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ORIGINAL RESEARCH

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EFFECT OF ACUPRESSURE THERAPY POINT LI 4, SP 6, AND BL 60 ON DURATION OF THE FIRST STAGE OF LABOR IN PRIMIGRAVIDA AND NEWBORN'S APGAR SCORE

Fara Imelda Theresia Patty^{1*}, Suhartono², Ngadiyono¹, Mardiyono¹

¹Postgraduate Midwifery Program, Semarang Health Polytechnic, Semarang, Indonesia

²Postgraduate Epidemiology Program, Diponegoro University, Semarang, Indonesia

*Corresponding author:

Fara Imelda Theresia Patty

Postgraduate Midwifery Program, Politeknik Kesehatan Kementerian Kesehatan Semarang
Jl. Tirta Agung, Pedalangan, Banyumanik Kota Semarang, Jawa Tengah, Indonesia (50268)

E-mail: fiet.neh@gmail.com

Abstract

Background: The prolonged partus is one of the causes of maternal deaths marked by the slow progress of labor. Induction of labor and caesarean section is a common procedure performed on long-term partus events to end pregnancy. The birth acupressure technique is a complementary method to activate the hormone oxytocin at a certain point to use to soften the cervix and increase contraction.

Objective: To examine the effect of acupressure point LI4, SP6 and BL60 on the duration of the first stage of labor and APGAR score of newborns in primigravida.

Methods: This research employed a quasi-experimental study with posttest control group design. It was conducted at the Public Health Center of Trauma and Public Health Center of Palaran Samarinda, East Kalimantan, Indonesia. There were 40 respondents selected using purposive sampling, which 20 respondents assigned in the experiment and control group. The duration of the first stage of labor was assessed using partograph and APGAR score was assessed using APGAR score assessment sheets. Mann Whitney test was used for data analysis

Results: Findings showed that the duration of the first stage of labor in the experiment group was 187 minutes and in the control group was 307 minutes. Mann Whitney test obtained p-value 0.001 (<0.05), which indicated that there was a statistically significant difference of the duration of the first stage of labor between both groups. However, Mann Whitney test for APGAR score showed p-value 0.114 (>0.05), which indicated that there was no significant difference of APGAR score in the experiment and control group.

Conclusion: There was a significant effect of acupressure on the duration of the first stage of labor, but no effect of the APGAR score. Therefore, acupressure may be recommended to shorten the duration of the first stage of delivery in primigravida.

Keywords: acupressure; duration of labor; APGAR score

INTRODUCTION

Pregnancy and childbirth is a natural birth process, but not without risk and a burden for a woman ([Khomsah, Suwandono, & Ariyanti, 2017](#)). Some pregnant women will face a mild to severe degree of emergency that can provide the danger of discomfort, dissatisfaction, pain, disability and even death

for the mother and baby ([Kuswaningrum, Suwandono, Ariyanti, Hadisaputro, & Suhartono, 2017](#)). The most common complications are postpartum hemorrhage, placental abruption, prolonged labor and infection. The prolonged partus is one of the causes of maternal mortality. WHO stated that

prolonged labor caused maternal mortality by 8%, while in Indonesia reached 9% ([Say et al., 2014](#)). The prolonged labor is caused by abnormalities contractions, fetal abnormalities, and birth canal disorders. The impact of the prolonged labor causes the severity of the mother and fetus, so that the treatment performed is the induction of labor. Induction of labor has been shown to reduce maternal and infant mortality, but this induction of labor also increases morbidity in mothers and infants ([National Research, 2013](#)).

The method of labor induction is divided into pharmacological methods and non-pharmacological methods. Pharmacological methods include administration of oxytocin, prostaglandin and mechanical methods by breaking the membranes and stripping of the membranes. The experience of mothers experiencing labor induction is that they usually have a psychological impact because labor induction is considered painful, the main problem faced during the pharmacologic method is that the uterus stimulates very quickly which in turn causes stress on the mother and fetus ([Prawirohardjo, 2006](#)).

In recent years, complementary and herbal methods have been widely used in medical intervention; acupuncture and acupressure are among the complementary therapies that have been found to have some success possibilities for managing pain in labor and birth. Labor acupressure is the induction of labor used to soften the cervix and increase contraction. The theory of acupressure mechanisms in the pressurization of stimulating the uterus through hormonal changes and changes in the nervous system. Acupressure increases the release of hormones from the hypothalamus in the anterior pituitary system to activate the hormone oxytocin to stimulate the uterus ([Neri, Monari, Midwife, & Facchinetti, 2014](#); [Smith, Crowther, & Grant, 2013](#)).

