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The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module

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Abstract

Title: The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module

Impact Statement: In the adult perioperative patient, anxiety is a prevalent factor. Many clinicians turn to pharmacological methods for reducing anxiety. Music therapy has been recognized as a nonpharmacological practice that successfully reduces anxiety which can simply implemented into clinical care.[2]

Background: Anxiety is experienced by most individuals in the perioperative setting, which causes the body to develop a stressful state.[1] Anxiety can lead to negative effects on the patients surgical and anesthetic management. The prevalence of perioperative anxiety challenges healthcare providers to find an alternative approach to reduce anxiety for those patients who cannot be treated with the traditional pharmacological approach of using midazolam.

Method: A literature review was conducted which examined the use of music therapy versus midazolam for reducing anxiety in the adult perioperative patient. An educational module was developed and presented to an anesthesia group in which participants completed a pre- and post-assessment. The educational intervention was distributed anonymously using an online survey platform for data collection.

Results: Researchers found that an educational module is a successful method for implementing clinical change. The results concluded that participants would be likely to implement music therapy into practice exhibiting that participants' knowledge and perspectives markedly increased.

Discussion: Data from the survey demonstrated that anesthesia providers improved their knowledge about music therapy as a nonpharmacological method to reduce anxiety. A few limitations were identified: small sample size, online delivery, and access to the survey.

Conclusion: Implementing an educational intervention is a proven method of dispersing knowledge. This educational intervention has indicated positive outcomes, demonstrating that an educational module can significantly enhance the knowledge and attitudes of participants, thereby promoting change.

Keywords: Music Therapy, Anxiety, Midazolam, Preoperative Care

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Introduction

For any individual, a surgical intervention can be a disquieting experience.[1] Each year, roughly 234 million surgical operations are performed.[2] Approximately fifty percent of patients who undergo surgery will have preoperative anxiety, including fear, nervousness, and concern about an event.[3] Anxiety can lead to fatigue, restlessness, muscle tension, and difficulty concentrating.[3] Many patients perceive the day of surgery as one of the most ominous days of their lives.[1] The fear of surgical complications is a predominant factor leading to anxiety in preoperative surgical patients.[3] Anxiety is a normal response amongst patients undergoing a surgical procedure; thus, anesthesia providers must mitigate the anxiety through pharmacological and non-pharmacological methods.[1]

PICO Question

In adult patients 18 years old and older, how does preoperative music therapy implementation, compared to midazolam administration, reduce patient anxiety?

Problem Statement

Surgery encumbers the body by generating a stressful state.[1] Among the individuals undergoing a surgical procedure, fifty percent of those individuals will experience a form of preoperative anxiety.[3] Preoperative anxiety is a universal dilemma; in the United States, it occurs as much as 20.2%.[3] The regularity of perioperative anxiety can vary depending on the type of surgery, gender, and influence for surgery.[3] Preoperative anxiety is influenced by many factors, with most patients being fearful of the surgical outcome, thus making it the leading cause of preoperative anxiety (29.3%).[3] Anxiety is a normal response experienced by individuals undergoing a surgical procedure. Anxiety can be acute or chronic.[3] In the preoperative period,

anxiety can be characterized as a vague, uneasy feeling with the cause being nonspecific and unknown.[3,4] Anxiety precipitates nervousness, fear, fatigue, restlessness, muscle tension, and problems concentrating.[3]

Problem Identification

Preoperative anxiety can significantly lead to unwanted hemodynamic responses due to sympathetic, parasympathetic, and endocrine stimulation affecting the surgical outcome and anesthetic management.[3,4] Anxiety generates a substantial amount of stress on the body, increasing rates of cardiac mortality, unwanted problems with anesthetic induction, and altered recovery corresponding with preoperative anxiety.[3] These undesirable events can incite increased postoperative pain, a prolonged hospital stay, reduced quality of life, and a profound need for analgesia and anesthetics.[3] A patient with preoperative anxiety can encounter delayed wound healing and an impaired immune system, leading to an increased risk of infection.[3]

Anxiety can have extensive effects on the anesthetic management of a patient. Anxiety can prompt patient dissatisfaction with anesthesia management and produce undesirable anesthetic complications.[3] The prevalence of preoperative anxiety challenges healthcare providers to find an alternative approach to reduce anxiety for those patients who cannot be treated with the traditional pharmacological approach of using midazolam.

Background

Anxiety is experienced by most individuals in the preoperative setting, which causes the body to develop a stressful state.[1] Many health care providers provide pharmacological treatment methods, such as the short-acting benzodiazepine midazolam, for anxiety relief and other non-pharmacological methods are not considered. Some patients are not appropriate candidates for

the traditional pharmacological approaches to reduce anxiety, leading healthcare providers to seek alternative options. A non-pharmacological method that can be used in the preoperative period to reduce anxiety is music therapy. Since the 19th century, music therapy has been an alternative intervention to aid in reducing anxiety levels.[2] Music therapy has been recognized as a practice that reduces anxiety and pain levels.[2] Music therapy is supported by the American Society of Critical Care Medicine Clinical Practice Guidelines as a proficient technique to regulate anxiety and pain.[2] Music therapy can be delivered in numerous configurations such as binaural tone and patient's choice of music.[4] Music therapy is effortless to administer, non-invasive, cost-effective, and adequate for reducing preoperative anxiety levels.[4]

Scope of the Problem

Preoperative anxiety is experienced frequently in an individual undergoing a surgical procedure and is ordinally treated with a pharmacological approach. The short-acting benzodiazepine midazolam is the traditional treatment used to alleviate a patient's anxiety.[5] Midazolam acts on the $GABA_A$ receptors, lessening anxiety, and is responsible for sedation and anterograde amnesia.[5] Midazolam can adversely affect a patient's clinical condition by eliciting dose-dependent sedation, leading to respiratory depression and reduced blood pressure.[5] Anxiolytics can trigger a delay in healing, increased healthcare utilization, postoperative delirium, and financial expenditure.[6] Accordingly, the adverse effects of pharmacological methods have some healthcare providers questioning the benefits; thus, they are supporting non-pharmacological methods as more equipped to reduce preoperative anxiety.[5]

Consequences of Not Addressing the Problem

Anxiety promotes a state of fear, nervousness, and worry in a person when an event is coupled with physiological alertness.[3] Anxiety in the preoperative patient can contribute to

numerous health problems. Anxiety can be acute or chronic, which can alter an anesthesia provider's anesthetic management of the patient, and it can further impact intraoperative anesthesia care.[3] By understanding the effects of preoperative anxiety, the anesthesia provider can tailor the anesthetic plan to ensure the effectiveness. The anesthesia provider can alter the anesthetic plan by increasing anesthetic requirements, treating hemodynamic changes, recognizing the possibility of delayed awakening, and treating postoperative pain levels.[3]

Preoperative anxiety not only effects the anesthesia plan but can have other devastating effects. Anxiety can promote acute myocardial infarction, high admission rates, increased analgesic and anesthetic usage, and prolonged hospital stays.[3] An anesthesia provider's main goal is to ensure patients are comfortable including being free from anxiety. The effects of preoperative anxiety can lead patients to be dissatisfied with care.[3] Anxiety can also affect a patient's pain level. In accordance with research, anxious patients have increased reports of postoperative pain delaying recovery.[7] It is vital that healthcare provider ensure a patient's preoperative anxiety is adequately controlled.

Knowledge Gap

The literature shows that majority of patients are uneducated about day of surgery expectations which promotes an increased risk of developing anxiety in the preoperative period. The day of surgery can be overwhelming for an individual. An unfamiliar environment surrounded by loud noises, frequent interactions and numerous providers promotes a state of anxiety. To assist in the reduction of preoperative anxiety, patients should be educated on what to expect on the day of surgery prior to their surgical procedure. Patients need to be educated on what to expect regarding the surgical, the anesthesia and the postoperative pain management plan, which can aid in lessening anxiety levels on the day of surgery.

