Utilization of *Back Movement Technique* to Intensity of Low Back Pain in Third Trimester Pregnant Women

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ABSTRACT

One of the discomforts in third-trimester pregnancy is lower back pain. This can affect a woman's quality of life during the end of pregnancy and the early postpartum period. The prevalence of back pain during pregnancy can reach 80%. Treatment with drugs during pregnancy can also cause side effects. Movement in the *back movement technique* is called can overcome back pain in pregnant women. The study aims to prove the use of *back movement technique* to decrease the intensity of low back pain in third trimester pregnant women. The study used quasy-experimental, pretest-posttest with control group design. The sample of the study was third-trimester pregnant women with low back pain in the area of Gubug II Health Center, Grobogan as many as 40 respondents who had been selected with consecutive sampling technique. The instrument used to measure back pain in pregnancy is the Numeric Rating Scale (NRS). Data analysis used wilcoxon and man-whitney. There was a decrease in intensity of low back pain before treatment by 4.75 cm and after being given a back movement technique of 1.55 cm (p = 0.001). Back movement technique is proven to be more effective in reducing the intensity of low back pain in third-trimester pregnant women.

Keywords : *Back Movement Technique*, Low Back Pain, Pregnant Women, Third-Trimester.

BACKGROUND

Back pain is the most common discomfort felt in the third trimester of pregnancy. This can cause insomnia, the disruption of daily maternal activity causes psychological problems during the postpartum period which can affect a woman's quality of life during late pregnancy and the early postpartum period.(Pennick & Sd, 2013)·(Gutke, Lundberg, & O, 2011) Pregnancy back pain prevalence reaches >50%. In Indonesia, the prevalence of back pain during pregnancy reaches 60% to 80%.(Mafiksari & Kartiksari, 2015)

A significant factor influencing back pain in pregnant women is the increase in trimester in the gestational age of pregnant women.(Manyozo, Nesto, & Muula, 2019) The stomach will get bigger along with the development of the fetus, causing the center of gravity to move towards the front. Sacroiliac ligaments weaken so that the pelvic rotates forward which further increases hyperlordosis in pregnant women and increases tension in the pelvic or lower lumbar region. So back pain is one of the most complained discomforts.(Casagrande, Gugala, Clark, & Lindsey, 2015)

Management of back pain can be overcome by pharmacological and non-pharmacological therapy. The health risks associated with using analgesics in pregnancy are well documented. For example, Non-Steroidal Anti Inflammatory Drugs (NSAIDs) are contraindicated for pregnancy in the third trimester, and opioids are not considered safe during pregnancy. Opioids usually are often given before birth for pain management which can cause dependence. Potential dangers associated with prescription opioids used during pregnancy are poor fetal growth, premature birth, and birth defects.(Yazdy, Desai, & Brogly, 2015) Therefore back pain management using drugs during pregnancy has not been satisfactory.(Gorginzadeh, Imani, & Safari, 2016)

Women during pregnancy are strongly encouraged to do exercises to reduce pain (Han, Kim, Yang, Lee, & Sung, 2014) Non-pharmacological interventions such as postural training and stabilization exercises are effective in managing back pain during pregnancy (Katonis et al., 2011) According to Liddle's research, exercise can effectively prevent and overcome back pain in pregnancy.(Pennick & Sd, 2013) The exercise program also has a very beneficial effect related to the severity of lumbopelvic pain in pregnancy, can reduce the intensity of pain and the level of disability.(Kokic et al., 2017) Besides physical exercise during pregnancy can reduce the severity of back pain compared with those who do not exercise.(Davenport et al., 2019)

Several attempts to help pregnant women as handling back pain complaints have been carried out including government programs namely pregnancy exercise. However, this program has not been fully utilized by pregnant women. Many pregnant women who do not have the motivation to participate in pregnancy exercise classes, explained that 58.5% of mothers have low motivation which resulted in 33.8% of mothers not participating in pregnancy exercises.(Sembiring, Sidabukke, & Putri, 2016) Supported by preliminary studies conducted by researchers, in reality, the implementation of pregnancy exercises in the field is still classified as not being carried out routinely. If done, the target of the class of pregnant women is usually all pregnant women starting from trimesters I, II, III so that the movement of pregnancy exercises that are done is still general. It can be said that the movements of pregnancy exercises are still comprehensive and not focused on stretching the spine to reduce lower back pain that is usually experienced by mothers during the third trimester of pregnancy.

