The Impact of Music Therapy in the Postoperative Setting on Overall Patient Satisfaction Using Validated Outcome Scores

Christopher P. Chiodo, MD, Cornelia Keyser, BA, David Palms, BA, Christopher Malone, RN, Eric M. Bluman, MD, PhD, Jeremy T. Smith, MD

Purpose: Previous studies have examined music therapy (MT) as a potential modality to relieve negative postoperative symptoms such as pain. This randomized control trial examined the use of MT on patient satisfaction in the postanesthesia care unit.

Design: Fifty patients undergoing outpatient orthopaedic surgery were enrolled and randomized into two groups, those receiving MT postoperatively and a control group who did not.

Methods: After hospital discharge, subjects were assessed with two validated outcome measurements for overall patient satisfaction, the visual analog satisfaction scale and the Patient Judgment of Hospital Quality survey.

Findings: The results showed no statistically significant differences between the MT and control group on the Patient Judgment of Hospital Quality survey (MT = 3.42, standard therapy = 3.41, P = .94) and the visual analog satisfaction scale (MT = 91.20, standard therapy = 91.65, P = .88).

Conclusions: MT given in the postoperative setting has no impact on overall patient satisfaction.

Keywords: music therapy, patient satisfaction.
previous research examining MT in adult patients in the postoperative setting. Most studies have focused primarily on pain relief and the effect of music on physiological factors such as respiratory rate, with the overall results being contradictory or inconclusive. For instance, Good et al reported that music reduced pain levels after major abdominal surgery, whereas Taylor et al found that it did not. More recent research by Gallagher et al reported that MT reduced postoperative pain, anxiety, and nausea for patients who underwent various types of orthopaedic surgeries. In addition, Toulunay et al found that music played in outpatient orthopaedic cast rooms reduced patient anxiety and improved patient ratings of their overall experience. Our research investigated the replication of improvements in patient experience if MT is administered postoperatively. Although some research has investigated MT’s potential to improve satisfaction with the operative experience, those studies that examined patient satisfaction did so only peripherally and did not use validated measures. Accordingly, the goal of the present investigation was to assess the effect of MT on overall patient satisfaction in the postanesthesia care unit (PACU) using validated outcome measures.

**Design**

Institutional Review Board approval was obtained. Consecutive patients who underwent outpatient foot and ankle surgery at the Brigham and Women’s Faulkner Hospital in Boston were recruited to participate in the study by a research assistant. Patients who gave written consent to participate were randomized to one of two study groups using the sealed envelope technique. The “standard therapy” (ST) control group received standard care in the orthopaedic postoperative recovery room, whereas subjects in the “MT” group were provided with noise canceling headphones and an iPod with a wide selection of popular and relaxing songs to use during their time in the PACU.

The research assistant explained how to use the iPod and remained in the PACU to answer any questions that the patients had. Patients who did not previously have experience using an iPod were not excluded from the study. The nurses and staff working in the PACU were given information on the study and instructed to find the research assistant if the patients had study-related questions. In addition, all participants were informed that they would receive a survey with questions pertaining to their hospital experience 2 weeks after they left the hospital. They were instructed to complete and return the surveys in the provided prestamped envelope. They were also informed that their responses would remain anonymous and recorded by the research assistant, who was in no way involved with their care.

A power analysis performed with $\alpha = 0.05$ and $\beta = 0.1$ calculated a sample size of 25 subjects per group. A hypothesized clinically significant difference of 7 mm for the visual analog satisfaction scale (VASS) was determined using Singer and Thode’s “Determination of the minimal clinically significant difference on a patient visual analog satisfaction scale.” Enrollment in each group was closed following the return of the 25th completed survey.

**Methods**

Seven days postoperatively, all subjects were mailed a survey containing two validated outcome instruments, the VASS as well as relevant and individually validated sections from the Patient Judgment of Hospital Quality (PJHQ) survey. The PJHQ was chosen as it has been validated to address patient satisfaction with both the general health care domain and in regards to specific aspects of care. Items included a variety of multiple choice, yes/no, rating scale, and open-ended questions. Items were summed and converted to a scale from 0 to 100, with 100 indicating an excellent score. The total survey included 100 items that were subdivided into 11 subscales. Specifically, the “nursing and daily care,” “hospital environment and ancillary staff,” and “overall quality of care and services” sections of the PJHQ were included in our survey. To limit the possibility of coercion, subjects were informed that their survey responses would be deidentified and persons involved in their surgical care would remain unaware of participation and individual responses. At the conclusion of enrollment, data were analyzed using a 2-tailed Student $t$ test with a $P$ value < .05 indicating statistical significance.
Findings

Ninety-seven consecutive surgical patients were recruited to the study and randomized to either the MT or the ST treatment group. During the study, no patient in the music group discarded, discontinued, or turned the iPod over to the nursing staff. Twenty-five of the 46 subjects (54%) in the MT group and 25 of 51 subjects in the ST group (49%) returned the survey and were enrolled in the study. The age range for the study was 17 to 94 years. The average age of the subjects in the MT group was 51 years, whereas the average age in the ST group was 49 years. Seventeen of the 25 enrolled patients (68%) in each group were female and 8 were male.

