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## Reduce The Intensity of Labor Pain with Acupressure

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### ABSTRACT

*Project-based learning is one of the lessons that is able to direct participants. The process of childbirth is identical to the feeling of pain as a manifestation of the birth process which begins with uterine contractions, cervical dilatation and effacement. It is a physiological process, as a subjective experience of the physical sensations associated with the stages of labour. To reduce the sensation of labor pain, it is necessary to have pain management in labor using non-pharmacological methods, one of which is acupressure. The purpose of this study was to determine the effect of acupressure on the level of labor pain. Methods: The research design in this study was a pre-experiment with a one-group pre-post test design. The population of all women giving birth normally with a sample of 52 respondents for the intervention group and 52 respondents for the control group. The sampling technique was accidental sampling. Bivariate analysis using the Wilcoxon test. Results: Statistical tests using the Wilcoxon test obtained p value = 0.000 (p value <0.05) meaning that acupressure has been proven to significantly reduce the intensity of labor pain. Conclusion: acupressure can reduce the intensity of physiological labor pain in primigravidas in labor during the first active phase.*

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## 1. INTRODUCTION

Childbirth is a physiological process experienced by a mother in the process of giving birth to her baby. Childbirth is a highly anticipated process (Dahlberg, et.al, 2016). In general, pregnant women expect a normal, safe and comfortable delivery with minimal pain. Physiologically, the sensation of pain originates from pain signals that arise when the uterine muscles contract with the aim of pushing the baby in the uterus out (Hauck, et.al, 2007).

The most dominant pain with a long time is felt in the first stage of labor. The nature of labor pain during the first active phase will be felt heavier, sharper, and cramp-like which results in the spread of pain sensations (Niven & Murphy-Black, 2000). Labor pain that arises will be more frequent and longer, so that it can cause the mother to become anxious, afraid and tense and even stressed which results in excessive release of hormones such as adrenaline, catecholamines and steroids. This hormone can cause smooth muscle tension and vasoconstriction of blood vessels which results in reduced blood and oxygen flow to the uterus so that it can cause uterine ischemia, fetal hypoxia and make pain impulses multiply (Lowe, 2002).

Increased catecholamines can cause disturbances in the strength of uterine contractions which have an impact on the incidence of uterine inertia as one of the causes of prolonged labor (Nursahidah, et.al, 2020). Prolonged labor in the first stage of labor has a risk of post partum hemorrhage, chorioamnionitis, and increases the length of intensive care in the neonatal. Interventions to reduce pain, anxiety and discomfort during labor are a major part of midwifery care in modern midwifery services for mothers in labor. Labor pain can have an impact on the birth process. High pain perception in labor and anxiety can cause a stress response resulting in an increase in catecholamine hormones which leads to an increase in respiration frequency, heart rate, reduced energy which causes fatigue (Uçar & Golbasi, 2019).

Various efforts have been made to reduce pain in labor, both pharmacological and non-pharmacological. Non-pharmacological pain management is cheaper, simple, effective and without adverse effects. Non-pharmacological methods can increase satisfaction during labor, because the mother can control her feelings and strength (Turk & McCarberg, 2005). Relaxation, breathing techniques, movement and position changes, relaxation, hydrotherapy, hot/cold therapy, music, guided imagery, acupressure, and aromatherapy are some of the non-pharmacological techniques that can increase the comfort of the mother during labor and have an effect on effective coping of the labor experience (Hanser, et.al, 1983).

Acupressure is a needleless acupuncture method that originates from traditional Chinese medicine (Schlaeger, et.al, 2017). The acupressure method uses the hands to press certain body parts on acupuncture points. The acupressure points associated with labor are SP6 and LI4. The SP6 point is the point which is located four fingers above the ankle. Whereas the LI4 point is the point located between the first and second metacarpal bones on the distal part of the folds of both hands. Point SP6 and point LI4 are uterine points. Emphasis on these two points will correct the energy imbalance, smoothen the blocked blood flow along the meridians.

Acupressure can ease the birth process because it increases the effectiveness of contractions in the uterus (Chung, et.al, 2003). Acupressure also helps produce endorphins

which function to reduce pain. This method has no side effects or harm to the patient and can be performed by midwives, nurses and husbands during labour. Acupressure has advantages or disadvantages compared to other techniques or methods. Acupressure is very practical because it doesn't require a lot of tools and is enough with your fingers, thumb, forefinger, palm and it's cheap and safe (Hamlaci & Yazici, 2017).

