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A Comparative Study Between Music Therapy Versus Virtual Reality Therapy In Alleviation Of Anxiety And Patient Satisfaction In Patients Undergoing Elective Surgical Procedures.

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ABSTRACT

Preoperative anxiety is a widespread concern among patients undergoing elective surgical procedures, often leading to increased pain sensitivity, heightened anaesthetic needs, and delayed recovery. Conventional pharmaceutical treatments, while effective, may pose risks such as sedation and dependency, prompting the need for alternative approaches. Among non-pharmacological options, music therapy has long been recognized for its calming effects, while virtual reality (VR) therapy is emerging as a novel method for anxiety reduction. This study examines the effectiveness of both interventions in alleviating anxiety and improving patient satisfaction before surgery. A randomized controlled trial was conducted with 100 patients scheduled for elective surgery. Participants were randomly assigned to one of two groups: one receiving music therapy and the other undergoing VR therapy for 30 minutes prior to their procedure. Anxiety levels were assessed using the State-Trait Anxiety Inventory (STAI) before and after intervention, while patient satisfaction was measured postoperatively through a structured survey. Both music and VR therapy significantly reduced anxiety levels. However, the VR therapy group exhibited a greater decrease in STAI scores compared to the music therapy group. Additionally, patient satisfaction scores were higher among those who underwent VR therapy, suggesting a stronger preference for immersive and engaging interventions. While both therapies are beneficial in reducing preoperative anxiety, VR therapy appears to be more effective in both anxiety alleviation and patient satisfaction. This study supports the inclusion of VR-based interventions in preoperative care strategies to improve patient experiences.

Keywords: Preoperative anxiety, Music intervention, Virtual reality therapy, Patient satisfaction, Surgery preparation

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INTRODUCTION

Experiencing anxiety before surgery is a natural reaction, but excessive anxiety can negatively impact patient outcomes. It can elevate stress hormone levels, increase pain perception, prolong hospital stays, and lead to higher anesthetic requirements. Traditionally, sedatives and anxiolytic medications have been used to address preoperative anxiety, but they come with potential side effects, including drowsiness, respiratory complications, and increased medical costs.

As a result, there has been growing interest in alternative, non-pharmacological strategies to ease preoperative stress. Music therapy has been widely used in healthcare settings due to its simplicity and effectiveness. By offering a soothing auditory experience, music therapy helps divert attention from stressors, promoting relaxation.

On the other hand, virtual reality (VR) therapy is a newer technique gaining traction in medical environments. By immersing patients in a calming, simulated environment, VR therapy provides a multi-sensory distraction, helping to shift focus away from anxiety-inducing thoughts. The interactive nature of VR makes it a promising tool for preoperative care [1-8].

This study explores and compares the effectiveness of music therapy and VR therapy in reducing anxiety levels and enhancing patient satisfaction in those undergoing elective surgical procedures. The findings aim to provide insights into the potential incorporation of these interventions into routine preoperative protocols.

MATERIALS AND METHODS

Study Design and Participants

This research was conducted as a randomized controlled trial at a tertiary care hospital. A total of 100 patients scheduled for elective surgeries were recruited, meeting the inclusion criteria of being between 18 and 65 years of age and classified under ASA physical status I-II. Patients with hearing impairments (for music therapy), visual impairments or susceptibility to motion sickness (for VR therapy), or those on prescribed anti-anxiety medications were excluded from participation.

Randomization and Interventions

Patients were randomly divided into two equal groups. One group received music therapy, in which they listened to calming instrumental music through noise-canceling headphones for 30 minutes before their surgery. The second group underwent a 30-minute VR therapy session, engaging in a relaxing virtual environment designed to ease anxiety.

Outcome Assessment

The effectiveness of each intervention was measured using two key parameters:

- **Anxiety Reduction:** Preoperative anxiety was evaluated using the State-Trait Anxiety Inventory (STAI) before and after intervention.
- **Patient Satisfaction:** Following surgery, patients completed a standardized survey rating their satisfaction with the intervention on a scale of 1 to 10.

Data Analysis

Data was analyzed using SPSS software. Changes in STAI scores within each group were examined using paired t-tests, while differences between the two interventions were analyzed through independent t-tests. A p-value of <0.05 was considered statistically significant.



RESULTS

Reduction in Anxiety

Both music therapy and VR therapy significantly reduced anxiety levels. The music therapy group exhibited an average reduction of 10 points in STAI scores, while the VR therapy group showed a more pronounced reduction of 15 points. The difference between the two groups was statistically significant ($p < 0.05$), favoring VR therapy as the more effective intervention.

Patient Satisfaction Levels

Patients in the VR therapy group reported higher satisfaction, with an average score of 9 out of 10, compared to 8 out of 10 in the music therapy group. Statistical analysis confirmed the significance of this difference ($p < 0.05$), indicating that patients preferred the immersive nature of VR over passive auditory therapy.

Demographic Data

Table 1: Demographic Data of Participants

Demographics	Music Therapy Group (n=50)	VR Therapy Group (n=50)
Mean Age (years)	45	47
Gender (M/F)	25/25	26/24

STAI Scores Before and After Therapy

Table 2: Pre- and Post-Intervention STAI Scores

Group	Pre-Intervention STAI	Post-Intervention STAI	Mean Reduction
Music Therapy	40	30	10
VR Therapy	42	27	15

Patient Satisfaction Scores

Table 3: Patient Satisfaction Scores

Group	Mean Satisfaction Score
Music Therapy	8
VR Therapy	9

DISCUSSION

The findings of this study reinforce the effectiveness of both music therapy and VR therapy in preoperative anxiety management. However, VR therapy demonstrated a superior reduction in anxiety levels, likely due to its immersive quality, which more effectively diverts patients' attention from surgical concerns.

Additionally, the significantly higher patient satisfaction scores among those who experienced VR therapy suggest that individuals find interactive and visually stimulating interventions more engaging than passive listening. The ability of VR to transport patients into a completely different environment appears to enhance the preoperative experience, making it a valuable psychological tool.

These results are consistent with prior research that highlights VR therapy's benefits in pain management and anxiety reduction in various clinical settings, including burn treatment and chemotherapy. Given its positive impact, VR therapy has the potential to become a routine part of preoperative care.

However, some limitations should be noted. The study excluded individuals with visual impairments or motion sickness, which may limit its applicability to all patient populations. Furthermore,

the short duration of both interventions means that the long-term impact on postoperative recovery and anxiety levels remains unclear [9-14].

Future studies should investigate the cost-effectiveness of VR therapy and its potential benefits for postoperative pain management, recovery speed, and overall healthcare expenditures.

CONCLUSION

Both music therapy and VR therapy are effective in reducing preoperative anxiety and enhancing patient satisfaction. However, VR therapy appears to offer greater benefits in both areas. Incorporating VR-based interventions into preoperative care routines may provide a powerful, non-pharmacological solution for anxiety management, ultimately improving patient outcomes.

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