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# Improving Perioperative Anxiety and Pain: Development of a Music Therapy Protocol

Rhyz Wilson, BSN, RN

## **Introduction of the Problem**

In the United States, 23 million people undergo surgery each year, generally experiencing preoperative anxiety and pain (Mohammadi, Ajorpaz, Torabi, Mirsane, & Moradi, 2014).

Patients who become apprehensive in anticipation of surgery can show physical and psychological changes, including increased heart rate, blood pressure, and palpitations (Ni, Tsai, Lee, Kao, & Chen, 2011). Perioperative anxiety is strongly correlated with a higher incidence of post-surgery pain, an increased need for analgesics and anesthetics, and delayed recovery and discharge from the hospital (Jimenez-Jimenez et al., 2013; Kuhlmann et al., 2018). Finding multimodal approaches to ease anxiety and discomfort from unfamiliar hospital surroundings is necessary to reduce preoperative anxiety and subsequent physiological complications (Ni et al., 2011). The purpose of this doctoral project was to improve perioperative anxiety and pain through the development of a music therapy protocol for a critical access hospital in southern Illinois. This critical access hospital had no protocol in place and was interested in developing a music therapy protocol for managing perioperative anxiety and pain.

## **Literature Review**

Current evidence demonstrates a statistically significant decrease in both anxiety and pain in adults receiving music interventions before, during, and/or after surgery (Kuhlmann et al., 2018; Lin et al., 2011; Nilsson, 2008). Systematic reviews and meta-analyses of randomized controlled trials have revealed that music can decrease systolic and diastolic blood pressure, heart rate, and respiratory rate (Kuhlmann et al., 2018; Nilsson, 2008; Trangeberg & Stomberg, 2013; Wakim et al., 2010). Music as an anesthetic adjunct during monitored anesthesia care

(MAC) cases, was found to reduce the amount of sedation required, speed recovery time, and prevent the likelihood of converting to a general anesthetic (Newman et al., 2010). Similarly, lower anxiety levels were reported in expectant mothers undergoing caesarean section with regional anesthesia after receiving music intervention compared to those who did not (Hepp et al., 2018).

On the contrary, results of a prospective, randomized, double blind study did not show beneficial effects of intraoperative music as a nonpharmacological intervention under general anesthesia to reduce stress response or anesthetic requirement (Kalyani, Poonam, & Shalini, 2015). When questioned 24 hours after the surgery, no patient recalled hearing music during the surgery (Kalyani et al., 2015).

According to systematic reviews conducted by Nilsson (2008) and The Joanna Briggs Institute (2011), the tempo of the music seems to be the most important factor in determining the effectiveness of music therapy. The recommended type of music is non-lyrical, consisting predominantly of low tones, comprised of mostly strings with minimal brass percussion, and at a volume level of 60 dB (Nilsson, 2008). A musical rate of 70 to 80 beats per minute is similar to the heart's own rhythm and stimulates the brain's alpha waves, which leads to relaxation and a reduction of pain through the release of the body's endogenous opioids and endorphins (Trangeberg & Stomberg, 2013).

### **Project Methods**

The objectives of this quality improvement project were to: (1) review current evidence-based literature to determine the role of music in perioperative anxiety and pain management; (2) develop a music therapy protocol for a critical access hospital in southern Illinois; (3) introduce the music therapy protocol to perioperative nurses and anesthesia providers at a critical access

hospital in southern Illinois; and (4) encourage use of the protocol to serve as an option for managing perioperative anxiety and pain.

Based on the evidence and in collaboration with agency stakeholders, a music therapy protocol was developed for a 25-bed critical access hospital in southern Illinois. An educational presentation demonstrating the positive impact of music therapy was presented to a total of ten preoperative nurses, anesthesia providers, and postoperative nurses. After time for discussion and questions, the music therapy protocol was introduced. The participants agreed to implement the music therapy protocol and discussed specific details about implementation.

