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The effect of aromatherapy with lavender essence on severity of labor pain and duration of labor in primiparous women

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ABSTRACT

Objective: The aim of this study was to investigate the effect of Lavender essence inhalation on severity of labor pain and duration of labor.
Methods and materials: This single-blind, randomized clinical trial was conducted on 120 pregnant women in two groups. The experimental group received 2 drops of Lavender essence inhaled at three stages (4–5, 6–7, 8–9 cm cervical dilation) and severity of the labor pain and duration of labor was measured before and after intervention. The control group was treated with distilled water as a placebo in the similar ways, too.
Results: The results showed that difference in the labor pain before and after intervention in two groups was significant (P = 0/001). But there was no difference in mean duration of the active phase and the second stage of labor between the two groups.
Conclusion: Lavender essence aromatherapy may be an effective therapeutic option for pain management for women in labor.

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1. Introduction

Labor pain, which is among the most severe pains experienced, can be very diverse in terms of the intensity felt and its location [1]. In some cultures, women prefer Caesarean section delivery to avoid the pain of labor [2].

Labor pain relief methods are divided into non-pharmacological (psychoprophylactic, hypnotism, acupuncture, healing touch therapy, relaxation exercises, massage therapy, music therapy, …) [3] and pharmacological (systemic medicines, inhalation anesthesia, general anesthesia, regional anesthesia) methods [4]. Use of non-pharmacological pain relief techniques help the labor progress and shorten the duration of delivery [5].

Mohammadkhani-Shari quotes Melzak and Wall writing, "non-pharmacological approach to pain relief includes a wide variety of techniques to address not only the physical sensations of pain but to prevent pain induced psychological suffering" [6]. One of the newest therapies is aromatherapy [7] which is an ancient art that uses the essences extracted from various herbs for their medical properties [8]. Aromatherapy is used to relieve pain, treat anxiety and depression, insomnia, fatigue and asthma. It also helps to build confidence, inspiring creativity and success [9]. Essential oils may be administered through the skin (massage), inhalation, compresses, in baths and oral administration [8]. Review of the literature between 1996 and 2002 suggests aromatherapy as an effective way for managing pain and psychological impacts of interventions [10].

One of the means of action is the aroma of these oils sent as a signal to the olfactory bulb which has close anatomical ties to the limbic system. The limbic system is the emotional center of the brain, where all major emotional expressions are generated. The limbic system influences the endocrine and the autonomic nervous [11].

Inhalation of essential oils has given rise to olfactory aromatherapy, where simple inhalation has resulted in enhanced emotional wellness, calmness, relaxation or rejuvenation of the human body. The release of stress is welded with pleasurable scents which unlock odor memories [12].

Aromatherapy offers relaxation and can induce sleep. It also enhances the mother's ability to cope with the pain in labor [13].

One of the essential oils used in aromatherapy is Lavender (Lavandula angustifolia). This compound has analgesic properties and contains Linalyl acetate [8]. Lavender is a herbaceous plant and

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its roots have been shown to produce anticonvulsant effects. Its leaves and flowers are used for pain management, too [14]. Lavender essential oil has a wide range of benefits including a sedative, analgesic, disinfectants, anti depressant, …[15].

Many of the studies that have examined the effects of aromatherapy with lavender essential oils have had conflicting results. According to the findings of a study conducted in 2000 by Burns et al., aromatherapy with lavender essential oils did not significantly affect the labor pain intensity and, also, the number of caesarean section deliveries. However, the exposure is effective in reducing fear and anxiety during childbirth and reduces the need of analgesics during the birth as well [16]. Then in a study conducted in 2007 Burns et al. concluded that using different methods of aromatherapy in labor such as massage, bath, inhalation and belts, could be helpful in reducing delivery pain and improving birth outcomes [17]. Sobhani et al. evaluated the effect of lavender aromatherapy as a treatment to help relieve pain after C-section. The findings showed a decrease in pain intensity after using aromatherapy treatment [9]. DaghighBeen suggested in his study that, compared to honey, using lavender cream had a better effect on perineal pain reduction and wound healing following episiotomy [18], which is inconsistent with the findings of a survey by Vakilian that showed no reduction in pain intensity after episiotomy [11].

