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## A Systematic Review of A Type of Therapeutic Methods For Reducing Pain And Progress in Childbirth in Iran

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### ABSTRACT

**Introduction:** Pregnancy and childbirth are very important in every woman's life. Childbirth causes severe pain in the individual and has many adverse effects on the physiologic status of the mother and the fetus and the process of childbirth. Different studies have been done to relieve childbirth pain. Therefore, the present study was conducted with the purpose of systematic review of studies to reduce pain and progress of childbirth in Iran.

**Materials and Methods:** In this systematic review of information from the databases of the Clinical Trials Registration Center, Iranmedex, Magiran, Irandoc, Google scholar, SID, and Iranian articles published in foreign magazines of Pubmed, Proquest, Scopus, Science-Direct databases, with Keywords including pain, childbirth, were searched until December 2016. Studies that met the entrance criteria were studied and criticized.

**Results:** Finally, 72 clinical trials were evaluated. Studies have shown that in order to reduce the pain and progress of childbirth, several methods such as medicinal plants (lavender, cloves, etc.), chemical drugs (pethidine, hyoscine, etc.), and non-medical methods (Thermal Therapy, etc). Among all interventions, in the group of herbal treatments, lavender, and among the chemical drugs Entonox gas reduced the severity of pain and the progress of childbirth. In the field of non-pharmacological methods, acupressure had the greatest impact.

**Conclusion:** Therapeutic methods to reduce the severity of childbirth pain and its progress in Iran are very diverse and among these methods lavender, Entonox gas and acupressure were the most effective treatments. Judging by the definitive effectiveness of all these interventions requires more extensive research with higher sample sizes.

## INTRODUCTION

Pregnancy and childbirth are very important in any woman's life, because they are associated with many physical and emotional changes in the body (Abushaikha and Oweis, 2005). Childbirth physiology causes severe pain in the person due to elongation and enlargement of the lateral cervix, vagina, and perineum, as well as severe contractions of the uterus (Tork Zahrani et al., 2007). According to the International Association for the Study of Pain, the pain is an unpleasant emotional and an emotional mental - experience associated with the tissue damage (Kimberly and Trout, 2004). Despite the fact that labor pain differs from other pain and is not due to injury or illness, it needs a proper administration with appropriate interactions (Poole JH., 2003). Labor pain has many adverse effects on the physiologic status of the mother and the fetus and on the process of childbirth, which include increased oxygen consumption, increased pulmonary ventilation, decreased blood carbon dioxide, increased heart rate, increased blood pressure, delayed gastric emptying, disorders of the efficacy of uterine contractions, prolonged the process of childbirth, reducing blood flow to the uterus, fetus hypoxia, metabolic acidemia and followed by midwifery interventions and its complications (Abushaikha and Oweis, 2005). Therefore, the purpose of all childbirth care units is to reduce this pain and turn childbirth into a pleasant experience with the minimal pain (Brownridge, 1995). Childbirth pain can lead to loss of mother psychological control during the childbirth, which is a key factor in the creation of traumatic childbirths and psychological disorders (Forood and Mehdipoor, 2005). Excessive pain leads to increased mother's anxiety in the during childbirth and stimulates the sympathetic nervous system and as a result increasing the secretion of Catecholamines such as Epinephrine and Norepinephrine, resulting in more pain, prolongation of the first and second stages of

labor and dissatisfaction of the experience of childbirth (Sercekus and Okumus, 2007).

Many pregnant women have a lot of fear of childbirth. There is a lot of pain during the contractions of the first and second stages of labor, which is very different among women. Despite this variation, pain is usually severe and is often described by women as the most painful experienced (Landolt and Milling, 2011). Labor pain is a complex, personal, mental and multifactorial phenomenon that is affected by psychological, biological, cultural-social and economic factors. Although labor one of the most painful incidents of human experience, its extensive ranges and from one to another woman and even from one pregnancy to another pregnancy its different (Cunningham et al., 2007). Many of the elective cesareans take place due to fear of labor pain, and today 8-22 percent of cesareans was devoted (Waldenstrom et al., 2006). The management of labor pain is one of the main goals of care for mothers. A lot of things can be done to reduce labor pain, including pharmacological and non-pharmacological methods. Pharmaceutical methods include systemic administration of drugs, inhalation anesthesia, general anesthesia, and regional anesthesia. Non-pharmacological pain relief methods include psychoprophylaxis (Lamaz), hypnosis, acupuncture, trance, relaxation exercise, music therapy, therapeutic touch, placebo, delivery in water, maternal change, etc. (Tournaire and Theau-Yonneau, 2007).

Considering that several studies have been done to reduce labor pain in Iran and various findings have been reported, so far these studies have not been reviewed and also according to that matter which finding an easy, affordable, non-invasive, and along with less side effects treatment method has a special importance, the present study aimed at a systematic review of studies to reduce labor pain in Iran.

## METHODS

In this systematic overview of all clinical trials conducted on various types of treatment to reduce labor pain in Iran from 2000 to 2016 was used. To obtain the information requested from the articles published in the internal journals of the Clinical Trials Registry, Iranmedex, Magiran, Irandoc, Google scholar, SID, and Iranian articles published in foreign journals of the Pubmed, Proquest, Scopus, Science databases direct was used. In order to maximize the comprehensiveness of search in Persian sources, Persian keywords including labor, pain, labor pain, and their possible combinations were used in abstract, title and keyword terms. For this purpose, the ((and)) and ((or)) operators were used. The Advance Search database was used to search the articles in English resources. The Pain, Labor Pain, Delivery, Relieving Pain keywords were also searched combined using ((and)) and ((or)) operators. In the Google Scholar database, the keywords were entered in the title section and all articles in the database were reviewed. The criteria for entry of the articles to the study included: performing a clinical trial, doing a study in Iran and assessing the severity of pain and reducing it with appropriate tools. The characteristics of the participant population included women who had term pregnancy (gestational age of 37- 42 weeks), ages 16-35, Singleton pregnancy with cephalic presentation and normal NST. The exclusion criteria were consisted of: history of cesarean section and infertility, high risk pregnancy (such as hydramnios, oligohydramnios, preeclampsia, eclampsia, gestational diabetes, intrauterine growth retardation of the fetus, etc.), any physical and mental illness, smoking and using drugs and alcohol. The researcher provided a list of titles and abstracts of all the articles in the above mentioned databases and examined them independently in order to determine and select related topics. Then the related articles were independently entrant the studying. Finally, 72 articles were selected. The important results obtained from the

articles were reviewed, then content and classification analysis were performed.

