

# Complementary and alternative therapies to relieve labor pain: A comparative study between music therapy and Hoku point ice massage



Faranak Safdari Dehcheshmeh<sup>a</sup>, Hossein Rafiei<sup>b,\*</sup>

<sup>a</sup> Department of Midwifery, School of Nursing and Midwifery, Shahrekord University of Medical Sciences, Shahrekord, Iran

<sup>b</sup> Department of Medical Surgical Nursing, School of Nursing, Qazvin University of Medical Science, Qazvin, Iran

## ARTICLE INFO

### Article history:

Received 29 June 2015

Received in revised form

6 September 2015

Accepted 6 September 2015

### Keywords:

Complementary therapies

Alternative therapies

Pain severity

Primiparous women

Music

Massage

## ABSTRACT

**Background & aim:** Pain is a common experience for women during labor. In the present study, we compared the effect of two types of non-pharmacological pain relief methods “music therapy” and “Hoku point ice massage” on the severity of labor pain.

**Methods:** This prospective, randomized, controlled trial was conducted in Shahrekord, Iran, from September 2013 to June 2014. We randomly assigned 90 primiparous women who expected a normal childbirth into three groups: group “A” received music therapy, group “B” received Hoku point ice massage, and group “C” received usual labor care. At the beginning of the active phase (4 cm cervical dilation) and before and after each intervention (at dilations 4, 6, and 8 cm), the intensities of labor pain were measured using Visual Analogue Scale (VAS).

**Results:** At the beginning of the active phase, the mean VAS scores were  $5.58 \pm 1.29$ ,  $5.42 \pm 1.31$ , and  $6.13 \pm 1.37$  in the women in groups “A,” “B,” and “C,” respectively ( $P > 0.05$ ). After the intervention, the mean pain scores were significantly lower at all of the time points in groups “A” and “B” than in group “C” women ( $P < 0.05$ ). Although the pain scores showed a more decreasing trend after the intervention in group “A” than that in group “B,” the difference between the two groups was not statistically significant ( $P > 0.05$ ).

**Conclusions:** Music therapy and Hoku point ice massage are easily available and inexpensive methods and have a similar effect in relieving labor pain.

© 2015 Elsevier Ltd. All rights reserved.

## 1. Introduction

Pain is a common experience for women during labor and may have a negative effect on the mothers, fetus, and family [1–3]. A study conducted in 2013 showed that about 96% of women experience pain during labor [4]. Labor pain can be treated using both pharmacological and non-pharmacological methods [1,5]. Complementary and alternative therapies for pain relief have become increasingly popular among pregnant women and women in labor with different cultures [6–8]. A 2008 study showed that 73% of Australian pregnant women used at least one kind of complementary therapy during their pregnancy period [7]. Another study in this context reported that traditional/complementary and

alternative medicines were used by 83.7% of Iranian women during pregnancy. Herbal preparations, diet changes, vitamin and mineral used, body-based practices, and spiritual methods were the most reported methods by Iranian women [8]. Pallivalappila et al. also reported a similar finding. They showed that despite the uncertainty about safety and effectiveness, complementary and alternative medicine modalities, and complementary and alternative medicine products are widely used during the early stages of pregnancy by UK pregnant women [9].

As of now, several complementary and alternative therapies have been proposed to relieve labor pain, including muscle relaxation, breathing techniques, acupuncture, acupressure, aromatherapy, music therapy, touch therapy, massage therapy, hypnosis, diet, and herbs [1,10–13]. Some of the earlier studies have also evaluated the effectiveness of these methods. For instance, Silva Gallo et al., in their clinical trial in 2013, examined the effect of a 30-min lumbar massage on the severity of labor pain. The patients'

\* Corresponding author.

E-mail address: [hosseinr21@gmail.com](mailto:hosseinr21@gmail.com) (H. Rafiei).

pain was measured using a 100 mm VAS, and the results showed that the massage is effective in decreasing the severity of labor pain [14]. Another study by Liu et al., in Taiwan, examined the effects of music therapy on the severity of labor pain in 60 primiparous women. The authors observed that listening to music decreased the labor pain, particularly in the latent phase of labor [15]. An earlier study in Iran by Tork Zahrani et al. examined the effect of massage on the intensity of pain during the first stage of labor and also reported a similar finding, wherein the results showed that back massage decreased the intensity of labor pain [10].

Although several studies have examined the effects of various complementary and alternative therapy methods on labor pain, only a few have performed a comparative study between the different methods. In the present study, we compared the pain-relieving effects of the two types of most commonly used complementary and alternative therapy methods (music therapy and ice massage) on the intensity of labor pain.

