Role of Music Therapy in Decreasing Perception of Labor Pains in Latent Phase of Labor

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Abstract

Objectives : To study effect of music therapy in reducing perception of Labor Pains.

Methodology : This is an observational study conducted at Department of Obstetrics and Gynaecology RNT Medical college Udaipur, between April 2012 to May 2013 with due permission and guidance of head of department. After applying inclusion and exclusion criteria 200 women were studied.

Observations and Results: This study reveals that music decreases or alter pain perception whether measured by a self-report pain scale (Visual Analogue Scale/VAS) or an observer rated pain scale (Behavioral Rating Scale/BRS). After exposure to music intervention, subjects in the music group reported reduction of pain from severe to moderate level. Mean values after music therapy decreased from 80.2 to 62.2 by VAS scale and from 7.7 to 5.8 by BRS scale which was significant statistically.

Conclusion : This study identifies that there is significant effect of soothing music on perception of pain during the latent phase of labor.

Key words: *Music Therapy, VAS, BRS, latent phase, labor*

Introduction

American Music Therapy Association (AMTA), in 1998 defined Music therapy as allied health profession in which music is used as a therapeutic relationship to address physical, psychological, cognitive, and social needs of individuals (American Music Therapy Association, 2013). Music therapy is the incorporation of music, whether through a trained therapist or technology, for the benefit of patients.

The pain experienced in labor is affected by the processing of multiple physiological and psychosocial factors (Lowe 2002; Simkin2004)[13]. Perceptions of labor pain intensity vary. Pain originates from different sites during labor and birth. In the first stage of labor, pain occurs during contractions, is visceral or cramp-like in nature, originates in the uterus and cervix, and is produced by distension of uterine tissues and dilation of the cervix. In the first stage, pain is transmitted via spinal nerves T10-L1. Labor pain can be referred to the abdominal wall, lumbosacral region, iliac crests, gluteal areas, and thighs. In the second stage of labor pain occurs from distension of the vagina, perineum, and pelvic floor. In the second stage, pain is transmitted via the pudendal nerves, entering the spinal cord via nerve roots S2-S4. Stretching of the pelvic ligaments is the hallmark of the second stage of labor. Second stage pain is characterized by a combination of visceral pain from uterine contractions and cervical stretching and somatic pain from distension of vaginal and perineal tissues. [10]

Music therapy as non-pharmacologic intervention is believed to restore, maintain, and improve emotional, physiological and psychological well being and has been used as an adjunct to nursing practice. It is a well known fact that anxiety worsens sensation of pain. Music therapy is a strategy to break the cycle of fear-tension-pain, finally relaxes and & relieves tension.

During labor, music may function in several ways in order to reduce pain perception. The act of listening to music may reduce the pain perception as a distraction by changing the transmission of pain impulses through activating the limbic system and sensory region of the brain (**Attention modulation**). Music elicits

emotional (**Emotional Modulation**) states and provides opportunity to process the emotions evoked by pain and serves as an excellent stimulus for holding one's attention and directing it away from the pain. The **gate control theory of pain** (Melzack & Wall, 1996) [10] explains the mechanism of the effect of music on labor pain. **Gate control theory of pain** (Klassen, et al., 2008)[8] purports that by music small diameter, slow conducting pain receptors are blocked with stimulation of large-diameter sensory fibers (Klassen, et al., 2008; Ferguson, 2004; Prensner, et al., 2001).[8,6,14]

Moreover, music perceived by the brain also stimulates the pituitary gland to release endorphins that controls pain [17.] It increases dopamine levels which contributes to the individual's experience of pleasure and motivation, which is essential to maintain a pain management regime[16]. **ACTH, DHEA, epinephrine, and IL-6** concentrations are markers for healing. It has been demonstrated that these markers significantly improved with music, specifically by **Mozart Music (**Conard, et al., 2007)[3].