## RESULTS

In this systematic review, 72 articles with a sample size of 7894 were examined. The articles were of the clinical trial type. Of the 90 studies related to the topic, 72 were selected for review, which was divided into two groups of Pharmaceutical and non-pharmaceutical according to the type of intervention. The first group included articles that examined the effects of medicinal plants and chemical drugs, And the second group included articles that used non-pharmaceutical methods. In non-pharmacological methods, 35 studies were studied. 16 studies were investigated on medicinal plants including Lavender, Clove, Peppermint, Rose-Water, Salvia, Jessamine, Spinach, Dill seed, and 21 studies to investigate the effects of chemical drugs including Pethidine, hyoscine, atropine-promethazine, indomethacin, anesthetic drugs in the area and Anton. In 72 eligible studies, the following results were extracted:

### **Group One: Pharmaceutical Methods:**

#### **A: Medicinal Plants:**

**Aromatherapy:** Aromatherapy is used to use volatile oils or aromas extracted from aromatic plants, and are applied through massage, smell and inhalation (Mahmoodi, 2002). Aromatherapy means using the senses of smell and unique aromas of different essences and their effects on the endocrine system, auto nerve system and brain stem. When an aroma is inhaled, it is absorbed by the olfactory epithelium and converted a nerve impulse. At first, the nerve impulse reaches the olfactory bulb and then through the olfactory pathway to the limbic region of the brain and exerts its effects (Steflitsch and Steflitsch, 2008).

**Lavender:** This plant belongs to the Lamiaceae family and possesses analgesic, anti-bacterial, antifungal, anti-flatulence and muscle relaxant properties. The precise mechanism of lavender's neurological function is not fully determined, but may have similar effects to benzodiazepines and

increase the effects of  $\gamma$ -Amino butyric acid (GABA) (Daghighbin, 2007; Cvanagh et al., 2002). The severity of labor pain in the massage group with lavender essential oil was significantly reduced compared to the other two groups (Mohammadkhani et al., 2012). In a study showed aromatherapy with lavender was effective in reducing labor pain (Sobhani, 2007). The mean pain in the lavender group was reduced compared to the control group (Vakilian et al., 2012; Alavi et al., 2010). Pain intensity was significantly reduced in the aromatherapy group (Seraji and Vakilian, 2011).

**Dianthus:** Eugenol is derived from dianthus tree extract that has antioxidant, anti-pain, anti-inflammatory and microbial effects (Mojarrad et al., 2009). The effective substance of Dianthus (*Dianthus sp*) is euphorbia carioglios aromatitus. Dianthus has a considerable amount of espresso Essential Oil (Firouzi et al., 2077). The severity of pain and anxiety were compared in two groups with dianthus and peppermint, which decreased in both groups, but the severity of pain and anxiety decreased in the dianthus group (Ozgoli et al., 2013).

**Peppermint (*Mentha piperita*):** The menthol present of peppermint was affecting the cappuccino receptors and blocks the transmission of the pain signal, thereby reducing the pain sensation (Fluck et al., 1988). Peppermint essence was effective in reducing the severity of pain and anxiety in the first stage of labor by inhalation method (Ozgoli et al., 2013). In the study of Fazzel et al (2005), the edible form of Peppermint essence was effective in reducing pain after cesarean (Fazel, 2005).

**Rose - water (*Rosa*  $\times$  *damascene*):** Rose is one of the famous aromas and the damask rose of is an important part of the fact that in Iran, by distillation of this flower, rose - water is obtained. The essential oil has two solid and liquid components. The solid component is called Stearoptene, which is odorless. The liquid component contains a strong and sharp smell that called alopeaton, which contains 45-75% of garyol and 20-40% of citronella, and the rest contains

Phenethyl alcohol (Phenylethanol), neural, linalool, and ... (Asemi et al., 2006). The severity of labor pain was reduced in the intervention group when its scent was smelled (Roobahani et al., 2015). In the study of Vahabi et al (2016), there was a significant difference between the two groups in terms of pain intensity after intervention in dilution of 10-8 cm (Vahabi et al., 2016). Aromatherapy to the inhalation method whit rose-water essence is effective on the anxiety of the active phase of labor of primiparous women (Kheirkhah et al. 2016).

**Salvia (*Salvia officinalis*):** Salvia is one of the plants that used to treat various types of diseases, including improve gastrointestinal pain, amplification the immunity system, diabetes, increased uterine contractions, and reduced the contraction (childbirth pain) (Perry et al. 2003). The use of salvia essence in the people that suffering the epilepsy, the first trimester of pregnancy, Breast-feeding period, and in people who have the respiratory allergy is forbidden (Shinde et al., 2012). Pain intensity was 30 minutes after aromatherapy fumigation in the control group, which was statistically significant (Kaviani et al., 2014).

**Jasminum (*Jasminum polyanthum*):** Jasminum oil, with the increased relaxation, can reduce pain and uterine contractions (Nouri et al., 2009). Jasminum oil is strong and heavy oil that is used in low and late stages of labor, which is a low risk to the fetus. Also, this plant the cause of shortens the stages of labor when exiting the pair by creating strong contractions in the third stage of labor (Turnaries, 2004). The extract of Jasminum is stimulating and calming, and it is used to reduce labor pain and increase the activity of the uterus (Amooshahi, 2007). Massage with Jasminum oil reduced labor pain in the first, second and third stages of childbirth compared to the control group, and massage with Jasminum oil in compared to the aromatherapy with Jasminum oil and normal care, the greatest effect was on reducing pain (Alavi, et al., 2017).

**Peganum Harmala or Espand (*Peganum Harmala*):** Peganum Harmala is a stable and

without fluff plant. It has various properties including hypnotic, suckling, fetal abortion, corticosteroids, anticancer, antifungal, Bacteria and parasite, immune stimulant and amino acid oxidase inhibition (Karam Sichani et al., 2012). In the normal and abnormal accouchement chapter of the book "Law", a copy and prescription has come that facilitates the accouchement in which they bring a mixture of seeds of *Peganum Harmala*, juniper, fetula asa foetida, acacia gum and rubia tinctorum in the form of pills and give it to the one who she just got a baby (has accouchement) (Al-Zahrawi et al., 2004). The active compounds of *Peganum Harmala* contain alkaloids that accumulate in seeds and roots. Beta-carboxylates are such as Harmalin, Harmine, Harmonol, Harman, Kinazoline like vessi sin and vesi sinon (Farzin et al., 2011). They use *Peganum Harmala* to start the pain of accouchement. *Peganum Harmala* (espond) smoke was effective at the beginning of accouchement, first and second stages of accouchement and mothers' satisfaction (Zahrani et al., 2016).

