

Research Article

The Effect of the Birthing Ball on Duration of the First Stage of Labour in Primigravida at Utama Barokah Clinic, Bandung City in 2021

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ABSTRACT

Background: Labour and birth are physiological and normal events. The process is considered to be normal if it takes 37-42 weeks without any complications. Non-pharmacological methods to speed up the progress of labour include birthing ball exercises. The Birthing ball exercise is a technique to help the progress of labour that can be used during the first stage of labour. Until now, birthing balls are not widely known and not common, even though birthing balls are very effective in accelerating the birth process. The advantage of using the birthing ball is that it increases blood flow to the uterus, placenta and baby, and provides comfort for the knees and ankles. **Purposes:** The purpose of this study was to determine the average length of the first stage of labour in primigravida using a birthing ball and those not using a birthing ball and the effect of the birthing ball on the duration of the first stage of labour in primigravida. **Method:** This study uses a quasi-experimental method with a Randomized Two-Group design, Post-test only. This study was held at Utama Barokah Clinic, Bandung from June to July 2021. **Result:** The research sample was 30 respondents, primigravida during the first stage of labour with data analysis using the Mann Whitney test, and the p value <0.05 was obtained. **Conclusion:** There was a difference in the average length of the first stage of labour in primigravida using a birthing ball and those not using a birthing ball.

Keywords: birthing ball, duration of the first stage of labor, primigravida

INTRODUCTION

Labour and birth are normal physiological events. The role of health workers, especially midwives, is to help detect complications during labor and delivery. Labor and birth are considered normal if the process occurs at term (37-42 weeks) without any complications. There are four stages of labour; the first stage is divided into two phases: the latent phase and the active phase. The latent phase (from 1-4 cm dilatation) is the period from the onset of labor to the point when dilatation begins to progress progressively. While the active

phase is the initial time from the dynamic progress of the opening until the opening is complete (4-10 cm) (1-3).

According to data from the Indonesian Demographic Health Survey (IDHS) in 2015, the maternal mortality rate was 305/100,000 live births. This figure is still relatively higher when compared to ASEAN member countries. Prolonged labor is work that lasts more than 24 hours and is classified as prolonged labour; even if the progress of the work has not been adequate, the situation must be assessed for problems and resolved before the deadline (4,5).

Long labour is one of the contributors to the Maternal Mortality Rate (MMR) in the world. Based on the World Health Organization (WHO), in 2018, there were cases of prolonged labour in women in the world, namely 289 per 100,000 live births. Meanwhile, in Indonesia, the incidence of prolonged labour is the highest in ASEAN, namely 359 per 100,000 live births, mothers who die due to prolonged labour. Based on District/City Health Profiles in West Java Province in 2017, the number of reported maternal deaths was 696 people (76.03/100,000 LB). This number decreased compared to 2016, and maternal deaths were 799. The number of maternal deaths in pregnant women was 183 people. (19.9/100,000 LB), 224 women giving birth (24.47/100,000 LB), and 289 postpartum women (31.57/100,000 LB) (6).

In primigravida, the duration of labor in the first stage has a longer time compared to multigravida, where the duration of delivery in the first stage in primigravida is about 20 hours while multigravida is about 14 hours. However, not all natural childbirth will end according to the proper time. In labor whose time is outside normal limits due to prolonged labor, other factors that can affect the length of labor are presentation abnormalities, inadequate contractions, birth canal abnormalities, twin or generally pregnancies, and anemia (1,7).

Birth attendants and maternity mothers often forget the techniques for progressing labor in the first stage. This will cause the birthing mother to have a bad delivery experience and or experience prolonged labor trauma, and a birth attendant needs to meet the mother's need for comfort during childbirth. To accelerate the progress of labor by pharmacologic methods that use drugs and non-pharmacologic methods,

namely without using drugs and carried out together with birth attendants including hypnobirthing, active birth, counterpressure, birthing ball, hydrotherapy, breathing techniques, visualization, use of music and aromatherapy (8).

A birthing ball is a technique to help the progress of labour that can be used during the first stage of labour. Birth balls are not widely known by the public and are not yet familiar even though Birth balls are very effective in accelerating the process of labour and birth (9–11). Kurniawati's research (2017) showed that the women who did birthing ball exercise experienced a shorter first stage of labour, low use of analgesics, and low incidence of section caesarean. This is reinforced by research from Sriwenda (2016), which proves that the duration of the active phase of labour is 30% shorter and barriers during the second stage of labour decrease significantly in the group that carries out the exercise or the group that is given the intervention (12). A birthing ball is an intervention that midwives routinely carry out at the Barokah Main Clinic, Bandung, but some patients refuse to do this therapy; therefore, the authors are interested in further researching the effect of the birthing ball on the duration of the first stage of labour in primigravida.