Locations of acupressure points that are useful during labor include the feet for En in the four fingers above the ankles, the palms between the thumbs and other fingers, the feet near the toes, between the eyes, on the upper shoulders, under the ankles, on the soles of the feet. The principle of acupressure comes from eastern medicine, where it is known that there is a flow of vital energy in the body (known as Chi or Qi (China) and Ki (Japan)) (Beal, 2000). This flow of energy greatly affects health. One technique for launching vital energy is acupressure, namely: pressing certain points (known as acupoints) using the forefinger or thumb to stimulate the flow of energy in the meridians. This technique has been used for hundreds of years and is very safe and effective.

Acupoints are located all over the body, close to the surface of the skin and connected to each other by a complex network of meridians (Langevin & Wayne, 2018). Each acupoint has a specific effect on a particular body system, or organ. Stimulating and gently massaging the point will change the body's physiology and will affect the mental and emotional state.

Acupressure starts from nerve stimulation with a small diameter in the muscles that will send impulses to the spinal cord, then it is passed on to three nerve centers, spinal cord, mesencephalon, hypothalamus-pituitary complex, all three of which are activated to release neurotransmitters (endorphins) which block pain messages that come next through pain pathways (Hmwe, et.al, 2016). other. Endorphins are a natural supply of the body in the form of substances such as morphine, activated by stress and pain, localized in the brain, spinal cord and digestive tract, providing an analgesic effect when these agents combine with opiate receptors in the brain (Duthie & Nimmo, 1987).

The effect of acupressure on labor pain has been tested by several experts in several studies. There was a significant reduction in pain intensity immediately and 30 minutes after the intervention in the massage and acupressure group compared to the control group ( $P \leq 0/003$ ;  $p < 0/002$ ) (Tournaire & Theau-Yonneau, 2007). A combination of acupressure and support for pregnant women can reduce pain and speed up the delivery process, research conducted by Anna found a decrease in labor pain in the acupressure group and was most noticeable immediately after treatment (acupressure group) with a p value  $< 0.001$ . The research of Sreechithra Cacupressure is an effective non-pharmacological method to provide comfort to the mother when experiencing labor pain. with research.

Maternal supportive care and acupressure during labor reduce pain intensity and improve labor outcomes (Mohamed Ali, et.al, 2017). A Cupressure on the combination of BL32 (Ciliao) and LI4 (Hegu) points with BL32 (Ciliao) and SP6 (Sanyinjiao) points is effective in reducing the intensity of labor pain so that it can be used as an alternative non-pharmacological intervention in reducing labor pain intensity.

## 2. METHODS

This study used a one group pre-experimental research design repost *test design*, where in this design the observations were made twice, namely before the experiment

and after the experiment (Marsden & Torgerson, 2012). The stages are as follows: Outreach to midwives and respondents on how to do acupressure. Researchers assisted by midwives search for and select prospective respondents according to inclusion and exclusion criteria. The researchers together with the midwives identified potential respondents according to predetermined inclusion and exclusion criteria. Respondents who met the criteria were given information about the objectives and procedures of the research conducted and then asked for consent as respondents by signing an informed consent. Ask respondents to fill out a research questionnaire (demographic data and characteristics of respondents).

Furthermore, pain level measurements were taken when the respondent entered the active phase of 4-9 cm opening using the Visual Analog Scale (VAS). 2). Selected respondents performed acupressure techniques. Emphasis on point L14 is the point between the first and second metacarpal bones on the distal part of the folds of both hands, massaging and pressing 30 times with a clockwise rotation technique) and emphasis on point SP6, which is the point located four fingers above the ankles, massaging and pressing 30 times by turning the technique counterclockwise. massage do it from the first stage of the active phase at 4- 7cm opening