Prior to the day of surgery, patients can be educated on personal techniques to decrease anxiety and the anxiety reducing methods available on the day of surgery, such as having the option of music therapy versus midazolam. Within the healthcare community there is a knowledge gap on alternative anxiety reducing methods such as music therapy and its benefits. Healthcare providers are taught to use pharmacological methods as treatments and overlook non-pharmacological practices that can be more beneficial to the patient versus traditional treatments. The benefits of music therapy need to be incorporated into healthcare provider education. Additional randomized control trials on the effects of music therapy for reducing preoperative anxiety levels need to be conducted, which will provide a foundation for the benefits of music therapy.[6]

Proposed Solution

Most healthcare providers use traditional pharmacological methods, such as the short-acting benzodiazepine, midazolam, to treat preoperative anxiety.[4] Some patients are not candidates for the use of pharmacological methods to lessen anxiety. Alternative non-pharmacological methods such as music therapy needs to be implemented into daily practice. Music therapy is an advantageous non-pharmacological anxiety-reducing method that serves as anxiety relief that is fundamentally harm-free and cost-effective.[4]

Research has exhibited that low-pitched, slow-paced, harmonious music akin to the heartbeat, provides relaxation and produces therapeutic effects when the patient listens to the music for at least thirty minutes.[4] Listening to music suppresses the sympathetic branch of the autonomic nervous system and activates the parasympathetic branch to initiate relaxation.[7] Music therapy balances mood and behavior therefore reducing anxiety levels.[4] Furthermore, music

therapy reduces a patient's perception of pain by releasing endogenous opioids and blocking nerve conduction.[4]

Music therapy, in comparison to midazolam, has exhibited a decrease in a patient's mean arterial pressure, preventing vast hemodynamic changes associated with anxiety, as the patient experiences greater relaxation and anxiolysis.[4,7] Music therapy can be beneficial to all surgical patients as research has shown that music therapy was effective in reducing preoperative anxiety in women undergoing a total laparoscopic hysterectomy.[8] Music therapy is a simple non-pharmacological technique that can be easily incorporated into the preoperative care of the patient.[9] Music therapy is a safe, feasible and low cost method that should be used as a treatment for pain and anxiety.[10] Patients on arrival to the preoperative area can be given a choice of music to listen to during the preoperative period. That music can then be played on the TV in the patient's holding area. Music therapy in the preoperative period is an established non-pharmacological method that aids providers in reducing anxiety levels.

Summary

Anxiety is a significant problem that patients face in the preoperative period. Anxiety causes tremendous stress to the body, weakening the immune system and ability to respond to surgical stress. The day of surgery is taxing to all patients, creating an emotional state that promotes anxiety. Healthcare providers typically turn to pharmacological methods with adverse side effects that can harm some patients. Music therapy, a non-pharmacological approach to treating anxiety, provides a comforting aspect with no unwanted side effects, thus benefiting all patients.

Review of the Literature

Literature Search Process

A literature review was performed using the Florida International University library website to access the online databases: PubMed and Science Direct. PubMed was selected as it includes international scholarly journals in medicine, nursing, and the health care system. Science Direct was chosen as it includes peer-reviewed articles on nursing and medicine. To select applicable literature, the keywords used were music therapy, anxiety, preoperative anxiety, surgical patient, midazolam, perioperative anxiety, and music. The search was conducted using the terms in combination with one another. The literature search was limited to being published between 2018-2023. A detailed description of the literature reviewed is included in the appendix.

Inclusion and Exclusion Criteria

Inclusion criteria encompassed articles written in the English language, published within 2018-2023, with full text availability, and pertained to anxiety management in the preoperative patient. The exclusion criteria included studies involving participants under 18, and pregnant women, and the articles did not pertain to music therapy or midazolam for anxiety management in preoperative patients. There were no restrictions on the location where the research took place. Following the inclusion and exclusion criteria, ten articles were included as they identified information that pertained to the PICO question.

Literature Appraisal and Literature Matrix

The quality of the selected articles was assessed by reading them, implementing the inclusion/exclusion criteria, and identifying relevant data. A literature review table was conducted for the ten articles in the appendix. For this literature review, Dearholt and Dang's evidence hierarchy was used to assess the level of evidence of each article. Of the ten articles,

eight of them were considered level I evidence. These articles qualify as level I evidence as either a randomized controlled trial, systematic review, or meta-analysis. A level III evidence article was included. One level V evidence article was included as it is a quality improvement project based on evidence-based practices.

Characteristics of the Included Studies

Gurler H, Yilmaz M, Erturhan KT. conducted a descriptive correlation and cross-sectional study that compared the Anxiety Specific to Surgery Questionnaire (ASSQ) with the Spielberger State-Trait Anxiety Inventory (STAI) and the Amsterdam Preoperative Anxiety and Information Scale (APAIS) in assessing preoperative anxiety levels and evaluating fears associated with surgery and anesthesia in surgical patients.[1] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level III evidence. This study included 507 participants who underwent elective surgery in a surgical ward in a university hospital in Turkey.[1] The data was measured using the three anxiety scales and the Descriptive Characteristics and Clinical Information Form.[1] The relationship between the three scales was assessed using the Spearman correlation test.[1] A P value of <0.5 was considered significant.[1] The study found that 70.8% of patients had fears associated with the surgical procedure and anesthesia.[1] Women, participants with no primary school education, and participants undergoing major surgery and general anesthesia who did not know the surgical procedure and complications had increased anxiety according to three-scale scores.[1] The strengths of this study included the stratified random sampling method to select the participants.[1] The study's limitations included only having participants undergoing elective surgery and patients from surgical wards and a single-centered study which limited the generalizability of the results.[1] The study concluded that half of the patients had moderate to high preoperative anxiety, with consistent results among the three

anxiety scales.[1] These anxiety scales were found to be interchangeable in assessing preoperative anxiety levels. Anxiety prevalence was 46.4% (APAIS), 44.4% (STAI), 49.3% (ASSQ).[1]

Bojorquez GR, Jackson KE, Andrews AK. conducted a quality improvement project based on evidence-based practice that assessed music therapy as an adjunct intervention for reducing pain and anxiety.[2] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level V evidence as this is a quality improvement project. 42 participants were included in this project.[2] Data was measured using a numerical pain rating scale, a patient-reported outcome measurement information system anxiety short form, and a statistical package for social sciences.[2] A t-test and Wilcoxon signed rank score compared patient-reported pain and anxiety levels before and after post-music therapy.[2] The project found that anxiety ($\text{pre}\bar{X}=56.47$, $\text{post}\bar{X}=46.52, t=7.787, P\leq.001$) and pain ($\text{pre}\bar{X}=6.07$, $\text{post}\bar{X}=3.45, t=7.046, P\leq.001$) were reduced with music therapy.[2] The limitations of this project were the need for a music therapist and a limited sample size.[2] The project concluded that music therapy can improve anxiety and pain management, especially opioid use, and its success is based on the collaboration between nurses and social workers.[2]

Abate SM, Chekol YA, Basu B. conducted a systematic review and meta-analysis of 28 studies to provide data on the global prevalence and determinates of preoperative anxiety among surgical patients.[3] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence as a systematic review and meta-analysis were performed. This review examines the risk factors associated with preoperative anxiety and the frequency of global anxiety.[3] Heterogeneity was checked with a forest plot, $\chi 2$ test, I^2 test, & p-values.[3] Substantial heterogeneity was measured with a subgroup analysis and meta-regression.[3] A sensitivity analysis was used to evaluate influential studies, and a moderator analysis was used to examine

the independent predictors of the prevalence of preoperative anxiety in surgical patients.[3] This systematic review and meta-analysis showed that preoperative anxiety was four times more likely in patients who feared complications.[3] There was a risk of developing preoperative anxiety in patients associated with the fear of awakening during surgery, medical mistakes, and preoperative pain (RR= 2.58).[3] The global pooled prevalence of preoperative anxiety had a 48-95% confidence level.[3] The subgroup analysis found that preoperative anxiety was highest in Africa (56%).[3] The review also found that the risk of preoperative anxiety was increased by 82% in females compared to males (RR=1.18).[3] The strengths of this review were that bias was checked with a funnel plot, and the objective diagnostic test Egger's correlation and Begg's regression test were used.[3] The review limitations were the failure to report risk determinants for analysis, substantial heterogeneity, and limited studies from certain countries.[3] 55% of patients had preoperative anxiety suggesting that mitigating strategies should be implemented to prevent and manage preoperative anxiety.[3] Fear of complication, medical mistakes, awakening during surgery, postoperative pain, and gender were independent predictors of preoperative anxiety.[3]

Prasad M, Sethi P, Kumari K, et al. conducted a randomized controlled trial to seek an alternative method to treat anxiety in the perioperative patient compared to midazolam.[4] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence. 1,225 participants undergoing spinal anesthesia were selected.[4] The participants were separated into two groups: music and control.[4] The data was measured using a Visual analog scale for anxiety and pain levels.[4] A sample size of 75 participants per group was selected with a 95% confidence interval, 95% power, and 95% contingency.[4] A one-way analysis of variance (ANOVA) was used to compare the variable's mean value in each group.[4] A post-hoc analysis was conducted with a Games-Howell or Tukey's test.[4] The differences between the proportions

were assessed with the chi-square test.[4] The anxiety scores were reduced in the patient's choice of music and binaural tone groups.[4] The standard deviation for the visual analog scale in the music group was 1.28, and the control group was 1.4.[4] Postoperative pain scores were lowest in the patient's choice music group and high satisfaction scores (96%).[4] The study's limitations were using a visual analog scale that can be subjective and a small population by limiting the participants to patients receiving spinal anesthesia.[4] This RCT concluded that music is a successful alternative to the pharmacological management of spinal anesthesia patients.[4] Music therapy increases satisfaction with its relaxing effects and impact on pain, stress, and post-op nausea and vomiting.[4] Music therapy was also found to be a non-invasive and cost-effective method.[4]