METHODS

The type of research used in this study is a quasi-experimental research using a Randomized Two-Group Design, Post Test Only research design, namely a quasi-experimental design using a the post-experimental group (with treatment) and post-control group (without treatment). The population in this study were 34 mothers who gave birth at the Utama Barokah Clinic, Bandung. This population was obtained from the monthly reports of

maternity mothers at the Utama Barokah Clinic, Bandung City in May - June 2021.

Data analysis was carried out using two analytical methods, namely, (1) univariate analysis, used describe the data collected as it is without intending to draw conclusions that apply to the general public or to make generalizations, (2) bivariate data analysis, data testing that was carried out using a statistical test, namely the Mann Whitney test, in which the respondents were divided into 2 groups, those who received treatment and those who did not. One of the movements was a kneeling position with the chest leaning forward and backward and hugging the birthing ball and then moving the hips clockwise or side to side for 1 hour and resting 30 minutes until second stage. The level of significance is 95% ($\alpha = 0.05$). Guidelines for accepting the hypothesis: if the P value is less 0.05 then H_0 is rejected, if the P value is greater than 0.05 then H_0 fails to be rejected. The data obtained is presented in a tabular form. The study had been approved by the Ethics Committee of Faculty of Medicine and health Universitas Muhammadiyah Jakarta, with a reference number of 096/PE/KE/ FKK-UMJ/IV/2021.

RESULT

The study was conducted in June 2021 at the Utama Barokah Clinic, Jalan Sekelimus Utara Gg. Gedong no 1, Batununggal-Bandung Kidul, Bandung City, West Java. The treatment group, namely 15 primigravida mothers who gave birth using

a birthing ball; and the control group (or the group without treatment) that did not use a birthing ball consisting of 15 respondents. The following are the overall results of the research:

Table 1. Descriptive data on the duration of labour in the first stage of labour using a birthing ball (experimental group) and without the use of a birthing ball (control group) at the Utama Barokah Clinic, Bandung City in 2021

Time of Labour Kala I	N	Min*	Max	Mean	Std. Deviation
Using Birthing ball	15	193	430	315.93	81.494
Without Using Birthing ball	15	450	1165	706.53	279.080

*Minute

In Table 1, it can be seen that for the group that did the birthing ball exercises, the average length of labour was 315 minutes, while the group that did not do the birthing ball exercises had an average length of labour of 706 minutes.

Before administering the test to determine the effect of the birthing ball exercises on the duration of the first stage of labour, a normality test was used to determine the distribution of the data with the Shapiro-Wilk indicator if the number of samples was less than or equal to 50, and the Kolmogorov Smirnov indicator if the number of samples was more than 50.

Table 2. Normality Test Data

Time of Labour Kala I	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Using Birthing Ball	0.142	15	0.200	0.929	15	0.261
Without Using Birthing Ball	0.202	15	0.102	0.799	15	0.004

In Table 2 it can be seen that because the number of samples in the experimental group (using a birthing ball) and the control group (without using a birthing ball) is 15 and 15 (less than 50), so the normality test used was the Shapiro-Wilk. For the experimental group (using the birthing ball) $p=0.261$ ($p>0.05$) meaning that the data was normally distributed and the control group (without using the birthing ball) $p=0.004$ ($p<0.05$) meaning that the data was not normally distributed. Because one of the data was not normally distributed, it can be concluded that the data on the length of labour in the experimental group (using a birthing ball) and the control group (without using a birthing ball) are not normally distributed. Because the data distribution is not normal, the test used to determine the effect of the birthing ball on the length of labour was the Mann Whitney Test.

Table 3. Mann-Whitney Test

Birthing Ball	N	Length Kala I		Sig.
		Mean of rank	Sum of rank	
Without using birthing ball	15	23.00	345.00	0.000
Using birthing ball	15	8.00	120.00	

From the results of the Mann-Whitney test in Table 3 above, it can be seen that the average length of labour without using a birthing ball is 23.00 minutes and the average length of labour using a birthing ball is 8.00 minutes. Meanwhile, based on the p value, the result is 0.000. Because the p value less than 0.005, H_0 is rejected and H_a is accepted. Thus, it can be concluded the use of the

birthing ball on the duration of the first stage of labour in Primigravida at the Utama Barokah Clinic, Bandung City in 2021.