The population in this study were all mothers during the first active phase with an opening of 4-10 cm in the working area of the Wanakerta Health Center, Karawang Regency. Samples were mothers in the first active phase with an opening of 4-9 cm, with inclusion criteria: Primigravida with a gestational age of 37-42 weeks, Inpartu in the first stage of the active phase with an opening of 4-9 cm, intact amniotic fluid, live fetus, single, head presentation, did not use pharmacological methods to reduce labor pain and were willing to become research subjects, with a total sample of 52 respondents. The exclusion criteria were: the condition of the mother who experienced pathological conditions, complications or sudden emergencies. Sampling was taken through an accidental sampling technique

#### 4. RESULTS AND DISCUSSION

**Table 1.1** Distribution of Respondent Characteristics

Characteristics	n	%
Age		
- <20 years	3	5,8
- 20-35 years	37	71,2
-> 35 years	12	23,1
Education		
- Low	8	7,7
- Tall	48	92,3
Profession		
- Working	22	42,3
- Doesn't work	30	47,7
Total	52	100

**Table 1.1** shows that the majority of respondents are aged between 20-35 years, with the majority having tertiary education and not working.

**Table 1.2** Pain Level Distribution

Level Painful	Painful Before acupressure		Painful After acupressure	
	n	%	n	%
Light	-	-	3	5,8
Currently	-	-	47	90.4
Heavy	35	67,3	1	1,9
Very Heavy	17	32,7	1	1,9
<b>Total</b>	<b>52</b>	<b>100</b>	<b>52</b>	<b>100</b>

**Table 1.2** shows that most respondents felt severe pain before acupressure was performed and after the acupressure technique was performed it decreased to moderate pain.

**Table 1.3** Distribution of average pain levels before and after acupressure is performed

Pain Level	Means	SD	SE	p.s. Value
Before Acupressure	7,865	1.22	0.16	0.000
After Acupressure	5,653	1.41	0.19	

**Table 1.3** above shows that the average pain level before acupressure was performed was 7.865 with a standard deviation of 1.22. After acupressure was performed, an average pain level of 5.665 was obtained with a standard deviation of 1.141. It can be seen that the mean difference between before acupressure and after acupressure is 2.21 with a standard deviation of 1.01. The statistical test results obtained a p value of 0.000. It can be concluded that there is a significant difference between pain before and after acupressure is performed during the first active phase of labour.

### Characteristics of respondents

The results showed that the majority of respondents were aged 20-35 years, at which age they belonged to the low risk category in the classification of maternal characteristics. Mothers who give birth at an older age generally experience longer labor and feel more pain when compared to mothers who are still young. Age under 20 years or over 35 years in Facing childbirth experienced very great pain.

Parity also affects the perception of pain. In primigravidas, pain will be felt more at the beginning of labor, while in multiparas pain will increase when labor is advanced, namely when the fetus declines rapidly in the second stage. Young age also tends to be associated with an unstable psychological condition, which triggers anxiety so that the pain felt becomes more severe. Age can be used as a factor in determining pain tolerance.

Tolerance will increase with age and understanding of pain. Age has a big influence that is felt when the mother gives birth, age is an important variable that can affect pain. This can be because parents tend to bury the pain they experience, because they think pain is a

scientific thing that must be lived, so that pain at an age older than that age is found only slightly.

The majority of respondents' education level is high school. The higher a person's level of education, the more likely they are to respond more than those with lower education, especially in coping mechanisms for dealing with pain. Characteristics of work, the majority of mothers do not work. This is related to the condition of fatigue experienced by the mother. Mothers who work outside the home since pregnancy will experience more fatigue than mothers who do not work. Indirectly it can worsen the perception of pain, besides that fatigue causes sensations to intensify and reduce coping mechanisms.

### **Labor pain level before acupressure**

The results showed that the majority of women in labor experienced a level of severe pain before acupressure was performed at 67.3%. The pain felt by each individual during labor can be different. The feeling of pain during his period is very subjective, not only depending on the intensity of his pain but also depending on the mental state of the mother when facing labor.

Mother's mental state will make the mother become stressed or vice versa. Stress in labor can cause intense pain during labor because stress triggers the release of catecholamine hormones and adrenaline. These catecholamines will be released in high concentrations during delivery, if the mother feels anxious and afraid, causing various body responses. As a result of the body's response, the uterus becomes increasingly tense so that the flow of blood and oxygen to the uterine muscles decreases because the arteries shrink and narrow, the result is unavoidable pain. Further intervention is needed so as not to endanger the mother and fetus.