Jeon S, Lee Hj Fau - Do W, Do W Fau - Kim H-K, et al. conducted a randomized, single-blind prospective controlled trial to assess the effects of midazolam as a premedication.[5] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence as a randomized control trial. 128 participants were selected for this trial.[5] Data was gathered using a Beck anxiety inventory self-report questionnaire, a state entropy for depth of anesthesia, hemodynamic monitors, and a surgical pleth index for analgesia.[5] Midazolam was found to reduce side effects (CI =95%), heart rate (CI= 95%), and mean blood pressure (CI=95%).[5] The Pearson correlation coefficients between SPI and other parameters had a P value < .001.[5] No change was found in the Beck anxiety inventory score between the BS and T0 groups.[5] Midazolam increases the sedative effects of anesthetics, shortens induction time, and maintains hemodynamics. Midazolam had no postoperative analgesic effects.[5] The strength of the study included block randomization for participant selection.[5] The study's limitations included no control of the rescue drugs, the dose-response relationship of midazolam was not presented, and

a dose-response study was needed.[5] The trial concluded that midazolam as a premedication does not decrease anxiety but decreases entropy values, stabilizes hemodynamics, and gives analgesic effects on the induction of anesthesia.[5]

Giordano F, Giglio M, Sorrentino I, et al. performed a two-arm randomized and controlled single center parallel group pre and post event study to evaluate the effects of preoperative music therapy compared to premedication with midazolam in patients undergoing general anesthesia for stomatology.[6] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence as it is a randomized control trial. 70 participants undergoing elective surgery under general anesthesia were selected.[6] Data was measured using a visual analog scale (VAS-A), patient global impression of satisfaction, T-test/Mann-Whitney statistical test, and power analysis.[6] There was no statistical difference between plasma prolactin, growth hormone, and cortisol levels.[6] There was a difference in the VAS-A between the music therapy and control group with a P value <0.01.[6] 26 out of 30 patients in the music therapy group were very satisfied (87%).[6] Five minutes of music therapy in the preoperative setting reduces alertness and promotes a relaxed state that does not affect the length of stay.[6] Limitations of the study include a small sample size, minimal blinding, a specific population, and limited data generalizability.[6] The study concluded music therapy is a successful alternative to traditional pharmacological methods like midazolam.[6] Music therapy also received a higher satisfaction rate, which can lead to increased patient care in the perioperative setting.[6]

Ugras GA, Yildirim G, Yuksel S, Ozturkcu Y, Kuzdere M, Oztekin SD. conducted a randomized controlled trial to determine the effect of three different types of music on preoperative anxiety.[7] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence as a randomized control trial. 180 participants were selected to participate in

the study conducted in Turkey.[7] The participants were placed into 4 different groups: control, natural sound, western music, and classical Turkish music.[7] Data was measured using a state anxiety inventory (STAI-S), Pearson's chi-square test for categorical data, and a one-way analysis of variance for continuous data.[7] The STAI-S for the control and music group was $p<0.001$.[7] Post-music STAI-S, systolic and diastolic blood pressure, heart rate and cortisol levels were decreased compared to pre-music.[7] All music reduced STAI-S, systolic blood pressure, and cortisol levels.[7] The strengths of this trial included the results being evaluated with a 95% confidence interval and at a 0.05 type I error level.[7] Limitations of the study included types of music chosen by literature suggestions; music was only listened to during the preoperative period and only in the otolaryngology department.[7] Each type of music affected decreasing preoperative anxiety, while classical Turkish music was the most effective.[7]

Casarin J, Cromi A, Sgobbi B, et al. performed a 1:2 randomized control trial to evaluate the superiority of music therapy as an intervention compared to usual care in decreasing preoperative anxiety in patients undergoing total laparoscopic hysterectomy.[8] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence as a randomized control trial. 100 participants were selected to partake in the trial at a teaching hospital, Del Ponte Women's and Children's Hospital.[8] Data was collected using an anxiety level-state-trait anxiety inventory Y form and a postoperative pain visual analog scale.[8] A Pearson chi-square test for categorical data and a t-test for continuous data.[8] Participants in the music group had lower anxiety levels, with a median STAI-Y score of 38.0. Only 16.7% of participants in the music group had preoperative anxiety and 0% in the postoperative period.[8] The strengths of this study included the randomization with sequentially numbered opaque sealed envelopes allocation system.[8] Limitations of the study included a care control arm and no clear minimal

significant difference defined.[8] The study found that music therapy efficiently reduces preoperative anxiety in women undergoing total laparoscopic hysterectomy.[8]

Ko S. Y, Leung D.Y., and Wong E. M. conducted a pilot prospective parallel, randomized controlled trial assessing the effects of easy listening music intervention on patient satisfaction, anxiety, pain, and sedative and analgesic medication requirements.[9] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence as a randomized control trial. For this study, 80 participants underwent a colonoscopy in an electro-medical diagnostic unit in Hong Kong.[9] Visual analog scales on pain level, satisfaction with the procedure, and pain management were used to measure data.[9] A Chi-square test was used to compare categorical variables, while an independent t-test was used to compare continuous variables.[9] The study found that patients in the music group had higher satisfaction levels with colonoscopy ($p=.043$) and pain management ($p=.045$).[9] The strengths of this study included block randomization with a size of 8, and the research assistant was blinded to the allocation sequence.[9] The limitations of this study include a single setting, the attending physician was not blinded, and the patients had to recall their pain level, which increased the risk of bias.[9] The study concluded that simple and nonpharmacological methods should be implemented into practice and that easy music listening can improve a patient's procedural satisfaction and pain management.[9]

Ortega, F. Gauna, D. Munoz, G. Oberreuter, H. A. Breinbauer, L. Carrasco, a randomized controlled trial was conducted to assess whether listening to music with binaural headphones affects the perception of pain and anxiety in patients undergoing closed nasal bone fracture reduction.[10] According to Dearholt and Dang's (2017) evidence hierarchy, this study has level I evidence as a randomized control trial. 36 participants in San Juna De Dios Hospital were

selected for this trial.[10] The state-trait anxiety inventory and visual analog scale (VAS) for pain were used to measure data.[10] A P value of .05 was considered statistically significant.[10] All P values were 2-sided.[10] A Shapiro-Wilk test was also used.[10] This study found that participants in the music group had significantly decreased systolic blood pressure (P= .0001) and anxiety (P=.0004).[10] Of the participants in the music group, 94% of them felt music reduced negative symptoms.[10] The VAS showed decreased blood pressure, anxiety, and pain, indicating music as having a positive effect.[10] The strengths of the study included randomization with a sequence of permuted blocks.[10] The study limitations included a small sample size and a limited population.[10] The study concluded that listening to music with headphones is a safe and cost-effective method that helps in pain and anxiety management in procedures that can cause discomfort.[10] It was also concluded that music therapy is a safe, feasible, and low-cost treatment for anxiety and pain management.[10]

Citation	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
S. Y. Ko, D. Y. Leung and E. M. Wong. 2019. Effects of easy listening music intervention on satisfaction, anxiety, and pain in patients undergoing colonoscopy: a pilot randomized controlled trial	RCT: pilot A prospective parallel, RCT with 2 groups Purpose: Assess the effects of easy listening music intervention on patient satisfaction, anxiety, pain, sedative and analgesic medication requirement	N:80 Characteristics: -Undergoing colonoscopy -45yrs or older -Communicate in Chinese Hemodynamically stable Excluded: Visual and hearing impairments Hx of dementia, cognitive disorders or psychiatric disorders Setting: electro-medical diagnostic unit in Hong Kong	IV:easy listening music DV:anxiety level DV2: pain level DV3: patient satisfaction	-State trait anxiety inventory -Visual analog scales of pain level, satisfaction with procedure and pain management Chi-square test compared categorical variables Independent t-test- compared continuous variables	Music group satisfaction p=.043 Music group pain satisfaction p=.045 All the statistical tests were 2-sided and level of significance was set at 0.05. Participants indicated they would listen to music again to reduce their anxiety prior to another procedure p=.001	Patients in the music group had higher satisfaction levels with the procedure and pain management No significant difference was found between the music and control group on pain, anxiety, sedation, analgesic, heart rate, blood pressure	Easy music listening can improve a patients satisfaction with the procedure and pain management Simple and nonpharmacological methods should be implemented into care	Strength: Block randomization with a block size of 8 Research assistant was blinded to the allocation sequence Limitations Single setting Attending physicians not blinded Patients were required to recall the pain which increased the risk of bias Recommend a large-scale multi-center study Level of evidence: I