**Anethum graveolensl dhi:** Chemical composition of *Anethum graveolensl dhi* includes: tannin, a resinous substance and an escape essential oil composed of limonene, ketone, Carvone and a fatty substance. Anatole in low amounts causes blood vessel contraction through the opening of voltage-dependent calcium channels and, in high concentrations, a relaxant effect on blood vessels (Soares et al., 2007). Mean duration of the first stage of accouchement and the severity of accouchement pain in the exposed group was lower than the non-existent group (Hekmatzadeh et al., 2012).

**Saffron (*Crocus sativus*):** The most important components of saffron stigma include Crocin, Crostein, alpha carotene, anto-cyanine, lycopene, zigzantine, tannin, monotrapiin aldehydes (such as picrocrocine and safranale), monotropenoid, isoferons, and flavonoids (Hosseinzadeh, 2009; Melnyk et al., 2010; Mousavi and Bathaei, 2011). Saffron was used in the past to relieve muscle cramps, menstrual disorders and has also been used as sedative, analgesic and

pain killer, antidepressant, anti-inflammatory, ending pregnancy, postpartum hemorrhage, antibacterial and anti-cancer therapy (Hosseinzadeh et al., 2013; Schmidt et al., 2007; Zargari, 2011). Abu Ali Sina recites Saffron as a sedative and sedative drug in his book "The Law" and states that saffron was used orally for women who suffered from accouchement pain to facilitate childbirth (Hosseinzadeh et al., 2013; Anonymous, 1999). In the consumer group of saffron oral capsules, the severity of accouchement pain was reduced by 11.8% (Azhari et al., 2014).

#### **B: Systemic chemical drugs:**

**Pethidine:** Pethidine is a derivative of opium and acts as an analgesic through receptors of ascending and descending pathways, and the neurons of the basal complexions of the hypothalamus, limbic and cerebral cortex (Saatsaz et al., 2007). In some patients, it seems that pethidine can accelerate labor (accouchement) by reducing the concentration of catecholamines in the circulation of the mother. Researchers believe that if pethidine is administered in the latent phase of delivery, it will prolong the stages of labor and often prevent true delivery by not increasing the contractions of the uterus. One of the most common side effects of pethidine is the attenuation of the central nervous system of the fetus and decreases the variability of the heart rate of the fetus (Kamyabi et al., 2003). Massage in compared with pethidine caused a significant and significant reduction in pain during labor. The rate of nausea, drowsiness and headache was a greater incidence of neonatal and fetal outcomes in pethidine recipients (Sereshti et al., 2013). Pethidine had no effect on the length of delivery stages (Saatsaz et al., 2007). Pethidine in compared with placebo reduced the duration of the first and second stages of delivery, and no complications were observed in mothers, and none of the newborns needed resuscitation (Kamyabi et al., 2003). There was no significant correlation between pethidine injection and progress in the process of delivery (Lalooha et al., 2017). Therefore,

there is a controversy over the use of pethidine.

**Hyoscine N Botil Bromide:** Hyoscine is an anti-cholinergic anti-septic, antipyretic and sedative agent which directly affects its loose effects on the smooth muscles of the digestive, urinary, and genital tract. But it does not affect the spontaneous contractions of the uterus. Hyoscine does not completely eliminate the sensation of pain (Iravani and Bekhradi Nasab, 2006). the severity of pain in the first stage of labor in the case group was lower than that of the control group, but it was not statistically significant (Mirtimouri et al., 2016). In a study showed that the active phase length and the second stage of delivery were significantly lower in the control group. However, the severity of labor pain in the two groups did not differ significantly and concluded that Hyoscine suppository can be used as an effective drug for accelerating the labor process and reducing the duration of pain, but it does not reduce labor pain (Mirtimouri et al., 2011). Comparison of Hyoscine and atropine in reducing labor pain, both medications reduced labor pain, but Hyoscine reduced pain more than atropine (Fardiazar et al., 2013). The results of a study showed that there were no significant differences between two Hyoscine and Promethazine drugs in reducing the severity of labor pain (Ebrahimzadeh Zagamie et al., 2012).

**Atropine- Promethazine:** Among three groups of atropine-promethazine, pethidine and control, the difference between atropine-promethazine and pethidine groups was significant. But there was no difference between the pethidine group and the control group (Saatsaz et al., 2007). Therefore, consumption of atropine-promethazine in reducing the duration of active phase of labor pain is recommended. The effect of Atropine- Promethazine on the duration of delivery and baby's Apgar. The findings showed that there was no significant difference between the mean duration of the active phase of labor, the second stage of labor and the Apgar score (baby's Apgar) in the case and control groups (Delaram et al.,

2002). Therefore, according to the results of this study, the use of atropine-promethazine has been questioned.

**Indomethacin:** Indomethacin is an NSAID drug. It's an analgesic drug that inhibits Prostaglandins. In many conditions, such as postpartum pain, it is used. It is also used to reduce episiotomy pain after normal delivery (Mason et al., 2004; Harrison and Devitt, 1992). The prescribing of rectal indomethacin in childbirth reduces pain in patients at an acceptable level which is statistically significant but produces a slightly longer delivery period, which is not statistically significant (Mansouri and Shabani-Tafti, 2007). In general, due to the uncomplicated nature of it during labor, this method can be used as a method for reducing labor pain.

**C: Topical drugs (Regional anesthesia, paracervical, spinal and epidural):**

Visceral and somatic sensory fibers from the uterus and cervix go to the spinal cord with sympathetic neural fibers. Neuronal impulses from the uterus and cervix enter the spinal cord via the T10-T12 and L1 nerves Somatic perineal pain impulses are mainly transmitted from the podental nerve (S2-S4) to the sacral 2, 3, and 4 nerves (Miller et al., 2005). The advantages of using epidural injection are the possibility of blocking the motor without block and minimizing hemodynamic complications and reducing maternal Catechol amines (Van der Vyver et al., 2002). Local anxiety including spinal anesthesia, epidural, lumbar, spinal, podental, and paracervical, in addition to the need for specialist anesthesia and specialist staff and aggressive interventions like the injection of an anesthetic into the vein, has complications such as hypotension, seizure, raised body temperature in the mother and infant, and rarely Dura rupture, followed by headache and itching of the body (Leighton and Halpern, 2002). The comparison of spinal anesthesia with pethidine and epidural with bupivacaine in labor pain was performed. In this study, the severity of pain was lower in the group receiving pethidine. None of the women received pethidine,

vomiting, itching and hemodynamic disorders. The use of intra-spinal pethidine produces great analgesia during normal labor and affects the patient's ability to move very little. This method has relatively few complications that are predictable and have no delayed complications and respiratory depression (Forouzesh et al., 2014). The use of bupivacaine, due to the duration of its acceptable effect, and the minimal blockage associated with the relative lack of Tachyphylaxis and its limited transfer to pair, has made this drug suitable for analgesia (Wall et al., 2006; Birnbach and Ostheimer, 2000). Fentanyl, a short-acting lipoprotein and lipophilic, has been used in a number of low-dose articles, along with local anesthetics for controlling labor pain by epidural method (Flynn et al., 1998; Phillips, 1988; Westmor, 1990; Cousins and Mather, 1984).