DISCUSSION

Labour and birth are normal physiological events in life. The birth of a baby is also a social event for the mother and family. The role of the mother is to give birth to the baby, while the role of the family is to provide assistance and support to the mother when childbirth occurs.

Based on the results of the study, it was found that the average length of the first stage of labour in women who were not using a birthing ball was 706 minutes (11 hours 46 minutes) in the slow category, whereas the average length of the first stage of labour in women who gave birth using a birthing ball was 5 hours 15 minutes in the fast category. The average value of the first stage in the control group was 706 minutes (11 hours 46 minutes) and, 315 minutes (5 hours 15 minutes) in the experimental group. There was a difference of 331 minutes (5 hours 31 minutes).

The results showed that the duration of the first stage of labour in women who used birthing balls was shorter. This is in line with the research of Wahyuni et.al, which stated that there was a difference in the length of the first stage of labour in mothers who were given birthing ball exercises and those who were not given birthing ball exercise. Thus, Wahyuni et. al, research asserted that birthing ball exercises are effective in accelerating the length of the first stage (13). Another research in the use of birthing balls is the study by Astrika et. al, who found that the ball delivery had a significant effect on the length of the first stage in primigravida, so ball deliveries can be recommended as a

helpful strategy to help shorten the duration of phase I (14).

The first stage is the opening stage which is marked by the discharge of mucus mixed with blood (blood show) because the cervix begins to open (dilate) and flatten (15,16). Labour that lasts longer than 24 hours is classified as prolonged labour. However, if the progress of labour does not occur adequately during that period, the situation must be assessed immediately and the problem must be recognized and resolved before the 24 hour time limit is reached. Whenever elongation is the cause of the cervix failing to fully open within a reasonable period of time (17).

The influence of the birthing ball on the duration of the 1st stage of labour in primigravida is also supported by one of the previous studies, which stated that the birthing ball is a physical therapy ball that helps first-stage inpartum mothers into a position that assists the progress of labour (9). This happens because of the influence of factors in the birthing ball pattern of deliver. Maryani et. al, said that during the first stage of labour, the active phase of the birth, the mother can sit as comfortably as possible on the ball and the shape of the ball will adjust to the shape of her body (18). This makes it easier for the mother to relax, and in addition, the ligaments and muscles, especially those in the pelvic area, become loose reducing pressure on the sacroiliac joints, blood vessels around the uterus and pressure on the bladder, back, waist, tailbone. It can also reduce pressure on the perineum (19). Research conducted by Suksesty regarding the effectiveness of the birthing ball on the length of labour, cervical dilatation and the decrease in the fetal head in primigravida mothers, showed that there was a significant effect of the birthing ball on the length of labour (20).

Mobilization of labour with a birthing ball, which is sitting on the ball and slowly swinging and rocking the hips forward and backward, right and left, and in a circular movement, will be beneficial for keeping the pressure of the baby's head on the cervix constant when the mother gives birth in an upright position, so that the dilation of the cervix may occur more rapidly. This is reinforced by research conducted by Wiliandari et.al, regarding the effectiveness of birth ball exercises in first-stage maternity mothers on the duration of the active phase I and the duration of the second stage with the p value $0.030 < 0.05$ (17).

Based on the results of the research analysis, the researcher assumes that the ball can be an important tool in the labour process, and can be used in various positions. Sitting upright on the ball while pushing, swinging or making pelvic rotations, can help the process of fetal descent. The ball provides support to the perineum without too much pressure and helps keep the fetus aligned in the pelvis. The sitting position on the ball is assumed to be similar to squatting to open the pelvis, and thus helps to speed up the labour process. Gentle movements performed on the ball greatly reduce pain during contraction.

CONCLUSION

The average length of the first stage of labor for women who gave birth ball was 315 minutes (5 hours 15 minutes), and for women who did not have a birthing ball was 706 minutes (11 hours 46 minutes) at the Utama Barokah Clinic, Bandung City in 2021. There is an effect of using a birthing ball in primigravida maternity on the duration of the first stage of labor at the Barokah Main Clinic, Bandung City, in 2021.

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CONFLICT OF INTEREST

The authors reported no potential conflict of interest.

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