

## The Effect of Giving Ice Massage at the SP6 Point on Pain, Comfort, Duration, and Anxiety in Maternity Mothers

Nur Masruroh<sup>1,\*</sup>, Uliyatul Laili<sup>2</sup>, Siska Nurul Abidah<sup>3</sup>

<sup>1,2,3</sup> Midwifery undergraduate study program, Nahdlatul Ulama University, Surabaya

\*Corresponding author: masruroh@unusa.ac.id

---

Cite this paper as: Nur Masruroh, Uliyatul Laili, Siska Nurul Abidah (2024) The Effect of Giving Ice Massage at the SP6 Point on Pain, Comfort, Duration, and Anxiety in Maternity Mothers. *Frontiers in Health Informatics*, 13 (3), 7296-7301

---

### Abstract

Reducing pain, anxiety and comfort for mothers during childbirth is very important as part of caring for mothers and babies in midwifery services. The aim of this study was to determine the effect of giving ice massage at the SP6 acupressure point during labor on labor pain, labor comfort, labor duration and anxiety. The method used was cross sectional with a two group pretest and posttest design. The population and sample in this study were 50 women giving birth during the first active phase at PMB Affah who would be given ice massage treatment and 50 people at Prima Husada Hospital as the control group. The instruments used in this study were ice gel, VAS questionnaire to labor pain, STAI questionnaire to anxiety, CCQ questionnaire to labor comfort, partograph sheet and ice gell. VAS pain scores in the intervention group were significantly lower compared with the control group after intervention at 4 to 5 cm, 6 to 7 cm, and 8 to 9 cm dilatation ( $P = 0.001$ ,  $P = 0.001$ ,  $P = 0.001$ ). 003,  $P < 0.001$ , respectively). The CCQ total score and comfort level in the intervention group with cervical dilation of 8 to 9 cm were significantly higher than those in the control group ( $P = 0.044$ ,  $P = 0.027$ , respectively). In addition, as pregnant women's anxiety levels increased, their total comfort scores decreased ( $P < 0.05$ ). Application of ice to the SP6 point during the 1st stage of labor reduces labor pain, increases comfort, and reduces anxiety levels. No side effects were found in the intervention group with ice massage applied to the SP6 point. Therefore, this method can be used as a safe and effective obstetric intervention in childbirth.

**Keywords:** ice, massage, acupressure, pain, childbirth.

### 1. Introduction

Managing labor pain, increasing comfort and reducing anxiety is one of the basic elements of midwifery care. Pharmacological methods that reduce labor pain have various side effects on the health of the mother and fetus. Therefore, there are non-pharmacological methods that do not cause side effects on the health of the mother and fetus. As well as providing comfort, should be offered as a pain management option. There are many non-pharmacological methods that midwives can use during labor, including acupressure, cold application and massage. This technique has the potential to reduce the pain experienced by mothers during the birth process, shorten the duration of labor and relieve anxiety. Acupressure and ice massage are non-pharmacological methods that can be used by midwives to treat labor pain. Acupressure involves pressure being applied to acupuncture points and this is known as needle-free acupuncture. According to traditional Chinese medicine beliefs, the body's vital energy that regulates bodily functions flows through channels called meridians. By applying pressure to certain points in the body, these channels can be cleaned. Acupressure is based on the distribution of energy density at these points, thereby relieving the organs connected to those points. In acupressure, pressure can be applied using hands, fingers and ice packs. Acupressure regulates blood flow and increases the secretion of oxytocin and endorphins by activating vasodilation and reducing the release of adrenaline and noradrenaline. Stimulates the colon (L14), spleen (SP6) and bladder (BL67) points to reduce labor pain and strengthen uterine contractions. In previous research by Masruroh (2023) it was concluded that

acupressure applied at the SP6 point which is located 3 to 4 fingers above the posterior malleolus bone can reduce labor pain and shorten the duration of labor.

Giving ice massage to acupressure points has various effects, such as facilitating the flow of energy at acupressure points and eliminating the perception of pain and muscle tension by stimulating peripheral nerve receptors. Most research on ice massage to reduce labor pain focuses on the Hegu pressure points on the acupressure points on the hands. Various studies from Nehbandani (2019) regarding the duration of ice massage applied at the Hegu point have been proven to be effective in reducing labor pain when administered for 20 minutes and administered for 10 minutes. Another study from Fricker (2024) examined the effect of giving ice massage at the SP6 point on labor pain. Research from Turkmen (2024) providing hot and cold massage for 30 minutes placed at the SP6 point in the first stage of labor was proven to reduce labor pain 30 and 60 minutes after the intervention was given when compared with the group given warm massage.