Complementary therapy, especially acupressure, has not been implemented in government health services, especially acupressure induction of natural labor. Although many studies have demonstrated the effectiveness of acupressure on the duration of labor in the first stage and Apgar score of newborns, however, there is limited

information to conclude that what kind of acupressure has a significant effect on duration of labor and Apgar score. Thus, this study aimed to examine the effect of combining acupressure points LI4, SP6 and BL 60 on the duration of the first stage of labor and APGAR score on newborn.

METHODS

Study Design

This was a quasi-experimental study with posttest control group design. The research was conducted at the Public Health Center of Trauma and Public Health Center of Palaran Samarinda, East Kalimantan.

Population and Sample

There were 40 respondents selected using purposive sampling, which 20 respondents assigned in the experiment and control group.

Intervention

Intervention group was given acupressure by pressing at three acupressure points (LI4, SP6 and BL60) clockwise (tonic) 30-40 times for one full minute, and then repeated again an hour later.

Instruments

The duration of the first stage of labor was assessed using partograph and APGAR Score was assessed using APGAR Score assessment sheets ([Apgar, 2015](#)).

Ethical Consideration

Ethical consideration was obtained from the Research Ethics Commission of Poltekkes Kemenkes Semarang with No: 287/KEPK/PoltekkesSmg/EC016. The researchers have confirmed that each respondent has signed an appropriate informed consent.

Data Analysis

Mann Whitney test was used for data analysis because of non-normal data distribution.

RESULTS

Table 1 shows that the mean average of respondents in the experiment group was 23.5 years old and in the control group was 24.7 years old. The majority of the respondents in both groups had a senior high school

background and working. Most of them had no narrow hip circumference; with cervix opening average was 5.9 in the experiment group and 5 in control group. Fetal weight interpretation in the experiment group was

2,689 gram and in the control group was 2,580 grams. All variables obtained p-value >0.05, which indicated that there were no significant differences of the characteristics of the respondents in both groups.

Table 1 Characteristics of the respondents

Variable	Experiment group (n=20)	Control group (n=20)	P-value
Age (Year)			
Mean ± SD	23.5 ± 2.37	24.7 ± 2.99	0.186
<19	-	-	
20 – 35	20 (100%)	20 (100%)	
>35	-	-	
Education level			
Elementary	10 (50%)	7 (35%)	0.343
Senior High	10 (50%)	13 (65%)	
University	-	-	
Working status			
Working	11 (55%)	12 (60%)	0.343
Not working	9 (45%)	8 (40%)	
Hip circumference (Mean ± SD)	84.7 ± 2.57	85.9 ± 2.78	0.183
Narrow	-	-	
Not narrow	20 (100%)	20 (100%)	
Fetal weight interpretation (Mean ± SD)	2689 ± 370.48	2580 ± 363.59	0.356
<2500 gram	1 (5%)	1 (5%)	
2500-4000 gram	19 (95%)	19 (95%)	
>4000 gram	-	-	
Cervical dilation (Mean ± SD)	5.9 ± 0.85	5 ± 0.82	0.114

Table 2 Duration of the first stage of labor and APGAR score of newborns using Mann Whitney test

Variables	Mean±SD; Median; Min-Max		Z	P-Value
	Experiment group (n=20)	Control group (n=20)		
Duration of the first stage of labor (Min)	187 ± 120.61; 150; 60-540	307 ± 108.33; 330; 120-480	-3.249	0.001
APGAR Score	8 ± 0.71; 9; 8-10	8 ± 0.55; 9; 8-10	-0.643	0.114

Table 2 shows that the duration of the first stage of labor in the experiment group was 187 minutes with standard of deviation of 120.61, and in the control group was 307 minutes with standard of deviation of 108.33. Mann Whitney test obtained p-value 0.001 (<0.05), which indicated that there was a significant difference of the duration of the first stage of labor between both groups. The experiment group shows a faster duration of the first stage of labor compared with the duration in the control group. For APGAR score, Mann Whitney test showed p-value 0.114 (>0.05), which indicated that there was no significant difference of APGAR score in the experiment and control group.