Citation	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
Bojorquez GR, Jackson KE, Andrews AK. 2020 Music Therapy for Surgical Patients: Approach for Managing Pain and Anxiety.	Quality improvement project based on evidence based practice Purpose: Assess music therapy as an adjunct intervention to pain and anxiety	N:42 Excluded: Procedure Time constraint Ongoing treatment	IV: music therapy DV: pain and anxiety levels	Numerical pain rating scale Patient reported outcome measurement information system anxiety short form Statistical package for social sciences t-test Wilcoxon signed-rank score-comparison of patient reported pain and anxiety levels pre and post music therapy	Statistically significant reduction in pain pre $\bar{X}$=6.07, post $\bar{X}$=3.45,t=7.046,P≤.001 Statistically significant reduction in anxiety pre $\bar{X}$=56.47, post $\bar{X}$=46.52,t=7.787,P≤.001	Anxiety and pain was reduced with music therapy	Music therapy can be used to improve anxiety and pain management Collaboration between nurses and social workers was crucial to music therapy success Music therapy can be used as a strategy to decrease opioid use	Limitations: The use of a music therapist Limited sample size Level of evidence: V

Citation	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
Abate SM, Chekol YA, Basu B. 2020. Global prevalence and determinants of preoperative anxiety among surgical patients: A systematic review and meta-analysis.	SR and MA 3 stage search strategy: PubMed/Medline, Cochran, Science Direct and LILACS databases Purpose: provide data on global prevalence and determinates of preoperative anxiety among surgical patients	N:28 studies Characteristics: -No language barrier -Cross-sectional studies from 1/2000-1/2020 Excluded: -Cross-sectional studies that discuss the prevalence of preoperative anxiety -Cross-sectional studies that score > 50% on quality assessment	IV: risk factors for preoperative anxiety DV: global prevalence of preoperative anxiety	Heterogeneity checked w/ forest plot, $\chi 2$ test, I^2 test, & p-values Substantial heterogeneity- subgroup analysis and meta-regression. Sensitivity analysis -evaluate influential studies Moderator analysis- independent predictors of the prevalence of preoperative anxiety of surgical patients	The global pooled prevalence for preoperative anxiety among surgical patients was 48% -95% confidence interval RR = 3.53-95 % confidence interval (CI: 3.06 to 4.07, six studies) Subgroup analysis- preoperative prevalence of anxiety- highest in Africa 56% Risks of preoperative anxiety among surgical patients increased by 82% in females compared to males RR = 1.18	SR and MA showed that preoperative anxiety was approximately 4 times more likely in patients who had fear of complications Risks of developing preoperative anxiety with surgical patients associated with patients perceived perception of awakening in the middle of surgery, fear of medical mistakes, & postoperative pain: RR = 2.58	55% of patients had preoperative anxiety suggesting that mitigating strategies should be implemented to prevent and manage preoperative anxiety Fear of complication, gender, fear of medical mistakes, fear of awakening during surgery & fear of postoperative pain were independent predictors of preoperative anxiety	Strength: -Bias was checked with funnel plot - Objective diagnostic test- Egger's correlation an d Begg's regression test Limitations: -Studies didn't report risk determinants for analysis -Substantial heterogeneity -Limited studies in certain countries In practice: Preoperative anxiety screenings and education should be implemented into practice Level of evidence: I

Citation	Design/Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
Prasad M, Sethi P, Kumari K, et al. 2023. Comparison of Binaural Tone Music vs Patient Choice Music vs Midazolam on Perioperative Anxiety in Patients Posted for Surgery Under Spinal Anesthesia: a Randomized Control Trial.	RCT Purpose: to find an alternative method to treat anxiety in the perioperative patient compared to midazolam	N: 1,225 Characteristics: -Ages 18-60yrs -Undergo surgery under spinal anesthesia Excluded: -Refused consent -Pregnant or breastfeeding -Hx of psychiatric illness -Hearing impairments -Chronic pain	IV1: listening to music IV2: midazolam DV: anxiety levels	Visual analog score (VAS-A) Visual analog score (VAS-P) Sample size of 75 per group was determined by a 95% confidence interval, 95% power & 95% contingency One way analysis of variance ANOVA- compare mean value of variable in each group Post-hoc analysis completed with Games-Howell or Tukey's test Differences between the proportions was assessed with the chi-square test	SD for VAS scores in the music group: 1.28 SD for VAS in the control group: 1.4 Post intervention mean in the music group: 2.73 Post intervention mean in the control group: 3.61	Anxiety scores were reduced in the patients choice music group and binaural tone group Postoperative pain scores were lowest in the patients choice group Satisfaction score was 96% for the patients choice group	Music is a successful alternative to pharmacological management of patients undergoing spinal anesthesia Music therapy increases satisfaction with its relaxing effect and impact on pain, stress and PONV Music therapy: non-invasive, cost effective	Limitations: -Use of a visual analog scale→ subjective -Small population: limiting to spinal anesthesia Level of evidence: I

Citation	Design/Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
Ugras GA, Yildirim G, Yuksel S, Ozturkcu Y, Kuzdere M, Oztekin SD. 2018. The effect of different types of music on patients' preoperative anxiety: A randomized controlled trial.	RCT Purpose: determine the effect of 3 different types of music on preoperative anxiety	N:180 Characteristics: -18-65yrs -Read and write Turkish -No sedative drugs Excluded: -Diagnosed with anxiety and panic attack and using anti-anxiety drugs -Hearing loss -Ear surgery -Emergency surgery - music training -Prior surgery Setting: Turkery	IV: Music DV: anxiety level	State anxiety inventory Pearson's Chi-square test-categorical data One-way analysis of variance – continuous data	STAI-S for the control and music groups $p<.001$ pre-music and post-music SBP, DBP, HR, and cortisol levels of the control and the music groups $p < 0.001$ $p = 0.003$ $p = 0.039$ $p < 0.001$	Post-music STAI-S, systolic BP, diastolic BP, HR & cortisol levels were reduced compared to pre-music All music reduced STAI-systolic BP and cortisol levels	Each music type had an effect on decreasing preoperative anxiety, and classical Turkish music was the most effective	Strengths: The results were evaluated in 95% confidence interval and at 0.05 Type I error level. Limitations: Types of music chosen by literature suggestions Music was only listened to during the preoperative period Music only in the otolaryngology department Level of evidence: I

Citation	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
A. Ortega, F. Gauna, D. Munoz, G. Oberreuter, H. A. Breinbauer and L. Carrasco. 2019. Music Therapy for Pain and Anxiety Management in Nasal Bone Fracture Reduction: Randomized Controlled Clinical Trial	RCT Purpose: Assess whether listening to music with binaural headphones affects the perception of pain and anxiety in patients undergoing closed nasal bone fracture reduction	N:36 Characteristics: Age > 18 7-15 days from the trauma and procedure Setting: San Juan de Dios hospital Excluded: Hearing loss Anxiety or mood disorder Using anxiolytics or beta blockers Concomitant fractures Contraindications for local anesthetics	IV: music therapy DV: pain and anxiety levels	State trait anxiety inventory Visual analog scale for measuring pain A P value \.05 was considered statistically significant, and all P values were 2-sided Generalized estimating equation model Shapiro wilk test	Music group showed significantly lower levels of systolic blood pressure (P = .0001), anxiety (P \.0001), and pain (P = .0004) compared to the control group	94% of participants felt the music reduced negative symptoms The VAS showed decreased BP, anxiety and pain indicating music having a positive effect	Listening to music with headphones is a safe and cost effective method that helps in pain and anxiety management with procedures that cause discomfort Music therapy is safe, feasible and low cost and should be used as a treatment for pain and anxiety	Strengths: Randomization with a sequence of permuted blocks Limitations: Small sample size Limited population Feasibility: music therapy would be easy to apply, is safe, and improves patient care Recommend a study with a larger sample size to confirm findings Level of evidence:I

Citation	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
Jeon S, Lee Hj Fau - Do W, Do W Fau - Kim H-K, et al. 2018. Randomized controlled trial assessing the effectiveness of midazolam premedication as an anxiolytic, analgesic, sedative, and hemodynamic stabilizer.	RCT: single-blind prospective study Purpose: Asses the effects of midazolam as a premedication	N: 128 Characteristics: -female - 20-65yrs -ASA I or II Excluded: central nervous system disorders, major cardiovascular disease, chronic pain disorders, peripheral neuropathy, diabetes mellitus neuropathy, nephropathy, hepatopathy, current prescription of any medication affecting the central nervous system or heart rate (HR), alcohol or drug abuse, pregnancy, and contraindication to midazolam premedication.	IV: midazolam DV: Effectiveness of midazolam	-Beck anxiety inventory: self report questionnaire -state entropy for depth of anesthesia -hemodynamic monitors -surgical pleth index: analgesia	Group P: P= .603 Group N: P+ .066 Midazolam decreased SE 95% CI Midazolam reduced heart rate 95% CI Midazolam reduced mean blood pressure rate 95% CI Pearson correlation coefficients btw SPI and other parameters P < .001	No change in beck anxiety inventory score was seen btw BS and T0 groups Midazolam increases the sedative of effects of anesthetics and shortens induction time Midazolam maintain hemodynamics No analgesic effects postop	Midazolam as a premedication does not decrease the level of anxiety Midazolam as a premedication decreases entropy values, stabilizes hemodynamics, and gives analgesia on induction of anesthesia	Strengths: Participants were randomly placed into groups with blocked randomization Limitations: No control of the rescue drugs The dose-response relationship of midazolam was not presented A dose response study is needed Level of evidence: I

