



## HAND AND KNEE POSITION ON THE PROGRESS OF LABOR IN THE FIRST ACTIVE PHASE LABOR AT PMB SOESI HERAWATI KEPANJEN, MALANG DISTRICT

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### ABSTRACT

**Background:** Abnormal labor patterns can occur during the active phase of labor, such as when cervical dilation takes longer than 6 hours, leading to prolonged labor, maternal and neonatal emergencies, or the need for a cesarean delivery. The hand-and-knee position can help rotate the fetus from a less ideal position (occipito-posterior) to a more favorable position (anterior), facilitating the baby's descent and speeding up cervical dilation.

**Method:** This study was conducted on 20 women in active labor at PMB Soesi Herawati Kepanjen. It compared two groups: those who used the hand-and-knee position and those who did not. A quasi-experimental design was used, with data collected using observation sheets and partographs, and analyzed with the Fisher's exact test in SPSS 25.0.

**Result:** The results showed a significant effect of the hand-and-knee position on labor progress during the active phase, with a p-value of 0.011 ( $\alpha < 0.05$ ). The hand-and-knee position helps create more space in the pelvic area, allowing the baby to move into an optimal position and speeding up cervical dilation.

**Conclusion:** The research concludes that the hand-and-knee position can help the fetus rotate into an ideal position, aiding cervical effacement and the descent of the fetal head, thus speeding up the active phase of labor. Midwives are encouraged to promote this position to mothers in labor, as it can facilitate cervical dilation and help the fetus descend deeper into the pelvis

**Keywords:** *Hand and Knee Potition, Phase Active Labor, First Stage labor*

## INTRODUCTION

Labor is a series of processes that end with the childbirth of the baby from intrauterine to extrauterine in the mother. The initial stage of labor is the first stage, the opening and dilatation of the cervix. In primigravida, the duration of labor in the first stage is longer than in multiparas<sup>(1)</sup>. Labor is also a physiologic process, labor pain and relieving that is among the major components of maternal care. Application of some labor position can lay the fetus better in pelvic canal direction<sup>(2)</sup>.

The normal process that should occur in childbirth does not rule out the possibility of complications and risk of harm to both the mother and fetus<sup>(3)</sup>. There are several factors that can endanger the health of mothers giving birth, such as bleeding and infection. This can result in high maternal mortality rates<sup>(4)</sup>.

Dilatation cervix in the active phase of labor varies from person to person, especially in primigravida. The average complete dilatation of the active phase of labor is based on WHO recommendations is 1.2 cm/hour using partograph. Uterus starts to become more active. In this phase, contractions get longer, stronger and more frequent, which can cause anxiety<sup>(5)</sup>.

Labor dystocia refers to abnormally slow or protracted labor. It may be diagnosed in the first stage of labor (onset of contractions until complete cervical dilation) or the second stage of labor (complete cervical dilation until delivery). Dystocia is responsible for most abnormal deliveries<sup>(6)</sup>.

Traditionally, labor progress was defined as normal or abnormal based on data from partograph and the patient was in active labor. Prolonged deceleration disorder is strongly associated with dystocia and first stage abnormalities<sup>(5)</sup>. First stage of the active phase is the most tiring, heavy time, and most women start to feel severe pain or pain because the position of the mother during labor and

birth is a crucial factor that directly impacts the health of both the mother and the fetus<sup>(7)</sup>. Various positions, can be adopted during the first stage of labor. Among these positions, hands and knees position is a horizontal form of the kneeling position, is classified as one with a mobile sacrum<sup>(8)</sup>.

Anxiety in women during the first stage of labor can result in increased adrenaline secretion. One of the effects of adrenaline is to constrict blood vessels so that the oxygen supply to the fetus decreases. Decreased blood flow also causes incoordination of uterine muscle contractions, where this state of incoordination uterine muscle contractions can make it difficult for the uterine muscles to increase dilatation or expulsion of fetus from the uterus, in the end women will experience prolonged labor because there is failure of descent<sup>(9)</sup>.

Changing position to provide movement in the labor position in the first stage which can help reduce the pain due to contraction and help increase the dilatation cervix in labor (effacement of the cervix, opening of the cervix and lowering of the lowest part of fetus)<sup>(10)</sup>. Women can try various comfortable and safe positions. Hand and knee position is a comfortable position for women to give birth. On all fours, this hand and knee position is very suitable for childbirth with back pain, making it easier for the fetus to rotate and reduce stretching of the perineum<sup>(11)</sup>.

Most of the times, when the fetus is fitted by mother's pelvis, less pain is felt. Various positions at the time of labor and delivery such as Hand and knee position can help laboring women during prolonged labor by changing the position and mobilization women during the first stage of active phase labor<sup>(12)</sup>.

Mothers' position at the admission and entrance to labor room is bed rest regardless of their desire, and the movements are more restricted by the ending part of the first stage, the mothers

are deprived from the possible benefits of position change despite the existing controversy in the clinical meaning of cervix complete dilatation <sup>(13)</sup>.

