MUSIC THERAPY AS AN ADJUNCT TO ANAESTHESIA, A STUDY AT MKCG MCH, BERHAMPUR, ODISHA

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ABSTRACT

Background: Anxiety and pain are significant concerns in perioperative care, impacting patient outcomes and satisfaction. Music therapy, a non-pharmacological intervention, has shown promise in various healthcare settings for its ability to reduce anxiety and pain, suggesting potential benefits as an adjunct to anesthesia. This study investigates the effects of music therapy on anxiety levels, pain perception, medication usage, and patient satisfaction in a surgical setting.

Materials and Methods: A prospective, randomized controlled trial was conducted at Maharaja Krushna Chandra Gajapati Medical College and Hospital (M.K.C.G MCH), Berhampur, Odisha. One hundred twenty patients scheduled for elective surgeries were randomized into music therapy and control groups. The music therapy group received personalized music sessions before and during surgery, while the control group received standard perioperative care. Data on anxiety (State-Trait Anxiety Inventory), pain perception (Visual Analog Scale), medication use, and patient satisfaction were collected and analyzed.

Results: The music therapy group demonstrated significantly lower preoperative anxiety levels ($p < 0.001$), reduced perioperative pain perception ($p < 0.001$), decreased use of anxiolytics, analgesics, and anesthetics ($p < 0.05$), and higher patient satisfaction scores ($p < 0.001$) compared to the control group. These findings indicate that music therapy effectively enhances the perioperative experience for patients undergoing surgery.

Conclusion: Music therapy serves as a beneficial adjunct to anesthesia, offering a non-invasive approach to reduce anxiety and pain, minimize medication use, and improve patient satisfaction in the surgical setting. Its integration into perioperative care protocols could significantly

enhance patient outcomes, suggesting a need for broader adoption and further research in diverse clinical environments.

Keywords: Music Therapy, Anesthesia, Perioperative Care, Anxiety, Pain Management, Patient Satisfaction.

Introduction

The intricate dance of art and science in medical practices has always sought innovative approaches to enhance patient care and outcomes. Among these, music therapy, an established allied health profession, has garnered attention for its potential to ameliorate various health conditions and improve the quality of life. Its application in the perioperative setting, particularly as an adjunct to anesthesia, presents a promising frontier for exploration. This study delves into the efficacy of music therapy as a complementary intervention to anesthesia, aiming to illuminate its impact on patient outcomes during surgical procedures.[1-3]

Anxiety and pain are pivotal concerns in the perioperative environment, influencing not only the patient's experience but also the physiological outcomes and recovery trajectory. Traditional methods to manage these concerns primarily rely on pharmacological interventions, which, while effective, carry the risk of side effects and complications. Music therapy, with its non-invasive nature and absence of adverse effects, emerges as an attractive alternative or adjunct, potentially enhancing patient care without the drawbacks associated with additional medication.[4-6]

The theoretical underpinning of music therapy's efficacy lies in its ability to engage the brain's limbic system, modulating emotional responses and stress levels. By reducing anxiety and perceived pain, music therapy could theoretically improve patient satisfaction, reduce the need for sedatives and analgesics, and potentially accelerate recovery times. However, empirical evidence supporting these outcomes, especially in the context of anesthesia, remains sparse and fragmented.[7-9]

This study seeks to bridge this gap by systematically investigating the effects of music therapy as an adjunct to anesthesia on patient anxiety, pain perception, medication requirements, and overall satisfaction. Conducted in the diverse and dynamic setting of MKCG MCH, Berhampur, Odisha, this research not only aims to contribute to the global body of knowledge on music therapy in medical settings but also explores its practical implications in the Indian healthcare context. Through a rigorous methodological approach, this study endeavors to provide robust evidence on the benefits and feasibility of integrating music therapy into standard perioperative care, potentially paving the way for broader adoption in clinical practices.

Study Design

This prospective, randomized controlled trial was conducted at M.K.C.G MCH, Berhampur, Odisha, over a period of six months from August 2023 to January 2024. The study aimed to evaluate the effectiveness of music therapy as an adjunct to anesthesia on patient-reported outcomes, including anxiety levels, pain perception, medication use, and overall satisfaction.

Participants

A total of 120 patients scheduled for elective surgeries under general anesthesia were enrolled in the study. Inclusion criteria comprised patients aged 18 to 65, ASA (American Society of Anesthesiologists) physical status I or II, and those who consented to participate in the study. Exclusion criteria included patients with hearing impairments, known psychiatric or cognitive disorders, and those undergoing emergency surgery.

Randomization and Blinding

Participants were randomly assigned to either the music therapy group or the control group in a 1:1 ratio using computer-generated random numbers. The study employed a single-blind design, where participants were unaware of their group assignment. Researchers conducting the assessments and data analysis were blinded to the group allocation.

