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# EFFECT OF MUSIC THERAPY DURING EPISIOTOMY REPAIR PROCEDURE: A RANDOMIZED CONTROLLED TRIAL

**MHATRE A[1], RAMESH B[2], RATHOD S[3] AND SOBANA R[4*]**

**1:** Research scholar, School of music therapy Institute of salutogenesis and complementary medicine Sri Balaji Vidyapeeth (deemed to be University), Pondicherry, India

**2:** Assistant Professor, School of music therapy Institute of salutogenesis and complementary medicine Sri Balaji Vidyapeeth (deemed to be university), Pondicherry, India

**3:** Professor, Department of obstetrics and Gynecology, Mahatma Gandhi Medical college and Research Institute, Sri Balaji Vidyapeeth (deemed to be University), Pondicherry, India

**4:** Professor, School of music therapy Institute of salutogenesis and complementary medicine Sri Balaji Vidyapeeth (deemed to be University), Pondicherry, India

***Corresponding Author: Dr R Sobana: E Mail: shobana234@gmail.com**

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## ABSTRACT

**Introduction**: The use of music therapy in the context of maternal healthcare for the purpose of episiotomy repair has been identified as a prospective intervention that may contribute to the improvement of postpartum recovery and the satisfaction levels of individuals undergoing the surgery. The purpose of this study was to look at the therapeutic effects of music therapy on pain perception, levels of cooperation, levels of relaxation, and overall satisfaction with the episiotomy repair process.

**Methodology:** Fifty-two individuals between the ages of 18 and 35 were randomly allocated equally to either a control or an intervention group for the study. Throughout the procedure, the intervention group got music therapy. The control group did not receive any. The level of pain relief, muscle relaxation and satisfaction scores were noted. The study also looked at demographic data, underlining the importance of socioeconomic considerations in interpreting the findings.

Results: The findings revealed a statistically significant reduction in pain perception within the intervention group, suggesting the effectiveness of music therapy in reducing pain severity. Individuals in the intervention group also reported higher levels of cooperation, more muscular relaxation, and improved overall feelings of relaxation and tranquilly. In overall, the participants expressed a high level

of satisfaction with the music therapy intervention and expressed support for its inclusion in postpartum care.

**Conclusion:** The study underlines the potential benefits of employing music therapy as a supplement to aid relaxation, ease discomfort, and improve mental well-being during episiotomy repair and postpartum recovery. The integration of music therapy into clinical practise might be improved further to enhance the therapy setting and encourage patient-centered care for women undergoing this demanding treatment.

**Keywords: Labour pain, episiotomy, music, comfort**

## INTRODUCTION

In obstetrics, episiotomy has been a common procedure used to prevent severe vaginal tearing during childbirth **[1]**. This surgical technique involves a carefully planned incision in the perineal area to facilitate safe delivery, reducing the risk of complications **[2]**. While episiotomy rates vary globally, **[3]** its practice remains prevalent in many countries as a routine procedure for both first-time and experienced mothers **[4]**.

Though episiotomy can be essential for mitigating certain risks during childbirth, it is not without its challenges. The procedure and its subsequent repair can be associated with pain and discomfort, impacting the patient's overall experience. The experiences of women during perineal repair after childbirth are often overlooked, especially when the trauma is minimal **[5]**. Pain is the most common physical discomfort during the repair, and its intensity can vary depending on individual pain thresholds and the complexity of the repair. This experience may become intense due to factors like fatigue and feeling of self-consciousness **[6]**. The cooperation level during the episiotomy repair may reduce due to intense pain, which can prolong the completion of the procedure and increase pain and discomfort.

Emotionally, perineal discomfort and ongoing pain may lead to feelings of anguish, dissatisfaction, and vulnerability, potentially impacting women's psychological well-being. Some women may experience worry, anxiety, or disappointment surrounding the surgical procedure and its deviation from their birth plan **[7]**. Unpleasant birth experiences, linked to perineal injuries, may contribute to postpartum depression, anxiety, and Post Traumatic Stress Disorder **[8]**. It is crucial for healthcare professionals to acknowledge and address the emotional impact of perineal repair and provide women with the necessary support and care during the postpartum period. Several techniques are used for reducing pain during episiotomy repair, including local anaesthetics like

lidocaine in the form of gel, spray or injection, and other topical products like EMLA cream (Eutectic Mixture of Local Analgesics) **[9]**. Medical possibilities have been expanded by non-injection techniques involving Entenox, an inhalable gas consisting of 50% nitrous oxide and 50% oxygen **[10]** used to manage pain during the episiotomy repair procedure.

