

TEST OF THE EFFECTIVENESS SQUATTING POSITION IN REDUCING THE DURATION OF THE SECOND STAGE OF LABOR

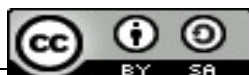
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ABSTRACT

The second stage of labor is a crucial phase that influences maternal and neonatal outcomes. Its duration is an important indicator of whether labor progresses normally or requires intervention. Birthing position plays a role in this process. The squatting position is expected to facilitate cervical dilation and fetal head descent, thus shortening the second stage. This study aimed to determine the effect of squatting on the duration of the second stage of labor. An experimental design was conducted with two groups: 15 mothers delivering in the squatting position and 15 in the lithotomy position. Data on the duration of the second stage were collected through observation and analyzed using the t-test. Results showed a significant difference between groups ($p = 0.000 < 0.05$). Mothers in the squatting position experienced a shorter second stage compared to those in the lithotomy position. The squatting position was proven to enhance contractions, improve the mechanism of labor, and facilitate optimal opening of the birth canal. It can be considered a safe and effective alternative birthing position to accelerate delivery, provided there is adequate education and professional supervision.

KEYWORDS

Squatting Position; Second Stage of Labor



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INTRODUCTION

Labor is a complex physiological process, involving interactions between the hormonal system, muscles, and the mother's body position. This process consists of four stages, one of which is the Second Stage, which is the period from complete cervical dilation (10 cm) to the birth of the baby. Prolonged second stage can increase the risk of morbidity and mortality in both mother and baby, such as maternal fatigue, postpartum hemorrhage, uterine rupture, and asphyxia in babies (Manuaba, 2010).

One non-pharmacological way to help smooth the labor process is to adjust the mother's body position when pushing. The conventional position often used in obstetric services in Indonesia is the lithotomy position (lying with the legs supported), but several studies have shown that the squatting position can accelerate the second stage because it can increase intra-abdominal pressure and enlarge the diameter of the pelvis (Aprillia, 2020).

Physiologically, the squatting position utilizes the force of gravity that helps lower the fetal head into the birth canal. In addition, this position widens the pelvic outlet by 20–30%, allowing the fetus to be born faster with more effective pushing efforts (Simkin & Ancheta, 2011). However, the application of this position in service facilities such as Independent Midwife Practice is still not common, either due to lack of information, habits, or limited aids.

Aprillia, S. (2020) in her research entitled "The Effect of Childbirth Position on the Duration of the Second Stage of Mothers Giving Birth at Health Center X", found that mothers who used the squatting position experienced a shorter average second stage time (35 minutes) compared to mothers who used the lithotomy position (52 minutes). The squatting position significantly accelerated the second stage ($p < 0.05$). Kusmiyati's research (2016) concluded that the squatting position can increase the effectiveness of pushing and accelerate the birth of the baby. Of the 40 respondents, 80% of mothers who gave birth in the squatting position completed the second stage in less than 30 minutes, compared to 45% in the lithotomy position. There is a significant relationship between the squatting position and the acceleration of the second stage.

Quantitative research conducted by Purnamasari, D. (2018) with an experimental approach was conducted at the BPM in the Yogyakarta region. The results showed that the squatting position helps reduce maternal psychological stress, facilitates the pushing process, and accelerates the expulsive phase. The squatting position effectively reduces the duration of the second stage by 20-30% compared to the supine position. Meanwhile, according to Sari, R. & Dewi, N.K. (2017) in their research at the Bandung City Hospital, it was found that the squatting position increased the outcome of spontaneous labor without the help of instruments. The average duration of the second stage is 25 minutes in the squatting position, while in the lithotomy position it is 45 minutes. The squatting position shortens the second stage and reduces the risk of medical intervention.

In The Labor Progress Handbook, Simkin & Ancheta (2011) stated that the squatting position increases the pelvic outlet by 30% and utilizes gravity to accelerate the descent of the fetal head. This has a direct impact on shortening the time of the second stage of labor. The squatting position supports the physiological efficiency of labor.

RESEARCH METHOD

This research is included in the type of quantitative research with a quasi-experimental approach. Quantitative research is used because the data collected is numerical (in this case the duration of the second stage in minutes) and is analyzed statistically to determine the causal relationship between the independent variable (squatting position) and the dependent variable (length of the second stage).

The research design used was a posttest-only control group design, which is a design in which two groups of respondents are compared: one group received an intervention in the form of a squatting position during labor, while the other group used the lithotomy position as a control. Measurements were only taken after the intervention (posttest), because the duration of the second stage could only be recorded after the mother gave birth.