## 2. Methods

This study is a prospective, randomized, controlled trial conducted from September 2013 to January 2014. The study sample consisted of 90 pregnant primiparous women who were hospitalized in the governmental hospital in Shahrekord, southwest of Iran. Permission from the deputy of medical research and approval from the ethics board of Shahrekord University of Medical Sciences were obtained for the conduct of the study. This study is also registered in the Iranian Registry of Clinical Trials (code number: IRCT138903162265N2).

The inclusion criteria were gestational age between 38 and 40 weeks, primiparous women, singleton and term pregnancy, cephalic presentation, embryo being in a natural state, normal fetal heart rate, having normal mental and physical health, cervical dilation 4 cm, and natural pattern of uterine contractions. Women were excluded if they had any underlying kidney or cardiovascular disease, gestational diabetes, chorioamnionitis, pre-eclampsia, cephalopelvic disproportion, visual impairments, narcotic use during the past 8 h, multiple pregnancy, and dilation more than 8 cm. In addition, women with any complications during the labor, requiring the use of analgesic drugs or midwifery interventions to accelerate the labor, were also excluded [1]. Fig. 1 shows the recruitment and flow of study participants throughout the trial.

After obtaining verbal and written informed consent, the participants were randomly assigned into three groups: group "A" received music therapy (according to their interest, women in this group listened to piano or waves sound through a headphone for 30 min in a single room), group "B" received Hoku point ice massage (After choosing the preferred position by the women and identifying the Hoku point on both hands, ice massage was performed using a towel containing ice balls and massaging rotationally for 20 min. The massage techniques were performed by the first researcher (FS) who has prior experience in this regard. The intensity of the ice massage was determined by the women, who were instructed to request for greater or lesser force during execution of the massage according to their preference), and group "C" received usual labor care of the maternity ward. The women in group "C" did not use any special technique for pain relief. Randomization was performed by the supervisor of the maternity ward who was blinded to the study groups.

The primary outcome of the study was a change in the pain severity at the beginning of the active phase (4 cm cervical dilation) and before and after each intervention (at the 4, 6, and 8 cm cervical dilations). To measure this, the pain severity was marked by the participant on a 0- to 10-mm VAS. This scale has been used among Iranian pregnant women and its reliability and validity have been

confirmed in previous studies in the Iranian context [1]. All data were analyzed using SPSS software (v16.0; PASW Statistics), and a *p* value less than 0.05 was considered to be statistically significant. Descriptive statistics (expressed as mean and standard deviation), independent *t* test, repeated measure ANOVA, and one-way ANOVA were used.

## 3. Results

The mean age of all the women was  $22.21 \pm 2.47$  years (range: 17–30 years). The mean gestational age in all the women was  $39.35 \pm 1.03$  weeks (range: 38–42 weeks). Demographic characteristics of the women including age, race, weight, education level, gestational age, number of abortions, dysmenorrhea history, and economic status were similar in the three groups (Table 1). Among the demographic characteristics, only the education level showed a statistically significant positive relationship with the level of pain ( $P < 0.05$ ).

### 3.1. Pain intensity in group "A" women

The range of pain intensity on the VAS at the beginning of the active phase in this group was 3.5–8.75 mm. At dilations 4, 6, and 8 cm in women in this group, the respective ranges of pain intensity on the VAS were 3–8 mm, 5–9 mm, and 4–10 mm. The mean score of pain intensity at the beginning of the active phase was  $5.58 \pm 1.29$ , and the respective mean scores at dilations 4, 6, and 8 cm were  $4.43 \pm 1.07$ ,  $6.16 \pm 1.05$ , and  $7.31 \pm 1.19$ . The results of the repeated measure ANOVA test showed that this decrease in pain intensity during the measured time points was statistically significant ( $P = 0.001$ ).

### 3.2. Pain intensity in group "B" women

The range of pain intensity on the VAS at the beginning of the active phase in this group was 3.5–6 mm. At dilations 4, 6, and 8 cm, the respective pain intensity ranges were 3–7 mm, 4–8 mm, and 6–8 mm. The mean score of pain intensity at the beginning of the active phase was  $5.42 \pm 1.31$ . The mean scores at dilations 4, 6, and 8 cm were  $4.70 \pm 1.22$ ,  $6.23 \pm 1.35$ , and  $7.25 \pm 0.65$ , respectively. The repeated measure ANOVA test results showed that this decrease in pain intensity during the measured time points was statistically significant ( $P = 0.001$ ).

