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Original Article

Combination pelvic rocking exercises with belly dance to reduce labor pain

Cylia Dzikra Ayu Berlita [1]✉, Krisdiana Wijayanti [1], Sudirman [1]

[1] *Master in Midwifery Program, Poltekkes Kemenkes Semarang, Central Java, Indonesia*

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CORRESPONDENCE

Phone: 62 813-1682-5054

E-mail: cyliadzikra20@gmail.com

A B S T R A C T

Background: Labor pain will get more substantial along with the increase in cervical dilatation and can affect the mother's psychological condition and the welfare of the fetus. Pelvic rocking exercises help reduce pain during labor, but the combined pelvic rocking exercises with belly dance for birth have not been studied. In this study, combining pelvic rocking exercises with belly dance for birth as physical preparation and exercise, especially in the pelvic area, can reduce pain effectively and efficiently so that mothers can give birth vaginally.

Purpose: Analyze the effect of intervention combination of pelvic rocking exercises with belly dance for birth to pain intensity of first stage the active phase in mother birth.

Methods: This is Quasy experimental research with pretest and posttest with control group design. Respondents were primigravida mothers during the first stage of the active phase. Determination of respondents by accidental sampling obtained the treatment group (n=17) and control group (n=17). The intervention was given for 20 minutes every 1 hour during the first stage of the active phase.

Result: The combined intervention of pelvic rocking exercises with belly dance for birth was effective in reducing pain intensity as seen from the average decrease in pain intensity every hour, at the 1st hour of 4.0, the 2nd hour of 3.0, the 3rd hour of 2.7, and the 4th hour of 2.6 ($p<0.001$)

Conclusion: The combination of pelvic rocking exercises with belly dance for birth is effective to pain intensity of the first stage, the active phase in women giving birth.

INTRODUCTION

Pain during labor will get stronger with increasing cervical dilatation, and intense pain intensity usually occurs during the first stage of the active phase.[1] The World Health Organization (WHO) stated that 2700 mothers gave birth in the delivery process; data showed that 15% of the entire labor process occurred without pain or mild pain, while 85% experienced moderate to severe pain.[2]

The intensity of pain during childbirth can affect the mother's psychological condition, the delivery process, and the welfare of the fetus. The release of catecholamine and steroid hormones can occur due to the mother experiencing stress caused by labor pain.[3] others giving birth will experience physiological changes in the body, such as an increase in blood pressure, an increase in heart rate, and an increase in respiratory rate. This situation must be overcome because it can increase glucose levels in the mother's body giving birth. In this case, it can inhibit the occurrence of uterine contractions. This will cause prolonged labor, the risk of Sectio Caesarian, and delivery using assistive devices such as vacuum and forceps.[4]

Previous research studies stated that pelvic rocking exercises intervention could help reduce pain, increase self-control, and get a comfortable childbirth experience by producing beta-endorphin hormone.[5,6] Psychological preparation is also essential because of the close relationship between pain and self-efficacy.[7] However, if the movement is carried out in a standing position, it causes the mother to feel uncomfortable, resulting in fatigue and anxiety.

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Mother giving birth in a standing position and moving the pelvis will strengthen the perineal muscles, stretch the spinal and pelvic ligaments, and strengthen abdominal muscles. The fetal head will experience rotation and a decrease in the presentation during the delivery process. Studies show that this movement will increase the intensity of uterine contractions and cervical dilatation.[7–9] However, in some of these studies, pain intensity measurements were not carried out every hour, so the decrease in pain intensity every hour could not be known.

Pelvic rocking exercises in practice are still not optimal, so in this case, it can be done by combining belly dance for birth. Belly dance for birth is ideal for maternity mothers because it can provide flexibility, strength, and calm during the labor process. Mothers giving birth need physical preparation and exercise, especially in the pelvic area, to affect labor progress, and mothers can give birth vaginally. In this case, it can also reduce pain effectively and efficiently.[10] Research on the intervention of a combination of pelvic rocking exercises with belly dance for birth on reducing labor pain has never been done.

The accuracy of the results of this study was assessed by measuring the intensity of pain every hour because the more cervical dilatation increases, the more the mother feels the pain. The purpose of this study was to analyze the effectiveness of the intervention of a combination of pelvic rocking exercises with belly dance for birth on the intensity of pain in the first stage of the active phase in mother birth.