Intervention

The music therapy group received personalized music sessions starting 30 minutes before anesthesia induction and continuing until the end of the surgery. Music selections were made based on patient preferences, with options spanning classical, soft rock, jazz, and Indian classical music, played through noise-canceling headphones at a comfortable volume. The control group received standard perioperative care without the addition of music therapy.

Data Collection

Baseline anxiety levels were assessed using the State-Trait Anxiety Inventory (STAI) one day before surgery. Perioperative pain was measured using the Visual Analog Scale (VAS), and medication use (anxiolytics, analgesics, and anesthetics) was recorded. Patient satisfaction was evaluated through a postoperative questionnaire. All assessments were conducted by personnel blinded to the study groups.

Statistical Analysis

Data were analyzed using SPSS version 25.0. Continuous variables were compared using the Student's t-test or Mann-Whitney U test, as appropriate, while categorical variables were analyzed using the Chi-square test or Fisher's exact test. A p-value of less than 0.05 was considered statistically significant. The primary outcomes were changes in anxiety levels and pain perception, while secondary outcomes included differences in medication use and patient satisfaction scores between the two groups.

Results

The comparative analysis of demographic and clinical characteristics between the music therapy and control groups, as detailed in Table 1, elucidates a carefully balanced participant profile across both cohorts. With mean ages closely aligned at 35 years (±10 SD) for the music therapy group and 36 years (±11 SD) for the control group, the study meticulously ensures age-related factors do not skew its findings. This attention to demographic balance is further reflected in the gender distribution, showing a harmonious split with 50% males and 50% females in the music therapy group, paralleled by a slight variation in the control group (46.7% males and 53.3% females). The homogeneity extends to the participants' preoperative health status, categorized under the ASA Physical Status with 66.7% classified as I and 33.3% as II in the music therapy

group, closely matched by 63.3% and 36.7%, respectively, in the control group. Additionally, the type of surgery—minor or major—was nearly identical across groups, with 50% of participants undergoing minor surgeries and the remaining 50% subjected to major surgeries in both groups. The lack of significant statistical difference across these demographics and clinical characteristics, as indicated by p-values well above the 0.05 mark, firmly establishes the foundational equivalence necessary for a valid comparison of outcomes.

Table 1: Demographic and Clinical Characteristics of Participants

Variable	Music Therapy Group (n=60)	Control Group (n=60)	p-value
Age (years, mean ± SD)	35 ± 10	36 ± 11	0.74
Gender (M/F)	30/30	28/32	0.69
ASA Physical Status (I/II)	40/20	38/22	0.76
Type of Surgery			
- Minor	30	28	0.70
- Major	30	32	0.65

SD: Standard Deviation, M: Male, F: Female, ASA: American Society of Anesthesiologists

In Table 2, the examination of preoperative anxiety levels offers a striking insight into the efficacy of music therapy. The music therapy group presented with a mean preoperative STAI score of 40 (±5 SD), markedly lower than the control group's mean of 50 (±6 SD). This reduction in anxiety levels among the music therapy recipients is not only statistically significant ($p < 0.001$) but also clinically relevant, suggesting a substantial impact of music therapy in alleviating preoperative anxiety. The use of mean scores and standard deviations in this context provides a clear, quantitative assessment of the intervention's effect, underscoring the potential of music therapy as a potent, non-pharmacological tool to enhance patient well-being in the perioperative environment.

Table 2: Preoperative Anxiety Levels (STAI Scores)

Group	Preoperative STAI Score (mean ± SD)	p-value
Music Therapy Group	40 ± 5	<0.001
Control Group	50 ± 6	

STAI: State-Trait Anxiety Inventory, SD: Standard Deviation

Table 3, "Perioperative Pain Perception (VAS Scores)," provides a nuanced view of pain levels experienced by patients at various stages of the surgical process, comparing those who received

music therapy to a control group. Initially, both groups reported similar preoperative pain levels, with mean scores of 2 (±1.2 SD) for the music therapy group and 2.1 (±1.3 SD) for the control group, indicating no significant difference (p=0.55). However, the intraoperative and postoperative (24h) phases reveal a stark contrast. The music therapy group experienced significantly lower pain levels during surgery (1.5 ± 0.8) compared to the control group (3 ± 1.1), and this trend continued postoperatively, with scores of 2 (±1.1 SD) versus 3.5 (±1.2 SD) respectively. These findings, underscored by p-values of less than 0.001, suggest that music therapy significantly reduces the perception of pain both during and after surgery.

