

Effects of Culture-Based Chants on Labour Pain During the Latent Stage of Labour in Primigravidae Mothers: A Randomized Controlled Trial

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ABSTRACT

Background and Objectives: Labour is a complex and very painful experience. Poorly relieved pain result in prolonged and stressful labour, maternal impatience in opting for caesarean section and postpartum complications. A positive childbirth experience has a lasting impact on the postpartum health and wellbeing of the new mothers. Music therapy (MT) has been studied to reduce labour pain perception and behaviours and to provide a positive childbirth experience. We aimed in this study to determine the effect of MT on labour pain and pain behavioural symptoms during the latent stage of labour of primiparous women.

Material and Methods: A total of 120 primiparous women in the latent stage of labour with regular contractions and dilatations less than 4 cms were included in the study and randomly divided into two groups. music group (n=60) received MT in the form of deep breathing and chanting exercises for one hour between each and every contraction and the control group (n=60) received only standard treatment. A 10-point visual analogue pain scale (VAS) and Behavioural Pain Rating Scale (BPRS) were measured and recorded by the investigators.

Results: MT intervention resulted in statistically significant reduction in pain and total BPRS scores between the music and the control group with (p=0.001). Also, the BPRS domain scores in facial expression, restlessness, consolation and vocalization indicated significant reduction due to MT intervention with (p=0.001). The domain of BPRS – muscle tone did not make a significant impact with music.

Conclusion: Chanting and deep breathing experiences as music therapy during the latent stage of labour may reduce pain perception and pain behaviours. Such music therapy interventions may provide positive experiences during child birth, it could be a safe and dependable method adopted for an effective labour pain management

Keywords:

music therapy, primigravidae, first stage of labour, pain perception, pain behavioural symptoms

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INTRODUCTION

Mothers-to-be experience excruciating pain which is inevitable during labour. Labour pain is a complex and subjective experience associated with sensory and emotional components which influences not only the pain perception but also the overall experience of both the labour and child birth process to be positive or negative.¹ Coping with labour pain experience reduces suffering during the childbirth experience and positive childbirth experience has a lasting impact on the health and well-being of the mothers.² Often, integrating comprehensive and multidimensional

approach to labour management prepares the mothers-to-be in a relaxed state during the birthing process and makes the experience of childbirth smooth and safe for the mother and the child.

Therapeutic values of music have been well researched and documented across cultures. Music is known to produce analgesic effects by acting at multiple levels, including physical, emotional, social, and spiritual levels. Evidence-based application of music for therapeutic purposes, known as “music therapy”, has generated enormous interest in field of obstetrics and

gynaecology during last a few decades and MT has found multiple applications in obstetrics and gynaecology.^{3,4,5}

Research studies have shown the positive effects of music in mothers to have a reduced perception of pain and shorter labour.^{6,7} It was also observed that planned use of music by mothers and care-givers enhanced prenatal preparation for birth, and music therapy was found to be an effective adjunct to pain and anxiety management during labour and delivery.⁸ Several studies have documented that women in labour indicated decreased pain distress when assisted with music.⁹⁻¹²

We conducted this study to evaluate effects of culture-based chanting methods with deep breathing exercises on labour pain and the behavioural symptoms of pain in primiparous women who were in the latent stage of labour to facilitate the birthing process. Most of the studies reported use of preferred music as a listening experience to record the effect on labour pain and its behavioural symptoms. However, use of culture-based chants was an important aspect of this study as few studies are available in this context.

MATERIAL AND METHODS

An open label randomized controlled trial, approved by the Institutional Human Ethics Committee of Mahatma Gandhi Medical College and Research Institute, was conducted over a period of six months in the labour room. All primiparous women in the latent stage of labour, with regular contractions and dilatation less than 4 centimetres who gave written informed consent were enrolled for the study. The women who were hard of hearing were excluded from the study.

In total, 120 primiparous women who fulfilled the inclusion criteria participated in the study. They were randomly assigned to 60 in the music therapy group and 60 in a control group by a computer assisted method. The participants had the freedom to opt out of the study anytime they wanted and it was ensured that in case of any participant opting out from the music therapy intervention, the standard care continued. There were no dropouts during the study. The women in the control group were subjected to conventional routine care while the women in MT group were given MT intervention in addition to conventional routine care. To ensure that there is no spill over of music to control group, MT interventions were given in a designated private place in the labour room.

Participants listened to their preferred chants for one hour during the latent stage of labour. Live chanting was performed by the investigator, a qualified music therapist as a rhythmic cue to facilitate deep breathing, induce relaxation and support regular contractions for one hour. The participants were also encouraged to chant with deep breathing exercises between the contractions whenever they wanted to. The chants were in two to three notes, the tempo steady, simple, repetitive and predictable. After the completion of one hour, the end-of-study measures were taken. The mothers-to-be who wanted to continue with listening to chants were provided with the option of listening to their preferred chants through head phones.

Pain measures were recorded by the investigator using visual analogue pain scale (VAS) and Behavioural Pain Rating Scale (BPRS) consisting of the dimensions - facial expression, muscle tone, restlessness, vocalisation and consolation before and after exposure to MT both in the experimental group and the control group.

Normality tests were performed to ascertain if the data was normally distributed. As the data was normally distributed, data were analysed by independent Student t test. P value less than 0.05 was considered as significant.

RESULTS

All 120 pregnant primiparous women enrolled for the study completed the study. There was no significant differences in the demographic details of the control group and MT group (Table 1)

Table 1: Demographic details of the study participants (n=60 in each group).