The technique of PCEA (Patient Control Epidural Analgesia) is a healthy and effective technique and reduces the need for a small amount of local epidural anesthetics (Wall et al., 2006). Pain control by the patient through epidural injection was evaluated as effective and appropriate and in 96% of patients with effective pain reduction (Mokaram Doriet al., 2012). In the sole study of 2004, the duration of labor was not altered in relation to normal delivery in mothers who used the epidural analgesia method, but in 97.8% of the mothers of the group they had complete analgesia (Yeganeh, 2004). In a study, the length of the active phase and the second stage of epidural delivery were shorter, respectively, than normal delivery (Amidi et al. 2001). In Iran, due to concerns about the effects of epidural analgesia on mothers and fetuses, it has not been much welcomed in comparison with other analgesics (Spinal and General).

#### **D: Respiratory pain medication:**

**Entonox:** Entonox gas is a pain reliever and a combination of oxygen and nitrous oxide of 50-50, and is the most commonly used in inhaled pain in the United States, and 60% of women use it during labor (Wee, 2004). The analgesia caused by intubation of Entonox

gas is carried out within 30 seconds and its maximum effect is about 2 minutes. Entonox leads to an anorexia, tranquility, and euphoria by affecting the central nervous system and endorphin uptake (Rosen, 2002). The use of this gas, despite the appropriate analgesia in different stages of delivery, had no effect on the neonate Apgar score and postpartum hemorrhage (Salehian, 2010). The average pain intensity in the Entonox group was lower in all hours. The rate of nausea and vomiting in the two intervention stages was higher in the intervention group (Jafarzadeh et al., 2012). In a study, the severity of pain after Entonox was reduced (Esfandiari et al., 2009). By inhaling Entonox, pain is very severe to severe, and normal pain to the mild pain is significantly reduced (Nowrozinia, 2005). Length of the first stage of labor in the Entonox receptor group was significantly shorter than the control group (Mohammad Jaafari et al., 2013). The mean pain of patients at different times in the Entonox group was lower (Parashi et al., 2013). In comparing the effects of Entonox and Tenes, the effect of Entonox from Tenes was greater in reducing the severity of labor pain (Firozeh GHian et al., 2004).

#### **Group 2: Non-Medical Methods**

##### **Thermotherapy:**

The use of heat with a variety of tools for women during labor is easy, inexpensive and available, requires no prior skill and, if applied correctly, has very little side effects (Simkin and Bolding, 2004). It seems that heat stimulates the heat receptors of the skin and deeper tissues and may reduce pain according to the gate control theory. Another possible therapeutic effect is shortening the duration of labor (Habananda, 2004). The level of pain severity in the thermotherapy group was lower in the first and second stages of labor than in the control group and the heat therapy reduced the severity of labor pain (Behmanesh et al., 2008).

##### **Local coldness:**

One of the non-medical practices is the use of ice massage on pressure points.



According to traditional Chinese beliefs, vital energy or (Chi) in the body flows through the channels called meridians and regulates body function. Some of these canals are hollow organs of the body, such as the large intestine, bladder, and heart. According to this theory, these canals can be accessed through points in the body. The Hugo point is one of the pressure points associated with the intestinal energy channel called LI4 (LARGE INTESTINE) and in the dorsal fin, hand is between the index finger and the thumb (Melzack et al., 1977). Ice massage at Hugo's compression point can reduce the severity of labor pain (Safdari et al., 2009). Although the technique of ice massage can reduce the severity of labor pain, it seems that due to the high intensity of labor pain and increased pain during the active phase of labor, this method alone cannot be responsive to the severity of pain during the active phase of labor and needs to be accompanied with other non-pharmacological analgesia or re-occurrence of this procedure during the first phase of delivery (Afzali et al., 2011).

#### **Water Birth:**

One of the potential effects of this method is pain relief and increased relaxation due to the thermal and hydrostatic effects of water, following a decrease in the activity of the sympathetic nervous system and a decrease in the level of catecholamine. Probably part of this reduction is due to an increment in calmness of the patient and partly due to increased central blood volume (Benfield et al., 2001). The use of hot water ponds during labor and delivery, by increasing patient comfort, reducing the severity of labor pain, especially in the early stages and at the onset of the second stage of labor, has a significant role, although there was no statistically significant difference between the two groups in many cases, but, the lower intensity of pain in the delivery group in water was clinically important (Shahpourian et al., 2008). The severity of labor pain decreased and the duration of delivery in stages 1 and 2 in the delivery group in water was much shorter than the

standard delivery method that is probably due to the impact of hot water on the nipple and the stimulation of oxytocin secretion which causes effective contractions, as well as the condition of sitting in water and the effect of hydrostatic water, increases the resilient power of the pelvic tissues as well as a better reduction of the organ (Akbari et al., 2008).

#### **Touch and Massage:**

Massage involves touching, rubbing and rubbing with a hand or other device that improves circulation and excretion of the body (Abasi and Abedian, 2007). Massage through the stimulation of the peripheral nervous system and through the modification of visceral functions altered the physiological parameters, and by stimulating the nerve fibers and local stimulation of endorphins, it prevents pain transmission (Salari et al., 2005; Sinha, 2001; Field et al., 1997). Massage therapy, while reducing labor pain, reduces the need to use analgesics (Nabb et al., 2006), and the process of delivery in the field as a pleasant and enjoyable event (Williams and Mitchell, 2007). Massage of abdominal, sacral, shoulder, or back and waist areas for 30 minutes significantly reduce pain and anxiety in the active phase of labor (Chang et al., 2002). Massage led to decreased anxiety and worries, reduced depression and nostalgia and labor pain (Khodakarami et al., 2007). In a study back massage reduced the pain of the first stage of labor (Abbasi et al., 2007). Comparison of two methods of surface stroking massage and vibration massage on labor pain during labor. Both types of massage techniques in the T10-L1 region were effective in relieving the pain in the first stage of labor, and the severity of back pain was lower in the experimental groups and the highest pain relief was in the third stage (Kaviani et al., 2011). In a study massage significantly reduced the delivery length at the end of the first stage of labor and reduced the severity of labor pain (Khavandizadeh Aghdam et al., 2014).