Paired Student \( t \) tests were performed comparing the results of the VASS, the PJHQ, and each section of the PJHQ (nursing and daily care, hospital environment and ancillary staff, and overall quality of care and services) between the MT and ST groups (Table 1 and Figure 1). An overall survey score was calculated using a weighted mean of all survey items, and scores of the ST and MT groups were analyzed using a paired Student \( t \) test. The PJHQ survey uses a five-point Likert scale, which is then converted to a score from 0 to 100 (100 being excellent). The VASS is also graded on a scale of 0 to 100.

The average VASS score for the MT group was 91.20 compared with 91.65 for the ST group (Figure 2). Similar results were replicated on the PJHQ with a score of 68.4 for the MT and 68.2 for the ST. Within each subcategory, the MT group scored on average only 1.4 points higher on nursing and daily care, 0.5 points lower on hospital environment and ancillary staff, and 5.4 points lower on overall quality of care and services, when compared with the ST group (Figure 1).

We found no statistically significant difference \( (P < .05) \) between the MT and ST groups overall or for any component of the survey. We also performed a 2-tailed Student \( t \) test comparing the two groups for each individual question in the survey and did not find any statistically significant differences. Results and \( P \) values are listed in Table 1.

Discussion

The postoperative period is a potentially stressful time for patients. Patients find themselves in a new and sometimes noisy environment, often experiencing pain when concerned about recovery. On the other hand, music can be both relaxing and distracting. It can reduce and even eliminate disruptive noise (ie, unwanted sounds). As such, it would seem reasonable to offer MT to patients postoperatively.

In our study, 97 patients were consented and randomized to receive either MT or ST during their postoperative care at the Brigham and Women’s Faulkner Hospital. Of the 46 and 51 subjects that were randomized to the MT and ST groups, respectively, 25 patients from each division returned surveys. On analysis of the results, no significant differences were found between the research and the control groups on any of the given outcome measures.

Our results suggest that MT administered after outpatient orthopaedic procedures does not have an impact on patient satisfaction. Our findings

### Table 1. Mean Results for All Outcome Measures

<table>
<thead>
<tr>
<th></th>
<th>MT Group (N = 25), Mean (SD)</th>
<th>ST Group (N = 25), Mean (SD)</th>
<th>( P ) Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual analog satisfaction scale</td>
<td>91.20 (7.89)</td>
<td>91.65 (12.89)</td>
<td>0.88</td>
</tr>
<tr>
<td>Patient Judgments of Hospital Quality Overall Score</td>
<td>68.4 (9.4)</td>
<td>68.2 (10.2)</td>
<td>0.94</td>
</tr>
<tr>
<td>Nursing and daily care</td>
<td>74.4 (7.6)</td>
<td>73.0 (9.4)</td>
<td>0.54</td>
</tr>
<tr>
<td>Hospital environment and ancillary staff</td>
<td>63.2 (13.2)</td>
<td>63.8 (12.6)</td>
<td>0.88</td>
</tr>
<tr>
<td>Overall quality of care and services</td>
<td>62.8 (16.2)</td>
<td>68.2 (13.6)</td>
<td>0.21</td>
</tr>
</tbody>
</table>

MT, music therapy; SD, standard deviation; ST, standard therapy.

SDs calculated for each mean are also listed as well as \( P \) values calculated with a Student \( t \) test determining the statistical significance.
contradict those of other authors. For instance, Heitz et al reported that patients who received MT in the PACU perceived their experience as being “more pleasant” than the control group both 1 day and 1 month after discharge. Shertzer and Keck reported similar findings, where patients who listened to music had a more positive perception of their time in the PACU. These authors did not use validated outcome scores to measure satisfaction, however, and this may explain the discrepancy between our results and theirs. Furthermore, the primary focus of these other studies was music’s impact on variables such as postoperative pain, only peripherally investigating satisfaction as a secondary outcome.

There are possible explanations as to why music failed to impact patient satisfaction in our investigation. These reasons may be physiological or due to study design. Although music has shown to benefit health outcomes, this impact may not be applicable in the postoperative setting. Some studies have reported a decrease in pain where as others have reported no detectable effect. These differences may be a result of confounding factors, such as a patient’s music preferences or general coping skills that music may or may not effect. Many patients are still experiencing residual effects of anesthesia medication, which may alter their cognitive function and subsequently the effects of music in this setting.
Our study is not without limitations. A ceiling effect may have played a role in the study outcomes. The metrics for patient satisfaction for control subjects had a mean greater than 91% for the VASS and greater than 3.1 of 5 on other outcome measurements. As such, the difference in patient satisfaction attributed to music may have been undetectable when considering other factors, summing to an overall positive surgical experience. It is unknown as to whether a greater effect would be observed if this experiment were repeated in a center where negative patient satisfaction outcome measurements were previously reported. Furthermore, enrollment in the study was dependent on patients choosing to submit a survey, potentially introducing a nonresponse bias.

Conclusions

In this study, MT administered in the postoperative setting had no significant impact on overall patient satisfaction. Although music may in some settings have a beneficial effect on other parameters such as pain, institutions may wish to consider other interventions if focusing on overall patient satisfaction scores.

References