

*Original Article***Effect of heat therapy on pain severity in primigravida women***Fariba Fahami\**, *Fereshteh Behmanesh\*\**, *Mahboubeh Valiani\**, *Elaheh Ashouri\*\*\****Abstract**

**BACKGROUND:** Labor pain relief has been considered since many years ago. Heat as a non pharmacological method of pain relief helps reducing the pain intensity and increases the pain consistency. The aim of the study was to determine the effect of the heat therapy on the labor pain in primigravida women.

**METHODS:** In this clinical trial study, 64 low risk nulliparous women were randomly divided into two heat therapy and routine care groups. In addition to the routine cares, warm bag were used for the heat therapy group for the low back, from cervix dilatation of 3-4 cm to the end of the labor's first stage and for perinea at the second stage. The pain intensity was determined by McGill pain questionnaire in dilatation of 3-4, 6-7 and 9-10 cm and at the end of the labor's second stage. Data was analyzed using t-test and chi square test by using SPSS 11.

**RESULTS:** Results of research showed a significant decrease in the pain intensity in the heat therapy group at the first stage and the second stage of labor and comparing two groups showed significant difference ( $p < 0.001$ ).

**CONCLUSIONS:** According to the results of this study, it seems that heat therapy in addition to its beneficial effects, causes the mother to sense the labor pain in a lower pain severity.

**KEY WORDS:** Heat therapy, nonpharmacological pain relief, labor pain.

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Pain is a common phenomenon and is an inevitable part of the childbirth process.<sup>1</sup> This pain is a complicated, personal, mental and multi-facial phenomenon and is affected by economic, social, cultural, biologic and psychological factors.<sup>2</sup> Continuous labor pain is effected by respiratory system, blood circulation, endocrine glands and other body activities.<sup>3</sup> In other hand, the fear of childbirth pain is the most important reason that makes women to refuse delivering in a natural way worldwide and by this reason it was led to cesarean section application in Iran.<sup>4</sup> So effective control of the labor pain like other acute pains is very important for the health and society.<sup>5</sup> There are different methods to reduce the labor pain that is divided into pharmaceutical and non-pharmaceutical groups. Non-pharmaceutical methods in labor pain reduction

are frequently simple and cheap, and can be used as a successor or ancillary treatment with other drugs.<sup>6</sup>

One of the non-pharmaceutical methods in labor pain reduction is heat therapy. Using heat with various means, during labor is simple, cheap and available, and it doesn't need previous skills and if it used correctly, it has few side effects. There are not too much randomized controlled trials for using the heat or cold to control the pain during labor, but their effect on other clinical situations is studied.<sup>7</sup> Kalvie and Risto (2005) in their research found that the heat caused a small increase in uterine contraction and no any effect on fetal heart rate. It seems that the heat stimulates heat receptors of skin and deeper tissues, and it may reduce the pain as per the gate control theory.<sup>8</sup>

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Up to now, there is no recognized preference of labor pain for mother and fetus, and there are some identified harmful effects for both of them, (pain and stress caused increases abnormal fetus heart rate pattern, lack of balance excitement in mother consequently affects on mother and infant's relationships, sexual function disorders, ...) so it is important to reduce or alleviate the labor pain.<sup>9</sup> Some investigators in 2004 in a research found that about half of women refuse obstetric anesthesia even when they need it and it means that many of women want an utter natural delivery. The main aim of caring for mothers is managing the labor pain.<sup>10</sup> There are few studies conducted about heat therapy but no study was conducted in Iran about this subject. On the other hand using this method is easier than other methods like acupuncture, massage, TEN, hypnosis and acupuncture and it doesn't need skilled individual, also fear of labor pain caused an increase in cesarean requisition in Iran<sup>11</sup> and in this ecstatic Isfahan has the highest rate of cesarean section with 62%, so it is necessary that modern methods of painless delivery are vogueed in our country in order to avoid cesarean section and its side effects. In other hand, medicine education, treatment and healthy ministry, is tried to decrease the labor pain in recent years and one of these ways is non-pharmacological pain relief and un-painful delivery. This action is admitted at first. The aim of this study was to assess the effect of heat therapy on labor pain severity in primigravida women.