METHOD

Study Design

This study used a quasi-experimental design with pretest and posttest with control group design.[11]

Setting and Respondents

The study was conducted at Mutiara Medika Clinic, Rangkasbitung District, from February to March 2021. Respondents were primigravida mothers during the first stage of the active phase. The number of samples was 34 respondents divided into the treatment group (n=17) and the control group (n=17) randomly according to arrival.[12] The criteria to be a respondent of the sample, with the included sample criteria being primigravida, upper arm circumference > 23.5 cm, Sundanese, gestational age >37 weeks, vaginal delivery, presentation of the back of the head the fetus, the maximum maternal pulse is 98 beats/minute. The fetal heart rate is 120-160 beats/minute. Exclusion criteria were prolonged labor, delivery with assistive devices or Sectio Caesarea, the occurrence of bleeding, a mother who died during labor, getting induction of labor through drugs.

Experimental Procedure

The treatment group was given pelvic rocking exercises with belly dance for birth. Researchers provide interventions when the mother in labor enters the first stage of the active phase or until complete dilatation. The intervention was given for 20 minutes every 1 hour during the first stage of the active phase. Pretest 5 minutes before the intervention and posttest 5 minutes after the intervention. The pretest and posttest measurements were carried out every 1 hour for each intervention. The control group was given a breath relaxation intervention as standard care.

The Variables, Instrument, and Measurement

The dependent variable is labor pain in the first stage of the active phase. The researcher used the instrument of the observation sheet for measuring pain according to the Visual Analog Scale (VAS) range. Labor pain variables were measured at the 1st hour, 2nd hour, 3rd hour, and 4th hour before and after the intervention was given.

Data Analysis

The analysis used the T-Test and Friedman Test to determine the effectiveness of the intervention of a combination of pelvic rocking exercises with belly dance for birth on the intensity of pain in the first stage of the active phase in mother birth.

Ethical Consideration

The ethical license was obtained from the Medical/Health Research Bioethics Commission, Faculty of Medicine, Sultan Agung Islamic University, Semarang, under Number 43/II/2021/Bioethics Commission.

RESULTS

Table 1 shows that the characteristics of the age of the respondents have an average reproductive age of 20-35 years. Most of the respondents' education has a high school education level. Most of the respondents' anxiety levels were in the category of mild anxiety.

Table 1. Characteristics of Respondent (n=34)

Characteristics	Result
Age	
20-35 Years	34 (100%)
Education	
Middle School	10 (29.4%)
Hight School	21 (64.7%)
Collage	3 (5.9%)
Anxiety Level	
No Anxiety	3 (11.8%)
Mild Anxiety	24 (70.6%)
Moderate Anxiety	7 (17.6%)

Measurement of pain intensity in the treatment group was measured up to the 4th hour because the maternity mother reached the complete opening at the 4th hour. Table 2 shows that the average difference in the decrease in pain

intensity from the 1st hour to the 4th hour before and after the intervention in the treatment group is higher than the average difference in the decrease in pain intensity from the 1st hour to the 4th hour before and after the intervention in the control group. The calculation results in the 1st hour before and after the intervention obtained an effect size of 0.90, the 2nd hour obtained an effect size of 0.91, the 3rd hour before and after the intervention obtained an effect size of 0.81, and the 4th hour an effect size of 0.88 was obtained.

Table 2. Difference of Pain Intensity in the 1st To 4th Hours between the Treatment Group and the Control Group

	Group	Mean±SD	p-value	Effect size
1st Hours				
Pre	Treatment	6.82±0.80	0.811	0.04
	Control	6.88±0.78		
Post	Treatment	2.82±0.64	0.001	0.84
	Control	5.53±1.07		
Δ	Treatment	4.00±0.61	0.001	0.91
	Control	1.35±0.61		
2nd Hours				
Pre	Treatment	7.23±0.66	0.830	0.05
	Control	7.29±0.59		
Post	Treatment	4.18±0.73	0.001	0.82
	Control	6.29±0.77		
Δ	Treatment	3.06±0.43	0.001	0.91
	Control	1.00±0.50		
3rd Hours				
Pre	Treatment	8.00±0.53	0.228	0.21
	Control	7.76±0.56		
Post	Treatment	5.27±0.46	0.001	0.81
	Control	6.82±0.64		
Δ	Treatment	2.73±0.59	0.001	0.82
	Control	0.94±0.66		
4th Hours				
Pre	Treatment	8.33±0.58	0.947	0.02
	Control	8.35±0.61		
Post	Treatment	5.67±0.58	0.004	0.83
	Control	7.59±0.71		
Δ	Treatment	2.67±0.58	0.001	0.88
	Control	0.76±0.44		

