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Effect of Upright Position on Pain and Duration of the Active Phase of the First Stage of Labor among Women in Labor in the Work Area of Tasikmalaya TPMB

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A B S T R A C T

Prolonged labor is one of causes of maternal and infant death. Several causes of prolonged labor are inefficient uterine contractions, presentation or position of the fetus, inadequate pelvic bones or abnormalities of maternal soft tissues, which result in failure to progress in labor and an increase in the incidence of Caesarean section delivery. The upright position will encourage stronger and more efficient contractions, wherein gravity will occur to keep the baby's head pressed towards the lower uterine segment so as to help cervical dilation and shorten the duration of labor. Upright positions in the first stage of labor include walking, standing, sitting, half-sitting, kneeling, and crawling positions. This study aims to determine the effect of upright position compared to supine position on the level of pain and the duration of the active phase of the first stage of labor among primigravida women in labor. This was a quasi-experimental study with a post-test only design. There were 100 study samples who were assigned in the control group and the intervention group, consisting of 50 respondents, respectively. The study was conducted at the Tasikmalaya TPMB. Data collection was carried out for approximately 6 months on March-August 2022. The results showed that primigravida women in the active phase of the first stage of labor with upright position had a shorter duration of labor compared to those with supine position. Independent t test results obtained a p value = 0.000 ($p< 0.05$). Such finding indicated a statistically significant difference. Based on the results of the data analysis, it can be concluded that there was a significant difference in the duration of the active phase of the first stage of labor between upright position and supine position among women in labor in the Work Area of Tasikmalaya TPMB.

Persalinan lama merupakan penyebab penting dari kematian ibu dan bayi, penyebabnya salah satunya yaitu kontraksi uterus yang tidak efisien, presentasi atau posisi janin, tulang panggul yang tidak adekuat atau kelainan jaringan lunak ibu, yang mengakibatkan persalinan menjadi tidak maju dan meningkatkan kejadian persalinan dengan operasi caesar. Posisi upright *atau tegak akan membuat kontraksi lebih kuat dan lebih efisien, dimana akan terjadi gravitasi untuk menjaga kepala bayi ditekan ke arah perut bawah sehingga membantu dilatasi serviks dan waktu persalinan menjadi lebih cepat. Posisi* upright *dalam kala I persalinan meliputi berjalan, berdiri, duduk, setengah duduk, berlutut, dan posisi merangkak. Tujuan penelitian ini yaitu mengetahui pengaruh posisi upright dibanding berbaring terhadap rasa nyeri dan lamanya kala I fase aktif persalinan pada ibu primigravida. Metode penelitian menggunakan metode quasi experimen dengan rancangan* posttest only, *sampel yang diperoleh yaiu 50 responden untuk kelompok kontrol dan kelompok intervensi. Penelitian dilakukan di TPMB Kota Tasikmalaya, pengambilan data dilakukan selama kurang lebih 6 bulan Maret-Agustus 2022. Hasil uji t Independent didapatkan nilai p = 0,000 (p< 0,05). Hal ini secara statistik menunjukkan bahwa terdapat perbedaan yang signifikan posisi* upright *terhadap lama persalinan kala I fase aktif pada ibu inpartu primigravida.*

Introduction

Labor is a physiological or normal process which involves various physical and psychological factors. However, in certain cases, there are problems that require the intervention of healthcare workers, one of which is in the case of prolonged labor (Iravani et al., 2015; Lawrence et al., 2013).

Prolonged labor is one of causes of maternal and infant death. Several causes of prolonged labor are inefficient uterine contractions, presentation or position of the fetus, inadequate pelvic bones or abnormalities of maternal soft tissues, which result in failure to progress in labor and an increase in the incidence of Caesarean section delivery (Lawrence et al., 2013; *WHO*, 2014).

The World Health Organization (WHO) states that prolonged labor is a direct cause of complications during labor, accounting for 69,000 deaths, or 2.8% of all maternal deaths worldwide. Furthermore, data shows that one-third of women experience dystocia during the first time of delivery. The prevalence of dystocia is 4.8% to 21% of vaginal deliveries and 60% of Caesarean section delivery (Deliktas & Kukulu, 2018; Lawrence et al., 2013; Ondeck, 2019). Indonesian Health Demography Survey in 2017 reported that prolonged labor occupied the highest rate of complication by 40%. In West Java it was reported that prolonged labor contributed as much as 0.5% of the causes of maternal death (Annisya, 2020).

Certain impacts of prolonged labor for women include intrauterine infection, postpartum hemorrhage, postpartum infection, trauma and injury to the birth canal. Meanwhile, in infants it can cause fetal distress due to lack of oxygen, intracranial hemorrhage, sepsis, cerebral palsy and seizure disorders. Thus, it is important to perform appropriate management for women in labor so as to prevent prolonged labor (Dwiarini et al., 2022). It is very important to ensure that labor and delivery have a normal progress.

