

Palm Acupressure: A Complementary Intervention to Accelerate the Progression of the First Stage of Active Labour in Primigravida

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ABSTRACT

The success of labour is influenced by optimal labour progress during the active stage, characterised by accelerated cervical dilation. The active stage of labour is the longest phase and a critical period determining the success of a normal delivery. If labour progresses more slowly than expected, it can potentially lead to complications for the mother and baby. The purpose of this study was to analyse the effect of palm acupressure on the duration of the active stage of labour. The research method used a true experiment with a two-group pre-test post-test control design. Fifty-eight primigravida subjects giving birth at RSPAL Dr Ramelan in Surabaya were divided into two groups. The intervention group received palm acupressure, while the control group received deep breathing relaxation. Labour duration was monitored using a partograph. The independent t-test showed a p-value of 0.041, indicating a difference in labour duration between the two groups. The average difference in labour duration was 1 hour and 43 minutes. In conclusion, palm acupressure affects the duration of the active stage of labour. This intervention has the potential to prevent prolongation of the first stage and can be used as an alternative to strengthen uterine contractions in cases of labour with contraction disorders.

Introduction

Childbirth is a physiological process that involves complex interactions between uterine contractions, cervical opening, birth canal conditions, and maternal psychological factors. The success of the delivery process is greatly influenced by the optimal progression of labour, especially in the first phase of the active phase, characterised by the acceleration of cervical dilatation until complete opening. The active phase is the longest phase of labour and a critical period that determines the success of normal labour. If the progress of childbirth takes place more slowly than expected, there can be an extension of the first phase of the active phase, which has the potential to cause complications for both mother and baby. WHO emphasised that unsuccessful childbirth is one of the main causes of the increase in obstetric interventions, including labour induction, oxytocin augmentation, and cesarean sections. Therefore, effective efforts are needed to maintain the physiological processes of labour through safe, evidence-based, and effective interventions (World Health Organisation, 2018).

The problem of long childbirth is still a challenge in maternal health services in various countries, including Indonesia. Extended labour contributes to an increased risk of maternal fatigue, intrapartum infection, postpartum haemorrhage, fetal distress, neonatal asphyxia, and an increase in cesarean

sections. In addition to affecting the clinical outcomes of mothers and babies, these conditions also increase hospitalisation length and health care costs. In primigravida mothers, the risk of prolonged labour is higher than in multipara because of physiological and psychological adaptation to the experience of first delivery. Anxiety, fear, and high pain perception can increase the secretion of catecholamines, thereby inhibiting the release of endogenous oxytocin, causing uterine contractions to become less effective and slowing the progress of labour (World Health Organisation, 2018).

Based on data from the 2023 Indonesian Health Survey (SKI) and the national health profile report, childbirth complications are still one of the main causes of high maternal morbidity in Indonesia. One of the indicators that shows the increase in obstetric interventions is the high rate of cesarean section deliveries, which have continued to increase in recent years. This condition underscores the need to develop complementary interventions that can physiologically reduce labour complications, thereby reducing the need for unnecessary medical interventions (Ministry of Health RI, 2023).

Currently, the management of prolonged labour is generally carried out through pharmacological approaches, such as oxytocin augmentation or induction, and operative measures in the event of failure of labour progress. Although effective, the use of oxytocin is inseparable from the risk of uterine hyperactivity, fetal distress, uterine rupture, and an increase in the number of operative actions. Therefore, current care is increasingly encouraging the use of nonpharmacological methods as part of evidence-based childbirth care to support the normal childbirth process (World Health Organisation, 2018).

One of the complementary interventions emerging in obstetric practice is acupressure. Acupressure is a technique of stimulating the body's meridian points using finger pressure without using a needle. In childbirth, the most commonly used acupressure point is LI4 (Hegu), located on the back of the hand between the first and second metacarpal bones. Stimulation at this point is believed to increase the release of endogenous endorphins and oxytocin, improve uteroplacental blood circulation, enhance the effectiveness of uterine contractions, and help the mother relax during childbirth. Previous studies reported that acupressure at the LI4 and SP6 points was significantly associated with a shorter labour duration. However, no significant differences in pain scores or serum cortisol levels were observed between the two control groups. Other studies have also found that the combination of hypnopressure at the LI4 and SP6 points is more effective in shortening the active phase I compared to the control group (Mehta et al., 2017; Asadi et al., 2015)