Citation	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
Giordano F, Giglio M, Sorrentino I, et al. 2023. Effect of Preoperative Music Therapy Versus Intravenous Midazolam on Anxiety, Sedation and Stress in Stomatology Surgery: A Randomized Controlled Study.	RCT: Two-arm randomized and controlled single center, parallel group pre post event study Purpose: Assess the effect of preoperative music therapy compared to premedication with midazolam in patients undergoing general anesthesia for stomatology	N: 70 Characteristics: -Affected by stage 1 or 2 micro-invasive oral cancer -Undergoing elective surgery under general anesthesia Excluded: -Less than 18yrs -Neurological or psychiatric conditions -Hearing impairment -Drug abuse -ASA IV-V	IV: preoperative music therapy DV: anxiety levels	-Visual analog scale -Standard vital monitors -Patient global impression of satisfaction -Questionnaire -T-test/ Mann-Whitney statistical test -Power analysis - BIS - plasma prolactin - growth hormone - cortisol levels	Differences in the VAS-A score btw the MTG and CG $p<0.01$ MTG has a lower BIS $p= 0.02$ PGIS score 86.7% for the MTG group compared to 80% control $p<0.05$	No statistical differences for PRL, GH, and cortisol levels 26 out 30 patients 87% MTG were very satisfied Music modulates pain in different parts of the CNS 5 mins of preoperative music therapy reduces alertness and promotes a relaxed state and doesn't affect length of stay	Music therapy can be an alternative to traditional pharmacological methods like midazolam Higher satisfaction rates among the MTG can lead to increased patient focused care in the perioperative setting	Limitations: -Small sample size -Minimal blinding -limited data generalizability -specific population Additional studies should be conducted to determine if music therapy can be a stand-alone treatment Level of evidence: I

Citation	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
Gurler, Hesna PhD, Yilmaz Meryem PhD, Erturhan Turk Kubra PhD. 2021. Preoperative Anxiety Levels in Surgical Patients: A Comparison of Three Different Scales Scores	Descriptive correlational and cross-sectional study Purpose: compare anxiety specific to surgery questionnaire (ASSQ) with Spielberger state-trait anxiety inventory (STAI) and Amsterdam preoperative anxiety and information scale (APAIS) in assessing preoperative anxiety levels and evaluating fears associated with surgery and anesthesia in surgical patients	N: 507 Characteristics: Elective surgery between 9/1/2018-3/1/2019 Included: underwent elective surgery, older than 18 years and who spoke and understood the Turkish language. Excluded: change in consciousness levels before surgery, who used medication due to anxiety disorders Setting: four surgical wards in a university hospital in Turkey	IV 1: STAI IV 2: APAIS IV 3: ASSQ DV: prevalence of anxiety	The Descriptive Characteristics and Clinical Information Form STAI APAIS ASSQ The relationship between STAI, APAIS, and ASSQ scales was evaluated using the Spearman correlation test P value of < .05 was considered significant	70.8% of patients had fears associated with surgery and anesthesia Half of them had a moderative level of preoperative anxiety Anxiety prevalence was 46.4% (APAIS), 44.4% (STAI), 49.3% (ASSQ)	Women, participants with no primary school education, participants undergoing major surgery and general anesthesia who did not have knowledge about the surgical procedure, and surgical complications had increased anxiety according to three scale scores	Half of the patients had moderate to high preoperative anxiety with consistent results among the scales The tools were interchangeable in evaluating preoperative anxiety levels	Strengths: stratified random sampling method was used in the selection of the participants Limitations: -only elective surgical participants in surgical wards and a single-center study limited the generalizability of the results Level of evidence: III

Citation	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement And Data Analysis	Findings	Results	Conclusions	Appraisal: Worth to Practice/Level
J. Casarin, A. Cromi, B. Sgobbi, A. Di Siena, M. Serati, M. E. Bolis, et al. 2021. Music Therapy for Preoperative Anxiety Reduction in Women Undergoing Total Laparoscopic Hysterectomy: A Randomized Controlled Trial	RCT: 1:2 randomized control trial Purpose: Evaluate the superiority of music therapy as an intervention compared to usual care in decreasing preoperative anxiety in patients undergoing TLH	N:100 Characteristics: Women scheduled for a TLH for benign tumor Setting: teaching hospital Del Ponte Women's and Childrens hospital Excluded: Scheduled non gyn surgery Hx of malignancies Hearing impairments Neuropathic pain Chronic NSAIDs Non-Italian speaking women	IV:music therapy DV:anxiety level	Anxiety levels- state-trait anxiety inventory Y form Postop pain- visual analog scale Pearson chi-square test- categorical data T test- continuous data	median STAI-Y scores 38.0 vs 41.0; p = .002 anxiety during the preoperative period 16.7% vs 37.2%; p = .04) anxiety during postoperative periods (0% vs 12.9%; p = .04 anxiety during the late postoperative periods 6.6% vs 7.1%; p = .93	Participants in the music group had lower anxiety levels Postoperative pain intensity did not change between the groups at 1,3, and 6 hours postop	Music therapy is efficient at reducing preoperative anxiety in women undergoing TLH	Strengths: Randomization with sequentially numbered opaque sealed envelopes allocation system Limitations: Care control arm No clear minimal significant difference defined Can not define interaction btw the variable altered state of mind for general anesthesia and postoperative data collection Level of evidence: I

Synthesis of the Literature

Prevalence of Anxiety

In the preoperative period, anxiety is a common experience. Many individuals fear the day of surgery because of the potential effects of the surgical procedure and anesthesia. A study found that 70.8% of patients had fear associated with anesthesia and surgical procedures.[1] To further assess preoperative anxiety levels in surgical patients, one study used three different anxiety scales (Anxiety Specific to Surgery Questionnaire (ASSQ), Spielberger State-trait Anxiety Inventory (STAI), and Amsterdam Preoperative Anxiety and Information Scale (APAIS)) to determine the prevalence of anxiety.[1] The prevalence of anxiety with the ASSQ was 49.3%, 44.4% with STAI, and 46.4% with APAIS.[1] The study concluded that half of the patients had moderate to severe preoperative anxiety, consistent amongst the three scales.[1] The prevalence of anxiety was also increased in specific populations such as women, participants with no primary school education, and participants undergoing surgery and anesthesia who do not know the surgical procedure and complications.[1] Anxiety is also prevalent outside the United States. The global pooled prevalence for preoperative anxiety among surgical patients had a 48-95% confidence interval.[3] A subgroup analysis showed that the prevalence of anxiety was highest in Africa (56%).[3] One study found that independent predictors of preoperative anxiety consist of fear of complication, medical mistakes, awakening during the surgery, and postoperative pain; gender also contributed.[3] This study concluded that 55% of patients had preoperative anxiety suggesting that mitigating strategies should be implemented in preventing and managing preoperative anxiety.[3]

Music therapy for anxiety reduction in the preoperative setting

Music therapy is a successful and beneficial nonpharmacological method for reducing anxiety in the preoperative period. Most studies used visual analog scales (VAS) and a state-trait anxiety inventory to measure anxiety levels. One study found that the VAS indicated decreased anxiety, blood pressure, and pain, suggesting that music has a positive effect.[10] Participants in the studies who received music therapy had a decrease in anxiety levels.[2,4,7,8,10] One study showed that anxiety in the preoperative setting was reduced to 16.7% in the music group compared to 37.2% in the control group.[8] Multiple studies concluded that patients who listened to music had higher satisfaction overall.[4,6,9] Music therapy is effective with many avenues of music, such as binaural tone, patient choice, classical Turkish music, and easy listening.[4,7,9] A study concluded that participants had a satisfaction score of 96% for choosing their music.[4] Music therapy effectively reduces preoperative anxiety among patients receiving all types of surgeries, including a total laparoscopic hysterectomy, colonoscopy, and nasal bone fracture reduction.[8-10] Music therapy is a simple, cost-effective, feasible, and non-invasive method to reduce anxiety in the preoperative period.[4,9,10]

Midazolam for Anxiety Reduction in the Preoperative Setting

Midazolam has been the mainstay treatment method for reducing anxiety in the preoperative setting. Midazolam as a premedication decreased entropy values, stabilized hemodynamics, and provided analgesia on the induction of anesthesia.[5] Midazolam increases the sedative effect of anesthetics and is an adjunct to shortening anesthetic induction time.[5] A study found that midazolam had a 95% confidence interval for reducing heart rate, side effects, and blood pressure.[5] One study evaluated the effects of music therapy and midazolam on plasma prolactin, growth hormone, and cortisol levels and found no statistical differences in the lab levels.[6] Midazolam and music therapy were found to have the same effect on sympathetic

activity and hormonal response.[6] A study concluded that midazolam as a premedication does not decrease anxiety levels.[5]

Organizational Assessment

Most patients in the preoperative period will experience some level of anxiety. Anxiety in the preoperative period can lead to adverse effects that are emotional and physical for an individual. These adverse effects can contribute to an increase in anesthetic requirements, delay in healing, and increase the risk of developing infection. Recognizing anxiety's effects on the patient is essential to providing quality care. Anxiety in the preoperative period is traditionally treated with midazolam. Midazolam can lead to adverse effects; thus, finding alternative methods to reduce anxiety is needed. Music therapy is a non-pharmacological method that successfully reduces anxiety in preoperative patients and is an appropriate alternative to using midazolam to reduce preoperative anxiety. The following sections will discuss the goals, objectives, structure, strengths and weaknesses, and the theoretical framework of this project.

