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The Effect of The Pelvic Rocking Technique on The Duration of The Active Phase of The First Stage of Labor in The Working Area of Kalapanunggal Health Center

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Abstract

Introduction: The Prolonged active phase of labor increases the risk of maternal and neonatal complications. One non-pharmacological method to accelerate labor is the pelvic rocking technique using a birthing ball. Objective: To determine the effect of pelvic rocking on the duration of the active phase of the first stage of labor in the working area of Kalapanunggal Health Center. Methods: A quasi-experimental study with a two-group posttest-only design was conducted on 30 women in labor, divided into an intervention group (pelvic rocking, n=15) and a control group (light walking, n=15) selected by purposive sampling. Instruments included partographs and observation sheets. Data were analyzed using the Mann-Whitney test. Results: Most respondents were aged 20–35 years (66.7%) and primiparous (56.7%). The mean duration of the active phase of the first stage was 221 minutes in the intervention group and 390 minutes in the control group (p=0.000). The mean duration of the second stage was 77 minutes in the intervention group and 108 minutes in the control group (p=0.021). Conclusion: Pelvic rocking significantly shortens the duration of both the active phase of the first stage and the second stage of labor. This technique can be recommended as an effective and easily applied non-pharmacological intervention to support labor progress.

Keywords: Pelvic rocking, Labor, Active phase of the first stage, Second stage.

Introduction

Labor is the process by which the baby, placenta, and amniotic membranes exit the uterus and enter the outside world. Normal labor generally occurs at full term without complications. This process begins with uterine contractions that cause changes in the cervix, such as dilation and effacement, until the placenta is finally delivered completely (Lestari et al, 2023).

According to the World Health Organization (WHO), more than 85% of deliveries are normal. However, approximately 15-20% of mothers experience complications that lead to death. Of the 295,000 maternal deaths, approximately 94% occur in developing countries due to various factors related to pregnancy and childbirth. (Purnama et al., 2022). In Indonesia, the number of mothers who gave birth in 2020 reached 5,043,078. Of these, approximately 23.2% experienced complications during delivery. According to the 2019 National Health Research and Development Report, the most common complications included premature rupture of membranes (5.6%), prolonged labor (4.3%), abnormal fetal position (3.1%), umbilical cord entanglement (2.9%), hypertension (2.7%), bleeding (2.4%), and other complications (4.6%) (Rahim et al., 2024).

One of the main factors contributing to increased maternal and fetal mortality and morbidity is prolonged labor. For the mother, this condition can increase the risk of bleeding due to uterine atony (33%), birth canal lacerations (26%), infection (16%), exhaustion (15%), and shock (10%). For the fetus, prolonged labor can cause severe asphyxia, brain trauma, infection, and injuries resulting from medical procedures (Yuhana et al., 2022). Factors that cause prolonged labor include an abnormal fetal position, pelvic abnormalities, uterine contraction disorders, errors in labor management, a fetus that is too large, congenital abnormalities, a large number of deliveries (grandemultipara), and premature rupture of membranes (Sembiring & Siregar, 2023).

Many methods are used to reduce pain during labor, both pharmacological and non-pharmacological. Non-pharmacological methods tend to be easier and safer for laboring mothers. These methods include massage, birth ball use, touch therapy, relaxation, warm and cold compresses, aromatherapy, breathing control, positioning, music therapy, hypnotherapy, acupuncture, and others. (Yusrah, 2024).

Pelvic rocking with a birthing ball is a way to increase the size of the pelvic

cavity by rocking the pelvis on the ball and slowly rocking the hips back and forth, right, left, and in a circle. A birth ball is a physical therapy or simple exercise using a ball, where the exercise is applied to pregnant women, women giving birth and postpartum mothers. Indications for the use of a birth ball are to relieve pain in laboring mothers, for prolonged dilation and to lower the baby's head for a long time. A birth ball is a physical therapy ball that helps laboring mothers in the first stage of labor progress. It can be used in various positions. One movement is sitting on the ball and rocking to create a feeling of comfort and help labor progress by using gravity while increasing the release of endorphins because the elasticity and curve of the ball stimulates receptors in the pelvis responsible for secreting endorphins (Cahaya, 2022).

Based on the 2024 Local Area Monitoring (PWS) report at the Kalapanunggal Community Health Center, the target number of mothers giving birth in that year was 898 people. Of this number, 92 mothers giving birth (10.2%) were referred, 28 mothers giving birth (3.1%) experienced premature rupture of membranes (PROM), 20 mothers giving birth (2.2%) experienced prolonged active phase I, 17 mothers giving birth (1.9%) experienced prolonged second stage, 6 mothers giving birth (0.7%) experienced abnormal position, 10 mothers giving birth (1.1%) experienced severe preeclampsia (PEB), 8 mothers giving birth (0.9%) experienced fetal distress, and 3 mothers giving birth (0.3%) experienced antepartum hemorrhage.

Based on the problems described above, the researcher is interested in conducting research with the title "How does the pelvic rocking technique affect the length of active phase 1 labor in the Kalapanunggal Community Health Center Work Area?