### 3.3. Pain intensity in group "C" women

The range of pain intensity on the VAS at the beginning of the active phase in this group was 3.5–8.5 mm, and at dilations 4, 6, and 8 cm, the ranges were 4–8 mm, 5–9 mm, and 5–10 mm, respectively. The mean score of pain intensity at the beginning of the active phase was  $6.13 \pm 1.37$ . At dilations 4, 6, and 8 cm, the respective mean scores of pain intensity in this group were  $6.48 \pm 1.28$ ,  $8.16 \pm 0.78$ , and  $8.53 \pm 1.06$ . The results of the repeated measure ANOVA test showed that this increase in pain intensity during the measured time points was statistically significant ( $P = 0.001$ ).

### 3.4. Pain intensity between the groups

The results of the one-way ANOVA test showed that the mean scores of pain intensity at the beginning of the active phase were similar between women in all the three groups ( $P > 0.05$ ). A comparison between the group "A" and group "C" women at different time points was performed using independent *t* test, and the results showed that group "A" women experienced significantly

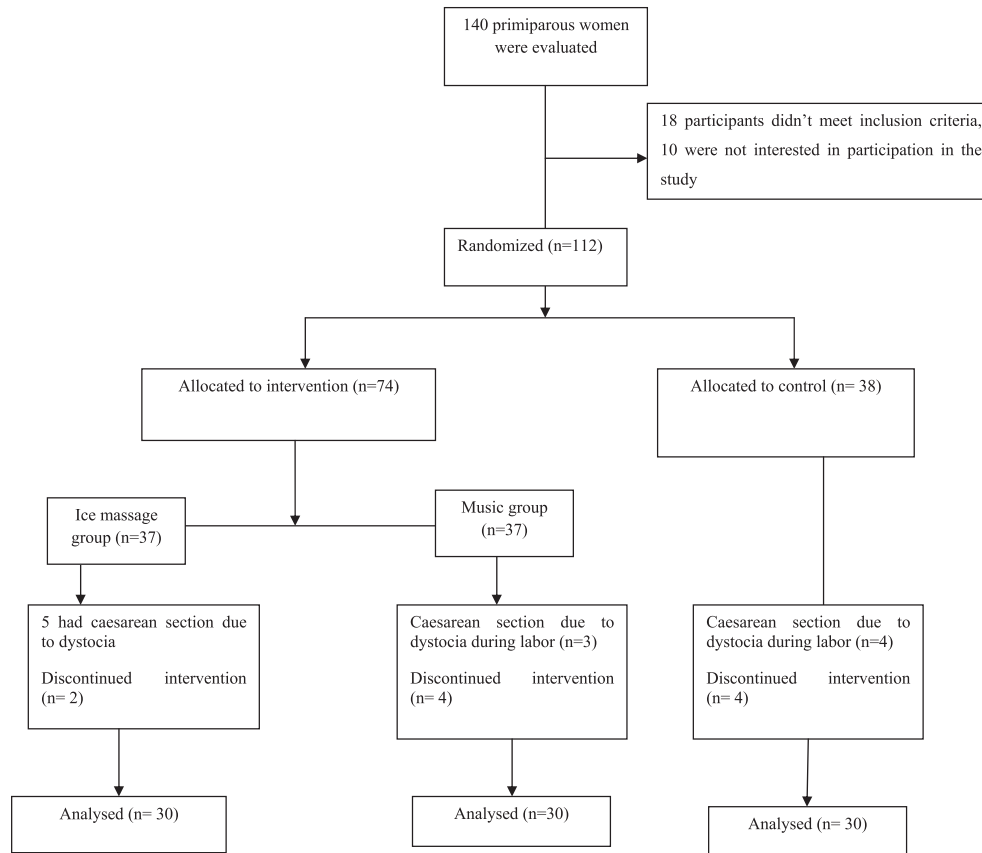


Fig. 1. Recruitment and flow of participants through the trial.

