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Labor Pain: A Narrative Review of Music in Pain Management

Azam Mazroie Sebdani[1], Shiva Mostafaei[2, 3], Nazi Abdollahpour[4]

[1]Department of Psychiatric, Alzahra Hospital, Isfahan University of Medical Science, Isfahan, Iran
[2]Specialist in Obstetrician and Gynecology, Khatam-Ol-Anbia Specialty and Subspecialty Hospital, Tehran, Iran
[3]Upper River Valley Hospital, New Brunswick, Canada
[4]School of Nursing, Iran University of Medical Sciences, Tehran, Iran

Correspondence to: Shiva Mostafaei.
Email address: *msn_sho@yahoo.com*

Abstract: **Labor is a painful experience for almost all women. Different strategies include non-pharmacological interventions and pharmacological interventions have been developed for labor pain relief. This review conducted to identify the evidence based effects of music therapy on labor pain.**
Methods: A narrative review of the literature was undertaken between October 2015 and April 2016, which involved searching several electronic databases: Cochrane Library, JSTOR Music Collection, Science Direct, Web of Knowledge, EMBASE, PubMed, Google and Google scholar. Three review authors independently assessed trials for inclusion and extracted data. Data were checked for accuracy.
Results: Eleven studies met the inclusion criteria. All were randomized clinical trial. Most study used visual analog scale for measuring participant pain. In all study, mothers who listened music during labor experienced lower level of pain in compared to women who not.
Conclusion: Music is a non-invasive, simple, cheap, safe, and effective method for reliving labor pain. Clinicians should be considered this to relief pregnant women pain during labor.

Keywords: **labor pain, complementary therapy, music therapy, review article.**

1. INTRODUCTION

Pain is an unpleasant sensory and emotional experience, which is a consequent of real or potential damages to a tissue [1]. Labor is the active process of delivering a fetus and is characterized by regular, painful uterine contractions [2]. Labor is a painful experience for almost all women [3]. In one study in 2007, Onha et al., examined the pain perception among 181 parturient in Nigeria with using 0 to 10 numerical pain scale. The mean intensity of pain reported by the participants in Onhe study was 7.7. Results of Onhe et al., study also showed that 22.1% participants received some pain relieving drug during their labor while 77.9% did not [4]. In other study in this regards by Khaskheli & Baloch, 66% of patients reported labor as an exhausting painful experience [5]. Factors such as lower socioeconomic class, rural population, multiparous women, prior knowledge of labor pains, spontaneous labour, use of pharmacological agents, and co-operative staff attitude affected participant's experiences in Khaskheli & Baloch study [5].

The evolution of pain during the labor is associated with ischemia of the uterus during contractions, distension of the cervix and low uterine segments and tissue damage in the pelvis and perineum. The impulses thus generated during labor are conducted into the spinal cord by afferent C fibers from the cervix and lower uterine segments, and by afferent A delta and C fibers from the pelvis, pelvic organs and perineum [6, 7, 8, 9]. In the other definition, labor pain has two components: visceral and somatic pain. Visceral pain occurs during the early first stage (mediated by T10 to L1 spinal

segments) and the second stage of childbirth (mediated by T12 to L1, and S2 to S4 spinal segments), and somatic pain which occurs during the late first stage and the second stage. Labor pain is distressing event and it produces undue physiological and psychological side effects both to the mother and the baby such as hyperventilation, increased oxygen consumption, increased gastric acidity, decreased placental perfusion, diminished uterine perfusion, increases cardiac output and blood pressure, long-term excitement imbalance, long-term emotional stress [11, 12]. So management of labor pain is imperative. To reach this aim, different strategies include non-pharmacological interventions (that aim to help women cope with pain in labor) and pharmacological interventions (that aim to relieve the pain of labor) have been developed [12, 13]. Pharmacologic technique to manage labor pain can be broadly classified as either systemic or loco regional. Systemic administration includes the intravenous, intramuscular, and inhalation routes. Regional techniques consist of epidurals, spinals and combined spinal-epidurals, and are the most popular modalities for analgesia for labor [14].

Although systemic medications and regional anesthetics have become popular for pain management in recent years, however non pharmacological techniques that do not involve medication have also been tried in different centers with varying success. One of them is music therapy. This review conducted to identify the evidence based effects of music therapy on labor pain.