Table 3: Perioperative Pain Perception (VAS Scores)

Timepoint	Music Therapy Group (mean ± SD)	Control Group (mean ± SD)	p-value
Preoperative	2 ± 1.2	2.1 ± 1.3	0.55
Intraoperative	1.5 ± 0.8	3 ± 1.1	<0.001
Postoperative (24h)	2 ± 1.1	3.5 ± 1.2	<0.001

VAS: Visual Analog Scale, SD: Standard Deviation

Table 4, "Medication Use During Surgery," further quantifies the impact of music therapy on the pharmacological aspect of patient care. It demonstrates a noteworthy reduction in the dosage of medications administered to the music therapy group. Anxiolytics, analgesics, and anesthetics were used in lower mean dosages (0.5mg ± 0.2, 50mg ± 10, and 100mg ± 20, respectively) compared to the control group (1mg ± 0.3, 70mg ± 15, and 120mg ± 25, respectively), with all differences achieving statistical significance (p-values of <0.001 for anxiolytics and analgesics, and 0.02 for anesthetics). This suggests that music therapy may play a role in reducing the need for pharmacological intervention during surgery, potentially mitigating medication-related side effects and interactions.

Table 4: Medication Use During Surgery

Medication	Music Therapy Group (mean dosage ± SD)	Control Group (mean dosage ± SD)	p-value
Anxiolytics	0.5mg ± 0.2	1mg ± 0.3	<0.001
Analgesics	50mg ± 10	70mg ± 15	<0.001
Anesthetics	100mg ± 20	120mg ± 25	0.02

SD: Standard Deviation

Table 5, "Postoperative Patient Satisfaction Scores," assesses patient satisfaction on a scale of 1 to 10 across several parameters, revealing a significant enhancement in the music therapy group's

experience. With scores of 9 (±0.8 SD) for overall satisfaction, 9.2 (±0.7 SD) for comfort level, and 8.8 (±1 SD) for willingness to repeat the experience if necessary, the music therapy group reported markedly higher satisfaction than the control group, which scored 7 (±1.1 SD), 6.5 (±1.2 SD), and 6 (±1.3 SD), respectively. The significant p-values of less than 0.001 across all parameters indicate that music therapy not only improves the subjective experience of care but also enhances patients' comfort and satisfaction with the surgical process.

Table 5: Postoperative Patient Satisfaction Scores

Satisfaction Parameter	Music Therapy Group (score out of 10, mean ± SD)	Control Group (score out of 10, mean ± SD)	p-value
Overall Satisfaction	9 ± 0.8	7 ± 1.1	<0.001
Comfort Level	9.2 ± 0.7	6.5 ± 1.2	<0.001
Willingness to Repeat	8.8 ± 1	6 ± 1.3	<0.001

Discussion

This study aimed to evaluate the effectiveness of music therapy as an adjunct to anesthesia in reducing preoperative anxiety, perioperative pain, medication use, and enhancing patient satisfaction. The findings indicate that music therapy significantly benefited patients undergoing elective surgeries, aligning with the hypothesis that non-pharmacological interventions can play a crucial role in perioperative care.

The significant reduction in preoperative anxiety levels in patients exposed to music therapy, as indicated by lower STAI scores compared to the control group, corroborates the body of evidence suggesting music's calming effect on the nervous system. These results are consistent with studies, which highlighted music's ability to decrease cortisol levels and modulate the autonomic nervous system, thereby reducing anxiety.[7-9]

Furthermore, the observed decrease in perioperative pain perception, as reflected in lower VAS scores among the music therapy group, adds to the growing evidence that music can be a powerful adjunct in pain management. This finding supports the gate control theory of pain, suggesting that music may distract patients from pain stimuli, thus altering pain perception.[10-11]

The reduction in medication use among patients receiving music therapy is a particularly noteworthy finding. The need for lower doses of anxiolytics, analgesics, and anesthetics not only underscores the therapeutic potential of music but also suggests a practical approach to mitigating the risks associated with pharmacological interventions, including side effects and dependency.[10-11]

Increased patient satisfaction scores in the music therapy group highlight the importance of patient-centered care approaches. This aligns with previous research indicating that patient

satisfaction is significantly influenced by non-clinical factors, including the care environment and emotional support. The willingness of patients to repeat the experience suggests a high level of acceptance and satisfaction with music therapy as part of their care.[8-11]

Limitations and Future Research

While the results are promising, this study is not without limitations. The single-center design and the specific patient population limit the generalizability of the findings. Additionally, the subjective nature of measures such as pain perception and satisfaction may introduce bias. Future research could address these limitations by incorporating a multi-center design, a broader patient demographic, and objective measures of physiological responses to music therapy.

Clinical Implications

The findings from this study suggest that music therapy can be a valuable adjunct to anesthesia, offering a non-invasive, cost-effective method to enhance patient outcomes. The integration of music therapy into perioperative care protocols could potentially reduce the reliance on pharmacological interventions, improve patient satisfaction, and contribute to a more holistic approach to patient care.

Conclusion

In conclusion, this study adds to the growing body of evidence supporting the benefits of music therapy in the perioperative setting. By demonstrating significant improvements in anxiety, pain perception, medication use, and patient satisfaction, it underscores the potential of music therapy to enhance the surgical experience. As healthcare continues to evolve towards more patient-centered models, the integration of music therapy into clinical practice offers a promising avenue for enhancing patient care and outcomes

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