**Table 1**  
Women demographics characteristics in three groups.

		Control group	Ice massage group	Music group	<i>P</i> value
Occupation	Employment	4(13.3%)	6(20%)	8(26.7%)	0.43
	Unemployed	26(86.7%)	24(80%)	22(73.3%)	
Education	Illiterate	1(3.3%)	1(3.3%)	3(10.0%)	0.07
	Primary school	3(10.0%)	3(10.0%)	3(10.0%)	
	Middle and high school	23(76.7%)	22(73.3%)	16(53.3%)	
	Graduate	3(10.0%)	4(13.3%)	8(26.7%)	
Age (year)		22.90 ± 2.82	22.30 ± 2.70	21.43 ± 2.58	0.73
Gestational age (week)		39.30 ± 1.14	39.33 ± 1.06	39.43 ± 0.89	0.58
Number of abortion		0.13 ± 0.34	0.16 ± 0.37	0.13 ± 0.34	0.91

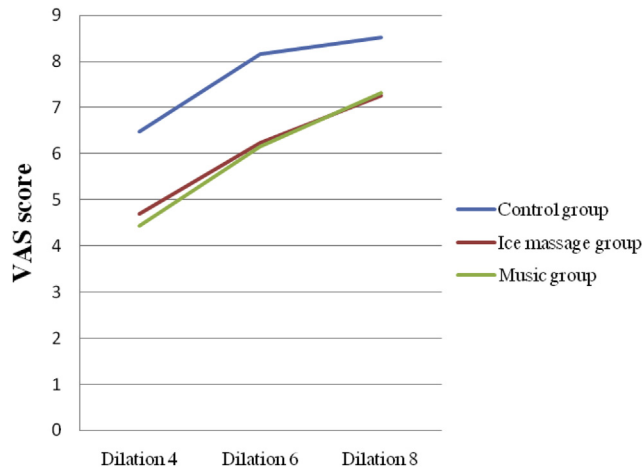
lower level of pain than group “C” women at all of the time points ( $P < 0.05$ ). The results of this test also showed that at all time points, women in group “B” experienced significantly lower level of pain than that by group “C” women ( $P < 0.05$ ). A comparison between groups “A” and “B” showed that pain intensity was similar at all of the time points between these two group ( $P > 0.05$ ), although the total mean scores of pain intensity were lower in group “A” women than in group “B” women (Graph 1).

#### 4. Discussion

Labor pain relief increases pregnant women's satisfaction of the experience of childbirth [2,16]. This study was conducted to compare the pain-relieving effects of music therapy and Hoku point ice massage in Iranian pregnant women. The findings showed that both methods have a similar effect on labor pain.

To the best of our knowledge, there are only two studies that

have compared the effect of massage and music therapies on relieving labor pain. The first study was conducted by Taghinejad et al., in 2010, in which 101 pregnant women were assigned into two groups of either massage ( $n = 51$ ) or music ( $n = 50$ ) therapy. For measuring pain intensity, the authors used VAS. They observed that both massage and music therapies are effective in relieving labor pain, which is consistent with the present study findings. However, in contrast to our finding, Taghinejad et al. reported that massage therapy has a better effect on pain relief than music therapy [1]. The second study in this regard was performed by Kimber et al. who compared the effects of music and massage therapies on the intensity of labor pain in a group of UK pregnant women. In contrast to our findings, Kimber et al. showed that massage therapy has more effect on labor pain relief than music therapy [17]. This difference between the findings of the present study with those of the two previous studies could be attributed to the difference in the selected music type, music duration, massage



Graph 1. Mean score of VAS in women in group "A", "B", and "C" in all times.

time, applied pressure point, and massage type. For instance, Taghinejad et al. in their study did not use ice massage and the massage points were the lower area of the abdomen, shoulders, back, and the pubic area, and Kimber et al. used massage and music along with other relaxation techniques [3,17].

Studies that have compared between the other types of non-pharmacological methods for labor pain relief are also few in numbers. In one study by Hajiamini et al., in 2012, the effects of ice massage and acupressure on labor pain were compared, and the results showed that both the techniques reduced labor pain, although ice massage provided more persistent pain relief than acupressure [1]. Another study in this regard conducted by Yildirim & Sahin examined the effect of breathing and skin stimulation techniques on labor pain perception among 40 Turkish women. They showed that both breathing and skin stimulation techniques were effective in reducing the perception of pain by pregnant women, which led to a more satisfactory experience of childbirth [18].

## 5. Conclusion

This study showed that both music therapy and Hoku ice massage have similar effects on labor pain. Music therapy and Hoku point ice massage are easily available and inexpensive methods, which do not result in adverse side effects for the mother or the fetus. Clinicians can use these non-pharmacological pain relief methods to reduce labor pain. Due to the limited number of comparative studies on the different methods of non-pharmacological labor pain relief, there is a need for additional

studies using other techniques such as muscle relaxation, breathing techniques, acupuncture, acupressure, aromatherapy, touch therapy, and hypnosis. Moreover, a further study that would examine the effect of different types of massage therapies (ice and hot) on the different body points is suggested.