Based on secondary data at RSPAL Dr Ramelan Surabaya in 2024, there were 735 births. Of these, 36% were normal deliveries, and 56% were operative deliveries, of which 2.8% were indications of extended period I delivery. Management in these cases includes pharmacological therapy (including induction) and, if necessary, operative measures. The nonpharmacological methods applied are still limited to deep breathing relaxation and distraction techniques. This condition shows that evidence-based complementary interventions, especially palm acupressure, have never been used in childbirth services. Given the high rate of cesarean section deliveries, the discovery of elongated period I labor cases, and the limited use of complementary methods based on scientific evidence, research on palm

acupressure is needed, in the hope of providing an alternative non-pharmacological intervention that is safe, effective, easy to implement, and contributes to supporting physiological labor and reducing the risk of prolonged partusures and obstetric interventions that are not required.

Method

This study uses a true experimental method with a pre-test/post-test control design. The subject of the study is a primigravida who gave birth during the 1st active phase at RSAL Dr Ramelan Surabaya in 2025, with 58 people. The selection of subjects was carried out by a simple random sampling technique and in accordance with the inclusion criteria, namely: willingness to be a respondent, gestational age 36-41 weeks, cervical opening 4-9 cm, and head location. Meanwhile, mothers with injuries on both palms, childbirth with medical and non-medical complications, and emergencies were excluded from this study. Respondents were divided into two groups. In the intervention group of 28 people, palm acupressure was performed at HT 8, HT 9, PC 8, and PC 9 points during uterine contractions, lasting 45-50 seconds each, repeated 4-5 times over 10 minutes for 4 hours. The four meridian points are close together, so stimulation is carried out simultaneously.

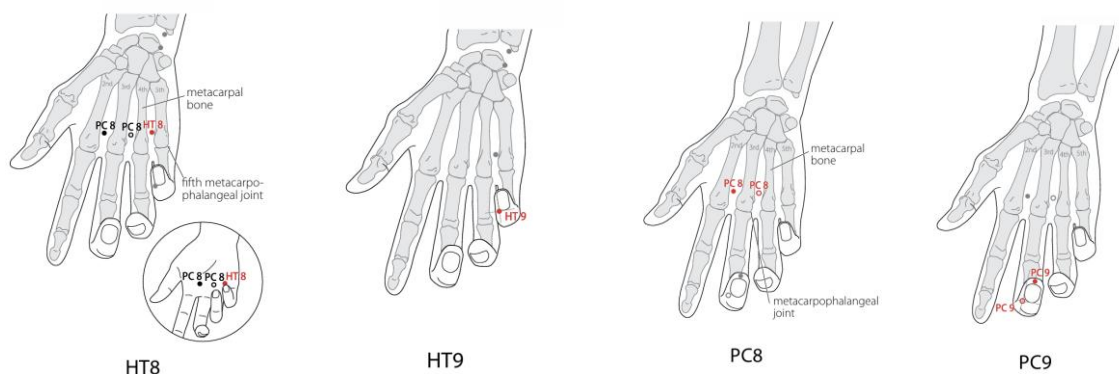


Figure 1. Meridian point HT8 (Shaofu), HT9 (Shaochong), PC8 (Laogong), and PC9 (Zhongchong) (World Health Organisation, 2009)

In the control group of 28 people, they received standard breathing-relaxation care during each uterine contraction for 4 hours. The instrument used to measure the duration of labour during the first phase of the active phase is the WHO partograph. The duration of labour during the first phase of the active phase is based on the indicator of the addition of the opening of the cervix per hour. It is normal if the cervical opening increases by 1 centimetre per hour; slow if it increases by more than 1 centimetre per hour; and fast if it decreases by less than 1 centimetre per hour. The next indicator is the length of the labour process during the first active phase of labour, from the opening of the cervix (four to ten centimetres) to the delivery of the baby, approximately six hours or more. This research has received approval from the Research Ethics Committee at RSPAL dr. Ramelan Surabaya on February 6, 2025, with No: 8/EC/KEP/2025.