2. METHODS

The aim of present study was to conduct a systematic review of the efficacy of music therapy on labor pain. A narrative review of the literature was considered the appropriate method to answer the research question. Taking this approach, a narrative review of the literature was undertaken between October 2015 and April 2016, which involved searching several electronic databases: Cochrane Library, JSTOR Music Collection, Science Direct, Web of Knowledge, EMBASE, PubMed, Google and Google scholar. The following keywords were used: Music therapy, pain, intensity, labor, childbirth, pregnancy, experiences. Post gathering of the main body of literature, the papers were grouped in order of appropriateness. The main strengths and limitations of each paper were summarized. Titles and abstracts were examined for relevance to the review question, accessibility and English and Persian language. The review identified 11 papers. Three review authors independently assessed trials for inclusion and extracted data. Data were checked for accuracy. Two review authors independently assessed trial quality. All studies were approved by local Ethics Committee, subjects' informed consent was obtained and all provided full inclusion and exclusion criteria. Randomization was clearly described in all of the studies.

3. RESULTS

We included 11 studies in the review. Simavli et al., examined the effect of music on labor pain relief, anxiety level and postpartum analgesic requirement among 156 primiparous women who expected vaginal delivery. Participants were randomized into 2 groups; music group (n = 77) or a control group (n = 79). Women in the music group listened to music during labor. Pain intensity level was measured using a Visual Analogue Scale (VAS) (0-10 cm). Results of Simavli et al., showed that mothers in the music therapy group had a lower level of pain compared with those in the control group at all stages of labor ($p < 0.001$). They also reported that postpartum analgesic requirement significantly decreased in the music therapy group ($p < 0.01$) [15].

Dehcheshmeh & Rafiei in a comparative study examined the effect of music therapy and Hoku point ice massage on labor pain. They 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. They measured labor pain at the beginning of the active phase (4 cm cervical dilation) and before and after each intervention (at dilations 4, 6, and 8 cm), with using VAS. At the beginning of the active phase in Dehcheshmeh & Rafiei study, the mean of VAS scores were 5.58 ± 1.29, 5.42 ± 1.31, and 6.13 ± 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 ($P < 0.05$). Not using sample size formula is limitation of Dehcheshmeh & Rafiei study [16].

Liu et al., examined the effects of music therapy on labor pain and anxiety in Taiwanese first-time mothers. They randomly assigned sixty primiparas expected to have a normal spontaneous delivery to either the intervention group (n = 30) or the control group (n = 30). The intervention group in Liu et al., study received usual care and music therapy, whereas women in the control group received usual care only. They used VAS for measuring participant's pain level. Results of Liu et al., showed that the women in intervention group compared with the women in control group experienced lower pain significantly. A limitation of Liu et al., study is small sample sizes [17].

Taghinejad et al., compared the effect of music and massage on labor pain. They randomly assigned 101 primigravidae women who were hospitalized for vaginal delivery into two groups of either massage (n = 51) or music (n = 50) therapies. They used VAS for measuring participant's pain level. Results of Taghinejad et al., study showed that music therapy decrease labor pain as a non-pharmacological method. On limitation for Taghinejad et al., study is lack of control group [18].

Hosseini et al., examined the effect of music on labor pain. The subjects of Hosseini et al., study were 30 women, which allocated in two experimental and control group. The experimental group in Hosseini et al., study listened to a relaxing music for 30 minutes in each hour for a two-hour period and the control group was not exposed to music during this period. They used VAS for measuring participant's pain level. Results of Hosseini et al., study showed that music therapy decrease labor pain. Hosseini et al., have several limitations. Small sample size and not using randomization in time of group assigned is most important of their limitation [19].

In a well-designed study, Phumdoung & Good examined the effect of music on labor pain. Randomization with a computerized minimization program was used to assign women to a music group (n = 55) or a control group (n = 55) in Phumdoung & Good study. Women in the intervention group listened to soft music without lyrics for 3 hours starting early in the active phase of labor. They used VAS for measuring participant's pain level. Results of Phumdoung & Good study showed that music therapy decrease labor pain significantly [20].