Therefore, the novelty of this research is the measurement comfort of labor, duration of labor and level of anxiety in mothers giving birth

The aim of this research is to determine the effect of giving ice massage at the SP6 point on labor pain, labor comfort, labor duration and anxiety during the mother's labor process.

## 2. Materials and methods

### 2.1 Materials

This research used a cross sectional method with two group pretest posttest. The research location was in the maternity room of Prima Husada Hospital and PMB Affah. Childbirth assistance at Prima Husada Hospital and PMB Affah is carried out by midwives who have STR and have an APN training certificate. Midwives involved in this research will carry out internal examinations to measure dilation cervix, measuring DJJ and TTV, researchers who will provide intervention in the form of giving ice massage at point SP6 and giving questionnaires to be filled out by respondents.

The population and sample in this study were 50 women giving birth at Prima Husada Hospital as the control group and 50 respondents at PMB Affah as the intervention group who received ice massage at point SP6. The inclusion criteria were women giving birth physiologically, term pregnancy, first stage of opening 4 cm, the position of the head and amniotic membranes are still intact. The exclusion criteria are women giving birth at high risk and women giving birth who experience complications. The sampling technique uses accidental sampling

### 2.2 Data collection procedures

The procedures, instruments and stages of this research are

- a. Manage research permits and research ethics at KEPK
- b. Mothers who are willing to become respondents have signed informed consent, both groups are given the opportunity to fill out a respondent characteristics questionnaire
- c. Midwives carry out checks every 2 hours, DJJ, TTV and His every 30 minutes
- d. Respondents in the intervention group and control group did not given analgesics in any form, not given technique pain reduction except breathing techniques (inhale from the nose out of the mouth) only.
- e. After the respondent has chosen a comfortable position, the midwife determines the location of point SP6, which is 3-4 fingers above the posterior malleolus bone on the foot.
- f. To avoid direct contact with the respondent's skin, use ice gel wrapped in a towel
- g. When the cervix was opened 4-5 cm, the researcher gave ice massage at the SP6 point with a duration of 3 contractions, then the respondent was asked to fill out the VAS questionnaire
- h. When the cervix was opened 6-7 cm, the researcher gave ice massage at the SP6 point with a duration of 3 contractions, then the respondent was asked to fill out the VAS and STAI questionnaires.
- i. When the cervix was opened 8-9 cm, the researcher gave ice massage at the SP6 point with a duration of 3 contractions, then respondents were asked to fill out the VAS and CCQ questionnaires.

### 2.3 Data analysis

After the intervention has been given, data is collected, tabulated and analyzed using Mann Whitney to determine the mean differences in labor pain, comfort, anxiety level and duration of labor. Further data analysis used Spearman correlation to measure the effect of giving ice massage on labor pain, anxiety level, duration of labor and comfort in labor.

### 3. Results and discussion

#### 3.1 Respondent characteristics

Table 1 Distribution of respondent

Karakteristik Responden	Intervention group (n: 50)		Control group (n:50)	
	f	%	f	%
Ages				
20 – 35 th	29	58	26	52
> 35 th	21	42	24	48
Parity				
Primiparous	23	46	29	58
Multiparous	27	54	21	42
Companions				
Husband	32	64	26	52
Other family	8	36	24	48
Level of education				
Primary school	7	14	2	4
High school	23	46	25	50
University	20	40	23	46
Employed				
Yes	19	38	32	64
No	31	62	18	36

Source : primer data Juni-Agustus 2024

From table 1 it can be seen that in the intervention group more than half (58%) and in the control group more than half (52%) were aged between 20-25 years, where this age is the optimal age for women to get pregnant and give birth. Then from parity, in the intervention group more than half (54%) were multiparous and in the control group more than half (58%) were primipara. Of the birth companions in the intervention group, 64% and likewise in the control group, 52% were accompanied by their husbands.