Normal delivery is directly proportional to the proper and effective delivery management carried out by the delivery assistance so as to prevent prolonged labor or dystocia and the negative impact on the baby. Discomfort that is often faced in the active phase of the first stage of labor is the presence of labor pain. Women in developing countries including Indonesia with limited health facilities usually lie in bed during the delivery. In addition, supine position also facilitates examination of uterine contractions, examination of the fetus and vaginal examination performed by healthcare workers (Dwiarini et al., 2022; Gross et al., 2015).

Supine position puts a load on the uterus so that the blood vessels are hypotensive and the abdomen and contractions will be less strong. In contrast with upright position which can trigger effective contraction which further support cervical dilation and the descent of the fetal head into the pelvic floor (Ibrahim et al., 2020). Therefore, so upright position is recommended by WHO during the active phase of the first stage of labor.

The upright position will encourage stronger and more efficient contractions, wherein gravity will occur to keep the baby's head pressed towards the lower uterine segment so as to help cervical dilation and shorten the duration of labor (Deliktas & Kukulu, 2018). During the first stage of labor, upright positions include walking, standing, sitting, half-sitting, kneeling, and crawling (Emam & Al-Zahrani, 2018).

A study conducted by Emam & Al-Zahrani (2018) revealed a statistically significant difference between the upright and supine groups regarding an increase in the duration, frequency, and intensity of uterine contractions, cervical dilatation, and fetal head descent, as well as a decrease in the interval between the two groups/five respondents were in the upright group. On the other hand, there was a less progress in the supine group. Moreover, respondents in the supine group expressed higher pain scores, had longer duration of the 1st, 2nd, 3rd stage of labor than those in the upright group. Furthermore, there was a statistically significant difference in APGAR scores of the neonates during both the first and the fifth minute. In addition, women in the upright group had higher satisfaction scores compared to those in the supine group ($p < .001$).

This study aims to determine the effect of upright position compared to supine position on the level of pain and the duration of the active phase of the first stage of labor among primigravida women in labor.

Methods

This was a quantitative study with a quasi-experiment method and a post-test only design. The study samples were selected based on inclusion criteria. The study was conducted at Tasikmalaya City TPMB. Data collection was carried out for approximately 6 months on March-August 2022. The instruments used in this study were (1) G-form was used as a filling sheet for collecting characteristics of respondents (2) a partograph was used to record the progress of labor and (3) a Numeric Rating Scale was used for pain assessment. Instruments (2) and (3) are already standard forms that have been tested for validity and reliability.

The population in this study involved primigravida women in the active phase of the first stage in labor as many as 100 women spread across 10 TPMB work areas in Tasikmalaya city. The study samples were selected using total sampling technique based on inclusion criteria, namely primigravida, term pregnancy, single pregnancy, Occiput presentation and cephalic position, active phase of labor, no complications and willing to be respondents. Respondents were assigned into 2 groups, namely 50 respondents in the intervention group (upright position) and 50 respondents in the control group (supine position).

Respondents in the intervention group performed upright positions such as standing, sitting, crawling, squatting or walking for 20-25 minutes every 1 hour starting from the cervical dilation of 4 cm to 10 cm in the active phase and those in the control group performed the supine positions such as supine, half supine, and tilting on the bed. Data obtained were analyzed using SPSS statistics version 21. Data were analysed descriptively and analytically using using chi square and paired t tests.

Results

Selection of the study sample obtained 100 primigravida women labor who met the inclusion criteria. The samples were assigned in the control group and the intervention group, consisting of 50 respondents, respectively.

Table 1. Frequency Distribution of the Characteristics of Study Samples (n=50 for each group)

Variable	Upright (n=50)		Supine (n=50)		X^2	p
	F	%	F	%		
Age (years)						
20-< 25	3	6	2	4		
25-<30	24	48	28	56	0.93	0.86
30-35	23	46	20	30		
Mean	4.08=26.18		25.24=4.09			
Level of Education						
Elementary School	4	8	3	6		
Junior High School	20	40	18	36	2.04	0.56
Senior High School	24	48	27	54		
University	2	4	2	4		
Employment Status						
Unemployed	9	18	6	12	0.77	0.40
Employed	41	82	44	88		
Gestational age						
37-38 Weeks	27	54	30	60	1.96	0.16
39-41 Weeks	23	46	20	40		

Table 1 presents the characteristics of study samples. It was revealed that most of respondents in the upright group (48%) and the supine group (56%) in the age group of 25-30 years with a mean age of 26.18 ± 4.08 and 25.24 ±4.09, respectively. Regarding the level of education category, most of respondents in the upright group (48%) and the supine group (54%) were graduated from Senior High School. Furthermore, most of respondents in both groups were unemployed or housewives. There were no statistically significant differences between the two groups related to their age, level of education, employment status, and gestational age.