Primary DNP Project Goal

Anxiety is a state commonly experienced by most patients in the preoperative period. Anxiety is traditionally treated by midazolam which can have adverse effects on patients. Finding an alternative method to reduce anxiety in the preoperative period is necessary. Music therapy is an efficacious alternative to reducing preoperative anxiety. This project aims to implement music therapy, a non-pharmacological method to reduce anxiety in the preoperative patient.

This project will be presented to the staff at a level 1 trauma center in south Florida. This level 1 trauma center in south Florida is an ideal facility to implement music therapy in the preoperative period. Since its opening in 1953, this level 1 trauma center has been at the

forefront of providing the highest quality of care, with this level 1 trauma center being one of the largest hospitals in Florida.[11] The level 1 trauma center's mission is to heal the body, mind, and spirit of those we touch.[11] Their vision is to be a premier clinically integrated delivery system providing access to exceptional patient- and family-centered care, medical education, research, and innovation for the benefit of the community we serve.[11] This level 1 trauma center is overseen by the South Broward Hospital District Board of Commissioners which includes seven members appointed by the Florida Governor.[11] This is a facility that promotes evidence-based practice that improves the quality of care given to patients.[11] This hospital is an optimal choice for implementing music therapy into the preoperative period for reducing anxiety.

In the preoperative period, anxiety is prevalent among patients at this level 1 trauma center in south Florida. Anxiety is an expected state in the preoperative period as patients are fearful of undergoing a surgical procedure. Those patients who are eligible to receive midazolam will be given an appropriate dose to aid in reducing anxiety. The midazolam is typically not given to patients until it is time to take them to the operating room. Leaving the administration of midazolam at the end of the preoperative period does not cover the anxiety that is experienced throughout the entire preoperative period.

For some individuals, such as the elderly and stroke patients, midazolam is not an appropriate method for reducing anxiety. For these individuals, midazolam is not an option; thus, it is necessary to find an alternative method to reduce anxiety in this patient population in addition to all preoperative patients. Midazolam is the traditional method for reducing anxiety in the preoperative patient though there are gaps in providing anxiety throughout the entire preoperative experience. Music therapy is an alternative method for reducing anxiety that can be used throughout the preoperative period and can be utilized by all patients.

Music therapy is currently unavailable at this level 1 trauma center in the preoperative setting. To reduce anxiety in the preoperative period, eligible patients will receive midazolam before entering the operating room. Administration of midazolam to reduce anxiety is the primary method at this level 1 trauma center. Administering midazolam is not appropriate for all patients thus, there is a gap in care, and alternative methods are not used. Using midazolam as a premedication for reducing anxiety is a frequent method, but there is a lack of clinical evidence of its effectiveness.[5] A Cochrane review exhibited that benzodiazepines reduce pre-procedural anxiety in comparison to placebo, but the evidence used to support this claim was of low quality.[6] One study found that midazolam as a premedication does not reduce anxiety levels.[5] The literature is in support of implementing music therapy as an alternative method to reduce anxiety in the preoperative period. Music therapy can decrease anxiety in patients with cancer, coronary heart disease, and patients who are mechanically ventilated.[6] Music therapy is a safe and cost-effective complementary non-pharmacological method that can be used in conjunction with standard surgical care.[6]

This project's key stakeholders include the project sponsors encompassing a faculty member from Florida International University and a Certified Registered Nurse Anesthetist from the level 1 trauma center in south Florida. The stakeholders at the clinical site include the preoperative nurses and anesthesia providers. Other stakeholders include the hospital and the surgical patients. Music therapy cannot be implemented without the support of the anesthesia department and the preoperative nurses.

For this project, the sample will consist of anesthesia providers working in the main operating room at the level 1 trauma center. This population is essential to the project as the anesthesia providers will be the targeted audience who will be educated on music therapy and

give their feedback on whether implementing music therapy will be an effective method for reducing anxiety in preoperative patients.

SMART Objectives

Specific

Anesthesia providers will have a music therapy protocol to reduce the levels of anxiety in the preoperative patient.

Measurable

The effectiveness and benefits of music therapy will be evaluated through a questionnaire. The anesthesia providers will receive the questionnaire before and after an educational intervention. A questionnaire software will be used to survey, analyze, interrupt data, and produce results.

Achievable

This protocol will serve as a guideline for anesthesia providers and preoperative nurses on implementing music therapy in the preoperative setting. The anesthesia providers and preoperative nurses will work together to ensure the music therapy protocol is followed to reduce anxiety levels in the preoperative patient.

Realistic

An educational presentation by the leader of this educational project will be provided to the anesthesia providers in the main operating room via email about the prevalence of anxiety in the preoperative patient, the benefits of music therapy as an alternative to midazolam, and the adverse effects of midazolam the benefits.

Timely

Anesthesia providers will be educated on the music therapy protocol to be implemented at the level 1 trauma center within the first three months of initiating the quality improvement project. The music therapy protocol will be established and completed to be implemented by the anesthesia providers within a 6-month period.

Description of the Program Structure

A level 1 trauma center in south Florida can benefit its surgical patients by implementing music therapy into practice. The level 1 trauma center in south Florida needs an additional method to reduce anxiety in the preoperative patient. Currently, most patients receive midazolam before entering the operating room to reduce anxiety. Midazolam is not appropriate for some surgical patients, and there is no other method currently in practice to reduce anxiety in these patients, thus leaving these patients to remain anxious, which can lead to adverse effects. Music therapy is a successful non-pharmacological, cost-effective method that can be easily implemented into practice to reduce anxiety in preoperative patients. The support of the anesthesia department and preoperative nurses is vital to the success of executing this anxiety-reducing method.

Organizational SWOT Analysis

The SWOT Analysis stands for strengths, weakness, opportunities, and threats. It is a business tool used to analyze an organization and how it compares to its competition.[12] The SWOT Analysis investigates factors inside and outside the organization.[12] Though the SWOT Analysis is a business tool, it can be applied to the clinical setting.[12] In the clinical setting, a SWOT Analysis can be used to determine the factors that can be faced by an institution in implementing a new protocol into practice.

Strengths

Anxiety is a common state experienced by most preoperative patients. In the preoperative period the anxiety reducing method of choice is midazolam. Currently, there is no alternative method to reducing anxiety in the preoperative patient. Music therapy is a beneficial non-pharmacological method to reduce anxiety in preoperative patients.[4,9,10] The successful implementation of a music therapy protocol for reducing anxiety in the preoperative patient corresponds with the clinical sites mission and values: to provide exceptional patient- and family-centered care, medical education, research, and innovation for the benefit of the community. The organization prides itself on research and innovation to benefit its patient thus implementing a anxiety reducing protocol that is backed by the evidence-based research keeps in line with the providing exceptional patient care.

Weaknesses

Within the organization there are weakness that can impede the implementation of the music therapy protocol. Some anesthesia providers maybe reluctant in using a non-pharmacological method to reduce anxiety. Midazolam a pharmacological method is used frequently, changing this practice will challenge providers to come out of their comfort zone. Evidence has shown that midazolam does not reduce anxiety.[5] Deviating from what an individual is comfortable with can be difficult and most will result back to what they previously practiced. Another weakness involves the differences in practices among anesthesia providers. There are many correct ways to practice anesthesia and some providers use pharmacological and nonpharmacological methods. Implementing a new protocol will pose its challenges and the success of the protocol starts with the anesthesia providers willing to advance patient care through evidence-based practice.

Opportunities

Implementing evidence-based practice allows the organization to uphold its values by providing exceptional care to its patients. Not all patients are candidate for the traditional method of using midazolam to reduce anxiety thus some patient's anxiety is not being treated. Implementing a music therapy protocol into everyday practice will aid in reducing anxiety in all preoperative patients. Implementing a music therapy protocol gives the organization an opportunity to reach all patients and provide them with comforting care in a time of discomfort and distress. Music therapy is also a cost-effective method.[4,10] Implementing music therapy into practice can reduce pharmacological cost to the hospital and to the patient.