This study is called a quasi-experiment because randomization was not carried out on the research subjects, but there was still a division of groups and the provision of structured interventions. This model is considered appropriate for clinical practice settings or midwifery services such as in Independent Midwife Practice, where field conditions do not allow for the implementation of full experiments (Sugiyono, 2017).

According to Notoatmodjo (2018), quasi-experimental research is a method used to determine the effects of a treatment or action on a particular group, but does not use randomization in selecting subjects. This type of research is very useful in real-world situations, especially in the fields of public health and midwifery.

The population in this study were all mothers in labor who were in the second stage of labor and gave birth spontaneously. The sampling technique used was purposive sampling, with inclusion criteria being full-term pregnant women (gestational age 37–42 weeks), giving birth spontaneously, and willing to follow the research procedure. Exclusion criteria included mothers with a history of high-risk pregnancy, special medical indications, or unable to squat.

Data collection in this study was carried out directly through observation and recording on observation sheets by researchers and health workers on duty during labor. The data collected includes: respondent characteristics (age and parity), delivery position used (squatting or lithotomy) and duration of second stage of labor (calculated from the time of full dilation until the baby is born). The instrument used is a structured observation sheet that has been tested for validity and reliability. The time of data collection was carried out during the labor process, by recording directly from the beginning of the second stage until the baby was born. The delivery position is recorded according to that used during the main pushing process. The duration of the second period is calculated from the time of complete dilation (10 cm) until the baby is born. Time is recorded in hours and minutes. The duration of the second period is measured in minutes.

Data analysis and processing in this study were carried out systematically to obtain an overview of the effect of the squatting position on the duration of the second stage of labor. The first step taken was checking the raw data (editing) to ensure that all data collected from the observation sheet had been filled in completely and correctly. Furthermore, coding was carried out, especially for qualitative variables such as labor position, so that they could be processed statistically. The data that had been prepared was then tabulated into a table to make it easier to read and group the results based on the characteristics of the respondents and the main variables of the study. The collected data were analyzed using the Independent T-Test or Mann-Whitney U Test, depending on the results of the data normality test, with a significance level determined at $p < 0.05$ (Sugiyono, 2017). This design was chosen because it is considered effective for evaluating the effects of a treatment on different groups, especially in obstetric care settings with real conditions that do not allow full randomization.

RESULT AND DISCUSSION

This study was conducted in one of the independent midwife practices that actively provide midwifery services, including delivery assistance. The study was conducted on 30 respondents, who were divided into two groups: Squatting Position Group (n=15), Lithotomy Position Group (n=15). The data collected includes: respondent characteristics (age and parity), delivery position used (squatting or lithotomy) and duration of second stage of labor (calculated from the time of full dilation until the baby is born).

Table 1. Frequency Distribution of Respondents Based on Age

Age Group	Respondents (n)	Percentage (%)
< 20 years	5	16,7
20–35 years	21	70,0
> 35 years	4	13,3
Total	30	100

Based on table 1, the majority of respondents were in the age range of 20–35 years (70%). This shows that respondents in the study were dominated by mothers in the productive age group.

Table 2. Average Length Duration Second Stage of Labor Based on Age

Age Group	Average Length Duration Second Stage of Labor (minutes)	Information
< 20 years	38,4	Oldest
20–35 years	31,2	The soonest
> 35 years	35,0	Intermediate tends to be long

Based on table 2, respondents aged <20 years showed the longest average length duration second stage of labor, which was 38.4 minutes. The 20–35 age group had the shortest average time for the labor process. At age >35 years, the average length duration second stage of labor increased again.

The majority of respondents were in the age range of 20–35 years, which is a healthy and optimal reproductive age group for childbirth. This shows that respondents in the study were dominated by mothers in the productive age group who were physiologically ready to give birth. Respondents aged <20 years showed the longest average length duration second stage of labor. This is likely due to the immaturity of physical and psychological conditions for labor. Meanwhile, the 20–35 age group had the shortest average time, indicating optimal body readiness for the labor process. At age >35 years, the average length duration second stage of labor increased again, possibly due to decreased tissue elasticity and pushing strength.

Table 3. Frequency Distribution of Respondents Based on Parity

Parity	Respondents (n)	Percentage (%)
Primipara	13	43,3
Multipara	17	56,7
Total	30	100

Based on table 3, most of the respondents in this study were multiparous mothers (56.7%). Meanwhile, primipara (43.3%) are mothers who have just given birth for the first time. Multipara tends to have a faster labor process.