**Acupressure:**

Acupressure is based on the principles of acupuncture (Waters and Raisler, 2003). In the study of Azgali et al 2010, the pressure on Hugo point has been effective in reducing labor pain (Ozgoli et al., 2010). The use of acupressure alone cannot reduce the pain of labor and needs to be accompanied along with noninvasive pain medications (Heidari et al., 2008). Acupressure at the Hugo or LI4 point reduced the severity of labor pain (Hamidzadeh et al., 2011). The effect of pressure on spatial 6 or SP-6 was effective on pain intensity 2 minutes after intervention. However, there was no significant difference in the stages after 30 minutes of intervention and 30 minutes after intervention (Samadi et al., 2010). The comparison of two-stage acupressure comparisons in two points of bile spray 21, GB-21 and SP-6 on the intensity of active phase of active phase of labor showed that there was a significant difference between the severity of labor pain before intervention with immediate, 30 and 60 minutes after intervention in the three groups (Moradi et al., 2012). In a study indicated that there was a significant difference between the intensity of SP-6 at the SP-6 point before and after the intervention up to 8 cm dilatation, but no difference was observed after this dilation (Safdari Dehcheshmaei et al., 2009).

**TENS:**

One of the methods used to control labor pain is the use of an electrical stimulator for the lumbar sensory organs through the skin which is known as TENS. The history of the use of the TENS equipment in the field of midwifery by 1986 was carried out by the Düsseldorf Test in Germany in controlling labor pain (Go – Aleccander et al. 1990). Theoretical study and colleagues in 2000 were compared in three groups of with TENS circuit, without TENS circuit and control group in terms of pain intensity in the first stage of labor. The results showed that the severity of pain in the first stage of labor was significantly decreased in the group with TENS circuit

compared to the other two groups. The total length of the active phase of the first stage of labor and the second stage of labor was shorter in the TENS group with flow than in the other two groups (Nazari et al., 2000). The use of Entonox compared to TENS resulted in a further reduction in the intensity of the active phase of the active phase of labor (Pazandeh et al., 2004).

**Intravenous Injection of Sterile Water:**

Different studies have shown the effectiveness of intradermal injection of 0.1 ml distilled water in the Michaelis Rhomboid region (A rhizome-shaped space in the pelvis that consists of the posterior upper thighs and gluteal muscles and the spinal cord at the lower end of the spine) on reducing labor pain (Martensson and Wallin, 1999). The main mechanism of the effect of intradermal injection of distilled water on low back pain during labor is unknown; however, it may be possible to reduce the back pain during labor by stimulating the androgenic opioid system, like the mechanism of the acupuncture effect, or through the Gate Control theory (Wiruchpongson, 2006). The only side effect of this is pain for 20-30 seconds at the injection site (Martensson and Wallin, 1999). So that women refrain from reintroducing it despite lower back pain (Fogarty, 2008). Therefore, it is recommended to use subcutaneous injection instead of intradermal injection (Martensson and Wallin, 1999). In a study the mean of pain intensity in the test group decreased significantly after 10 and 45 minutes after administration of distilled water compared with the placebo group. But in the 90th minute, there was no significant difference between the mean pain severities in the two groups. Subcutaneous injection of distilled water did not have any effect on the type of delivery and the satisfaction level of pain relief in the test group was higher than that of the placebo group (Hosseini et al., 2010). Subcutaneous injection of distilled water seems to be used as an effective and safe way to relieve pain. The subcutaneous injection of distilled water in the sacrum region did not reduce the pain of the sacrum area, and only the increase in pain caused the

pain to be slower. Many pain relief techniques such as stimulation of the sacrum area or massage or local injection inhibit the transfer of pain to the posterior horn. This study only reduced the pain (Vakilian, 2004).

#### **Music and Audio through Hearing:**

Music has many therapeutic, physical and psychological effects, and its use to relieve pain is one of the easiest methods of deflection (Ilkhani, 1990). Listening to favorite music leads to a muscle relaxation, distraction of thought from pain, reduces pain intensity and reduces the transmission of pain messages to the central nervous system (Bral, 1998). In the study of (Safdari et al., 2009), the mean pain intensity after intervention in dilatations 4, 6 and 8 cm in the music group was lower than the control group. Listening to sedative music reduces the anxiety and pain of women in childbirth (Nanbakhsh et al., 2009). The sound of the Qur'an reduced the severity of labor pain and the length of the first stage of labor (Bayrami et al., 2014).

#### **Mother's Movement and Changing Position:**

Different studies have been undertaken in which women have been in position during the second stage of labor, such as lithotomy vertical situations like cats or knees, squatting, the use of birthright, etc. (Lupe an Gross, 1986; Kakol, 1989). Changing the status causes more participation in the body, control over your body, less anxiety, greater self-esteem (Williams et al., 1980; Otte, 1998), and as a result of the natural progression of delivery (Roberts et al., 1981). The vertical position reduces the pain, increases stiffness, reduces the risk of pressure on the lower inferior vein and more effective contractions of the uterus, and increases the risk of postpartum hemorrhage compared to the rest. Sleeping position relative to the vertebra increases the number of episodes, episiotomy, an abnormal pattern of fetal heart rate, and decreases in fetal infarction in the arterial blood stream compared to other conditions (de Jonge et al., 2009). Maternal delivery (labor) status was compared in three cases:

lithotomy, knee and squatting, which showed no significant statistical difference between the three groups and concluded that the mother should be free (Amiri Farahani et al., 2012). In a study knee position was associated with less pain and the duration of the second stage of labor was shorter than that of the sitting position (Azhari et al., 2013). The study showed that the mean pain in the non-recumbent group was lower than the lower back group (Khavandizadeh Aghdam et al., 2009). The amount of back and stomach ache in sitting position was less than resting position, and the severity of pain was increased by changing the position from sitting to resting position (Akhlaghi et al., 2011).

#### **The Presence of Comrade:**

In the hospitals of our country, the patient's companions often do not have the right to attend the patient's bedside and accompany him, and this limitation is more in the labor sector, especially in the delivery room. However, a supportive companion can help reduce mother's anxiety, contractile activity and uterine flow, and make her mother happy (Kennel et al. 1991). The presence of the compound increases the production of oxytocin and increases the threshold of pain in the patient, thereby modifying the pattern of labor pain and reducing labor length (Taylor et al., 2000). In the study of Javadnoori et al (2000), in the protected group, the length of active phase of labor, the need for exacerbation of labor with oxytocin was lower; the severity of labor pain and delivery by cesarean section was lower. The mean duration of the active phase of labor and the mean duration of the second stage of delivery in the support group by the midwife decreased (Khavandizadeh et al., 2015). Findings of a study showed that during pregnancy, the individual's support significantly reduced apparent anxiety, early onset of breastfeeding and increased maternal satisfaction with delivery. In terms of active phase of labor, there was no significant difference between the second stage of labor, the first infant upgrade and

the pain between the experimental and control groups (Nobakht et al., 2012).