Table 2. Differences in the Level of Pain in the Active Phase of the First Stage of Labor between the Upright Group and the Supine Group

Pain Scale	Group				X^2	p
	Upright		Supine			
	F	%	F	%		
Before						
Mild pain	0	0	0	0	0.77	0.5
Moderate pain	5	10	7	14		
Severe pain	45	90	43	86		
After						
Mild pain	46	92	33	66	14.46	0.001
Moderate pain	4	8	13	26		
Severe pain	0	0	4	8		

Table 2 revealed women in the upright group had a higher reduction in the pain scale compared to the supine group among primigravida women in labor. Independent t test obtained a p value = 0.001 ($p< 0.05$). Such finding showed that there was a statistically significant difference in the level of pain during the active phase of the first stage of labor between upright position and supine position.

Table 3. Comparison of Duration of the Active Phase of the First Stage of Labor between the Upright and Supine Groups

Duration	Group				X^2	p
	Upright		Supine			
	F	%	F	%		
2-< 4 hours	4	8	0	0		
4-< 6 hours	46	92	33	66	23.14	0.000
>6 hours	0	0	17	34		

Table 3 showed that primigravida women in the active phase of the first stage of labor with upright position had a shorter duration of labor compared to those with supine position. Independent t test results obtained a p value = 0.000 ($p< 0.05$). Such finding showed that there was a statistically significant difference in the duration of the active phase of the first stage of labor between upright position and supine position.

Discussion

This study aims to determine the effect of upright position compared to supine position on the level of pain and the duration of the active phase of the first stage of labor among primigravida women in labor. Based on the results of previous study and literature review, it was known that the upright position upright position which can trigger effective contraction which further support cervical dilation and the descent of the fetal head into the pelvic floor. Therefore, labor pain can also be relieved.

The active phase of the first stage of labor is a very important phase during the progress of labor. Therefore, every delivery assistant must be able to control and supervise the delivery process so as not to enter into pathological condition. To avoid harmful conditions of the mother and fetus during the delivery process, especially during the active phase of the first stage of labor, healthcare workers must be able to assess the labor progress with reference to the descent of the fetal head and the progress of the cervical dilation which is strongly influenced by perfect contractions. Labor contractions are unique considering that there are physiological muscle contractions that cause pain (WHO, 2013).

The aftereffects of this study are upheld by the assessment of Marzouk & Eid (2020) which states that labor process physiologically causes pain during the first stage. Such pain is mainly caused by an increase in uterine contractions duration and frequency, cervical dilation progress, fetal head pressure, and amniotic fluid on the lower segment of the uterus that causes uterine ischemia. Labor pain can be experienced more severely when accompanied by anxiety and fear. Pain is generally described as a subjective feeling of distress and discomfort. In addition, the feeling of pain at the time of uterine contractions is also very subjective. It not only depends on the intensity of uterine contractions but also depends on the mental state of the women in labor (Deliktas & Kukulu, 2018)

Previous studies showed that ambulation with a specific rhythm could increase tolerance for labor pain during uterine contractions. Furthermore, changes in position could reduce pain, facilitate blood flow to the uterus, uterine contractions, fetal decline, and personal control (Marwiyah & Pusporini, 2017; Emam & Al-Zahrani, 2018). Upright position is expected to reduce labor pain since it is known that position in labor can affect the duration of labor process. Women who move a lot and are allowed to choose the desired position will experience a short labor process and reduced pain. Therefore, women

in labor should be given the freedom to choose the position that feels most comfortable, unless there is a contra indication (Ibrahim et al., 2020; Lawrence et al., 2013).

Supine position is preferred by women in labor because it can provide comfort to the mother, increase contractions, the flow of oxygen circulation in the blood which will be transferred to the fetus. In addition, supine position makes it easier for healthcare workers to conduct examinations (Ibrahim et al., 2020; Kumud et al., 2013). On the other hand, upright position helps cervical dilatation and the descent of the fetal head into the pelvic floor due to the force of gravity and effective contractions that pushes the baby down. As a result, the incidence of dystocia may be decreased and encourage the shorter progress of labor (Makvandi et al., 2019; Lawrence et al., 2013).

Conclusion

Based on the results of the data analysis, it can be concluded that there was a significant difference in the duration of the active phase of the first stage of labor between upright position and supine position among women in labor in the Work Area of Tasikmalaya TPMB.

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