Threats

There can be many threats to implementing a protocol within an organization. A major barrier to implementing change revolves around the stakeholders. Stakeholders must be willing to partake in the process of implementing a new protocol and be open to change. If the stakeholders are not on board with the protocol, change will not occur. Having the stakeholders in favor of implementing a new protocol will promote its success. It is necessary to have stakeholders in agreement with the new protocol because without their support the new protocol will not succeed, and patients will not be able to benefit.

Conceptual Underpinning and Theoretical Framework

Theoretical frameworks are essential in nursing care and evidence-based practice as they allow for nursing theory-guided practice.[13] Nursing theory-guided practice aids in improving the quality of nursing care, permitting nurses to connect what they do for patients and why they do it.[13] Nursing theories influence practice promoting nurses to interpret their values and beliefs about human health processes and understanding different approaches to patient care.[13]

Theory Overview

The middle-range theory, the theory of unpleasant symptoms, is based on the symptoms that an individual is experiencing, the factors that influence the effect of the symptoms experienced, and the consequences.[14] Symptoms can occur together and individually but most commonly occur together, such as nausea and pain.[14] Symptoms primarily differ from one another but share specific dimensions: intensity, timing, level of distress, and quality.[14] Intensity is attributed to the severity and strength of the symptom.[14] Time refers to the frequency of occurrence of the symptoms and can also refer to the time at which the symptoms occurred in relation to an activity.[14] Distress is associated with the degree to which the individual is agitated.[14] Quality refers to how an individual describes the symptoms.[14] The theory describes three variables that determine the previous dimensions: physiological, psychological, and situational factors.[14] The physiological component of the theory is emulated in the unpleasant symptoms.[14] Psychological factors include mental capacity, reaction to the symptoms, and knowledge about the symptoms.[14] The situational element includes social and physical factors that can affect the individual's encounter with the symptoms.[14] These three factors relate more to each other than individually to the symptoms.[14] The factors also interact with each other in accordance with the symptoms.[14] The concluding factor of the theory involves performance. Performance is the effect or outcome of the symptoms an individual is undergoing.[14] Performance consists of functional and cognitive activities.[14] The theory of unpleasant symptoms can be used to guide nursing research.[14] The theory can be used to develop theoretically derived measurement instruments to outline the dimensions of symptoms.[14]

Theory/Clinical Fit

The theory of unpleasant symptoms can be used to describe the effects anxiety has on a patient's experience in the preoperative setting. Anxiety being a psychological factor, can contribute to an individual's physiological and situational effects, thus affecting one's performance. In accordance with the theory, preoperative anxiety can lead to distress in the body, which affects performance as a delay of healing can occur. According to the theory of unpleasant symptoms, individuals with similar physiological conversions can express variation in the experience of their symptoms, and psychological and situational factors influence the variability.[14] Anxiety and depression can provoke dyspnea and fatigue; thus, this is an example of the influence of psychological factors.[14] Individuals who are depressed or highly anxious would endure more adversity in handling symptoms.[14] Multiple factors influence an individual's experience with symptoms thus, the theory of unpleasant symptoms is helpful in customizing interventions that pertain to a patient's attributes and arrangement of symptoms.[14] The theory can be used to understand the effects of anxiety on an individual and how to tailor interventions to relieve the symptoms.

Methodology

Setting and Participants

The study will take place at a level 1 trauma center located in south Florida. The participants in the study will consist of anesthesia providers including anesthesiologist, anesthesiologist assistants, and certified registered nurse anesthetists of Envision Physician Services. Potential participants will receive an email with an anonymous link that will lead to a survey software that will ask if the individual would consent to partake in the educational project. Participants that agree to partake in the project will be sent another anonymous link that

will direct participants to take a pre-educational module survey, continued by an educational PowerPoint, and the post-educational module survey.

Procedures

The primary goal of this project is to educate anesthesia providers on the success and benefits of using music therapy a nonpharmacological method for reducing anxiety as an alternative to midazolam. Participants of the educational intervention will initially be given a online pre-educational assessment to test the participants knowledge on what benefits music therapy offers patients in reducing preoperative anxiety, which patients can partake in music therapy, and the negative effects of midazolam. The assessment will also indicate the anesthesia providers perspective on accepting a music therapy protocol for reducing anxiety in the preoperative patient. The pre-educational assessment will also be used as a tool for comparing the results of the post-educational assessment. Following the pre-educational assessment, participants will be guided to an online educational PowerPoint presentation that will discuss how music therapy can be used as an alternative method to reduce anxiety in the preoperative patient. The main goal of the PowerPoint presentation is to educate participants on the benefits of music therapy on reducing anxiety in the preoperative patient. The presentation will also touch on midazolam and its negative effects on patients. The final step in the educational intervention will consist of an online post-educational assessment. This assessment will consist of 10 questions that will be used to gauge the participants understanding of music therapy and its ability to reduce anxiety in the preoperative patient. This assessment will also determine the and willingness of the anesthesia providers in implementing a music therapy protocol into practice and the results of the research will guide the change in practice to benefit preoperative patients' anxiety levels. The data collected from the pre/post-educational assessment will serve as

evidence to the support in implementing a music therapy protocol for reducing anxiety levels in the preoperative patient and the success an online education presentation has on introducing a change to practice.

Participant Recruitment

Potential participants will receive an email with an anonymous link that will lead to a survey software that will ask if the individual would consent to partake in the educational project. Participants that agree to partake in the project will be sent another anonymous link that will direct participants to take a pre-educational module survey, continued by an educational PowerPoint, and the post-educational module survey.

Data Collection

The primary method for collecting data will be the pre/post-educational module assessments. These assessments will be indistinguishable and be distributed to each participant via an anonymous email link to a survey software. The assessment will conclude whether the educational PowerPoint has improved the participant's knowledge and willingness in relation to using music therapy to reduce anxiety in the preoperative patient. The assessments will consist of 10 questions that will focus on the negative effects of anxiety, the prevalence of anxiety, ways to use music therapy to reduce anxiety, the benefits of music therapy, and the negative effects of midazolam.

Confidentiality is necessary and participants and the data collected from the project will be kept confidential. The pre-educational module assessment will be used to determine the anesthesia providers appeal to partake in the educational module and the post-educational module assessment will let researchers evaluate the participants knowledge and attitude towards implementing music therapy into practice.

Data Management and Analysis

The Doctor of Nurse Practice (DNP) student will participate in this educational project as a co-investigator. The DNP student will oversee the dispersing of the survey. A survey software will be used to produce data from the survey responses of the pre/post-educational module assessment. The data collected will be analyzed by the investigator to determine if the participants knowledge and attitude towards implementing a music therapy product has materialized. The researchers foresee that the statistical analysis will show the efficaciousness of the educational module and increase the participants point of view in implementing a music therapy protocol for reducing anxiety in the preoperative patient. The data and participants will be kept confidential throughout the entire project. The data will be secured on a password protected laptop.

Protection of Human Subjects

For this educational project, participants will include anesthesia providers including anesthesiologist, anesthesiologist assistants, and certified registered nurse anesthetist that provide anesthesia services to patients at a level 1 trauma center in south Florida. Participants will be recruited via email through a survey software to all anesthesia providers at a level 1 trauma center in south Florida. Participants privacy will be kept confidential as the email will include an anonymous link that allows participants to voluntarily consent to partake in the pre-educational module. Participants will not be penalized for withdrawing from the educational module. This educational project poses no anticipated risk to the participants.

Discussion of the Results with Implications for Advanced Practice Nursing

Anxiety is a prevalent state endured by most in the preoperative period. Anxiety can lead to numerous adverse effects such as promoting an acute myocardial infarction, high admission

rates, increased analgesic and anesthetic usage, and prolonged hospital stays.[3] Un treated anxiety can promote an uncomfortable environment for the patient to experience which can lead to patients having fear and dissatisfaction with care. Music therapy a non-pharmacological method for reducing anxiety is a successful alternative to midazolam for reducing anxiety in the preoperative patient.

This educational project aims to educate anesthesia providers on music therapy and its benefits in reducing preoperative anxiety. Participants will be educated on the effects of anxiety and its harmful effects as 70.8% of patients had fear of anesthesia and the surgical procedure.[1] The educational module will discuss music therapy and the benefits of implementing it into practice. Multiple studies found that patients who listened to music had overall higher satisfaction with care.[4,6,9] The evidence on music therapy for reducing preoperative anxiety that will be presented to the participants will set a foundation for advancing knowledge and attitude towards implementing change to better patient care. Following the pre/post-educational module assessment and educational PowerPoint presentation it is anticipated that anesthesia providers will be willing to implement a music therapy protocol into practice to reduce anxiety in the preoperative patient.