### **Respiratory Techniques:**

One of the most influential factors in the use of respiratory patterns in childbirth is the maternal mental health support of the midwife. The use of respiratory techniques at certain times of labor and delivery may give one who gives birth to the baby the feeling that the path of the birth of his child follows a natural and controlled path and everything is under the control of his midwife (Yildirim and sahin, 2004). The use of respiratory techniques is one of the effective ways of controlling noninvasive pain, which improves the relaxation and leads to a communication increment with the patient during labor and delivery (Yildirim and sahin, 2004). The main purpose of teaching respiratory techniques is to divert the thought of the one who gives birth to the baby from pain of labor and these methods are based on a sensory principle (Chen et al., 2001). In a study mothers who had used respiratory and massage techniques for their delivery stages were significantly less pain intensive than controls (Foroud et al., 2006). The results of a study showed that the use of respiratory techniques reduces the severity of pain and pain in the first stage of labor. However, the mean of labor pain in the second stage was not statistically significant between the two groups. 80% of the research units believed that performing respiratory techniques during labor can help with pain (Hasanpour Azghadi and Salari, 2006).

### **Reflexology:**

Reflexology or therapeutic reflection is a branch of a holistic and non-invasive method, and based on this, there are areas of reflection on the palms of the hands that match any part of the body, such as muscle, nerve, gland, and bone. . In other words, the legs represent and represent a map of the whole body. These reflections can be found on the soles of the feet, fingers, and along the inner and outer sides of the foot (Tiran and Chummun, 2005). Reflexology during pregnancy is used to treat a variety of physiological problems such as nausea and

vomiting, constipation, pregnancy, fatigue, headache and breastfeeding. Major theories about how reflexology works, including pain gate control theory, neural impedance theory, increased endorphins secretion, and enkfalins, and consequently pain control (Molart, 2003; Pourghaznein and Ghaffari, 2007; Tipping and Mackerth, 2000). In a study pain intensity in the reflexology group was less than the other two groups, routine care and support (Dolatian et al., 2011). In the 2012 study by Jenabi et al, in the group receiving the massage, the severity of labor pain decreased by reflexology but did not affect the length of labor (Jenabi et al., 2012). In the intervention group with reflexology, the severity of labor pain was reduced (Mirzaei et al., 2010).

### **Relaxation:**

Among the methods of relaxation, meditation or TM: Transcendental Meditation is one of the most effective methods, and the relaxed mood that it creates is not only controlled by pain, but also increases the ability to deal with physical and psychological disorders. In this method, once and for all, 10-15 minutes each day, the stresses of daily life and the relaxation of muscles with deep breathing are depleted (Navidi, 2008). The results of a study showed that the pain and length of the first phase of delivery in the intervention group were lower than the control group at the beginning of the first, second and third hours of active phase of labor (GolyanTehrani et al., 2006). In a study Mothers who were directly supported and calm-supportive training had about 90% of normal births, of which 61% were in the control group (Bahri Binabaj et al., 2004). Mothers who were under direct support and calm-supportive training had about 90% of normal births, of which 61% were in the control group (Bahri Binabaj et al., 2004).

### **Uriculotherapy:**

Uriculotherapy as opposed to acupuncture is a non-invasive and acceptable method by the patient. In this method, external ear stimulation is used. Using the ear, almost all the anatomical points of the

body, as well as different parts of the brain, the spinal cord, and the central nervous and peripheral nerves can be achieved. Uriculotherapy can be effective in controlling pain and also balancing the levels of hormones and neurotransmitters in the body and the brain (Ismaili, 2011). It also stimulates the internal organs of the body, such as the uterus and the ovary. Improving the overall circulation of the body, deep relaxation, stimulating the brain and improving the immune system are other benefits of uriculotherapy (Cabyoglu *et al.*, 2006). In the study of Rastegarzade *et al.* (2015), the mean score of pain in different curettage was significantly decreased in the group receiving the uriculotherapy.

### DISCUSSION

The purpose of this study was to evaluate the efficacy of various treatments used for pain relief and progression of labor in Iranian studies from 2000 to 2016. The results of 5 clinical trials showed that aromatherapy and massage with lavender essential oil had been effective in reducing labor pain (Mohammadkhani Shahri *et al.*, 2012; Sobhani, 2007, Vakilian *et al.*, 2012; Alavi *et al.*, 2010; Seraji and Vakilian, 2011). As Tyran and Chomon argue, aromatherapy causes relapse and stimulates sleep and increases endorphin secretion, thus increasing the ability of the mother to cope with painful stimuli (Tiran and Chummun, 2004). In the study of Azgali *et al.* 2016, in both groups of clove and peppermint, the severity of labor pain was decreased in the first stage, but pain reduction and anxiety levels were higher in the cluster group (Ozgoli *et al.*, 2016). Perhaps this difference is a kind of mechanism of the drug. An anxiety reduction mechanism in lavender is a reduction in cortisol levels, but clove has analgesic effects by decreasing prostaglandins (Mirzaei *et al.* 2009; Hoodgar *et al.*, 2011). Two studies have investigated the effect of peppermint essential oil on pain reduction, which was proved in both papers as effective (Ozgoli *et al.*, 2013; Fazel, 2005). Three studies have investigated the

effect of rose water scent. In the study of Roozbehani *et al.* 2015, even though the reduction in labor pain was statistically significant, but it wasn't clinically significant (Roozbehani *et al.*, 2015). In a study by Wahhabi *et al.* 2016, only 10-8 cm dilatation was effective. It seems that in the dilatation of 10-8 cm, the pain has increased sharply due to the fetal drop and embryo pressure, as well as the greater dilation of the cervix and this reduction in pain intensity in the intervention group is more evident (Vahabi *et al.*, 2016). In a study by Kheirkhah *et al.* 2013, Inhalation of the essence of the flower of Mohammadi was effective on active phase anxiety (Kheirkhah *et al.*, 2013). In a study by Kaviani *et al.* 2014, aromatic syrup was used as an inhaler with an emulatur. In this study, only 30 minutes after the intervention, pain reduction was evident and was not significant at 60 minutes after intervention (Kaviani *et al.*, 2014). This can be due to the induction effects of the drug at the start of treatment. Due to limited studies in this field, further studies are recommended. The results of the study of Alavi Fili *et al.* 2017 showed that the use of Yasmine oil, either as a scarf or as a massage, can reduce labor pain (Alavi Fili *et al.*, 2017). In the study of Turk Zohrani *et al.* 2016, Esfand (espond) smoke has been associated with cervical cramps and onset of labor, and has not had any specific complications. In this study, the intervention group, 48 hours after the intervention, the score of the scrotum was increased so that they had labor (childbirth) in 48-72 hours (Zahrani *et al.*, 2016). The Vesi sine existed in the Espand plant increases the secretion of prostaglandins, which then causes pain and causes early onset of labor (Rachana *et al.*, 2001). In the study of Hekmatzadeh *et al.* 2012, the extract of the egg was effective on the length of the active phase and the severity of labor pain (Hekmatzadeh *et al.*, 2012). This egg effect may be due to the presence of tannin and anthol in it that has anti-anxiety and anti-anxiety effects. In the study of Azhari *et al.* 2014, the intensity of the active phase pain was reduced in the first stage in the intervention group with oral