Results

Table 1. Frequency distribution characteristic of primigravida Childbirth Phase 1 Active Phase of Primigravida

Characteristics	Palm Acupressure Group			Deep Breath Relaxation Group			p-value <i>Livene test</i>
	n=28	%	Mean±SD; Median; Squirrely	n=28	%	Mean±SD Median; Squirrely	
Age (years)							
<20	2	7,14	25.32±2.982; 25,00; 19-31	1	3,57	25.69±2.987; 25,00; 19-31	0,026
20-30	24	85,72		23	82,14		
31-40	2	7,14		4	14,29		
Education							
Elementary School	0	0,00	-	0	0,00	-	
Junior High School	0	0,00		0	0,00		
High School	15	53,57		13	46,43		
Diploma	1	3,57		0	0,00		
Bachelor	12	42,86		15	53,57		
Jobs							
IRT/Not working	12	42,86	-	18	64,28	-	
TNI/PNS	10	35,71		7	25,00		
Private	6	21,43		3	10,72		
Self-employed	0	0,00		0	0,00		
Gestational age (weeks)							
36-37	2	7,14	38.93±1.052 39,00; 37-41	2	7,14	39.07±1.152 39,00; 37-41	
38-39	18	64,29		17	60,72		
≥40	8	28,57		9	32,14		

Based on Table 1, the respondents in the treatment group were almost entirely aged 20–30 years (85.72%). The average age is 25.32 years, with a range of 19 to 31 years. In the control group, almost all (82.14%) were 20–30 years old. The average age is 25.96 years with a range of 19 years to 31 years. In the treatment group, the last education level was mostly high school (53.57%), and in the control group, it was mostly bachelor's (53.57%). 42.86% of the treatment group's work was not working or was as housewives. In the control group, the vast majority, 64.28%, also did not work.

The gestational age in the treatment group was mostly 64.29%, with 38-39 weeks. The average gestational age is 38 weeks, with a range of 37 to 41 weeks. In the control group, most (60.72%) also had a gestational age of 38–39 weeks. The average gestational age is 39 weeks, with a range of 37 to 41 weeks.

Table 2. Cervical opening of labour during the 1st active phase of primigravida

Cervical Opening	Palm Acupressure		Deep Breathing Relaxation	
	n=28	%	n=28	%
Normal (1 cm/h)	8	28,57	7	25,00
Fast (> 1 cm/h)	15	53,57	6	21,43
Slow (< 1 cm/h)	5	17,86	15	53,57

Source: Primary Data, 2025

Based on Table 2, the opening of the cervix during the 1st phase of active primigravida in the treatment group after palm acupressure is mostly 53.57%, indicating rapid cervical opening. Meanwhile, in the control group, most (53.57%) had slow cervical opening.

Table 3. Duration of labour during phase 1 of the active phase of primigravida

Duration of labour during phase 1 of the active phase	Palm Acupressure			Deep Breathing Relaxation		
	n=28	%	Mean±SD;	n=28	%	Mean±SD;
			Median; Squirrely			Median; Squirrely
≤ 6 hours	23	82,14	4.49±1.02 5.00;	13	46,43	5,061±1,180
> 6 hours	5	17,86	3,0-6,7	15	53,57	5.00; 3,0-6,8
<i>p-value</i>	0.489*			0.083*		
	0.041**					

* *Shapiro Wilk Test*** *Independent Sample T-Test*

Based on Table 3, the duration of childbirth during the active phase of primigravida in the treatment group receiving palm acupressure was almost entirely ≤ 6 hours (82.41%). The average duration of labour during phase 1 is 4 hours 49 minutes, with a range of 3 hours to 6 hours 7 minutes. In the control group, the duration of delivery during the active phase of primigravida after breathing relaxation was almost half, 46.43%, with a duration of ≤ 6 hours. The average duration of childbirth during the 1st active phase is 5 hours and 6 minutes; the range is 3 hours to 6 hours and 8 minutes. The Shapiro-Wilk test results in the treatment group showed a p-value of 0.489, and in the breath relaxation group, a p-value of 0.083. The results of the *t-independent test* (p-value = 0.041) indicate a difference in labour duration during the first active phase between the two groups.

Discussion

The results showed a difference in the rate of service opening between the palm acupressure group and the deep breathing relaxation group. In the treatment group, most experienced faster cervical opening. In the control group, most had a slow cervical opening. These findings suggest that palm acupressure has a greater effect on the progression of active phase I childbirth than deep-breathing relaxation. The speed of cervical dilation is an important indicator of labour progress. In this study, the palm acupressure group showed a higher cervical opening rate, suggesting that acupressure stimulation can enhance the effectiveness of uterine contractions and accelerate delivery.