Methodology

This is an observational study conducted at Obstetrics and Gynaecology department of RNT Medical college Udaipur, between April 2012 to May 2013 with due permission and guidance of Professor & head of department of Obstetrics and Gynaecology department of RNT Medical college Udaipur. After applying inclusion and exclusion criteria 200 women were studied.100 were cases and 100 were controls. All Primiparas with age Between 20 to 35 years, with a singleton fetus, who received antenatal care & who have been in the latent phase of labor for not more than 10 hours are included in the study. All primiparas who had received analgesic medication,and had spontaneous membrane rupture for longer than 20 hours and had history of psychiatric problems, patient on major antipsychotic medications, patients with difficulty in hearing the spoken word were excluded from the study. The fetal inclusion criteria were normal fetal heart rate, cephalic presentation, vertical lie, and 36 to 42 weeks' gestation with an estimated fetal weight of 2,500 to 4000 grams.

To measure perception of pain two methods were used

1 Visual analogue scale 2 Behaviour rating scale

Visual Analogue Scale (VAS) is usually presented as a 100 mm horizontal line on which the patient's pain intensity is represented by a point between the extremes of "no pain at all" and "worst pain imaginable. Participants were asked to indicate the amount of pain they were feeling 'right now' by marking the appropriate place on the line. Higher values indicated increased levels of pain. To measure the level of pain, the following scaling was used; 0-4 mm as no pain, 5-44 mm as mild pain, 45-74 mm as moderate pain, and 75-100 mm as severe pain.

To measure objective manifestations of pain, Behavioral Rating Scale was used. The Behavioral Rating Scale is used to record and observe verbal and nonverbal cues of the laboring woman who were in their latent phase of labor. It is a five-category scale used to assess present behavioral manifestations of pain: face, restlessness, muscle tone, vocalization, and consol ability. Each category is scored on the 0–2 scale, which results in a total score of 0–10. In interpreting then scores, the following scaling was used; 0 as relaxed and comfortable, 1–3 for mild discomfort, 4–6 for moderate pain, and 7-10 for severe discomfort or pain or both. The checklist will be marked by the investigators according to observed reactions made by the patients before and after the application of soothing music.

Procedure: After the signed consent form the respondents upon agreeing to participate in the investigation. Confidentiality and anonymity of the respondents were maintained all throughout the investigation. Women who agreed to participate in the investigation were asked to complete the demographic form and were allocated randomly into music and non-music group. The intervention took place in the labor room. The non-music group was provided with the usual standard routine care (vital signs monitoring & fetal heart tone monitoring) while the music group was provided with the usual standard routine of care and was exposed music therapy for 30 minutes during the latent phase (2-4 cm cervical dilatation). Both groups did not received analgesics or other non-pharmacologic treatments during the course of the investigation. Pain measures (VAS and BRS) were administered before and after 30 minutes of exposure to soothing music in the music group and 30 minutes after routine standard care in the non-music group during the latent phase of labor.

Results

Hundered subjects (100 for each cases and control

group) were recruited to participate in the investigation. The mean age was 22.5years. All the subjects in both groups were married .All patients under study were primiparas and had history of regular pre natal check up. There were no significant differences on demographic data of the non-music and music group in terms of age, marital status, parity, and prenatal check-up.

As reflected on table 1, no significant difference were found for the pre-test scores between the non-music and music group utilizing the visual analogue scale (VAS) (t=-.716, p=0.475), however, statistically significant difference where identified when the behavioral rating scale (BRS) (t=-2.71, p< 0.05) was utilized.

Table 1: Baseline difference on the pretest scores of the music & non music group utilizing two pain scales

NON MUSIC GROUP MUSIC GROUP						
Variables Mean S D Mean S D Confidence interval					*t*	*P*
Visual Analogue Scale (VAS)	80.87	5.99	80.2	7.17	95% -.716	.475
Behavior Rating Scale (BRS)	8.05	.715	7.78	.690	95% -2.71	.007

TABLE 2.Mean, SD, *t* values & *P* values after intervention

NON MUSIC GROUP			MUSIC GROUP		
Variables Pre-test	Post-test	t	Pre-test	Post-test	t
Mean SD	Mean SD	Mean SD	Mean SD		
Visual Analogue Scale (VAS)	80.87 5.99	77.58 5.728	-.716	80.2 7.17	62.26 7.22	-16.61
Behavior rating Scale (BRS)	8.05 .715	7.5 .638	-2.715	7.78 .690	5.8 .724	-18.42

From table 2 we find that in the music group, comparison of the pre-test and post-test scores revealed significant difference on the VAS scores (t=-16.618) and BRS scores (t=-18.429). In the non-music group, no significant difference was found between the pre-test and post test scores on the VAS (t=-.716), however, significant difference was identified on the BRS scores (t=-.2.715).