Method

This research is a quantitative study. The design used in this study was a quasi-experimental one, namely by observing the active phase of the first stage of labor using an observation sheet. The design used in this study was a two-group only posttest design. In the intervention group, the study used the pelvic rocking method, while in the control group, the researcher used the light walking method in the room. The sample in this study was 30 mothers in labor, who were divided into 15 groups in the intervention and 15 in the control group. The sampling technique used in this study was "non-probability

sampling" with a purposive sampling method. Before conducting statistical tests, a normality test was first conducted. The data normality test was conducted to determine whether the data distribution in each group followed a normal distribution. The test used is the Shapiro-Wilk test because the sample size is less than 100. The results of the data test show that the data is normally distributed, so a parametric test is used, namely the Independent T-Test. If the results of the data normality test show that the data is not normally is normally distributed, a parametric test is used, namely the Independent T-Test. If the results of the data normality test show that the data is not normally distributed, so that the bivariate analysis was continued using the non-parametric Mann-Whitney test.

Results

Univariate Results

Table 1
Frequency Distribution of Age of Women Giving Birth Between the Intervention and Control Groups in the Kalapanunggal Community Health Center Work Area

Usia	n	%
< 20 and >35 years	10	33,3
20-35 years	20	66,7
Total	**30**	**100**

Based on Table 1, it shows that the majority of respondents are aged 20-35 years, namely 20 people (66.7%), while respondents aged <20 years and >35 years are 10 people each (33.3%).

Table 2
Frequency Distribution of Parity in Women Giving Birth Between the Intervention and Control Groups in the Kalapanunggal Community Health Center Work Area

Pariy	n	%
Primipara	17	56,7
Multipara	23	43,3
Total	**30**	**100**

Based on Table 2, it is known that there were 17 respondents with primiparous parity (56.7%), while there were 23 respondents with multiparous parity (43.7%).

Table 3
Average Length of the First Active Phase in Women Giving Birth Between the Intervention and Control Groups in the Kalapanunggal Community Health Center Work Area

Variabel	N	Min	Max	Mean	Median	SD
Lama Kala I						
- Pelvic Rocking	15	102	291	221.33	231.00	56.593
- Berjalan	15	363	463	390.60	386.00	24.871

Table 3 shows the average duration of the first stage in the intervention group (pelvic rocking) was 221 minutes (3 hours 41 minutes) and the control group (walking) was 463 minutes (7 hours 43 minutes).

Table 4
Average Duration of Second Stage of Labor in Women Giving Birth Between the Intervention and Control Groups in the Kalapanunggal Community Health Center Work Area

Variabel	N	Min	Max	Mean	Median	SD
Lama Kala II						
- Pelvic Rocking	15	35	137	77.80	66.00	33.886
- Berjalan	15	52	139	108.60	124.00	30.097

Table 4 shows the average duration of the second stage of labor for mothers giving birth in the intervention group (pelvic rocking), which was 77 minutes, while in the walking group, it was 108 minutes.

Bivariate Results

Normality Test

Before conducting the hypothesis test, a normality test was performed using the Shapiro-Wilk. The results are shown in the table below:

Table 5
Results of the Normality Test for Period I

	Kelompok	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Lama Kala I	Kelompok Pelvic Rocking	.160	15	.200*	.935	15	.321
	Kelompok Berjalan	.192	15	.141	.839	15	.012

Based on Table 4.5, the results of the normality test using Shapiro-Wilk show that the significant value of the duration of the first stage in the pelvic rocking group is 0.31, more than 0.05, which is declared normally distributed. Conversely, in the walking group, the value is 0.012, less than 0.05, so the data is not normally distributed. Because the results of the normality test indicate that one of the groups is not normally distributed, bivariate analysis was conducted using the non-parametric Mann-Whitney test.

Table 6: Results of the Normality Test for Period II

	Kelompok	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Lama Kala II	Kelompok Pelvic Rocking	.199	15	.112	.864	15	.028
	Kelompok Berjalan	.272	15	.004	.851	15	.018

Based on Table 6, the results of the Shapiro-Wilk normality test show that the

significance value for the duration of the second stage of labor in the pelvic rocking group was 0.028, and in the walking group was 0.018. Because both significance values were less than 0.05, it can be concluded that the data in both groups were not normally distributed. Therefore, bivariate analysis was performed using the non-parametric Mann-Whitney test.

Uji *Mann-Whitney*

Testing using the Mann-Whitney test showed a significant difference between the length of the first stage of labor in the intervention and control groups. The test results are presented in the following table:

Table 7
Difference in the Length of the First Active Phase of Labor in Women in Labor Between the Intervention Group and the Control Group in the Kalapanunggal Community Health Center Work Area

Variabel	N	Min	Max	Mean	P
Kelompok Intervensi	15	102	291	8.00	0,000
Kelompok Kontrol	15	363	463	23.00	

Table 7 shows the average score of the duration of the first stage of labor in the intervention group and the control group. The average difference in the intervention group was 8.00, while in the control group it was 23.00. The Mann-Whitney test results showed a p-value of 0.000, which is smaller than the α value of 0.05, meaning there was a difference in the duration of the active phase of the first stage of labor in women giving birth between the intervention group and the control group. Kalapanunggal Community Health Center Work Area.

