



A STUDY TO EVALUATE THE EFFECTIVENESS OF MUSIC THERAPY ON THE PAIN PERCEPTION AND OUTCOME OF DELIVERY AMONG PRIMI GRAVIDA IN ACTIVE LABOR.

Obstetrics & Gynaecology

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ABSTRACT

Background & Objectives: Exaggerated stress response due to unrelieved labor pains can have adverse effects on both the mother and the fetus. A challenge for every obstetric health care provider is to devise interventions to aid the women cope with the labor pains. Many non-pharmacological measures for pain relief are on appraisal and music therapy is one among these. This research is an effort to evaluate the effect of music therapy on the perception of pain in primi gravida in active labor.

Material & Methods: An experimental study was conducted on 100 primi gravida women in active labor who were selected by using purposive sampling and were randomly divided into music group (n=50) and control group (n=50). The women in the music group received 3 music therapy sessions starting early in the active phase of labor. Here VAS was used to measure the perception of pain; before and after the study. Partogram was used to monitor the progression of labor. NST was used for fetal surveillance. Data obtained was analyzed using descriptive and inferential statistics.

Results: As labor progressed; an increase in the mean sensation of pain in both the groups was noted and the Student t-test of group differences at each data point reported that the music group had significantly lower sensation of pain scores at each post test, compared to the control group: first post test: $t=2.9$; second post test: $t=5.13$; third post test: $t=3.88$; at $p < 0.05$. ANCOVA showed that the music group had lesser sensation of pain than did the control group [F (1, 97) = 83.47 and F (1, 97) = 77.58, respectively; at $p < .0001$].

Conclusion: Music therapy is effective in reducing the perception of pain and stress levels in the women during active labor. Women accept music therapy as a stress reducing strategy during labor.

KEYWORDS

Music therapy, Labor pain, Active labor.

INTRODUCTION:

The phenomenon of pregnancy and child birth are one of the physiological wonders in the medical field. Pregnancy, labor and child birth are important events in every woman's life. Pregnancy can be both, an exciting and an anxious time for the parents-to-be. In this era of stressful life, there is a high prevalence of anxiety during antenatal, intranatal and postnatal periods among women.[1]

From the ancestral period it is very well known that 'an active and happy woman mostly delivers a healthy child in normal delivery'. Seemantham is an ancient Indian ritual celebrated for the woman's fertility and for the attainment of child's viability, with the original intent to share wisdom and lessons on the art of becoming a mother. It is called 'Baby shower' in the western world. In India, prayers, Vedic recitals of relics and verses are important components of this ritual because; the music makes the mind of the pregnant lady relax, increases the mental strength of the would-be mother and also affects the development of fetal brain.[2]

After nine months of pregnancy, begins the process of labor, a time of change, both an ending and a beginning, for the woman, the fetus and the family. Labor can be a time of conflicting emotions, fear and apprehension, coupled with excitement and happiness. Labor pain is a subjective multidimensional experience and not one specific technique or combination of interventions helps all women or even the same woman throughout the labor experience.[3]

For several decades, childbirth educators have focused on wide arrays of pharmacological and non-pharmacological pain relief methods on laboring women. Pharmacological agents like spinal and epidural anesthesia, nerve blocks, inhaled analgesia are well known. But, they can bear side-effects on the mother and the fetus. Hence non-pharmacological modalities like hydrotherapy, massage therapy, acupressure, hypnosis, application of heat and cold, relaxation and breathing, and aromatherapy have gained popularity. Among these, music therapy is one of the measures to assist the woman to cope with pain, build her self-confidence and maintain a sense of mastery and well being.[4]

Music is apparently universal, being found in every known human culture, past and present. Recognition of the inherent qualities of music to heal and fortify the soul has been revered since the ancient Greek and

Roman cultures. In 500BC, Pythagoras developed the concept of use of music in medicine.[5] Ancient Indian Ragas were designed with rules and regulations to regulate the working of the major energy systems in our body.[6] In the last two decades the concept of "medicinal music" has gained increasing popularity and the research studies evaluating the effects of music on the workings of the body, both in health and in disease are ongoing. One of the most widely known applications of music in the medical field has been audio-analgesia: the use of auditory stimulation as an analgesic agent.[7]

Melzack found that 60% of women in primiparas and 40% of multiparas experienced extremely severe labor pain.[8] Present study is an effort to unleash the therapeutic effects of music on the pain experienced by the laboring women.