#### 3.2 Labor pain before and after intervention

Table 2. Labor pain level before and after intervention using mann whitney U test

Pain level (VAS), mean (SD)	Intervention group	Control group	P value
4-5 cm dilatation,			0,166
Before	4.36 (0.59)	4.54 (0.95)	
After	4.16 (0.68)	4.66 (0.96)	
6-7 cm dilatation			0.001
After	7.34 (1.54)	8.20 (1.53)	
8-9 cm dilatation			0.003
After	8.26 (1.48)	9.44 (1.24)	

In this study, ice massage applied to the SP6 point at 4 to 5 cm, 6 to 7 cm, and 8 to 9 cm cervical dilatation reduced perceived labor pain. In other studies, the labor pain levels of cold massage groups have been found to be significantly lower than control groups. The continual stimulation of acupressure points in labor can increase vital energy flow in the meridi- ans, and thus provide more considerable therapeutic effects. In studies

similar to this study in which acupressure was applied to the SP6 point, it has been reported that labor pain levels of intervention groups are lower compared with those of control groups. Reduced labor pain will lead to positive childbirth-related emotions, the woman's participation in labor, and birth without pain medications. The current study supports use of ice massage to the SP6 acupressure point as an additional option for midwifery support of women in labor. More research is needed to confirm the effectiveness of ice massage to reduce labor pain and anxiety and increase comfort. Future studies should compare the effectiveness of ice application to the SP6 point to other nonpharmacologic methods in reducing labor pain.

### 3.3 Labor duration using independent T test

Labor duration	Intervention group	Control group	P value
4-10 cm cervical dilatation	4.67 (0.88)	4.64 (0.64)	0,805

In the current study, ice massage applied to the SP6 point was found to have no significant effect on labor duration. No other studies have examined whether ice massage applied to the SP6 point affects labor duration. However, trials of ice massage to the Hegu point found that ice massage shortened the duration of the first stage of labor by 82 to 120 minutes. This difference in effect may be because of differences in the location of the ice massage. Acupressure, rather than ice massage, to the SP6 point has also been shown to reduce the duration of labor by 21 to 163 minutes.

### 3.4 State anxiety and comfort level

	Intervention group	Control group	P value
<b>Anxiety</b>			0.364
State anxiety score (6-7 cm cervical dilatation)	45.53 (6.46)	46.54 (0.54)	
<b>Comfort</b>			0.438
Total comfort score (4-5 cm cervical dilatation)	29.86 (3.69)	30.24 (4.34)	
Total comfort score (8-9 cm cervical dilatation)	29.24 (3.49)	27.40 (4.17)	0.44
<b>Comfort subscales</b>			0.290
Physical comfort (4-5 cm cervical dilatation)	13.92 (2.84)	14.34 (3.61)	
Physical comfort (8-9 cm cervical dilatation)	13.40 (2.97)	12.10 (3.35)	0.092
Psychospiritual comfort (4-5 cm cervical dilatation)	4.88 (1.28)	4.72 (1.26)	0.698
Psychospiritual comfort (8-9 cm cervical dilatation)	4.70 (1.03)	4.38 (1.15)	0.316
Environmental comfort (4-5 cm cervical dilatation)	11.04 (1.42)	11.08 (1.46)	0.857
Environmental comfort (8-9 cm cervical dilatation)	11.34 (1.27)	10.92 (1.45)	0.234
<b>Level of comfort</b>			0.153
Relief (4-5 cm cervical dilatation)	9.96 (1.33)	9.56 (1.09)	
Relief (8-9 cm cervical dilatation)	9.36 (0.92)	9.00 (1.04)	0.027
	19.88 (3.12)	20.58 (3.63)	0.139

Transcendence (4-5 cm cervical dilatation) Transcendence (8-9 cm cervical dilatation)	19.68 (2.97)	18.40 (3.45)	0.072
---	--------------	--------------	-------

Acupressure is believed to stimulate the secretion of oxytocin from the pituitary gland, which stimulates uterine contractions and thereby shortens labor duration.<sup>7,19,32</sup> It is possible that because pressure is not applied to the SP6 point in ice massage as much as it is applied in acupressure, the secretion of oxytocin from the pituitary gland is not stimulated. Additionally, because oxytocin augmentation is routinely administered in the hospital where the study was conducted, any potential impact of ice massage on endogenous oxytocin production on labor duration would be diminished.