## References

- [1] Z. Hajiamini, S.N. Masoud, A. Ebadi, A. Mahboubh, A.A. Matin, Comparing the effects of ice massage and acupressure on labor pain reduction, *Complement. Ther. Clin. Pract.* 18 (3) (2012) 169–172.
- [2] L.O. Lawani, J.N. Eze, O.B. Anozie, C.A. Iyoke, N.N. Ekem, Obstetric analgesia for vaginal birth in contemporary obstetrics: a survey of the practice of obstetricians in Nigeria, *BMC Pregnancy Childbirth* 12 (14) (2014) 140.
- [3] H. Taghinejad, A. Delpisheh, Z. Suhrabi, Comparison between massage and music therapies to relieve the severity of labor pain, *Women's Health* 6 (3) (2010) 377–381.
- [4] M.O. Oyetunde, E.O. Ojerinde, Labour pain perception and use of non-pharmacologic labour support in newly delivered mothers in Ibadan, Nigeria, *Afr. J. Midwifery Women's Health* 7 (4) (2013) 164–169.
- [5] L. Jones, M. Othman, T. Dowswell, Z. Alfirevic, S. Gates, M. Newburn, S. Jordan, T. Lavender, J.P. Neilson, Pain management for women in labour: an overview of systematic reviews, *Cochrane Database Syst. Rev.* 3 (2012 Mar 14) CD009234.
- [6] T. Field, Pregnancy and labor massage, *Expert Rev. Obstet. Gynecol.* 5 (2) (2010) 177–181.
- [7] H. Skouteris, E.H. Wertheim, S. Rallis, S.J. Paxton, L. Kelly, J. Milgrom, Use of complementary and alternative medicines by a sample of Australian women during pregnancy, *Aust. N. Z. J. Obstet. Gynaecol.* 48 (4) (2008) 384–390.
- [8] T. Khadivzadeh, M. Ghabel, Complementary and alternative medicine use in pregnancy in Mashhad, Iran, 2007–8, Iran. *J. Nurs. Midwifery Res.* 17 (4) (2010) 263–269.
- [9] A.R. Pallivalappila, D. Stewart, A. Shetty, B. Pande, R. Singh, J.S. Mclay, Complementary and alternative medicine use during early pregnancy, *Eur. J. Obstet. Gynecol. Reprod. Biol.* 181 (2014) 251–255.
- [10] Tork Zahrani Sh, M. Honarjoo, Sh Jannesari, H. Alavi, The effect of massage on intensity of pain during first stage of labor, *Pejouhesh* 32 (2) (2008) 141–145.
- [11] B.L. Waters, J. Raisler, Ice massage for the reduction of labor pain, *J. Midwifery Women's Health* 48 (5) (2003) 317–321.
- [12] C.A. Smith, C.T. Collins, A.M. Cyna, C.A. Crowther, Complementary and alternative therapies for pain management in labour, *Cochrane Database Syst. Rev.* 18 (4) (2006) CD003521.
- [13] C.A. Smith, C.T. Collins, C.A. Crowther, K.M. Levett, Acupuncture or acupressure for pain management in labour, *Cochrane Database Syst. Rev.* 6 (7) (2011) CD009232.
- [14] R.B. Silva Gallo, L.S. Santana, C.H. Jorge Ferreira, A.C. Marcolin, O.B. Polineto, G. Duarte, S.M. Quintana, Massage reduced severity of pain during labour: a randomised trial, *J. Physiother.* 59 (2) (2013) 109–116.
- [15] Y.H. Liu, M.Y. Chang, C.H. Chen, Effects of music therapy on labour pain and anxiety in Taiwanese first-time mothers, *J. Clin. Nurs.* 19 (7–8) (2010) 1065–1072.
- [16] Amedee Peret FJA. Pain Management for Women in Labour: an Overview of Systematic Reviews: RHL Commentary (Last Revised: 1 March 2013). The WHO Reproductive Health Library; Geneva: World Health Organization.
- [17] L. Kimber, M. McNabb, C. McCourt, A. Haines, P. Brocklehurst, Massage or music for pain relief in labour: a pilot randomized placebo controlled trial, *Eur. J. Pain* 12 (2008) 961–969.
- [18] G. Yildirim, N.H. Sahin, The effect of breathing and skin stimulation techniques on labour pain perception of Turkish women, *Pain Res. Manag.* 9 (4) (2004) 183–187.