An exaggerated stress response due to unrelieved labor pains can have an adverse effect on the physiologic status of women like increase in Cardiac output, BP, RR, O₂ consumption, and catecholamine, cortisol, glucagon levels; all of which can have harmful effects on both the mother and the infant.[9] Extremely anxious patient in labor will have high catecholamine levels which decrease placental blood flow and can cause fetal distress.[10] The fear of labor pains is related to the maternal requests for C-sections.[11] Pain can also result in loss of emotional control during labor which is a key factor in the development of an emotionally traumatic childbirth experience and psychological disturbances.[12]

In the light of these adverse effects, the challenge for every health careprovider is to reduce the pain and make labor and child birth process as pleasant as possible. This entails every health care provider to develop an attitude of identifying a means to provide comfort to the mother before, during and after delivery. A huge number of studies are undertaken to identify a therapeutic tool to reduce pain during labor.[3,4]

MATERIALS AND METHODS:

The present Randomized control trail was conducted from the department of OBG, Vani Vilas Hospital, Bengaluru from November 2012 to November 2014. A total of 100 primi gravida who met the eligibility criteria were included in the study. In this study simple random sampling method (lottery method) is adopted and the samples are assigned into music group and control group. A total of 100 subjects

– 50 in music group and 50 in control group – are selected.

Inclusion Criteria:

1. Primi gravida
2. 20-30 years of age
3. Singleton pregnancy
4. Regular ANC
5. Fetus- Normal Fetal heart rate
6. Cephalic presentation
7. 38-42 weeks of gestation
8. Expected fetal weight: 2.5-3.25 kgs

Exclusion Criteria:

1. Received any analgesic medication
2. Induction of labor
3. Spontaneous membrane rupture
4. H/O psychiatric illness, on any anti-psychotics treatment
5. H/O any difficulty in hearing
6. Infections
7. Medical disorders
8. Endocrinological disorders

The subjects are randomly assigned into music group and control group by lottery method. The subjects are given a cot and a pillow in the labor room equipped with screens all around. They are then scheduled for socio-demographic and musical preference data collection. The pre test is given to both the groups at the onset of active labor: Visual Analogue Scale (VAS) for measuring the pain is recorded. Non Stress Test (NST) is done. Each subject is thoroughly examined and the pulse rate, blood pressure, fetal heart rate, uterine contractions, lie, presentation and position of the fetus are determined by per abdomen examination. Per vaginal examination is done to know the cervical effacement and dilatation, status of the amniotic membrane, station of the fetal head and adequacy of the pelvis.

The music group is given music therapy along with the routine nursing care. The music was played using audio players and headphones. The women in the control group are told that they would receive music at a later time during labor. They received the routine nursing care. Also, the control group is given ear plugs to ward-off the sounds from the environment. Both groups did not receive any analgesics.

Post test is conducted at the end of each session in both the groups using the same tools: documentation of VAS, PR, and BP, checking for FHS and uterine contractions. Per vaginal examination is repeated only if necessary and the partogram was filled. NST is taken. Feedback on the process of labor, perceived helpfulness of the music is noted down. Relatives are addressed regarding the progress of labor. Further the total duration of labor and the 1st minute APGAR score of the baby are documented.

The data obtained from all the subjects in both the groups is tabulated into the master data sheet. Both descriptive and inferential statistics are used to analyze the data based on the objectives and the hypothesis of the study; using EXCEL, Minitab and SPSS software packages. Student t-test and ANCOVA are used for the data analysis.

RESULTS:

Three sessions of music therapy is scheduled for each woman in music group; with each music therapy session lasting for 40 minutes. The music used in this study is non-lyrical, instrumental, with lullabies and classical music; with Behagraag as its main component. This raga is meant for celebration and also has an effect on pain relief.