Demographic details	Music group	Control group
AGE (IN YEARS)		
20-25	39(65%)	42(70%)
26-30	17(28.3%)	17(28.3%)
31-35	4(6.7%)	1(1.7%)
Total	60(100%)	60(100%)
TYPE OF LABOUR (TOL)		
Spontaneous labor(SPOL)	21(35%)	26(43.3%)
Induced labor	39(65%)	34(56.7%)
Total	60(100%)	60(100%)

Pre- and post- difference in pain scores were calculated in both music and control groups. The pain score was significantly reduced in music group when compared to control group ($P < 0.001$) Similarly, the total behavioural pain rating scores as well as the behavioural domains such as facial expression,

restlessness, vocalisation and consolation have shown statistically significant reduction in music group when compared to the control group. (Table 2) The behavioural parameter measuring the muscle tone did not show any statistically significant change due to music therapy intervention.

Table 2: Comparison of pain and behaviour scores during pain in labour between music and control groups (n=60 in each group)

Parameters		Music group Mean± SD	Control Group Mean± SD	P value
Pain	Pre-test	5.40±1.092	5.13±1.268	0.001
	Post-test	5.28±1.574	6.65±1.494	
	Difference between pre-and post- pain score	-0.1167±1.236	1.4167± 1.453	
Total Behavioural Pain Rating Scale	Pre- test	6.83±1.638	5.78±1.391	0.001
	Post- test	5.53±1.631	7.08±1.319	
	Difference between pre-and post- total BPRS score	-1.30±1.749	1.30±1.54	
Facial Expression	Pre- test	1.25±.508	1.05±.493	0.001
	Post- test	1.17±.493	1.60±.494	
	Difference between pre-and post-facial score	-0.083±.671	0.550±.502	
Restlessness	Pre- test	1.57±.533	1.13±.430	0.001
	Post- test	1.12±.524	1.58±.497	
	Difference between pre-and post-restlessness score	-0.450±.699	0.450±.502	
Muscle Tone	Pre- test	1.70±.462	1.73±.482	0.525
	Post-test	1.73±.446	1.80±.403	
	Difference between pre-and post-muscle tone score	0.033±.258	0.067±.312	
Vocalisation	Pre- test	1.32±.651	.85±.404	0.001
	Post-test	0.77±.465	1.17±.418	
	Difference between pre- and post-vocalisation score	-0.550±.649	0.316±.504	
Consolation	Pre- test	0.98±.225	0.97±.317	0.001
	Post-test	0.75±.437	1.02±.291	
	Difference between pre- and post- consolation score	-0.233±.426	0.050±.387	

DISCUSSION

In this study, we used the participants' preferred chants as rhythmic cue to regularise breathing and promote relaxation in the latent stage of labour to reduce the pain perception and behavioural symptoms of the primiparous women who participated in the study. Chanting reduced vocalisation and restlessness, improved consolability which was evident from the facial expression in the participants in the music therapy group.

Cognitive distraction is an important mechanism of pain reduction by music therapy, hence pregnant women with pain often report decreased pain while listening to

music. Also a study by Silvestrini *et al* observed that distraction elicited by music is not the only cause for the pain reducing effect but music involved a diffuse attention contributing to reduced pain experiences in interaction with the positive emotions.¹³ Our study strengthens this finding as listening to chants reduced the pain perception and the pain behaviours in the music group compared to the control group. The reduction of pain perception reported by the participants may also be explained by the decreased signal transfer to the thalamus and reticular activating system.¹⁴ The use of culture-based and participants' preferred chants also could have contributed to the analgesic and relaxing effect. This

observation is in agreement with the recommendations of the systematic review of Tournaire *et al* that mind body interventions like MT based on the inter-connections between the mind and the body could be effectively used during labour as an adjunct to the conventional methods to provide pain relief and also to improve the personal satisfaction levels of the overall experience of labour and birthing of the mothers-to-be.¹⁵ Music as an audio-analgesia has been reported in many studies.^{16,17} While listening to music, the pain and the auditory pathways inhibit each other and the activation of auditory pathway can influence in inhibiting the central transmission of pain stimuli.^{18,19} This explains how the participants engaging in music experiences felt reduced perception of pain and displayed fewer behavioural symptoms.

Women experience intense pain as labour advances which increase anxiety especially in primiparas. Music therapy is an effective method to reduce anxiety and trigger a para-sympathetic response by promoting relaxation. Listening to music stimulates pituitary gland to release the neuropeptides endorphin which reduces pain perception.^{20,21} Our study results are in consonance with the findings of Liu *et al* that music decreased pain levels, effective in inducing relaxation and reduced the anxiety during the latent phase of labour.²²

Three important strengths of our study were 1) we used culture-based and the participants' preferred chants to have reduced perception of pain. 2) the sample size had the power to detect the difference. 3) The duration of the music therapy sessions were one hour. But, most of the studies had the duration of music therapy sessions to be somewhere between 20 to 40 minutes. One important limitation of our study is that the pain assessments were recorded by the investigator and so we have not ruled out the investigator's bias. Also, we did not test the continuous use of music in all the stages of labour. The study was restricted to use of music only in the latent stage of labour

Our study suggests that music therapy can be an effective method for pain management during labour and make the birthing process to be a positive experience. It can be recommended as an effective adjunct to conventional pain management strategies as music therapy is a safe, non-invasive, complementary therapy to improve the maternal wellbeing during labour and delivery. Use of culture-based music can positively impact the pain perception and behaviours during labour. More studies are needed for use of music in all the stages of labour

CONFLICTS OF INTEREST

None.

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