Table 4. Average Length Duration Second stage of labor on Parity

Parity	Average Length Duration Second Stage of Labor (minutes)	Information
Primipara	36,1	Longer
Multipara	30,7	Faster

Based on table 4, The results showed that primipara mothers experienced a longer duration duration second stage of labor (36.1 minutes) compared to multiparas (30.7 minutes).

Most of the respondents in this study were multiparous mothers, namely mothers

who have had previous childbirth experience. Meanwhile, primipara are mothers who have just given birth for the first time. This difference in childbirth experience is important because it can affect the process and duration of labor, especially in the second stage. Multipara tends to have a faster labor process because the body has experienced physiological adaptation from previous childbirth. The results showed that primipara mothers experienced a longer duration second stage of labor compared to multipara. This is in line with the theory that mothers who give birth for the first time need more time because the pelvic floor muscles have never been stretched before, and the pushing reflex is not optimal. On the other hand, in multiparas, this process usually takes place more efficiently because of better experience and physiological readiness.

Table 5. Analysis Test of the Effectiveness Squatting Position in Reducing the Duration of the Second Stage of Labor

Childbirth Position	Respondents (n)	Mean (minute)	Standard Deviation	t	df	Sig (2-tailed)
Squat	15	28.1	2.5			
Lithotomy	15	35.6	3,1			
Statistical Test				-7,821	28	0.000

Based on table 5, it can be seen that there is a significant difference between the two groups. The p value <0.05 indicates that the squatting position significantly shortens the time of the second stage compared to the lithotomy position. The results showed that there was a significant difference in the average duration of the second stage of labor between the group of mothers giving birth in the squatting position and the group in the lithotomy position. Mothers giving birth using the squatting position experienced a shorter duration of the second stage of labor compared to those using the lithotomy position. The average time of the second stage in the squatting position group was 28.1 minutes, while in the lithotomy position group it was 35.6 minutes. The results of the statistical test using the Independent T-Test showed a value of $p = 0.000$ ($p < 0.05$), which means that there is a significant effect of the squatting position on the shortening of the second stage of labor.

The results of the statistical test using the Independent T-Test showed a p value = 0.000 ($p < 0.05$), which means that there is a significant effect of the squatting position on the shortening of the second stage of labor. This finding is in line with research conducted by Aprillia (2020), which shows that the squatting position can significantly accelerate the duration of the second stage. In this study, mothers who used the squatting position had a shorter second stage time compared to the lithotomy position, because the squatting position utilizes gravity and enlarges the diameter of the pelvis, thereby facilitating the descent of the fetus into the birth canal. According to Simkin & Ancheta (2011), the squatting position increases the pelvic outlet by 30% and accelerates the descending pressure of the fetus to the perineum, which accelerates the process of fetal expulsion. In addition, the squatting position makes the mother feel more actively participating in the labor process, which can increase the effectiveness of pushing.

This discussion is also supported by Kusmiyati (2016) who reported that the majority of mothers with a squatting position completed the second stage in less than 30 minutes. Physiologically, this is logical because the squatting position causes flexibility in the pelvic joints and allows the fetus to move down faster. The squatting position strengthens intra-abdominal pressure and allows the mother to push more effectively. In addition, this position also gives the mother a greater sense of control in the labor process, which has an impact on the mother's overall psychology and physiology. Thus, the results of this study strengthen the evidence that the squatting position is an alternative safe and effective labor position in an effort to speed up the second stage process and minimize

maternal fatigue, and can be used as one of the recommendations in midwifery services, especially in the practice of independent midwives.

CONCLUSION

Based on the results of the study, it can be concluded that the squatting position has a significant effect on shortening the time of the second stage of labor in mothers giving birth. Mothers who give birth in the squatting position experience a shorter second stage time compared to mothers who use the lithotomy position. This shows that the squatting position is an alternative physiological position that is effective in accelerating the labor process. Based on the results of this study, it is recommended that health workers, especially midwives, can consider using the squatting position as an alternative position in handling the second stage of labor, especially in mothers who give birth spontaneously and without complications. This position has been proven effective in accelerating the labor process and can increase the comfort and sense of control of the mother during the pushing process. In addition, it is important for pregnant women to receive education from pregnancy regarding various labor positions, including the benefits of the squatting position, so that they can prepare themselves physically and psychologically. Further research is expected to be carried out with a wider sample coverage and considering additional variables such as pain intensity, comfort, and maternal satisfaction during labor.

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