Table 1: Socio Demographic Variables In Both The Groups

Variable	Music group		Control group	
	n	%	n	%
Age (in years)				
<20	9	18	9	18
21-25	35	70	35	70
26-30	6	12	6	12
>30	-	-	-	-
Residence				
Rural	21	42	28	56
Urban	29	58	22	44
Education				
No formal schooling	9	18	9	18

Primary school	11	22	11	22
High school	17	34	17	34
PUC	8	16	8	16
Graduation and above	5	10	5	10
Occupation				
Housewife	35	70	32	64
Self-employed	8	16	8	16
Laborer	7	14	10	20
Religion				
Hindu	35	70	35	70
Muslim	14	28	14	28
Christian	1	2	1	1
Language				
Kannada	25	50	24	48
Hindi	16	32	15	30
Others	9	18	11	22

Majority of the women 70% (35) are within 21-25 years of age, 18% (9) are below 20 years, 12% (6) are between 26-30 years and there are no women above the age group of 30 years in both music and control group. There are 42% (21) and 56% (28) of women hailing from rural areas in music and control groups. There are 58% (29) and 44% (22) of women hailing from urban areas in music and control groups that there is an equal distribution of sample in both music and control groups in terms of the level of education attained. The occupation in the music group depicted that 70% (35) women are housewives, 16% (8) are self-employed and 14% (7) are laborers; and in the control group 64% (32) women are housewives, 16% (8) are self-employed and 20% (10) are laborers. In terms of religion, both music and control groups with 70% of the women being Hindus, 28% being Muslims and 2% being Christians. 50% (25) women in the music group and 48% (24) women in the control group speak Kannada; 32% (16) and 30% (15) women speak Hindi in the music and control groups respectively; and 18% (9) and 22% (11) women speak other languages in the music and control groups respectively. All the women in both the groups like music. Only 1 woman in the study sample was trained in music.

Table 2: Description Of The Sensation Of Pain Measured Using VAS

VAS	Music group		Control group		t-value	p-value
	Mean	SD	Mean	SD		
Pre test	5.96	2.16	4.74	2.04	2.9	0.005
Post test 1	4.04	2.23	6.24	2.05	5.13	0.00001
Post test 2	7.56	2.15	8.96	2.03	3.34	0.00115
Post test 3	9.00	1.63	9.92	0.36	3.88	0.00018

The difference in the sensation of pain between the two groups is analyzed using Student t-test. The pre test mean sensation of pain is high in the music group compared to the control group. However the post test mean sensation of pain at different intervals have reduced in the music group in comparison with the control group and these findings are statistically significant with $p < 0.05$. Thus the research hypothesis (H1) is accepted. This infers that the music therapy is effective in reducing the sensation of pain in the primi gravida women in active labor.

Table 3: ANCOVA Analysis Of The Sample

VAS	Pre test	Post test 1	Post test 2	Post test 3	F value	p value
Music group	5.96	4.04	7.56	9.00	83.47	<.0001
Control group	4.74	6.24	8.96	9.92	77.58	<.0001

The above table depicts that, using ANCOVA across the four data points, significant difference in the sensation of pain in both the groups are analyzed. While controlling the corresponding pre test measure, ANCOVA showed that the music group had significantly less sensation of pain than did the control group. [$F(1, 97) = 83.47$ for music group and $F(1, 97) = 77.58$ for control group with $p < .0001$].

Table 4: Mode Of Delivery And APGAR Score Of The Baby

Variable	Music group		Control group	
	n	%	n	%
Type of delivery:				
1. Vaginal	44	88	38	76

2. Cesarean	3	6	8	16
3. Instrumental	3	6	4	8
APGAR score:				
1. 9-10	47	94	41	82
2. 7-8	1	2	8	16
3. <7	1	2	2	4

This table depicts that among the women in music group 44 (88%) had vaginal delivery, C-section and instrumental deliveries were 3 (6%) each. In control group 38 (76%) women had vaginal delivery, 8 (16%) had C-section and 4 (8%) had instrumental delivery.