In recent times, there has been a growing preference for nonpharmacological methods alongside traditional pharmacological pain management during episiotomy repair. These complementary techniques, ranging from massage and virtual reality to skin-to-skin contact, have shown promise in alleviating pain and anxiety, addressing both the physiological and psychological aspects of an invasive medical procedure **[11, 12]**.

Music, in particular, has a long history of being used for its therapeutic benefits. From ancient times to modern-day clinical settings, music has been employed as a supportive tool to accompany standard medical treatments. Music's effects on pain management can be explained through the Gate Control Theory of Pain, where it is believed to close the "pain gate" in the spinal cord, reducing the brain's reception of pain signals **[13]**. Additionally, music has been found to lower stress hormone levels and promote the release of pain-relieving endorphins, further enhancing its pain-reducing properties **[14]**.

While there is an increasing emphasis on using music during childbirth and labor, limited research exists regarding its application during episiotomy repair. The research on music therapy in episiotomy repair is limited, with few articles examining pain, satisfaction, and procedure time. In Thailand, a study found that music therapy was effective in reducing pain caused by an episiotomy wound **[15]**. In Turkey, a study found that virtual reality glasses and music combined with music reduced pain, vital signs, and postpartum comfort **[16]**. Another study found no significant difference in depression, anxiety, stress, or pain scores **[17]**.

The current study aims to bridge the gap between existing literature by exploring the effects of music therapy in the presence of a music therapist on pain, cooperation, satisfaction, and relaxation levels. The research suggests an intervention strategy that integrates music with mindfulness and relaxation techniques to enhance relaxation experiences in the labor and delivery unit. This integration is novel and aims to enhance the understanding of the potential advantages of music in relaxing healthcare environments.

This study aims to bridge the gap in existing literature and explore the potential benefits of Music Therapy during episiotomy repair in the obstetrics setting. Music Therapy, as an evidence-based and clinical approach,

involves the use of music interventions within a therapeutic relationship to achieve individualized goals. By employing specific techniques, such as Music Assisted Relaxation (MAR), Music Therapy seeks to engage and distract patients during invasive medical procedures, potentially improving patient outcomes and experiences, enhancing the childbirth experience and promoting overall well-being for expectant mothers.

## MATERIALS AND METHODS

Subjects and Setting

This randomized controlled trial was conducted over a period of 6 months at the Department of Obstetrics and Gynaecology (Labour Ward) of Mahatma Gandhi Medical College and Research Institute Hospital, a rural tertiary care facility serving a large annual patient volume. The study received approval from the Institutional Human Ethics Committee under project number MGMCRI/2023/IRC/47/01/IHEC/25. The participants included primiparous women between the ages of 18-35 who had delivered vaginally. Prior to enrolment, informed consent was obtained from all participants. The inclusion criteria comprised primiparous women aged between 18-35 who had undergone normal vaginal delivery, while the exclusion criteria encompassed subjects unwilling to participate in Music Therapy, mothers using epidural analgesics, and mothers experiencing post-partum complications such as collapse and haemorrhage.

### *Sample size*

The sample size for this study was determined based on an effect size of 0.8, alpha value of 0.05, and a desired study power of 90%. Consequently, 26 participants were calculated to be required for each group. The participants were randomly assigned into either the control group (Group 1) or the intervention group (Group 2) using computer-aided randomization through an Excel sheet. Randomization was performed using the formula

=CHOOSE(RANDBETWEEN((1,2), “A”, “B”).