Generally, in Indonesia position during labor and birth is lying on the side, and lithotomy. However, the hands and knees position are comfortable for mothers and enables them to move their pelvis in various directions, such as up/down, left/right, or even rotate it. This movement facilitates the adjustment of the fetus's head with the pelvis by allowing for the rotation of the fetus's head and rotated the occiput and posterior position and asynclitism <sup>(12)</sup>.

Hand and knee position will shorten the conjugate vera and increase the pelvic outlet space, it is for progress in labor and also first stage if occiput in the posterior presentation can makes it easier for the fetus to turn and descend into the pelvic cavity <sup>(11)</sup>.

Hands and knee during childbirth can benefit women by allowing spontaneous pushing by fetus in canal birth, efficient contractions, short active phase of first stage labor, less intervention, and high patient tolerance to labor pain. Mothers' need for mental and physical support, as well as their encouragement to position change in the first stage of labor, and midwives play a major role in shortening this stage to relieve pain <sup>(12)</sup>.

Data at PMB Soesi Herawati in July 2023 is 15 primipara with prolonged labor. From the data above, it was found that 6 (40%) laboring women in < 6 hours, while in 9 (60%) labor during the first active phase  $\geq$  6 hours.

## METHODS

This research is quasi experimental design with group comparison. Population in this research was conducted on primigravida in the active dilatation phase of the first stage of labor at PMB Soesi Herawati Kepanjen and used random sampling probability with a total of 20

respondents. The treatment given to 10 women in active phase labor during dilatation with hand and knee position which was carried out until complete dilatation, while 10 active phase laboring women were not given hand and knee position. The hand and knee position are done for 50 seconds or between the women's contractions. Apart from explaining to the respondents, the researcher also explained to the accompanying parties, respondents were given an informed consent sheet and then researcher assisted and observed woman during labor. Complete data consisting of the mother's identity (age) and additional data such as time to completed dilatation cervix. The instrument used observation sheet and partograph, then editing, coding, data entry. Univariate and bivariate data analysis, then analyzed with fisher exact test using SPSS 25.0.

## RESULT

**Table 1.** Frequency distribution of respondents based on age (n=20)

Women Age	Frequency (n)	Percentage (%)
$\leq$ 20 tahun	6	30
21 – 35 tahun	14	70
$\geq$ 36 tahun	0	0

Table above shows that almost half of the age of women were mostly aged 21 – 35 years 14 respondents (70%), 6 respondents (30%) aged  $\leq$  20 years.

**Table 2.** Frequency distribution of labouring women with hand and knee position (n=10), non-hand and knee position (n=10)

First Stage Phase Active labor	Hand and Knee		Non-Hand and Knee	
	Frequency	Percentage	Frequency	Percentage
	(n)	(%)	(n)	(%)
Short ( $\leq 6$ hours)	10	100	4	40
Long ( $\geq 6$ hours)	0	0	6	60

Table above shows that total of women with hand and knee position 10 respondents (100%) were short in completed dilatation cervix. Meanwhile non-hand and knee position 4 respondents (40%) were short, 6 respondents (60%) were long in completed dilatation cervix.

**Table 3.** Analysis based on influence of hand and knee position with duration for completed dilatation cervix (n=20)

Hand and Knee Position	Duration active phase labor				p-value
	Short		Long		
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Hand and Knee Position	10	50	0	0	0.011
Non-Hand and Knee Position	4	20	6	30	

Table above shows results during treatment in labor. The results of the cross tabulation between giving a hand and knee position and the length of the first stage were obtained from 10 people who were given a hand and knee position during labor, there were 10 people with rapid dilatation cervix and 0 people with slow dilatation cervix. Then, of the 10 people who were not given a hand and knee position during labor, there were 4 people with rapid dilatation cervix and 6 people with slow dilatation cervix. SPSS analysis results is significance value (p) of 0.011. These results show a significance value of less than 0.05 ( $p < 0.05$ ) and stated that there is a significant relationship between hand and knee position and duration of the active phase of the first stage of labor.

## DISCUSSION

Based on the research results in table 3, hand and knee position in 10 respondents (100%) in control group is that active phase of labor in the first stage was accelerated, the time for complete dilatation cervix was  $\leq 6$  hours. Based on these results, it shows that the labor position can help increase the progress of labor.

Labor begins with the process of dilatation cervix, and the fetus descends into the birth canal. The process of labor includes four interrelated components that influence both the onset and progress of labor. These four components are passenger (fetus), passage (mother's pelvis), power (uterine contractions), and psychology (mother's emotional status). When labor begins, the interaction between passenger, passage, power, and psychology must be in sync for spontaneous vaginal birth to occur<sup>(4)</sup>.