## Methods

This clinical trial study performed on the entire 18-35 years old women referred to the maternity hospital of Babol University of Medical Sciences. Sixty four primiparous women (32 women in heat therapy group and 32 women in control group) entered the study. Sampling was done in random sampling method. Collecting the data was done using observation and examination method to complete the questionnaire. Sampling, collecting the data, and analyzing them was done in 2006-2007. Inclusion criteria was age between 18-35 years old, being at the beginning of active phase of labor, gestational age between 37-41 weeks, single preg-

nancy, cephalic presentation of fetus, and primiparous women and exclusion criteria was any psychotic and diagnosed anatomic disorder, chronic disease include cardiopulmonary disease, diabetes mellitus, and skin disease and any damage inflammation and eczema in the heat therapy region, women with gestational hypertension, polyhydraminus and oligohydraminus identified by sonography, women with fetal movement reduction, intrauterine growth retardation, fetal death, history of chronic pelvic pain, CPD, women with premature rupture of fetal membranes (PROM) after 12 hours, women with history of infertility, and abnormal pattern of fetal heart rate, any incidence during study (placental abruption, abnormal fetal position, cord prolapse, and etc), lack of tendency to continue heat therapy, the women lived alone, not with their husbands (due to divorces or antagonize and oxytocin-induced labor. The samples were selected based on inclusion and exclusion criteria's and their cervix dilation were assessed by vaginal examination and cases with dilation <3-4 centimeters were randomly allocated into two groups and after taking written testimonial the technique was explained and the rule pain was used for both groups. Before any intervention, the pain severity was measured when cervix dilated to 3-4 cm. In the heat therapy group after establishment of good sentimental relation with parturient, a hot water bottle was used to heat the low back of parturient based on the patient inclination. The minimum time for using the hot water bottle at the first stage was 80 minutes. At the second stage of the labor the hot water bottle with a sterilized wrap was put in patient's perinea. The minimum time for the hot water bottle in the perinea region was 5 minutes. Evaluation of pain severity the first stage of the labor was done in cervical dilation 3-4 cm, 6-7 cm and 9-10 cm. And evaluation of the pain severity at the second stage of the labor was done after delivery. The McGill linear scale was used to evaluate and measure the pain severity.

The control group only received routine care of labor and persistent attendance of investigator; and the pain severity was measured the

**Table 1.** Statistical indicators and mean pain severity at the 1<sup>st</sup> stage of labor (after intervention) and comparison of the two groups.

Statistical indicator Groups	Minimum	Maximum	Mean	Standard deviation	t	Df	P
Heat Therapy	3	10	8.14	0.99	265	62	0.01
Control	3	10	8.88	1.20			

**Table 2.** Statistical indicators and mean pain severity at the 2<sup>nd</sup> stage of labor and comparison of the two groups

Statistical indicator Groups	Minimum	Maximum	Mean	Standard deviation	t	Df	P
Heat Therapy	5	10	8.25	1.39	406	62	0.000
Control	4	10	9.65	1.99			

same as the heat therapy group. Then, SPSS software was used to analyze data. All the tests were considered by a maximum error rate of 5%.

## Results

The findings showed that most of the cases were 18-24 years old (67.2%) and housekeepers (84.4%) and had high school education (48.4%). The mean gestational age in both groups was 39-40 weeks. The results showed that the pain severity in cervical dilation 3-4 cm (before intervention) was the same in both groups and so was it in cervical dilation 6-7 cm ( $p = 0.02$ ) and dilation 9-10 cm ( $p = 0.01$ ). The mean number of the pain severity at the first stage of the labor showed a significant difference between the two groups ( $p < 0/05$ ) and was lower in the heat therapy group (table 1) and showed a significant difference in the pain severity at the second stage of the labor between the two groups too ( $p < 0.001$ ) and was lower in the heat therapy group than that of the routine care group (table 2).

## Discussion

The results showed that the mean pain severity at the first and second stages of labor showed significant statistical difference between the heat therapy and the routine care groups. This difference shows that the mean number of the pain severity in the heat therapy group was less

than that of the control group at the first and second stages of the labor and the heat therapy reduces the labor pain.

In 2004 Cluett et al studied on the role of immersion in water in pregnancy and the labor showed that warm water immersion during labor reduces the labor pain compared to the routine care group.<sup>11</sup>

Geissbuehler et al (2004) compared the water birth and the land birth and showed that patients in the water birth group needed less obstetrical analgesia and warm water reduced the pain in 69% of the patients.<sup>12</sup>

Grodzka et al (2001) showed labor in the warm water bath reduced the labor pain in 76% of all the cases.<sup>13</sup>

Regarding to the results of this study and comparison with other studies it can be concluded that the heat therapy has some useful effects and causes less pain in parturient. Although mentioned surveys studied the effect of immersion in warm water, the main entities of all surveys were warming the region or environment, so these studies were used to compare to our study.

It is hoped that the result of the present research could help improving and promoting the quality of the obstetrical care.

The authors declare no conflict of interest in this study.

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