saffron capsule (Azhari et al., 2014). Probably because of the antioxidant effects of saffron and reduce pain. Since plant-based treatments do not have a complication for mother and baby, they can be used instead of chemical drugs. Although studies in this area are very limited, it is recommended that further studies be conducted on this subject. There were 4 clinical trials in the field of pethidine administration. In the study of Soroshti et al 2013, the severity of uterine contractions in the massage group was lower than the two groups of pethidine and control (Sereshti et al., 2013). The difference in pain reduction with pethidine compared to massage may be due to insufficient dose of pethidine, since in higher dose studies, its analgesic effect was significant. In the study of laloha et al 2017, there was no correlation between pethidine injection and progress in the stages of delivery (Lalooha et al., 2017). Since the course of labor in a person with a rupture of water bag and semen is different, this study did not differentiate between them. That was one of the weak points of this study. In the study of Kamyabi et al 2003, pethidine reduced the duration of delivery (Mirtimouri et al., 2016), but in the study of watchmaker and colleagues, 2007, pethidine had no effect on the process of delivery (Saatsaz et al., 2003). Four studies have investigated the effect of hyoscine. In the study of Mirteymori et al 2016, the severity of pain in the first stage of labor in the case group was lower than that of the control group, but it was not statistically significant (Mirtimouri et al., 2016). Macvandy et al 2011 concluded that hyoscine suppository can be used as an effective medication to accelerate the delivery process, but does not reduce the severity of labor pain (Makvandi et al., 2011). Perhaps this difference is due to differences in how hyoscine is prescribed. In a study by Fardi Azar et al 2013, in comparing hyoscine and atropine in reducing labor pain, both drugs reduced the delivery pain, but hyoscine reduced pain more than atropine (Fardiazar et al., 2013). This difference could be due to the amount of two-fold hyoscine administered (40 mg) in

her study. In the study of Ebrahimzadeh Zagmi et al. 2012, two hyoscine and promethazine drugs did not show any significant difference in reducing the severity of labor pain (Ebrahimzadeh Zagami et al., 2012). Also, in the study of Delaram et al 2002, the atropine-promethazine mixture had no effect on the duration of delivery stages (Delaram et al., 2002). In the study of Saatsaz et al 2007, atropine-promethazine was effective in reducing the duration of active phase (Saatsaz et al., 2007). Mansouri et al 2007 concluded that rectal indomethacin significantly reduces labor pain, but prolongs the course of labor (Mansouri et al., 2007). This can be due to its tocolitic effects. Therefore, there is a controversy comments about the use of systemic chemical anxiety drugs disputes, and more studies are needed with higher sample sizes. In four studies that examined the effects of regional anesthesia drugs, in the three studies, the severity of labor pain was lower in the case group than in the control group, and none of these changes required therapeutic interventions in the hemodynamic mothers (Forouzesh Fard et al., 2014; Mokaram Dori et al., 2012; Amidi et al., 2001). Only in the study of Yeganeh 2004, there would be no effect on the length of delivery stages (Yeganeh, 2004). Therefore, you cannot be advised to do these methods. Six studies have been designed to evaluate the effect of Entonox. In all of these studies, the severity of pain and the length of delivery were reduced (Jafarzadeh et al., 2012; Esfandiari et al., 2007; Nowrozinia, 2005; Mohammad Jaafari et al., 2013; Parashi et al., 2013; Firozeh et al., 2004). There are some hypotheses in this regard that nitrous oxide stimulates the release of endogenous endorphins and possibly dopamine in the brain, and induces the effects of euphoria and stimulates pain in the brain (Martensson and Wallin, 1999). The most common side effects associated with Entonox gas were drowsiness, dry mouth, dizziness and headache respectively. In the study by Bahmanesh et al 2008, Thermal Therapy reduced the severity of labor pain.

Regarding the duration of delivery stages, the findings showed that the mean duration of the first and third stages of labor in the thermotherapy group was shorter and the mean duration of the second stage was not different in the two groups (Behmanesh *et al.*, 2008). Perhaps the reason for the lack of effect on the length of the second stage is that at this stage only in the perineal area, the bag of warm water was used and it was not used in the regions of the waist and abdomen.

In two studies, ice massage reduced the severity of labor pain and length of stages of labor (Safdari Dehcheshmeh *et al.*, 2009; Afzali *et al.*, 2011). Gateway control theory of pain can explain the effect of ice massage.

In the study of Akbari *et al.* 2008, the length of delivery in stages 1 and 2 was much lower in the delivery group in water than in the delivery method. And the rate of use of analgesics and oxytocin was lower in water delivery (Akbari *et al.*, 2008). In the study of Shahpourian *et al.* 2008, the intensity of pain in the first 15 minutes, in the delivery group in water, decreased slightly, in other words, it was different from the control group that increased. At the beginning of the second stage of labor, the severity of pain in the delivery group in water was significantly lower than the control group (Salari *et al.*, 2005). In the context of the study of the effect of touch and massage, four studies were conducted. In all four studies, massage reduced the severity of labor pain (Khodakarami *et al.*, 2007; Abbasi *et al.*, 2007; Kaviani *et al.*, 2011; Khavandizadeh Aghdam *et al.*, 2014). Therefore, massage in reducing labor pain is a safe, safe, yet inexpensive technique to reduce labor pain.