Therefore researchers want to try a simple intervention because the movement has focused on stretching the spine, easy to remember and practically performed by pregnant women, home-based, does not need special equipment, is not bound by time and funds to

implement it and is suitable for pregnant women namely by providing a *back movement technique* that is expected to be a better effort than the implementation of pregnancy exercises that even still cannot be done routinely. *Back Movement Technique* is a physical exercise that has focused on the lower back and pelvis which helps overcome complaints of lower back pain in the mother during pregnancy. *Back movement technique* consists of several movements, namely pelvic rock, pelvic tilt, hamstring stretchz, lumbar rotation, and cat and cow which can certainly be safe for pregnant women. This technique is inspired by william flexion exercise and pregnancy exercises.

According to research explained that pelvic rock in the management of low back pain has an important value in reducing disability during pregnancy.(Elkheshen, Mohamed, & Abelgawad, 2016) Then, the cat and cow movement is part of the pregnancy exercise movement which is also found in yoga movements which focus on reducing complaints of low back pain. Pelvic tilt and hamstring stretchz movements are taken from the william flexion exercise technique where the exercise is designed to increase lumbar flexibility to prevent lumbar extension and strengthen abdominal and gluteal muscles to overcome lower back pain. Movement in physical exercise is stretching or stretching. With stretching the muscles contracting due to shortening of the sarcomere will experience relaxation so that they experience muscle flexibility.(Page, 2012)

METHODS

This research was a quasi-experimental with a pretest-posttest with control group design. This intervention was given 2 times a week for 4 weeks with a duration of 30-60 minutes in February-March 2020. The population in this study were all trimester III pregnant women as many as 190 people in the Gubug 2 region of Grobogan Regency who experienced back pain. The sample of this study was 40 respondents consisting of 20 respondents in the intervention group (back movement technique) and 20 respondents in the control group (pregnancy exercises). The sampling technique in this study uses nonprobability sampling. The determination of the research sample is done by using consecutive sampling following predetermined criteria. Measurement of back pain intensity in pregnant women using the Numeric Rating Scale (NRS) pain scale. Data analysis used Wilcoxon and Man-Whitney to determine the effect of back movement technique on the intensity of low back pain in third-trimester pregnant women. The intensity of low back pain in pregnant women is measured before (*pretest*) and 4 weeks after the intervention (*posttest*). *Ethical clearance* this study obtained from the Health Research Ethics Commission Dr. Moewardi Surakarta with Number:1482 / XII / HREC / 2019 dated January 9, 2020

RESULTS

Table 4.1 Distribution of Characteristics of Respondents by Age, Gravida and Working Status

Variable	Group		*p value*
	Control n=20	Intervention n=20	
Age (years) :			
a. Mean±SD	27±4,316	26,45±4,478	0,718 [a]
b. Min-max	20-34	20-34	
c. Median	26,50	26,50	
Gravida:			0,786 [b]
a. Primigravida	9 (45%)	10 (50%)	

b. Multigravida	11 (55%)	10 (50%)	
Working Status :			
a. Working	8 (40%)	4 (20%)	0,168[b]
b. Not Working	12(60%)	16(80%)	

a : *Man Whitney*,b : *Chi-square*

Table 4.1 shows that the characteristics of respondents included age, gravida, and working status. Respondents in this study were 40 pregnant women who were divided into 2 groups: 20 respondents in the control group and 20 respondents in the intervention group. The average age of pregnant women in the control and intervention groups is 27 and 26.45 where they are still in a healthy reproductive age and p = 0.718 where p> 0.05 means that there is no difference in age between the two groups.