### Procedure

All participants who met the inclusion and exclusion criteria and provided informed consent were allocated to their respective groups. The control group received standard obstetric treatment, which involved episiotomy repair after normal vaginal delivery. The intervention group, on the other hand, received music therapy intervention in addition to standard obstetric treatment, which included music-assisted relaxation. During the study, two participants from the intervention group dropped out due to medical complications resulting in a planned normal delivery being converted to a cesarean section and an unexpected spontaneous delivery where the

therapist couldn't provide intervention. To compensate for these dropouts and maintain the integrity of the study, two additional participants were recruited and included in the intervention group, resulting in a total of 26 participants in that group. This approach ensured the balance and consistency of the study groups and preserved the statistical significance of the findings.

Participants who met the inclusion and exclusion criteria and provided informed consent were allocated to either the control or intervention group according to a randomization table. All participants received regular obstetric treatment, which involved episiotomy repair conducted in three stages: vaginal mucosa repair, muscle repair, and skin repair. Both groups were administered the same amount of analgesic (lidocaine 10ml). The intervention group received music therapy intervention in addition to standard medical treatment, specifically Music Assisted Relaxation (MAR) during the entire episiotomy repair procedure. Participants in the intervention group were trained in breathing induction before delivery, and during the procedure, they were instructed to follow therapist-guided breathing patterns which included breathing in a 4/4 rhythm when pain was not present and then in a 2/4 short and shallow breaths when pain was present and focus on the music provided for relaxation. The music therapist also used tactile stimulation and monitored the participants' comfort levels throughout the procedure. The control group received standard obstetric treatment, and a music therapist was present for observation purposes.

Pain intensity during episiotomy repair was assessed using the Visual Analogue Scale for Pain (VAS-P) for both groups. The intervention group also completed a satisfaction feedback form for the music therapy intervention. The levels of relaxation of participants were measured using the Relaxation State Questionnaire (RSQ). Data for VAS, RSQ, and Satisfaction feedback were collected 1-2 hours after episiotomy repair when participants were comfortable to respond. Participants had the option to opt-out at any point during the study if they were not willing to continue.

**Data collection tools**

The Visual Analogue Scale (VAS), Likert scale, Relaxation State Questionnaire, and Satisfaction level feedback form was used to collect data.

Visual Analogue Scale: The Visual Analogue Scale (VAS) is a pain rating scale introduced in 1921 to assess the severity and frequency of symptoms in epidemiological and clinical studies.[18] The scale has two ends, with "no pain" at the left end (0 cm) and "worst pain" at the right end (10 cm), and scores are based on self-reported measures of symptoms that are recorded with a single handwritten mark placed at one

point along the length of a 10-cm line that represents a continuum between the two ends.

The Visual Analogue Scale for Pain (VAS) is a pain rating scale introduced in 1921 by Hayes and Patterson. It is commonly used in epidemiological and clinical studies to assess the severity or frequency of different symptoms. The VAS measures pain levels, ranging from no pain to intense pain, and is used to assess the co-operation level of participants during the episiotomy repair procedure. The Likert Scale, created in 1932 by Rensis Likert, is a 5- or 7-point ordinal scale used to assess attitudes.

Likert Scale: In this study, the Likert scale was used to assess the co-operation level of participants during the episiotomy repair procedure. The scale was rated by the obstetrician who performed the procedure on the participant. Participants were rated 0 (strongly disagree) or 1 (disagree) if there was no cooperation or extremely less cooperation shown by the participant.

Feedback Form: In this study, a 5-item feedback questionnaire was used, framed by a senior music therapist and vetted by a clinical music therapist and gynaecologist. The questionnaire included questions on whether participants were able to follow and execute music therapy intervention, if they were able to focus on music more and manage pain because of music therapy intervention, if they were satisfied with the intervention, and if they would refer the service to their friends or family.

The Relaxation State Questionnaire (RSQ) evaluates an individual's current level of relaxation, which is particularly useful in evaluating the immediate efficacy of relaxation techniques. The 10-item questionnaire assesses the relaxation state of the body and mind, focusing on physiological aspects such as muscles, breathing, and heart rate. The scores of the RSQ are correlated with each other, and the higher the scores, the higher the level of relaxation.[19] Post-the episiotomy repair procedure, participants were asked to rate their sensation or bodily responses during the procedure based on their physiological and physical responses felt. The scores of the RSQ are correlated with each other, and participants were asked to rate their experience of relaxation from strongly agree to strongly disagree.