The results of this study are in line with the WHO, which emphasises that the progress of childbirth in the active phase is individual and that there are wide physiological variations among women, so that not all women need to achieve cervical opening of exactly 1 cm per hour. Therefore, an opening of the cervix of less than 1 cm per hour does not always indicate the presence of abnormalities or pathological labour, as long as the condition of the mother and fetus remains good (World Health Organisation, 2018).

The ACOG's latest guidance for 2024 reports that the rate of cervical opening in the active phase of labour ranges from 0.5–1.3 cm per hour, with the acceleration of dilation generally occurring after cervical opening reaches 6 cm. Thus, both the treatment and control groups in this study can still be categorised as within the physiological range according to the concept of modern obstetrics. Nonetheless, clinically, the palm acupressure group showed better labour progress than the deep-breathing relaxation group. This is evident from the proportion of respondents who experienced cervical opening of more than 1 cm per hour in the treatment group. The higher speed of cervical opening

indicates that palm acupressure can optimise the physiological processes of childbirth, enabling cervical dilatation to occur faster. In contrast, in the control group, most respondents experienced cervical opening of less than 1 cm per hour. However, it remained within normal limits according to WHO and ACOG (ACOG, The American College of Obstetricians and Gynaecologists, 2024).

Acupressure works by stimulating specific points on the palms that help release endorphins and increase uterine contractions. This increase in contraction frequency accelerates cervical dilatation, thereby shortening the active phase. Meanwhile, deep breathing relaxation also has a positive effect on childbirth, especially in reducing maternal anxiety and tension, which can indirectly facilitate contractions. However, because relaxation is less active than acupressure, its effect on accelerating cervical dilatation may not be as strong (Issac et al., 2023).

Acupressure stimulation at HT8, HT9, PC8, and PC9 points can increase uterine contractions by activating peripheral mechanoreceptors that trigger endorphin release, decreasing sympathetic activity, and improving maternal neuroendocrine balance. A decrease in catecholamine levels and an increase in endogenous oxytocin can result in more effective uterine contractions, thereby accelerating cervical dilatation and the progress of labour during the first active phase. This mechanism is consistent with the neurophysiological theory of pain and with findings from various obstetric acupressure studies showing improvements in labour progress through the regulation of maternal pain and stress (Shirdel et al., 2024).

Points on the meridians of the heart (HT) and pericardium (PC) are related to the regulation of the autonomic nervous system, specifically the sympathetic–parasympathetic balance. The HT8 (Shaofu) point, located in the palm between the fourth and fifth metacarpals, and the HT9 (Shaochong) point, located on the radial side of the little finger, about 0.1 cun posterior from the corner of the nail, are the Ying-Spring and Fire Point of the Heart Meridian. According to the WHO Standard Acupuncture Point Locations and modern meridian atlas, HT8 and HT9 function to calm the Shen, regulate the heart's Qi, and reduce overheating conditions in the heart meridians. Neurophysiologically, HT8 and HT9 stimulation are thought to increase parasympathetic activity and β -endorphin release, thereby reducing maternal anxiety and stress. A decrease in sympathetic activity may enhance the effectiveness of uterine contractions and the progress of labour during the first active phase (World Health Organisation, 2009).

The PC8 (Laogong) point is located in the palm, in the indentation between the second and third metacarpal bones, proximal to the metacarpophalangeal joint. In contrast, the PC9 (Zhongchong) point is located in the middle finger, 0.1 F-cun proximal to the radial angle of the middle fingernail, at the intersection of the vertical line of the radial side of the nail and the horizontal line of the base of the nail. These two points are often used to treat heart and mental diseases, as well as emotional and cognitive disorders. A neuroanatomical study showed that the PC8 region is connected to the dorsal horns of the spinal cord and the nucleus of the cuneatus in the medulla oblongata within the spinal segments C6 to T1. These findings suggest that PC8 has a direct influence on the central nervous system. The combination of these four points modulates maternal emotional responses and stress, potentially affecting pain perception and labour progression (Dorsher & Chiang, 2018; Li et al., 2013).