By using new non-pharmacological methods the entire process of giving birth becomes a pleasant experience, decreasing mother's tendency towards C-section [19]. On the other hand, non-pharmacological interventions have no side effects on the mother and baby and do not require a doctor's prescription. They also are viable alternatives to the pharmacological approaches [17]. Therefore the present study was conducted to evaluate the impact of aromatherapy with Lavender essence on the intensity and duration of labor pain in nulliparous women referred to Iran Hospital in Iranshahr.

1.1. Sample and sampling method

This single-blind, randomized clinical trial was conducted from September 2011 to January 2012. This study was performed at the Iran Hospital in Iranshahr city (Sistan-Balouchestan province, Iran). The study population comprised all women referred to this hospital for childbirth at the time of data collection. The eligibility criteria included nulliparous pregnant women with singleton pregnancy, gestational age over 37 weeks, cervical dilation greater than 3–4 cm, cephalic presentation and receiving no analgesia during labor. Exclusion criteria were set as follows: cephalopelvic disproportion, the subject's withdrawal from the clinical trial, history of allergy to herbs, factors leading to an emergency Caesarean section and diagnosis of underlying diseases in the mother.

In order to determine the sample size a pilot study was undertaken on 15 subjects. Based on the results of the comparison between the two averages, and, also, statistical consultants' comments, the sample size with a confidence level of 95% was determined to be 60 in each group. The subjects selected using a convenience sampling method, were randomly divided into two experimental and control groups. Randomization numbers were sealed in a predetermined computer-made randomization opaque envelope. The pregnant women' screening sequence numbers were printed outside the envelope, whereas the group names were printed inside. All envelopes were numbered consecutively and connected. Researchers who screened the eligible pregnant women after baseline separated the envelopes from the strain and opened them according to the pregnant women' screening sequence numbers, and then assigned the patients to either the experimental group or the control group.

1.2. Measurement instruments

A visual analog pain scale which is a standard pain assessment scale made of a 10 cm ruler between zero (no pain) and 10 (worst possible pain) was used to record the subject's pain level; its validity has been established in a number of studies. Melzak introduces numerical pain rating scale as a valid and reliable measure for assessing pain intensity [7]. The reliability of the mentioned tool was determined using equivalent method. In the pilot study the pain intensity in 10 mothers was measured using the above mentioned scales by the researcher and the research assistant, separately, and the correlation between their measurements was $r = 0.93$.

Data was gathered through inclusion of demographics (age, occupation, education, gestational age) and information about delivery process (duration of labor active phase, duration of labor second stage and neonates Apgar scores in the first and fifth minutes). The validity and reliability of the questionnaire were determined using, respectively, the content validity method and equivalent reliability method. Thus, in the pilot study the above mentioned inventory was completed by the researcher, research assistant and midwives in the maternity wards separately; reliability was $r = 0.91$.

1.3. Ethical considerations

This study was approved by the Medical Research and Ethical Committee of Iranshahr University of Medical Sciences. Each participant was verbally provided with information regarding the study and the contents of the information sheet. All participants signed a consent form in which the study procedures were explained.

1.4. Procedure

The first assessment, pain was performed before intervention (dilatation 3–4 cm) in both control and experimental groups using the visual analog pain scale. The VAS is a 0–10 pain rating ruler in which the respondent selects a number that accurately represents her pain. The Lavender essence was made with Lavandula angustifolia and was produced by the Barij Essence Pharmaceutical Company (Kashan, Iran). Given that pure lavender essence is highly concentrated and can cause irritation, the essence was diluted 1:10 with distilled water. In the experimental group two droplets of lavender essence 10% was diluted with distilled water 1:10. A dropper was used to drop the essence on to the patient's palm, then they were asked to rub their hands together and inhale the inhale the scent for 3 min while the hands were 2.5–5 cm distance from the nose. Aromatherapy with lavender essence was performed by the second researcher (A.P) who is an expert midwife. The pain intensity of the subjects was measured 30 min after the contraction ended. The intervention was carried out in 3 phases (dilation 5-6-, 7–8, and 9–10 cm). Pain intensity of the subjects in the experimental group was assessed before and 30 min after the three phase intervention while the subjects in the control group were treated with distilled water as a placebo in a similar way. The length of active phase and the second stage of labor, neonates Apgar scores in the first and fifth minutes in both study groups were measured and compared.

1.5. Data analysis

Data were analyzed with SPSS (Statistical Package for Social Science, version20) using descriptive statistics (mean, standard deviation and percentage), and analytical tests (Chi-square,