The pain felt by respondents before being given acupressure was included in the category of severe to verysevere pain, severe pain of 67.3% and very severe 32.7%. This is in accordance with the theory which says that the average pain intensity in labor during the first active phase described on a scale of 6-7, where a scale of 6-7 is a category of moderate to severe pain. The pain experienced during labor is unique for each mother and can be influenced by several factors including culture, emotions, birth experience, support system and preparation for delivery.

A study of women in the first stage of labor using the McGill Pain Questionnaire to assess pain found that 60% of primigravidas described pain due to very severe uterine contractions (unbearable intolerance, extremely severe), 30% moderate pain. In multiparas 45% severe pain, 30% moderate pain, 25% mild pain (Acute Pain Services). Labor pain is a physiological process, severe pain can increase the mother's fear and anxiety. The presence of fear and anxiety will stimulate sympathetic nerve activity so that the secretion of catecholamines (epinephrine and norepinephrine) increases.

Catecholamines stimulate alpha and beta which affect blood vessels, uterine blood vessels and increase uterine muscle tone. This effect decreases uterine blood flow, so it will increase maternal blood pressure. Stimulation of the beta receptors relaxes the uterine muscles and causes vasodilation. The combination of excessive secretion of catecholamine effects will reduce blood pressure to and from the placenta, withholding oxygen supply and removing waste and reducing the effectiveness of uterine contractions and prolonging the labor process.

Pain in the first stage of labor is caused by 2 events, namely due to uterine contractions which are delivered by thoracic nerve fibers 11 and 12. The uterine muscles have the ability to stretch within a certain limit, after a certain limit, the uterine muscles will contract or what is called his, a sign of the start of labor. Apart from stretching the smooth muscle, uterine contractions are also influenced by estrogen and progesterone, the myometrial contractility system itself, and during the latent phase of the first stage of labor, uterine contractions occur every 15-20 minutes, and can last approximately 30 seconds.

These contractions are slightly weakened and are not even felt by the mother, who is concerned. In the active phase of stage I, uterine contractions can occur 2 to 3 minutes and last 50 to 60 seconds. Uterine contractions in this phase are very strong. As long as the contractions of the uterus in this phase are very strong, during the contractions blood vessels will constrict causing muscle fiber anoxia, this is what causes pain, besides that painful stimuli arise due to pressure on the nerve endings when the uterus contracts. During uterine contractions, it is always followed by hardening of the abdomen and discomfort (pain), pain that is felt as back pain. In development it will become longer and stronger which results in the intensity of the pain being felt to increase. Pain due to stretching or opening of the cervix which is sent by the nerves of the sacrum 2.3.4. Besides that, painful stimuli arise due to pressure on nerve endings when the uterus contracts. During uterine contractions, it is always followed by hardening of the abdomen and discomfort (pain), pain that is felt as back pain. In development it will become longer and stronger which results in the intensity of the pain being felt to increase. Pain due to stretching or opening of the cervix which is sent by the nerves of the sacrum 2.3.4. Besides that, painful stimuli arise due to pressure on nerve endings when the uterus contracts. During uterine contractions, it is always followed by hardening of the abdomen and discomfort (pain), pain that is felt as back pain. In development it will become longer and stronger which results in the intensity of the pain being felt to increase. Pain due to stretching or opening of the cervix which is sent by the nerves of the sacrum 2.3.4.

### **Level of labor pain after acupressure**

After acupressure, the majority experienced a decrease from severe pain to moderate pain by 90.4%. The average pain level before acupressure was performed with a mean of 7.865 and after acupressure was carried out a mean of 5.653, there was a decrease of 2.203. This indicated that the average mother experienced moderate pain. In this study, the scale of pain felt by birth mothers after being given acupressure, the lightest was 5.8% and the heaviest was 1.9%. The pain that the respondent felt before being given acupressure was included in the category of moderate pain to severe pain

Administering acupressure techniques to the mother improves blood circulation, yin and yang harmony and neurotransmitter secretion, thereby maintaining the normal function of the human body and promoting well-being. Some midwives use acupressure to relieve labor pain.