Table 3

Non music group		**Music group**				
Variables	C I				*t*	*P*
Mean SD	Mean SD					
Visual Analogue Scale (VAS	77.58 5.72	62.26 7.22	95% (-17.13 - -13.50)		-16.618	<0.05
Behavior rating Scale (BRS)	7.5 .638	5.8 .72	95% (-1.97 - -1.58)		-18.42	<0.05

To ascertain whether music intervention is effective in lowering labor pain, Independent t-test analysis was conducted to compare whether music group did have lower pain perception than non-music group did after intervention. Women on the music group had lower scores both on VAS (t=-16.618, p< 0.05) and BRS (t=-18.42, p < 0.05) than the non-music group did. (Table 3.)

Discussion

This study identified the effect of soothing music on the perception of pain during the latent phase of labor among laboring women in a government hospital. Result of this investigation has demonstrated that soothing music is effective in decreasing pain perception among women in music group during the latent phase of labor. After exposure to music intervention, subjects in the music group reported and demonstrated reduced pain from severe to moderate level of pain.

Our results are same as seen by the study of Leodoro J 'Effects of soothing music on labor pain among Filipino mothers' [5]. Both studies revealed that those in the music group had statistically significant reduction in reported pain levels as compared to those in the non-music group. These results are in keeping with the previous studies conducted among Taiwanese [11]and Canadian women [8.] In the study conducted by Liu et al, [11] it was observed that compared with the non-music group, the music group had significantly lower pain and anxiety during the latent phase of labor. Browning (Browning, C.A. (2000). Using music during childbirth. Birth, 27(4), 272-6) also reported that the planned use of music by mothers and care givers enhanced prenatal preparation for birth, and was found to be an important adjunct to pain and anxiety management during labor and delivery. Codding [2] observed less perceived pain, shorter labor, and the use of less pain medication with women for whom music was provided. Hanser, Larson, & O'Connell, and Fulton [6] also observed that women displayed fewer pain responses during the music intervention than during the no music intervention. Phumdoung & Good [11] also arrived at the same conclusion and noted that women who were exposed to soft music reported decreased both sensation and distress of active labor pain. It is worth noting that reduction in pain perception was noted after listening to music utilizing two pain measures – visual analogue scale (VAS) and behavioral rating scale (BRS) after music intervention. This result strengthens the claim of previous authors that music may decrease or alter pain perception whether a self-report pain scale (Visual Analogue Scale/VAS) or an observer rated pain scale (Behavioral Rating Scale/BRS) is used.

Conclusion

The study identifies the effect of soothing music on the perception of pain during the latent phase of labor. Result of this investigation has shown that soothing music is effective in decreasing pain perception among women in music group during the latent phase of labor. Perception of pain was reduced by both scales i.e.by Visual Analogue scale and Behavior rating scale. This result strengthens that music decreases or alter pain perception whether measured by a self-report pain scale (Visual Analogue Scale/VAS) or an observer rated pain scale (Behavioral Rating Scale/BRS).After exposure to music intervention, subjects in the music group reported reduction of pain from severe to moderate level. Mean values after music therapy decreased from 80.2 to 62.2 by VAS scale and from 7.7 to 5.8 by BRS scale which was significant statistically.

The results of this study supported the gate control theoretical proposition that descending nerve impulses from the brain close the gate to pain in the spinal cord (Melzack & Wall, 1996). The distinction that laboring women made between sensation and distress and the differential effects of music support the proposition that sensory and affective components of pain are not necessarily in a one-to-one relationship (Melzack & Casey, 1968).

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