The music therapy protocol involved the preoperative nurse offering music to adult patients who were scheduled for procedures that required monitored anesthesia care involving local anesthesia with sedation and/or analgesia. Music was delivered to the patient through an MP3 player using earbud headphones or Bose headphones. To ensure cleanliness of the equipment, disposable single-use ear bud headphones and disposable ear pad covers for the Bose headphones were used. Non-lyrical music with a rhythm of 60-80 beats per minute (bpm) was preprogrammed into MP3 players. According to the protocol, patients received music therapy for at least 15 minutes in the preoperative area, for the duration of the procedure, and for at least 15 minutes in the postoperative recovery area. After patient discharge, the postoperative staff nurse was responsible for cleansing the MP3 player with a disinfectant wipe, then returning the MP3 player to the pre-procedure holding area in order to be recharged.

### **Evaluation**

A survey of eight questions was developed in collaboration with agency stakeholders to evaluate the staff's perception of the music therapy protocol. This survey included questions to evaluate feasibility of the protocol, challenges faced while using the protocol, and staff

perceptions of the effectiveness of the protocol. A 5-point Likert scale was used to assess staff members' support and the likelihood of continuing the use of music therapy at the facility. A section at the end of the survey was included to allow staff to provide additional comments and suggestions regarding the protocol. Four months after the implementation and presentation of the music therapy protocol, a link to this online survey was sent to the perioperative nurses and the anesthesia providers who chose to use the music therapy protocol. The completed online surveys remained confidential as no attempt was made to identify staff or link participant identity to survey responses.

Outcomes of the evaluation demonstrated positive feedback to the music therapy protocol. There were a total of five participants who chose to respond to the survey – 2 certified registered nurse anesthetists, 1 preoperative RN, 1 postoperative RN, and another labeled as other (LVN). All respondents ranked the ease of use of the protocol as very easy or easy. None of the participants identified challenges while using the protocol. The majority of the participants (60%) said that the music therapy protocol was very effective in improving patient anxiety and pain. The perioperative staff members said that they would likely continue to use the protocol in the future. In the open-ended suggestion section of the survey, one respondent suggested that there be more MP3 players available, so more patients could use them on busy scheduled days in the operating room.

One limitation of this project is that music therapy is unlikely to bring benefit to individuals who are unable to consciously perceive music, such as in the case of deafness or being under general anesthesia. Another limitation of this project is that patients were not asked to evaluate their experience with music therapy; the perioperative staff provided their own perceptions of patient responses. Only half of the perioperative staff members who attended the

educational presentation, when the music therapy protocol was introduced, responded to the online evaluation survey.

### **Impact on Practice**

An immediate impact at this critical access hospital was that staff members perceived patients had decreased levels of both anxiety and pain with the implementation of music therapy. Staff members found the music therapy protocol easy to use and showed a strong level of support for continuing to use the protocol. A long-term impact of the music therapy protocol would be the potential to decrease intraoperative anesthetic requirements and reduce the number of opioids administered to achieve pain relief, thereby reducing the chances of experiencing the side effects associated with opioids. Because music has a positive impact on both the psychological and physical outcomes of patients, a suggestion regarding ongoing implementation would be to offer music therapy, as part of a multimodal regimen, to children and/or inpatients, especially to those experiencing anxiety after being admitted to a hospital.

### **Conclusions**

The literature review indicated that music therapy can be used as part of a multimodal approach to ease anxiety and discomfort in unfamiliar hospital surroundings. By creating a music therapy protocol for a critical access hospital in southern Illinois, music was integrated by perioperative nurses and anesthesia providers as a safe, inexpensive therapeutic intervention to reduce perioperative anxiety and pain in adult patients undergoing surgery. Results from an evaluation survey indicated that after using the protocol, staff members perceived patients had decreased levels of both anxiety and pain. Additionally, staff members found the protocol easy to use and showed a strong level of support in continuing to use the protocol. Expanding music therapy to children and/or inpatients could be explored.

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