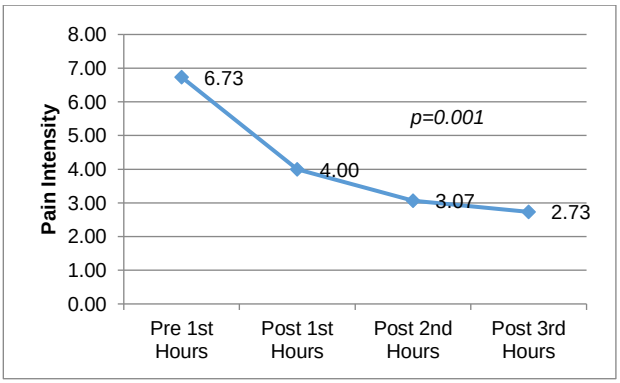

Figure 1. Pain Intensity Before and After Intervention in the Treatment Group

Figure 1 shows that the Friedman test results obtained p=0.001, indicating a significant difference in pain intensity from the four observation times. The results showed that applying a combination of pelvic rocking exercises with belly dance for birth effectively reduced the intensity of pain in the first stage of the active phase in women giving birth.

DISCUSSION

The combined pelvic rocking exercises with belly dance for birth effectively reduce pain during labor in women giving birth. Movement from pelvic rocking exercises with belly dance for birth is a relaxing method for the lower body, especially in the pelvis. Mothers giving birth during the movement feel that the energy produced is balanced and positively affects dealing with complaints that arise during the labor process. The mother becomes relaxed and can cope with pain. Mothers giving birth during this movement will play music. In addition, music alone has been reported to reduce pain and anxiety during labor.[13,14]

Stimulus from pelvic rocking exercise movements with belly dance for birth accompanied by music will go to T cells and surrounding cells in the Gelatinosa substance in the spinal cord. Impulses are carried by T cells to Periaqueductal Gray. In this case, the cells will activate local cells to secrete the hormones enkephaline, serotonin, and beta-endorphin. Enkephaline can cause presynaptic and postsynaptic inhibition in type A and type C pain fibers and synapse in the dorsal horn. In this process, it achieves inhibition by blocking calcium channels. The process of inhibiting pain is by blocking pain receptors so that pain is not transmitted to the cerebral cortex and will decrease pain intensity.[15] In this case, following the gate control theory that pain impulses will be sent when a defense is opened, and pain impulses will be inhibited when a defense is closed, this results in a decrease in pain intensity.[16]

This combination of pelvic rocking exercises with belly dance for birth can train the strength of the abdominal and waist muscles. Exercises can reduce pressure from the fetal head during labor, reduce blood vessel pressure in the uterine area, and reduce pressure on the bladder. This exercise can help the mother to relax and improve the delivery process.[17] Research studies suggest that pelvic rocking exercises can be beneficial for reducing pain, increasing self-control, and getting a comfortable birthing experience.[5,18] Mothers doing belly dance movements improve anxiety levels before facing childbirth and reduce lower back pain.[19,20] This is supported by the results of Hendri et al. research, which states that pregnant women who do Belly Dance during the delivery process will help in strengthening the muscles of the arms, chest, abdomen, and pelvis to provide a relaxing effect on the muscles and facilitate the delivery process.[21]

The mother said that doing physical exercise will make her feel comfortable and enjoy all the processes of pregnancy and childbirth during pregnancy and childbirth. Research

studies state that physical exercise can be useful in mastering breathing techniques, strengthening muscle elasticity, reducing complaints, and practicing relaxation to avoid complications during labor and increase self-efficacy.[10,22,23]

The combination of pelvic rocking exercises with belly dance for birth can help mothers during the labor process by making the mother feel comfortable and accelerating the process of fetal descent. This is supported by Dikmen et al.'s study results, which stated that during labor, by kneeling or swaying, there would be a gravitational force to encourage fetal rotation from occipital posterior to occipital anterior.[12] Pelvic rocking exercises on pelvic rocking in the fetal head area will help expel the fetal head and reduce back pain because pelvic rocking exercises cause a reduction in fetal head pressure on the mother's sacroiliac joints.[24] This is also supported by the results of Somayeh et al. research, which states that dance is a complementary therapy with low risk, reduces the intensity of labor pain, and increases maternal satisfaction when receiving care during the labor process.[25] Freedom of movement and an upright position during labor helps natural gravity to facilitate and promote fetal descent, improve the quality and effectiveness of labor contractions and decrease labor pain.[26]

CONCLUSIONS AND RECOMMENDATION

The application of a combination intervention of pelvic rocking exercises with belly dance for birth is effective in reducing pain intensity in the first stage of the active phase in maternity, this is evidenced by giving 20 minutes every 1 hour during the first stage of the active phase, there is a decrease in pain intensity every hour until complete opening as seen from the average decrease in pain intensity every hour. The intervention should be carried out every hour during the active phase until complete dissection, because pain can occur after the intervention is completed. Maternal mother can prepare information and physical exercise in facing the labor process.

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