### **Reducing the intensity of labor pain with acupressure**

The effect of acupressure techniques on labor pain can be determined using the Wilcoxon non-parametric test. Based on the Wilcoxon Test, the results obtained were a p value of 0.000, this indicated a p value <0.05, which meant that there was an effect of giving acupressure techniques on labor pain.

Of the 52 respondents before being given acupressure the mother experienced severe pain with an average (mean) of 7.865 and after being given acupressure the mother experienced moderate pain with an average (mean) of 5.653. This shows that there was a decrease in labor pain during the first active phase before and after being given acupressure, which was 2.203.

Acupressure effectively reduces pain during the active phase of labor. In the first stage of labor, acupressure can be used when contractions are painful (Hjelmstedt, 2010). This pain occurs when there is a blockade of energy flows along certain meridians in the body. The blockade released through the acupressure technique, harmony and function will soon return to normal.

The basis of his theory is that three mechanisms contribute to acupuncture analgesia: 1) Acupuncture stimulates type I and type II afferent nerves or A-delta fibers in muscles that send impulses toward the anterolateral tracts of the spinal cord. In the spinal cord, pain is inhibited presynaptically by the release of enkephalin and dynorphin, preventing pain messages from traveling up the spinothalamic tracts. 2) Acupuncture stimulates midbrain structures by activating cells in the periaqueductal gray matter and raphe nuclei. Signals are then sent down through the dorsolateral tract, which causes the release of the monoamines norepinephrine and serotonin in the spinal cord. This neurotransmitter inhibits presynaptic and postsynaptic pain by reducing signal transmission through the spinothalamic tract. 3) Stimulation of the pituitary-hypothalamic complex causes systemic release of beta-endorphins into the bloodstream from the pituitary gland. The release of beta-endorphins is accompanied by the release of adrenocorticotrophic hormone.

The process of reducing pain with acupressure intervention can also be explained using a holistic theory. Acupressure both stimulation and sedation depending on the yin and yang state of the patient. Acupressure on acupuncture points will have a local effect, namely reducing pain in the area around the pressure point. Acupressure energy at the acupuncture point will flow through the meridians to the target organ. Stimulation or sedation of target organs will effect changes in biochemistry, physiology, and perception/taste. Biochemical changes can be in the form of increased levels of endorphins, physiological changes can be in the form of blood flow and oxygen activity, while changes in perception/taste can be in the form of a decrease in pain levels.

Acupressure is an emphasis on acupuncture points using the forefinger or finger, so that stimulation with acupressure can affect neurotransmitters in the body like acupuncture. Acupressure is effective in reducing labor pain (Tournaire, 2007). Most mothers experience pain during childbirth, but the intensity of this pain is different for each mother. Pain is a natural process in labor. If it is not handled properly, it will cause other problems, namely increased anxiety when facing labor so that the production of the hormone adrenaline increases and causes vasoconstriction which causes the mother's blood flow to the fetus to decrease. The fetus will experience hypoxia while the mother will experience a long labor and increase systolic and diastolic pressure.

Labor pain can be controlled by providing a stimulus. One such stimulus is acupressure. Acupressure is a method of non-pharmacological pain management that can be applied to women in labor. Pain during labor can have effects that include suffering, fear, anxiety, increased cardiac output, blood pressure, pulse frequency, increased catecholamine plasma levels, increased oxygen demand, decreased gastric emptying, incoordination of



uterine contractions, decreased uteroplacental blood flow and acidosis. consequences of hypoxia in the fetus.

Based on the results of the study, it showed that there were differences in pain levels before and after acupressure was performed, where using the Wilcoxon test, the value of  $p = 0.000$  was obtained. A combination of acupressure and support for pregnant women can reduce pain and speed up the delivery process, in line with (Akbarzadeh, et.al, 2015). Acupressure reduces labor pain. There was a decrease in pain in the early postpartum period with acupressure therapy at the HT6 and LI4 points for 20 minutes (Hjelmstedt, 2010). The effectiveness of acupressure with ice packs in reducing pain and concluded that both acupressure and ice packs can reduce labor pain, it even seems that ice packs have a stronger effect (Afefy, 2015).

## 5. CONCLUSION

Acupressure can reduce the intensity of physiological labor pain in primigravidas in labor during the first active phase. Acupressure is used as a MCH program as an alternative for labor pain management in reducing labor pain during an active phase

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