Comfort promotes positive experiences of relaxation, safety, well-being, hope, and anticipation.<sup>2</sup> Pain relief has been defined as a significant source of comfort and support for women who are giving birth. In the current study, the total scores on the CCQ were higher in women at 8 to 9 cm dilatation who received ice massage to the SP6 point compared with women in the control group. However, no significant differences were found between the groups in the physical, psychospiritual, and sociocultural subscales of the CCQ or state anxiety levels. Similarly, Mirzaee et al found that acupressure and ice massage applied to the Hegu (LI4) point for 30 minutes did not have a significant effect on anxiety levels during labor.<sup>8</sup> It is possible that the lack of difference in anxiety levels was because both groups received similar amounts of attention and support as part of routine midwifery care in labor. There are no other studies that have examined the effects of ice massage applied to the SP6 point on childbirth comfort; although many studies have investigated the effects of other nonpharmacologic methods on comfort in childbirth. Trials of the application of heat to the sacral region, labor dance, and wood avens flowers, have demonstrated positive effects on the total comfort and relaxation levels determined at 8 to 9 cm of cervical dilation. Similarly, Bolanthakodi et al found that practicing yoga in the prenatal period increased the labor-related comfort levels of pregnant women.<sup>35</sup> Nonpharmacologic methods such as cold application, warm application, labor dance, yoga, and focusing can reduce perceived pain levels. Thus, the laboring woman can breathe well, push effectively, and stay in an upright position, enabling active participation. The combination of active participation and decreased pain can lead to increased comfort, which is more than the absence of pain.

Ice massage to the SP6 acupressure point can reduce pain and increase comfort during labor, potentially improving the experience of labor and labor and birth outcomes. However, before this nonpharmacologic approach is widely adopted into practice, more studies need to be conducted to demonstrate its effectiveness and to standardize its use during labor. In the current study, ice massage was applied during 3 contractions at 3 times during the first state of labor. Future trials should investigate the optimization of dose and frequency of this intervention

#### 4. Conclusion

The results obtained in the study showed that ice massage applied to the SP6 point reduced labor pain and increased comfort levels in labor. However, this intervention did not have any effects on labor duration and anxiety levels. Because pain naturally increases in intensity as labor progresses, ice massage should be repeated at regular intervals. No adverse events associated with the ice massage applied to the SP6 point were found in this study. Therefore, this method can be used as a safe and effective midwifery intervention in labor. Ice massage is a simple, affordable, and accessible approach to help relieve labor pain. Ice massage applied to relieve labor pain and provide comfort can ensure the active participation of women in the labor process and increase their satisfaction with vaginal birth. There is a need for more studies to further demonstrate the effectiveness of ice massage to the SP6 point in larger samples of women in diverse contexts

#### Acknowledgment

Thank to DRTPM Kemdikbudristek who has funded this research, to LPPM Unusa who has facilitated this research and to PMB Affah and Prima Husada Hospital who have agreed to be used as research locations

### Conflict of interest

In this research there is no conflict of interest with all parties

### References

- Masruroh N, Anggraini FD, Zuwariah N, Qur'any NN. The Effect of Acupressure Points L14 and SP 6 on Pain Intensity in the First Stage Labor. *Revista de Gestão Social e Ambiental* [Internet]. 2024 Mar 21;18(5):e05627.  
Available from: <https://rgsa.emnuvens.com.br/rgsa/article/view/5627>
- Türkmen H, Çetinkaya S, Kiliç H, Tuna SD, Şirvanci M, Mutlu H. The Effect of Ice Massage Applied to the SP6 Point on Labor Pain, Labor Comfort, Labor Duration, and Anxiety: A Randomized Clinical Trial. *J Midwifery Womens Health*. 2024;
- Zamora-Brito M, Fernandez-Jan C, Perez-Guerv R, Solans-Oliva R, Arranz-Beteg A, Palacio M. The role of acupuncture in the present approach to labor induction: a systematic review and meta-analysis. 2023;  
Available from: <http://dx.doi.org/10.1016/j>.
- Fricker F, Barbotte MV, Pallot G, Radoua N, Sorci G, Heitz M, et al. Positive psychological effects of seated acupressure massage are associated with a rise in plasma oxytocin without affecting CGRP levels or circulating IL-6. *Compr Psychoneuroendocrinol*. 2024 Feb 1;17.
- Nehbandani S, Koochakzai M, Keikhaie F, Jahantigh F. Comparison of the Effect of Hot and Cold Massage at Spleen 6 on Pain Relief During Active Labor Phase: A Clinical Trial. *Medical -Surgical Nursing Journal*. 2019 Aug 28;8(3).
- Mafetoni RR, Shimo AKK. Effects of acupressure on progress of labor and cesarean section rate: Randomized clinical trial. *Rev Saude Publica*. 2015;49(1).
- Can HO, Saruhan A. Evaluation of the effects of ice massage applied to large intestine 4 (hegu) on postpartum pain during the active phase of labor. *Iran J Nurs Midwifery Res*. 2015;20:1.