Also, the above table depicts that the 1st minute APGAR score of the baby. In the music group 94% of the sample had APGAR score between 9-10, 2% had 7-8 score and 2% had <7 score. In the control group 82% of the sample had APGAR score between 9-10, 16% had 7-8 score and 4% had <7 score.

DISCUSSION:

Pregnancy is a boon to every woman. Happiness, joy, satisfaction blossoms in her once she learns that she is pregnant. Just like a coin has two sides, pregnancy also has its own toil of stress and fear about the unknown. Especially, at the time of child birth her prayers amplify; her concerns about the well being of her baby and herself reaches crescendo.

In the present study the mean sensation of pain in music group range from 5.96 at pre test to 9.00 at the third post test; a gain of 3.04 and in the control group, sensation means range from 4.74 at pretest to 9.92 at the third post test; a gain of 5.18. Thus although the music group started with higher pain sensation; greater pain scores during each post test and greater gains are reported in the control group. With an increase in the mean sensation of pain in both the groups Student t-test of group differences at each data point reports that the music group has significantly lower sensation of pain scores at each post test, compared to the control group: first post test, $t=5.13$; second post test, $t=3.34$; third post test, $t=3.88$; with the results being significant at 0.05 level of significance. While controlling the corresponding pre test measure ANCOVA showed that the music group had lesser sensation of pain than did the control group during the music therapy sessions [$F(1, 97) = 83.47$ and $F(1, 97) = 77.58$, respectively; at $p < .0001$].

The above findings of the present study is supported by the study conducted by Sasistron Phumdoung et al on 110 Thai primiparous women by examining the effects of music on sensation and distress of pain in active phase of labor. The study reported that the sensation and distress significantly increased across the 3 hours in both groups ($p < .001$). ANCOVA indicated that those in the music group had significantly less sensation and distress of pain than did the control group [$F(1, 107) 18.69$, $p < .001$ and $F(1, 107) 14.87$, $p < .001$, respectively]. [13]

A similar study 'Effects of soothing music on labor pain' in government hospital Philippines conducted by Leodoro et al measured pain levels in the laboring women utilizing VAS and BRS. The study revealed that those in the music group had statistically significant reduction in the reported pain levels compared to those in the non-music group [VAS ($t=7.317$, $p < 0.05$) and BRS ($t=8.128$, $p < 0.050$)]. [14]

The current study findings are consistent with the study conducted by Debajani Nayak et al on the effectiveness of music therapy on anxiety and pain perception in 30 primi para mothers during first stage of labor in selected hospitals of Odisha. Mean post test (6.27) and pre test (7.8) pain perception and anxiety scores differed significantly from each other in the music group. Findings of the study revealed that music therapy would be very helpful in alleviating anxiety level and pain perception in primiparous mothers during first stage of labor. [15]

More number of normal deliveries with lesser C-sections and instrumental deliveries are noted in the music group as compared with the control group. The study thus concludes that music, a procedure of simple implementation combined with other elements of delivery care can harmonize the dynamics of labor, individualize the care and promote normal deliveries.

The study concludes that lesser number of babies with <8 APGAR score are found in the music group as compared with the control group. This illustrates the effect of music in reducing the fetal distress.

CONCLUSION:

Labor pain perceived by the women escalates as the labor progresses. Though the escalation of pain was found in both groups; the study concludes that the pain intensity scores of women who received music therapy in the music group are lower than that of the pain intensity scores of women in the control group. Majority of the women in the music group appreciated the music therapy and concluded that it was effective as it triggered their imagination about their baby-to-be-born, kept them away from the noises around them, relieved them out of pain to some extent, kept them occupied and enabled them to focus on themselves, made them feel happy and pleasant, it could put them to sleep and also made them feel well attended and cared. The above explicated concludes that music therapy played a multidimensional role on the laboring women. The study concludes that music elicited a significant effect on the fetus; increasing the fetal movements which is evident on the NST tracings; and also lesser number of babies with <8 APGAR score are found in the music group as compared with the control group. This illustrates that music has a positive impact on the fetus.

Conflicts Of Interests:

Authors declare no conflicts of interest.

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