Table 8
Difference in the Duration of the Second Active Phase of Labor in Women in Labor Between the Intervention Group and the Control Group in the Kalapanunggal Community Health Center Work Area

Variabel	N	Min	Max	Mean	P
Kelompok Intervensi	15	35	137	11.80	0,021
Kelompok Kontrol	15	52	139	19.20	

Table 8 shows the average score of the second stage of labor in the intervention group and the control group. The average difference in the intervention group was 11.80, while in the control group it was 19.20. The Mann-Whitney test results showed a p-value of 0.021, which is smaller than the α value of 0.05, meaning there was a difference in the length of the second stage of labor in mothers giving birth between the

intervention group and the control group. Kalapanunggal Community Health Center Work Area.

Discussion

Univariate Analysis

The research results showed a p-value of 0.000, which is smaller than the α value of 0.05, indicating a difference in the duration of the first active phase of labor between the intervention group and the control group in the Kalapanunggal Community Health Center Work Area.

During the first stage of labor, gently rocking and shaking the hips (Pelvic Rocking) back and forth, on the right side, left side, and in a circular motion will strengthen the abdominal and lower back muscles, reduce pressure on the blood vessels around the uterus, and pressure on the bladder. Furthermore, these movements help the mother relax, thereby reducing pain in the lower back, inguinal region, vagina, and surrounding areas. They also help uterine contractions more effectively deliver the baby through the pelvis if the mother is in an upright position and can lean forward.

Using a birth ball during labor prevents the mother from being in a continuous supine position. The birth ball encourages the mother to maintain an upright position, whether sitting, kneeling, or standing. This position helps open the pelvic cavity and encourage the baby to descend. Changing positions during labor can alter the shape and size of the pelvic cavity, helping the baby's head descend into an optimal position during the first stage of labor and assisting with rotation and descent during the second stage of labor (Purwati, 2020).

The research results showed a p-value of 0.021, which is smaller than the α value of 0.05, indicating a difference in the duration of the second stage of labor between the intervention group and the control group in the Kalapanunggal Community Health Center Work Area.

Labor is the expulsion of the products of conception (fetus and placenta) that are full-term or capable of surviving outside the uterus through the birth canal or other means, with or without assistance (self-power) (Manuaba, 2020). The second stage begins from full dilation (10 cm) until the baby is born. Prolonged labor has serious consequences for both mother and baby. Mothers with prolonged labor are at increased

risk of bleeding due to uterine atony, lacerations of the birth canal, infection, exhaustion, and shock. For the fetus, it can increase the risk of severe asphyxia, cerebral trauma, infection, and injury due to the procedure..

Pelvic rocking is a movement that involves rocking the pelvis forward, backward, left, and right. Pelvic rocking aims to train the muscles of the waist and hips and help lower the baby's head into the pelvic cavity and into the birth canal (Wulandari, 2019).

Pressure from the baby's head on the cervix remains constant when the mother is in an upright position, allowing for faster cervical dilation (opening). Labor mobilization with pelvic rocking, which involves sitting and gently rocking and rocking the hips back and forth, to the right, left, and in a circular motion, helps maintain constant pressure from the baby's head on the cervix when the mother is in an upright position, allowing for faster cervical dilation (opening). This theory aligns with research findings that suggest pelvic rocking can aid cervical dilation during the active phase of the first stage of labor. Furthermore, pelvic rocking helps the mother relax, allowing for smoother oxygen flow, increasing uterine contractions, and shortening labor.

Conclusion

Conclusions Based on the results of research on the effect of pelvic rocking techniques on the length of active phase 1 labor in the Kalapanunggal Community Health Center Work Area, it can be concluded that:

1. Most of the respondents were aged 20-35 years, as many as 66.7%, while respondents aged <20 years and >35 years were 33.3%
2. The majority of respondents were primiparous, as many as 56.7%, while respondents with multiparous parity were 43,7%.
3. The average time for the first stage of labor in the intervention group (pelvic rocking) was 221 minutes (3 hours 41 minutes) and the control group (walking) 463 minutes (7 hours 43 minutes) in the Kalapanunggal Health Center Work Area.
4. The average duration of labor II for mothers giving birth in the intervention group (pelvic rocking) was 77 minutes, while in the group (walking) it was 108 minutes in the Kalapanunggal Community Health Center Work Area.

5. There is a difference in the length of the active phase of the first stage of labor in mothers giving birth between the intervention group and the control group in the Kalapanunggal Community Health Center Working Area, with p=0.000 <0.05.
6. There is a difference in the length of time of second stage of labor in mothers giving birth between the intervention group and the control group in the Kalapanunggal Community Health Center Working Area, with p=0.021 <0.05.

Conflict of Interest

No conflict of interest among authors.

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