Leodoro et al., examined the effects of soothing music on labor pain among Filipino mothers. A quasi-experimental design with random assignment was utilized in Leodoro et al., study. Fifty subjects were assigned into either music (n=25) or non-music group (n=25) randomly. They used VAS and behavioral rating scale for measuring participant's pain level. Women in the control group received the usual standard routine of care while the music group was provided with the usual standard routine of care and was exposed music therapy for 30 minutes. Findings of Leodoro et al., revealed that women in the music group had statistically significant reduction in reported pain levels compared to those in the control group [VAS ($t=7.317$, $p<0.05$) and BRS ($t=8.128$, $p<0.050$)]. A limitation of Leodoro et al., study is small sample sizes [21].

Fulton examined the effects of music therapy on physiological measures, perceived pain, and perceived fatigue of women in early labor. Participants in Fulton study were 40 parturients undergoing labor induction procedures that randomly assigned to an experimental group (N=20) or control group (N=20). Results of Fulton study showed that self-reported pain and fatigue were significantly lower for the music group in compared to control group. A limitation of Leodoro et al., study is small sample sizes [22].

Safdari et al., examined the effect of music on labor pain in the active phase of the first stage of labor in primiparous women in a single blind randomized controlled trial. They assigned participants to an experimental group (N=30) or control group (N=30). They used VAS and behavioral rating scale for measuring participant's pain level. Women in the music group listened to their desired music via head phone intermittently each 30 minute during the active phase of labor. Results of Safdari et al., showed significant difference between the severity of the pains pre and post music intervention in 4, 6 and 8 cervical dilation ($P<0.001$) [23].

Ajori et al., examined the effect of music therapy on pain and duration of Labor. They randomly assigned 99 women at 38 weeks or greater with spontaneous labor to fast music, slow music, and control groups. They used VAS for measuring participant's pain level at the beginning of the active phase and then every 1 hour. Results of Ajori et al., showed that participants who listened to fast music reported lower VAS scores at all time after music therapy, except fourth hour, and in the first and fifth hours, this differences were significant. In slow music group VAS scores, only in fifth hour were significantly lower than those of control group [24].

4. DISCUSSION

Labor pain is a complex phenomenon with sensory, emotional and perceptive components and can be arguably the most severe pain that some women may experience in their lifetime [11, 25]. Labor pain affected by several factors such as psychic (behavioral), mood (motivation), cultural (education), and organic (genetic constitution) [26]. Management of labor pain represents an important challenge for both health care providers and pregnant women entire the world [13].

The aim of this narrative review was to find out whether music could reduce labor pain. The 11 studies included in the review showed significant difference between pain level in women who listened to music and those who did not. To our knowledge, review study similar to our study is very limited. In the one study in 2014, Hollins Martin reviewed the therapeutic effects of music upon childbearing women (benefits in terms of reducing stress, anxiety, labor pain and depression) and neonates (outcome). Results of Hollins Martin review showed that use of music during labor reduce neonates number of days to discharge, reduce neonates pain response behaviors, increase neonates weight gain, improve Brazelton scores, improve parent/infant intimacy, improve neonates oxygen saturation, increased neonates formula intake, neonates stabilize vital signs and increase parental reports of calmed infants. They also reported that music decrease mother pain perception during labor [27]. Non pharmacologic methods such as acupuncture, ice massage, hydrotherapy, hypnosis, religion, doula, water immersion, massage, ambulation, positions, transcutaneous electrical nerve stimulation (TENS), aromatherapy, herbal remedies and music therapy to relieve pain during labor, when used as a part of hospital pain relief strategies, provide significant benefits to women and their infants without causing additional harm [28-33]. Music therapy is one example of no pharmacological pain relief methods. According to the American Music Therapy Association definition "music therapy is the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program" [34]. Although actual mechanisms of action of music therapy in pain relief are not well defined but a number of theoretical mechanisms are discussed in the literature. It's thought that music can help to relieve pain, resulting in physiological changes, including: improved respiration, lower blood pressure, improved cardiac output, reduced heart rate, relaxed muscle tension [34].

5. CONCLUSION

Provisional evidence supports that there are therapeutic benefits from women listening to music during labor. Music is should be considered by clinicians as a non-pharmacological, non-invasive, simple, cheap, safe, and effective method for reliving labor pain.

6. LIMITATION

This review is limited in a number of ways. Only English and Persian article included in this review. Also some databases were not searched.

Ethical approval:

Published data were used in preparation of this manuscript; hence no ethical approval was required.

Conflict of interest statement:

None declared.

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