Based on the results of gravida analysis in both groups, respondents were identified as primigravida (1st pregnancy) with the following percentages: the control group of 9 people (45%) and the intervention group of 10 people (50%). Respondents with multigravida (2-4 pregnant) with the following percentages: the control group of 11 people (55%) and the intervention group of 10 people (50%), and the value of p = 0.786 where p> 0.05 which means no significant difference gravida in the two groups.

Based on the results of job analysis in the two groups, it was found that respondents who did not work with the following percentages: the control group was 12 people (60%) and the intervention group was 16 people (80%). Respondents who work with the following percentages: the control group of 8 people (40%) and the intervention group of 4 people (20%), and the value of p = 0.168 where p> 0.05 which means there are no significant differences in employment in the two group.

**Tabel 4.2 Analysis of Pain Intensity Differences Using the Numeric Rating Scale (NRS) in the Control and Intervention Groups**

Variable	*Pretest*	*Posttest*	P Value	Difference
	Mean + SD	**Mean + SD**		
NRS pain scale				
Control	4,70+0,733	3,00+0,973	0,001[d]	1,70+0,801
Intervention	4,75+0,786	1,55+1,276	0,001[d]	3,20+0,834
P value	0,872[c]	0,001[c]		0,001[c]

c : *Man-Whitney*,d : *Wilcoxon*

Table 4.2 shows that the results of the measurement of the intensity of low back pain using a numeric rating scale (NRS) before being given treatment in the control group had an average of 4.70 + 0.733 cm while the mean after treatment was given at 3.00 + 0.973 cm with a p-value of 0.001. Pain intensity before being treated in the intervention group was 4.75 + 0.786 cm while the mean after 1.55 + 1.276 cm with a p-value of 0.001. This means that there is a significant difference between the intensity of low back pain in pregnant women before and after treatment in the control and intervention groups.

The mean difference in back pain intensity in the control group was 1.70 + 0.801 cm, whereas in the intervention group it had a mean of 3.20 + 0.834 cm with a p-value of 0.001 (<0.05). It can be said that the use of back movement technique is more influential in reducing the intensity of low back pain in third-trimester pregnant women compared to the control group.

Table 4.1 Comparison of Mean Lower Back Pain of Pregnant Women Using NRS Scale Before and After Treatment in Both Groups
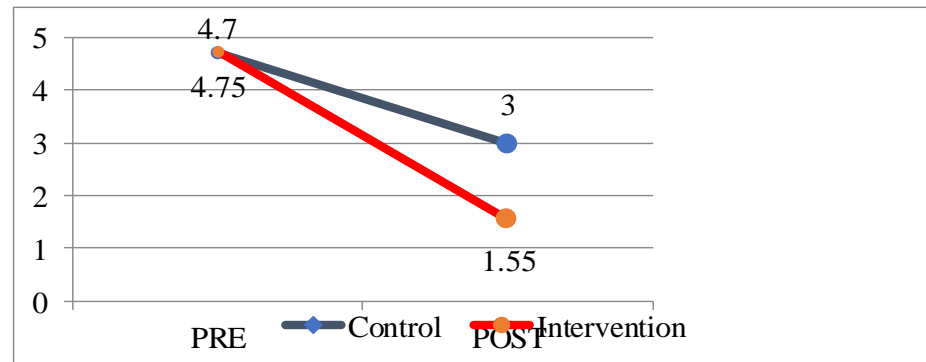
DISCUSSION