DISCUSSION

Findings of this study showed that the characteristics of respondents including age, educational level, working status, hip circumference, fetal weight interpretation and cervix opening in the experiment group and the control group were homogeneous, thus confounding variables can be controlled.

According to literature, the acceleration phase is the beginning of active phase and lead to the maximum slope phase, which the cervix is opening rapidly and increases from 3-4 cm to about 8 cm. Under normal conditions, the opening speed of the constant is 3 cm per hour, with a maximum speed of no more than

1.2 cm per hour in primipara; while the deceleration phase is the active phase, which the opening speed slows and the cervix reaches the cervix dilation of 8 - 10 cm, while the decrease reaches the maximum speed of 1.6 cm per hour in primipara and normally at least 1.0 cm per hour ([Cunningham, Leveno, Bloom, Spong, & Dashe, 2014](#)).

The duration of the first stage of labor in this study was 180 min in the experiment group and 307 min in the control group, where the measurements were performed during the first stage of the active phase until complete cervical dilation. Although the maximum value of the experiment group was much higher than the control group, but the minimum value was lower than that in the control group, which was 60 minutes. This indicated that the experiment group had a chance to be 120 minutes faster during labor than the control group.

This is in line with research conducted by Rojlin Tigga and Rita Thapa who examined the effectiveness of acupressure on labor pain and duration of the first stage of labor where the results of the length of labor in the treatment group were faster than the control group, which Rojlin divided the duration of labor into three categories: 1) 7 - 10 hours (14 respondents in the treatment group), 2) 10 -13 hours (16 respondents in the treatment group), and 3) 13 to 16 hours (15 respondents in the control group) ([Tigga & Thapa, 2016](#)).

Besides, assessment of Apgar score of newborns is used to help health workers in assessing the condition of newborns in general and decide to take emergency action or not to predict the health and intelligence of the baby in the future. In this study, the Apgar score of newborns in the treatment and control group was the same as the mean score was 8, with the minimum score of 8 and the maximum value of 10. This is in line with the study conducted by Gregson who examined the induction of labor using acupressure in primiparous mothers who passed the gestation, revealed that there was no significant effect of acupressure on Apgar score in the treatment group and the control group ([Gregson, Tiran, Absalom, Older, & Bassett, 2015](#)).

Mann Whitney test in this study revealed that there was a significant effect of acupressure on the duration of the first stage of labor; but no effect on Apgar score. This is in line with research conducted by Akbarzadeh Marzieh et al stated that the length of delivery for those who were given acupressure was faster than the length of delivery in the control group. It was 157 minutes of the duration of first stage of labor for supportive care group, 161 minutes for the acupressure group, and 281 minutes for the control group ([Akbarzadeh, Masoudi, Zare, & Kasraeian, 2016](#)).

As for Apgar score, showed no difference between acupressure group, supportive care group, and control group. APGAR score is used to assess Appearance, Pulse, Grimace, Activity and Respiration at the time of birth and determine the next action to be performed on the newborn with asphyxia. Newborn asphyxia is influenced by mother, infant and umbilical factors. One of the mother factors is the prolonged labor which the supply of oxygen from mother to baby is less so that the baby has hypoxia.

In this research, there is an effect of acupressure on the duration of the first stage of labor. The effect of acupressure suppression at points LI4, SP6 and BL60 on the body meridians will drain energy and the electron flow that stimulates the central nervous system, dilates the blood vessels and activates the Nitric Oxidate that stimulates the pituitary; and anterior hypophysis activates the prolactin hormone at the time of labor through uterine thinning downward and upward uterine thickening that serves to help push the baby down so that cervical dilatation occurs, while the posterior hypophage activates the hormone oxytocin at the start of labor by activating the ligamentous rotundum and maximizing blood flow resulting in contractions at the time of delivery. So, if the suppression of acupressure done every one hour, it can stimulate a good contraction so that the cervical dilatation occurs faster.

CONCLUSION

It can be concluded that there was a significant effect of acupressure on the duration of the first stage of labor, but no

effect of the Apgar score. Therefore, acupressure may be recommended to shorten the duration of the first stage of delivery in primigravida.

Declaration of Conflicting Interest

None declared.

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Author Contribution

All authors contributed equally in this study.

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