Generally, the progress of labor depends on the interaction of 3 variables, mother's energy, birth canal and fetus. Apart from this, the mother's position can help increase the progress of labor. The occurs of aberrant patterns in active phase first stage labor when protracted dilatation cervix to complete. This occurs if the arrest contractions are too long, there is no stimulation of contractions which causes cervical dilatation from the active phase until it is fully dilated. The hand and knee position will shorten the conjugate vera and increase the pelvic outlet space, so that apart for the progress of labor it is also for occiput in the posterior presentation and makes it easier for the fetus to turn and descend into the pelvic cavity<sup>(13)</sup>.

The results of research conducted by 38 respondents showed that the majority (21 or 55.26%) of women who gave birth in hand and knee position experienced labor that was not prolonged, while almost half (10 or 36.84%) of women who gave birth in side-lying

positions experienced a labor that was prolonged<sup>(14)</sup>.

Hand and knee position can help the fetus slide into the birth canal so that the dilatation cervix process during labor progresses more easily. Inhaling and exhaling techniques accompanied by hand and knee position can help the mother gather strength to push the fetus into the most ideal position for a normal birth. When the mother gives birth in the hands and knees position, it causes the spine and pelvis to form a C-shaped curve, which provides space for the fetus to push through the birth canal and accelerates cervical dilatation until complete dilatation<sup>(11)</sup>.

According to research stated that women who gave birth in the kneeling position had a shorter overall time for cervical dilatation and decreased baby dissatisfaction with a quicker second stage of labor without shoulder dystocia and fewer babies admitted to the neonatal intensive care unit compared with the supine position<sup>(6)</sup>.

The risks that occur in pregnant women with a prolonged first stage of the active phase include increased rates of operative vaginal delivery, fourth degree perineal lacerations, and postpartum hemorrhage. The risks to the fetus due to prolongation of the first stage of the active phase are fetal distress, increased rates of shoulder dystocia, and admission to the neonatal intensive care unit<sup>(6)</sup>.

Labor pain is experienced by women during delivery, and woman's perception of labor pain varies, which is affected by both physical and psychological factors. Additionally, it has been reported that severe labor pain is in relation with posttraumatic stress during childbirth. Therefore, providing support and care during labor to decrease labor pain are key responsibilities for midwives<sup>(8)</sup>.

Choosing a position during labor, one of which is the labor position to reduce pain during labor and can increase

the labor process. The hand and knee position are carried out every 50 seconds or between the women's contractions. This position can make it easier for women to rest between contractions if the women is tired and can reduce perineal lacerations<sup>(14)</sup>.

Based on the results of this treatment, there were various types of primipara who expressed concern because of the women's adaptation to pain during childbirth. So that when the women are given treatment in a hand and knee position, the women will be more comfortable, make it easier and can increase uterine contractions so that the dilatation cervix process during labor can occur more easily<sup>(11)</sup>.

The hands and knees position are comfortable for mothers and enables them to move their pelvis in various directions, such as up/down, left/right, or even rotate it. This movement facilitates the adjustment of the fetus's head with the pelvis by allowing for the rotation of the fetus's head and rotated the occiput and posterior position and asynclitism<sup>(12)</sup>.

Laboring in a hand and knee position can increase the progress of labor in the first stage of the active phase because kneeling with all four legs can direct the pressure of the head forward anteriorly and not towards the perineum. Labor can progress in a kneeling position, leaning forward and comforting the body with the palms of the hands or fists because at that time it will also affect the conjugate vera (shorten) and increase the pelvic outlet space which helps the fetus thrust into the ideal position and can increase uterine contractions<sup>(15)</sup>.

There are several effects on the progress of labor in a hand and knee position, helping the descent deeper into the pelvis, increasing the feeling of wanting to push, helping the fetus to rotate, making the women more comfortable and reducing back pain<sup>(12)</sup>. This is in accordance when the fetus is expelled, the fetus is coordinated, strong,

fast and lasts longer, approximately every 2-3 minutes<sup>(15)</sup>.

In the opinion of researchers, the hand and knee position take advantage of gravity, increasing the diameter of the pelvis, and opening the coccyx<sup>(10)</sup>, thereby allowing the smallest part of the head at the symphysis to descend and press on the cervix. Diversion contractions becomes a pain reliever to reduce pressure on the back and sacrum, increasing self-confidence in the active phase of the first stage and second stage of labor<sup>(8)</sup>. Further research shows that most of the theoretical speculations need to be clarified, if there are no prepartum/intrapartum maternal-fetal complications, all mothers in labor are expected to choose the most comfortable position, and are encouraged to choose the hand and knee position during labor<sup>(12)</sup>.

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## CONCLUSION

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Based on the results of the research and discussion above, it can be concluded that the hand and knee position can encourage the ideal position for the fetus to rotate by pivoting on the smallest part of the fetus for effacement of the cervix and lowering of the fetal head to accelerate complete opening in the active phase of the first stage of labor. It is hoped that midwife will take a persuasive approach to mothers in labor, regarding various birth positions, especially the hand and knee position in the first stage of labor because it can help the dilatation cervix's process and fetus in descending deeper into the pelvis.

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