**Statistical analysis**

The statistical analysis of the study data was performed using SPSS version 16 software. Descriptive analyses were used to present the mean and standard deviation for continuous variables, while frequency and percentage were used to describe categorical variables. To compare continuous variables between the control and intervention groups, an independent t-test was employed. The study variables consisted of dependent variables, including VAS scores, Likert

Scale scores, RSQ scores, and Satisfaction feedback form scores. The independent variables included age, education, and occupation, while the intervention variable was music therapy. A p- value of less than 0.05 was considered to indicate statistical significance.

## RESULTS AND DISCUSSION

The results of this study demonstrate a significant difference in the level of cooperation, relaxation and pain between the control and intervention groups during episiotomy repair. In the control group, a considerable proportion of participants (53.8%) were either uncooperative or highly uncooperative, while the intervention group showed a higher percentage of cooperative participants (84.6%). The presence of a music therapist and the implementation of music-assisted relaxation during the procedure seemed to foster a more cooperative attitude among the intervention group participants. This finding aligns with previous research highlighting the positive impact of music therapy on patients' psychological and emotional states, leading to a more relaxed and cooperative atmosphere during medical procedures.[20] The calming effect of music in the delivery room may have reduced stress and tension for both participants and medical staff, contributing to improved cooperation and focus during the episiotomy repair. The music therapy intervention appears to have positively influenced the overall birthing experience, creating a more comfortable and cooperative environment.

**Table 1: Comparison of Pain scores of VAS Pre and During within Intervention Group**

| Parameter | n | Mean | SD | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| VAS-pre | 26 | 8.65 | 1.72 | 12.35 | 25 | 0.001 |
| VAS-during | 26 | 3.69 | 2.09 | | | |

**Table 2: Comparison of Pain scores of VAS between Control and Intervention Group**

| Group | n | Mean | SD | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| Control | 26 | 6.35 | 2.94 | 3.75 | 50 | 0.001 |
| Intervention | 26 | 3.69 | 2.09 | | | |

Before the intervention, the mean Visual Analogue Scale (VAS) score was 8.65, indicating high pain intensity among participants. However, after implementing music-assisted relaxation during the procedure, the mean VAS score significantly decreased to 3.69. The control group experienced a higher mean pain level of 6.35, while the intervention group had a significantly lower mean score of 3.69, indicating the effectiveness of the music therapy intervention in reducing pain during the procedure. These findings align with previous research demonstrating the analgesic benefits of music therapy in various medical contexts **[11, 15, 17]**.

Music's ability to divert attention from pain and trigger a relaxation response could explain the significant pain reduction observed in the intervention group. The Gate Control Theory of Pain by Melzack further supports this notion, suggesting that music acts as a pleasant stimulus, closing the gate that allows pain signals to be sent to the brain **[18-21]**.

**Table 3: Comparison of Relaxation State Questionnaire (RSQ) between Control and Intervention**

| Parameters | Group | n | Mean | SD | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| Cardiovascular score | Control | 26 | 6.54 | 2.82 | -1.685 | 50 | 0.098 |
| | Intervention | 26 | 7.73 | 2.26 | | | |
| Muscle score | Control | 26 | 7.92 | 3.62 | -3.928 | 50 | 0.001 |
| | Intervention | 26 | 11.35 | 2.58 | | | |
| General Relaxation score | Control | 26 | 5.85 | 2.48 | -3.605 | 50 | 0.001 |
| | Intervention | 26 | 8.04 | 1.87 | | | |
| Sleep score | Control | 26 | 8.08 | 2.83 | -.399 | 50 | 0.691 |
| | Intervention | 26 | 8.38 | 2.73 | | | |
| Total score | Control | 26 | 28.19 | 7.27 | -3.806 | 50 | 0.001 |
| | Intervention | 26 | 35.31 | 6.17 | | | |

The comparison of Relaxation State Questionnaire (RSQ) scores between the Control Group and the Intervention Group revealed interesting findings. In terms of specific domains, the Intervention Group showed significantly higher mean scores for Muscle (11.35 vs. 7.92) and General Relaxation (8.04 vs. 5.85) compared to the Control Group. However, no statistically significant differences were observed in the Cardiovascular and Sleep domains between the two groups. The overall scores further supported the effectiveness of music therapy, as the Intervention Group had a significantly higher mean total score (35.31 vs. 28.19) than the Control Group. These findings highlight the crucial role of music therapy in enhancing the overall relaxation levels of the participants and suggest the potential benefits of integrating music therapy as a complementary intervention in medical procedures like episiotomy repair. The results of this study contribute to the growing body of evidence supporting the use of music therapy to improve patient outcomes and experiences during medical interventions.