Based on Table 4.1, the respondent's characteristic data consisted of maternal age, gravida, and working status in the intervention group and the control group. The average age of the control group was 27 years and the control group was 26 years. According to healthy reproduction for women is around the age of 25 to 35 years, which is a safe age for getting pregnant and giving birth..(Megasari, 2015) The increase in the incidence of low back pain can occur because one of them is the age of the mother.(Casagrande et al., 2015) Related to back pain experienced by pregnant women also mentioned age is a factor that can affect back pain with a prevalence of 48%.(Ansari, Hasson, Naghdi, Keyhani, & Jalaie, 2010) By the results of the study in terms of the age of respondents that other studies revealed that the average age of pregnant women is 26.2 years in pregnant women experiencing back pain during pregnancy.(Emília et al., 2017)

Obtained the characteristics of respondents data that is gravida, the majority of respondents in both groups namely mothers with multigravida are shown with a percentage of 55% in the control group and 50% in the intervention group. By the theory that multiparous women have a 2x higher chance of experiencing low back pain (LBP), from 172 research subjects, there are 105 multiparous and 67 uniparous. The incidence rate of multipara is 67.6% higher than 2x as much as 49.3% uniparous.18 The incidence of low back pain (LBP) is higher in multigravidas than in primigravidas.(Join, 2018)

Obtained data on the characteristics of respondents namely work, the majority of respondents in both groups namely mothers who did not work indicated by the percentage of 60% in the control group and 80% in the intervention group. By other studies that state that increased physical stress due to homework can be associated with risk factors for low back pain in pregnant women.(Sencan, Ozcan-Eksi, Cuce, Guzel, & Erdem, 2017) Supported by other studies also revealed that low back pain is most commonly experienced by housewives due to many activities in an unfavorable position, where lower back pain is one of the disorders of the musculoskeletal system caused by daily activities that ignore the problem of body position.(Shonafi, 2012)

The decrease in intensity of low back pain in the intervention group was greater than in the control group marked by p-value 0.001 (<0.05). Back Movement Technique is a physical exercise to reduce complaints of back pain in pregnant women which is an innovation resulting from adopting the william flexion and pregnancy exercise

movements, where this movement technique has focused on stretching the lower back that is expected to facilitate pregnant women in overcome complaints of low back pain. The William Flexion technique is an exercise that is specially made and aims to reduce pain, increase lumbar flexion, prevent lumbar extension, and strengthen abdominal and gluteal muscles to treat lower back pain without surgery.

The movement of the back movement technique method consists of movements that have been ascertained safe for pregnant women, namely pelvic rock, pelvic tilt, hamstring stretchz, lumbar rotation, and cat and cow. Where according to research explained that pelvic rock in the management of low back pain has an important value in reducing disability during pregnancy.(Elkheshen et al., 2016) Also, the cat and cow movement is part of the pregnancy exercise movement and is found in yoga movements that focus on reducing the discomfort of lower back pain during pregnancy.

By the results to research Ozdemir (2015) that stretching exercise programs for pregnant women can reduce the intensity of back pain. Moreover, it can reduce pain, increase muscle strength, improve functional status and improve quality of life.(Ozdemir, Bebis, Ortabag, & Acikel, 2015) Supported by Kluge's research (2011) which explains that special training programs such as strengthening and stretching exercises can reduce the intensity of low back pain and improve functional abilities during pregnancy.(Kluge, Hall, Louw, Theron, & Grové, 2011)

With the back movement technique, it will stretch the back muscles to relax, strengthen the flexibility of the lower muscles as a balance to increase the abdominal period, flex the lower back muscles and increase flexibility in the spine which can ease and prevent lower back pain during pregnancy.(Elkheshen et al., 2016; Marelly, 2017; RNV, P, & VPR, 2016; Suputtitada, Wacharapreechanont, & Chaisayan, 2002; Wulandari & Wahyuni, 2019)

CONCLUSION

Utilization of back movement technique which is done 2x in a week for 4 weeks with a duration of 30-60 minutes is proven to be more effective in reducing the intensity of low back pain in third-trimester pregnant women compared to pregnancy exercise.

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