Based on the study results, the duration of childbirth during the active phase in the treatment group after palm acupressure was almost entirely ≤ 6 hours. In the control group, the duration of delivery during phase 1 of the active phase of primigravida after being given breathing relaxation was almost half, with a duration of ≤ 6 hours. The analysis reported a difference in labour duration during the first active phase between the two groups, with an average difference of 4.49 hours. The control group had an average delivery duration of 5.06. The average difference in labour duration between the two groups was 1 hour and 43 minutes, indicating that the palm acupressure group experienced the active phase I of delivery faster than the deep-breath relaxation group. Thus, the average cervical opening speed in the acupressure group was estimated at 0.89 cm/h, while in the deep-breathing relaxation group, it was 0.79 cm/h. These findings suggest that the palm acupressure group experienced a faster rate of cervical opening than the deep-breath relaxation group. These differences indicate that palm acupressure has the potential to increase the effectiveness of uterine contractions and accelerate the progress of labour in primigravida

The difference in mean labour duration of 1 hour 43 minutes between the treatment and control groups was clinically significant. Shortening the duration of labour during the first active phase can reduce maternal fatigue, reduce the risk of prolonged labour, reduce the need for obstetric intervention, and increase maternal comfort. In addition, better labour progress can increase maternal and neonatal outcomes. Physiologically, the first phase of labour in the active phase is characterised by a progressive opening of the cervix due to stronger, regular, and coordinated uterine contractions. In this phase, cervical dilatation accelerates, influenced by the effectiveness of uterine contractions, the mother's psychological state, and hormonal factors such as oxytocin and endorphins. Faster delivery indicates that the process of contraction and cervical opening runs effectively, resulting in more optimal labour progress (Hofmeyr et al., 2021).

The results of this study explain the mechanism of action of acupressure, which provides stimulation to certain points on the palm connected to the meridian pathway. Stimulation is believed to activate the central nervous system and trigger the release of neurotransmitters and endogenous hormones, such as β -endorphins and oxytocin. β -endorphins increase comfort and reduce pain perception, while oxytocin increases the frequency and strength of uterine contractions. Increasing effective contractions will accelerate the process of thinning and opening the cervix, so that the duration of labour during the first phase of the active phase will be shorter. The results of previous research on the effects of acupressure on the palm on cervical dilatation and labour duration remain limited. Stimulation research on the hands is often associated with psychological problems such as pain and anxiety. The intervention had a significant effect on heart rate and stress levels compared with the deep-breathing relaxation group. Where the decrease in heart rate in the finger-holding relaxation group was 4.4 times/minute, while in the deep-breathing relaxation group it was 2.32 times/minute (Pillozzi et al., 2021; Setyo & Taufik, 2018).

Acupressure is also known to decrease the activity of the sympathetic nervous system, which is related to stress and anxiety during childbirth. High anxiety can increase the release of catecholamines,

especially epinephrine and norepinephrine, which have the potential to inhibit uterine contractions and reduce blood flow to the uterus. Conversely, the relaxed, comfortable conditions induced by acupressure stimulation can lower catecholamine levels, thereby making uterine contractions more effective. This allows the cervix to open more quickly and reduces the duration of labour. This is in line with previous research where stimulation of the hands was given to reduce anxiety levels in post-caesarean section patients. With the same technique, that is, grasping the fingers, the intervention touches the meridian points located on the fingertips. The stimulus will flow to the brain, then continue to the nerves in the organs of the body that are disturbed, so it is hoped that the blockage in the energy pathway will be smooth (Alam et al., 2022; Silviani et al., 2021).

The deep-breathing relaxation given to the control group is also a beneficial nonpharmacological method for reducing tension and improving maternal comfort during labour. This technique helps the mother control the response to pain as well as improve tissue oxygenation. However, based on this study's results, the effectiveness of breath relaxation in shortening labour duration is still lower than that of palm acupressure. This is evident in the longer average labour duration in the control group compared to the treatment group. The findings indicate that acupressure not only produces a psychological relaxation effect but also provides stronger physiological stimulation of the neuroendocrine mechanisms involved in the labour process.

Conclusion

Based on the results of the research and discussion, it can be concluded that administering palm acupressure effectively shortens labour duration during the first active phase of primigravida. Most respondents in the treatment group had a labour duration of < 6 hours, with a shorter average delivery duration than those in the control group who received deep-breathing relaxation. The 1-hour and 43-minute difference in average labour duration shows that palm acupressure has a greater influence on accelerating labour progression. Thus, palm acupressure can be considered one of the non-pharmacological complementary interventions that are safe, easy to apply, and useful for accelerating the delivery of the first phase of active primigravida, thereby having the potential to improve the quality of midwifery care and maternal comfort during the delivery process.

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