Intervention		
Respondent Characteristics	n	%	n	%
Age				
17-25 years old	1	3.6	0	0
26-35 years old	21	75	23	82.1
36-45 years old	6	21.4	5	17.9
Level Education				
Elementary School	1	3.6	2	7.1
Junior High School	7	25	10	35.7
Senior High School	14	50	13	46.4
Diploma / Bachelor	6	21.4	3	10.7
Parity				
1	9	32.1	9	32.1
2	13	46.4	16	57.3
3	5	17.9	2	7.1
>4	1	3.6	1	3.6
Job				
Housewife	24	85.7	22	78.6
Work	4	14.3	6	21.4
Trigger Factor				
Tired	11	39.3	13	46.4
Sit dwon to long	7	25	6	21.4
Position is wrong when sleeping	7	25	5	17.9
Sporadic activity	3	10.7	4	14.3
Quality				
As if cramps	7	25	1	3.6
As if be presseds	0	0	7	25
As if bruises	1	3.6	1	3.6
As if mosquito bite	2	7.1	1	3.6
As if pinch	5	17.9	1	25
As if strucks	11	39.3	11	39.3
As if stiff	2	7.1	0	0

Table 1. General Data Distribution of Respondent Public Health Center Mojo and Public Health Center Gading, Jully 2020 (n=56)

Table 2. Low Back Pain Scale Degree to Pregnant Women Second Trimesters Pre and Post on The Group Handling and Controll in The Public Health Center Mojo, and Public Health Center Gading, Jully, 2020 (n=56)

Low Back Pain	Intervention Groups				Control Groups					
	Pre		Post		Pre		Post			
	n	%	n	%	n	%	n	%		
No pain	0	0	2	7.1	0	0	5	17.3		
Mild pain	3	46.4	26	92.9	21	75	20	71.4		
Moderate pain	15	53.6	0	0	7	25	3	11.3		
Total respondent	28	100	28	100	28	100	28	100		
Wilcoxon test		a= 0.05 p=0.011								
Mann Whitney test	a= < 0.05 p= 0.00									

in pregnant women in the working area of the Mojo and Gading health centers, Surabaya.

#### 4. **DISCUSSION**

Many pregnant women in Mojo Public Health Center or Gading Public Health Center, Surabaya complain of pain in the back area. most pregnant women in the second trimester complain of pain with mild pain intensity. The majority of respondents are housewives and multiparas (pregnant with a second child). Multigravida mothers have experience of pregnancy and childbirth, so they form the mindset that lower back pain during pregnancy is a natural thing. According to the theory of Green and Lawrence (2005), human behavior is one of the factors of health. In addition, pregnant women who have a history of low back pain will also experience a higher risk of lower back pain. Age also affects the presence of low back pain in pregnant women at the Mojo and Gading Health Centers, Surabaya

The age of pregnant women between the two groups ranges from 26-35. Increasing age affects the physiological degenerative changes, and women have the risk of experiencing lower back pain three times more bear than men (Andini, 2015). Respondents also complained about various activity-related factors related to one's activities. The majority of respondents are housewives with various activities or jobs, including lifting buckets to dry clothes, sitting in the same position, and long time and changing sleeping positions (Kartikasari and Nuryanti, 2016).

Table 4 shows a decrease in low back pain scale after respondents received a combination of Benson relaxation and pelvic tilting. This proves that the combination of Benson relaxation and pelvic tilting can reduce the scale of low back pain in secondtrimester pregnant women and is measured using the Visual Analogue Scale (VAS) questionnaire.

According to (Ratnasari, 2017) the provision of pelvic tilting exercises for three weeks in second-trimester pregnant women is effective for reducing low back pain, strengthening abdominal, pelvic, and back muscles to improve maternal posture. Because, as the gestational age increases, so makes the weight gain gradually, and redistribution of concentration has a hormonal influence on the muscle structure during pregnancy. Both of these factors result in changes in posture in pregnant women. The greater the possibility of sacroiliac joint instability and increased lumbar lordosis, it will cause increasing pain (Purnamasari, 2019). In (Malarvizhi, Sai Kishore Varma and Sivakumar, 2017), pelvic tilting is very influential on low back pain. Low back pain occurs in many women. This was proven in his research that between men and women who complained of low back pain, it turned out that women who complained most of the low back pain by 16.26%. The measuring instrument used to measure low back pain is the Visual Analogue Scale (VAS) with (p <0.01). This research was conducted for two weeks. Research conducted by Lichayati

(2013) in (Megasari, 2015) that the relationship between pregnancy exercises with back pain in the Polindes of Tlanak Village, Kedungpring, Lamongan, the results of this study showed 75% of pregnant women who did not do gymnastics experienced lower back pain and the rest were pregnant women who often do pregnancy exercises do not experience lower back pain. Statistical test results p=0.001 (p < 0.05), which means it has a significant relationship between pregnant women.

## 5. CONCLUSION

For pregnant women to be applied in helping to reduce the intensity of back pain and for further research, it can be made an evidence base and additional information to develop further research with more samples and different approaches, so the results can be used as a reference for research.

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#### 7. CONFLICT OF INTEREST

#### None

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