Six studies evaluated the effect of acupressure. The results of two studies showed that acupressure at the Hugo or LI4 point reduced the severity of labor pain (Ozgolli *et al.*, 2010; Hamidzadeh *et al.*, 2011). The study of Heidari *et al.* 2008 showed that acupressure cannot be considered as an effective way to reduce the severity of labor pain. But it shortens

delivery time (Heidari *et al.*, 2008). The study by Moradi *et al.* 2012 concluded that the use of acupressure could be an effective way to reduce the severity of labor pain, and the two experimental groups differed in pain reduction from the control group, however, two acupressure points (GB-21 and sp-6) did not differ significantly in terms of reduction in pain intensity due to the two-step intervention (Moradi *et al.*, 2012). This was due to the same mechanism of acupressure and unit function in the practice of acupressure in research. Similarly, the results of the study by Safdari *et al.* 2009 were same (Safdari Dehcheshmaei *et al.*, 2009). In the study of Samadi *et al.* 2010, pressure at sp-6 point, except at a time interval of 2 minutes after intervention, increased the severity of labor pain at later stages (Samadi *et al.*, 2010). This difference in the results of studies can be related to the amount of pressure on the acupressure points in the research units and that the level of anxiety and fear of the subjects should be measured before entering the study, because it affects the severity of pain. In a study by Heidari *et al.* 2008, at intervals of contractions, the pressure was 7 seconds for the pain to slow down and then for two seconds of rest. But in the study of Moradi *et al.* 2012, the onset of the pressure began with the onset of contractions, and the duration of the pressure and spacing was the same in all people. Various studies have shown different results in this regard, and more studies are needed. In the study of Nazari 2000, the severity of pain in the first stage and the length of the active phase of the first and second stages of labor in the TENS group were reduced compared to the other two groups (Nazari *et al.*, 2000). In the study of Pazandeh *et al.* 2004 which addressed to the comparison of the effects of Entonux and TENS gas, Entonux had a greater reduction in the intensity of the active phase of labor than TENS. Although pain intensity was higher in TENS group, pain relief with Entonx was better than TENS (96.7% of mothers' satisfaction), but TENS also attracted the

satisfaction of mothers (80% of mothers) (Pazandeh et al., 2004).

In Hosseini et al 2010, subcutaneous injection of distilled water was effective in reducing labor pain by up to 45 minutes (Hosseini et al., 2010). But in the study by Vakilian et al. 2004, subcutaneous injection of distilled water only slowed the course of pain and had no effect on the severity of labor pain (Vakilian, 2004). Perhaps the reason for the lack of effect in this study was less than 0.1 cc distilled water than the previous study. But in Hosseini et al 2010, it was 0.5 cc. Researchers believe that the higher the injection of distilled water leads to more skin-borne skin, the better the analgesic effect (Bruggemann et al. 2007).

Three studies examined the effect of music therapy. In all three studies, the severity of labor pain and the duration of delivery were reduced (Safdari Dehcheshmaei et al., 2009; Nanbakhsh et al., 2009; Bayrami and Ebrahimipour, 2014). This issue is justified by the gate control theory of pain.

Four studies examined the movement of the mother and its position change. In three studies, sitting conditions were preferable to sleeping (Azhari et al., 2013; Khavandizadeh Aghdam et al., 2009; Akhlaghi et al., 2011). But in the study of Amiri Farahani et al 2012, the severity of pain was felt to the same extent in three groups: lithotomy, squat, and knee pain. But women preferred to choose most of the vertical and curved positions, because they felt more comfortable (Amiri Farahani et al., 2012). In a study by Khavandizadeh Aghdam et al 2015, a registered or midwife trained in labor would reduce the length of the active phase of labor and the duration of the second stage of delivery (Amiri Farahani et al., 2015), which coincided with the study of Javad Noori et al 2008 (Javadnoori et al., 2005). In the study of Nobakht et al 2012, the support of the person accompanying the delivery caused anxiety reduction, but had no effect on the length of the stages of labor (Nobakht et al., 2012). Perhaps the lack of this effect was due to the fact that in other studies he had used trained midwives or

professional supporters, but in this study a person was with a relative of one who she just got a baby (has accouchement). The World Health Organization states that mothers should be supported during labor and delivery in order to reduce their fear and anxiety (170).

Two studies were conducted on the effects of respiratory techniques. In both studies, the severity of labor pain was lower in the respiratory techniques group (Foroud et al., 2006; Hasanpour Azghadi and Salari, 2006). In the study of Hassan Pourazghadi et al 2006, the mean of labor pain in the first stage of labor in the 3-4 cm dilatation was significantly decreased in the experimental group. However, the mean of labor pain in the final stages was not statistically significant (Hasanpour Azghadi and Salari, 2006). The results of the studies indicate that in the transitional phase and when the head of the fetus is near the perineum, the woman loses control, has a great deal of discomfort and pain, and becomes anxious and irritable and therefore, it has less ability to apply relaxation techniques, which probably does not reduce pain significantly.

Three reflexology studies were conducted. In all three studies, the severity of labor pain was reduced (Dolatian et al., 2011; Jenabi et al., 2012; Mirzaei et al. 2010). The efficacy of reflexology therapy may be explained in the presence of scientific concepts such as peripheral vasodilatation for the localization of localized toxin accumulation and the reduction of pain sensation associated with pathways in the neural pathway in the gateway control theory of pain (Tiran and Chummun, 2004).

In two studies, the severity of labor pain in the first, second and third hours of active phase of labor and the length of stages of labor in the intervention group was reduced by meditation relaxation (GolyanTehrani et al., 2006; Bahri Binabaj et al., 2004).

In the study of Rastegarzadeh et al 2015, the mean scores of pain in different dilatations were significantly decreased



(Rastegarzade et al., 2015). Therefore, Ericulotherapy is an easy, safe, low-cost, and non-complicated procedure. But due to the lack of sufficient studies in this area, it is not possible to decide definitively.

This systematic review has some limitations that need to be addressed. The most important limitation was the lack of access to all papers and reports that were not published. The next problem was the lack of proper, high-quality and usable articles, as well as limited articles on herbal medicines and non-pharmaceutical methods that limited the possibility of more accurate and thorough comparisons and analyzes. The results of this study can be used to improve the health of mothers and infants, to reduce the number of standard cesarean sections, to improve the quality of health services and to choose the appropriate treatment methods for reducing the severity of pain and progress of labor and aware of the complications of the treatments used.

#### **Conclusion:**

An overview of clinical trials on drug and non-prescription treatments suggests multiple treatments for reducing pain and progression of labor. The most studied non-medical treatment was acupressure. In most of these studies, its effectiveness was noted on the severity of labor pain and its progression. Among medical treatments, after Entonox gas, the drug that has been mentioned in most studies for its efficacy is hyoscine. The most common side effects associated with Entonox gas were drowsiness, dry mouth, dizziness and headache respectively. For other chemical drugs, the number of studies is limited to their application. Among the herbal medicines, all the studies conducted on the effectiveness of the lavender plant are either referred to as scent or massage. For other plants, more and more studies are needed.

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