The results of the study indicate that all 26 participants (100.0%) successfully understood and engaged in the music therapy exercises during episiotomy repair. They expressed high satisfaction with the intervention, supporting its integration into postpartum care for women undergoing this procedure. The majority of participants (92.31%) reported focusing on the music therapy activity over experiencing discomfort, demonstrating the benefits of

music therapy in managing pain and enhancing the procedural experience. However, a small proportion (7.7%) had difficulty maintaining focus due to pain, suggesting the need for personalized approaches to address individual needs. Most participants (96.15%) effectively utilized music therapy to alleviate pain and anxiety, highlighting its potential efficacy as a coping strategy in the postpartum period. Although a single participant (3.85%) expressed dissatisfaction with the intervention's effectiveness, this finding underscores the importance of offering various relaxation techniques to cater to individual differences and preferences. Overall, these findings support the clinical applicability and usefulness of music therapy as a complementary intervention during episiotomy repair.

**Clinical Implications**

This dissertation's findings on the effect of music therapy during episiotomy repair have significant clinical implications for obstetric and postpartum care. Women undergoing episiotomy repair may benefit from the incorporation of music therapy as a relaxation intervention in a clinical setting in the following areas

1. Improved Relaxation and Pain Management: The study demonstrates that music therapy is an extremely effective method for enhancing relaxation and diverting attention away from pain during episiotomy repair. By incorporating music therapy into the standard postpartum care protocol, medical professionals can assist women in more effectively coping with the distress associated with the procedure. The non-invasive nature of music therapy makes it an appealing and safe complimentary intervention along with pharmacological interventions for pain management.
2. Enhanced Emotional Well-Being: During the postpartum period, music therapy has the potential to enhance emotional well-being and reduce anxiety. Music therapy can assist women in navigating the emotional challenges that arise after childbirth and episiotomy repair by fostering a tranquil environment. Taking care of emotional health is essential for postpartum recovery and facilitating a positive transition to motherhood.
3. The music therapy approach to relaxation interventions is individualised and holistic. Healthcare professionals can collaborate with music therapists to tailor music selections and activities to the preferences and emotional requirements of each woman. This individualised care contributes to a more holistic approach to postpartum care by promoting a sense of empowerment and

active participation in the healing process.

4. Integrating music therapy into episiotomy repair procedures can improve the therapeutic environment in the clinical setting. Music has the potential to create a soothing environment, thereby reducing tension for both patients and medical staff. A positive and supportive environment can contribute to a patient-centered approach to care and lead to more positive patient experiences.

Utilising these findings, healthcare providers can improve the therapeutic environment, encourage personalised care, and provide women enduring episiotomy repair with a supportive and positive postpartum experience. Further research and implementation of music therapy in clinical practise can contribute to improving the quality of postpartum care and recovery support for women.

## 7. CONCLUSION

The findings of the study indicate a statistically significant decrease in pain perception among participants in the intervention group, as well as a higher degree of cooperation compared to the control group. The intervention group exhibited considerably higher levels of relaxation, as shown by individuals' reports of increased muscular relaxation and overall sensations of relaxation and serenity. The findings of the study have significant clinical implications for obstetric and postpartum care, as they have the potential to enhance the therapeutic environment, promote emotional well-being, and provide a more personalised and comprehensive approach to treatment. Music therapy provides a non-intrusive and efficacious approach for augmenting relaxation, mitigating pain perception, and enhancing overall patient contentment. The results mentioned above may be utilised as a foundation for future study and the integration of music therapy within clinical settings. This has the potential to enhance the overall standard of postpartum care and facilitate the recuperation process for women.

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