The anticipated results for this educational project will demonstrate that an educational project can advance patient care by educating participants on evidence-based practices. The results from the pre/post-educational module assessment will show that by partaking in an educational PowerPoint presentation, participants will have gained knowledge on music therapy. From the knowledge gained on music therapy it is anticipated that the anesthesia providers will be more open to change and support the implementation of music therapy into practice.

Timeline

For this educational project, the Doctor of Nurse Practice (DNP) student will seek IRB approval. Once approved, the DNP student will implement the educational project in stages. The first stage of the educational project will consist of the DNP student administering the link to participate along with the pre/post-educational module assessments, and educational PowerPoint within the first three months of initiating the educational project. The second stage of the educational project will involve the analysis of the results obtained from the pre/post-educational module assessments which will occur in the 4th month of initiating the project. The final stage of the project will occur within the 5th and 6th months that will consist of the music therapy protocol being established and completed.

Results

Pre-Test Demographics

For this educational intervention, there were 8 participants (n=8). Most participants were female (n=6, 75%), in comparison to male (n=2, 25%). For data analysis, participants ages were the following: age 20-29 (n=1, 13%), 30-39 (n=3, 37%), age 40-49 (n=3, 37%), and 50-59 (n=1, 13%). Participants had varied ethnicities: Caucasian (n=2, 25%), Hispanic (n=5, 63%) and other (n=1, 13%). CRNAs represented all of the participants (n=8, 100%). Of the participants, the majority had a doctorate level of education (n=6, 75%), and two participant had a master's level of education (n=2, 25%). To conclude, the participants were asked about years of experience in anesthesia: 1-2 years (n=2, 25%), 2-5years (n=2, 25%), 5-10 years (n=2, 25%), and over 10 years (n=2, 25%).

Table 1

Demographics	**n (%)**
Total participants	8(100%)
Gender	
Male	2 (25%)
Female	6 (75%)
Age (Free Response)	
20-29	1 (13%)
30-39	3 (37%)
40-49	3 (37%)
50-59	1 (13%)
Ethnicity	
Caucasian	2 (25%)
Hispanic	5 (63%)
Other	1 (13%)
Position/Title	
CRNA	8 (100%)
Level of Education	
Doctorate	6 (75%)
Masters	2 (25%)
Experience as an Anesthesia Provider	
Over 10 years	2 (25%)
5-10 years	2 (25%)
2-5 years	2 (25%)
1-2 years	2 (25%)

Pre-Test Knowledge

This portion consist of questions that assessed the participants' knowledge of anxiety, music therapy, and midazolam. Participants were asked questions regarding the effects of anxiety. Of the participants, 13% correctly recognized the percentage of patients with fear associated with anesthesia and surgical procedures (50%). However, one participant (13%) selected 70.8%, two participant (25%) answered 65.7%, and four participants (50%) selected 80.3%. Participants were asked a second question about anxiety and to correctly identify the reason preoperative anxiety can negatively affect surgical outcomes, anesthetic management, and patient dissatisfaction with care; however, only six (75%) successfully identified the correct choice: prolonged hospital stay. Two participants (25%) selected decreased analgesic and anesthetic usage.

The participants were asked a series of questions that assessed the participant's knowledge of music therapy. Seven (87%) of the participants were able to successfully conclude that music therapy is an effective method for reducing anxiety with many avenues of music. This is a crucial understanding, as it underscores the importance of music therapy in healthcare though one participant (13%) did not agree. Participants were then asked if music therapy is simple, cost-effective, feasible, and non-invasive. Most participants (75%) identified this as accurate, while two (25%) thought this information was false. This highlights the need for further education on the topic. Participants were asked to correctly identify which organization supports music therapy to regulate anxiety and pain; 75% correctly identified the American Society of Critical Care Medicine; however, one participant (13%) selected the Centers for Disease Control and Prevention, and one participant (13%) selected the Food and Drug Administration. This is an area where more clarity is needed. Majority of participants (87%) correctly identified that music therapy suppresses the sympathetic branch of the autonomic nervous system, demonstrating a comprehensive understanding of the topic. One participant (13%) selected that music therapy suppresses the parasympathetic branch.

Additionally, participants were asked questions regarding midazolam. Only 62% of the participants correctly selected respiratory depression as the consequence of dose-dependent sedation. This is a key point and those who answered correctly demonstrated understanding of the topic. Of the participants, 25% chose dose-dependent sedation leading to hallucinations and 13% said an increased blood pressure. Most participants (87%) identified that anxiolytics can trigger postoperative delirium while one participant (13%) selected faster healing.

Majority of participants (75%) stated that they would implement music therapy as an alternative method to reduce anxiety. Two participant (25%) selected no to implement music therapy into practice. At the end of the survey participants were asked how likely they would be to incorporate music therapy into practice. 25% would most likely, 37% would somewhat likely 25% would somewhat unlikely, while 13% were most unlikely.

Post-Test Knowledge

Post-Test Knowledge on Anxiety

This portion consist of questions that re-assessed the participants' knowledge of anxiety following an educational module. Post-test knowledge of recognizing that 50 percent of patients have fear associated with anesthesia and surgical procedures increased to 50% (reflected by the 37% increase). However, three participants (37%) still answered 80.3% while one participant (13%) continued to answer 70.8%. This establishes the need for further education on the topic. Participants were asked to correctly identify the reason preoperative anxiety can negatively affect surgical outcomes, anesthetic management, and patient dissatisfaction with care. Majority of participants (62%) identified that correct answer: prolonged hospital stays. Two participants (25%) answered hemodynamic stability, and one participant (13%) decreased analgesic and anesthetic usage. From these results, further education is needed on this topic. The results of the true responses of the pre- and post-module assessment knowledge is shown in Table 2.

Table 2

True Responses	*Pre-test*	*Post-test*	*Difference*
Anxiety is a common occurrence in the preoperative period; what percentage of patients have fear associated with anesthesia and surgical procedures?	13%	50%	**37%**
Preoperative anxiety can negatively affect surgical outcomes, anesthetic management, and patient dissatisfaction with care due to?	75%	62%	**13%**

Post-Test Knowledge on Music Therapy

All (100%) of the participants were able to successfully conclude that music therapy is an effective method for reducing anxiety with many avenues of music. The results showed a 13% increase of participants selecting the correct response. Participants were then asked if music therapy is simple, cost-effective, feasible, and non-invasive. Following the educational module there was a 25% increase in participants selecting the correct answer as all participants (100%) identified this as true. Participants were asked to correctly identify which organization supports music therapy to regulate anxiety and pain; the results showed a 12% increase in participants choosing the correct answer as 87% correctly identified the American Society of Critical Care Medicine though one participant (13%) choose the Centers for Disease and Control Prevention. Post-test knowledge confirmed that seven participants (87%) have a solid understanding of music therapy as participants correctly identified that music therapy suppresses the sympathetic branch of the autonomic nervous system. There was no change (0%) in the number of participants that selected the corrected answer. One participant (13%) continued to select the parasympathetic branch. The results of the true responses of the pre- and post-module assessment knowledge are shown in Table 3.

Table 3

True Responses	*Pre-test*	*Post-test*	*Difference*
Music therapy is an effective method for reducing anxiety with many avenues of music?	87%	100.00%	**13%**
Music therapy is a successful nonpharmacological method for reducing anxiety in preoperative patients because it is simple, costeffective, feasible, and non-invasive?	75%	100.00%	**25%**
Music therapy is supported by which organization as a proficient technique to regulate anxiety and pain?	75%	87%	**12%**
Listening to music suppresses which branch of the autonomic nervous system to initiate relaxation?	87%	87%	**0%**

Post-Test Knowledge on Midazolam

Post-test knowledge of participants increased by 24% as 87 % of the participants correctly selected respiratory depression as the consequence of dose-dependent sedation. One participant (13%) chose increased blood pressure. The participants score highlights the potential of the educational module to significantly improve knowledge. Seven participants (87%) continued to identify that anxiolytics can trigger postoperative delirium with one participant (13%) selected decreased healthcare utilization. There was no difference (0%) in participants selecting the correct answer. The results of the true responses of the pre- and post-module assessment knowledge are shown in Table 4.

Table 4

True Responses	*Pre-test*	*Post-test*	*Difference*
Midazolam can adversely affect a patient's clinical condition by eliciting dose-dependent sedation leading to?	63%	87%	**24%**
Anxiolytics can trigger?	87%	87%	**0%**

Post-Test Knowledge of Participants Willingness to Implement into Practice

Seven participants (87%) stated that they would implement music therapy as an alternative method to reduce anxiety. There was a 12% increase in participants who will implement music therapy. One participant (13%) would not implement music therapy. Additionally, four participants (50%) stated that they were likely to incorporate music therapy into practice. There was an overall increase (25%) in participants willingness to implement music therapy into practice following the educational module. Three participants (37%) continued to be somewhat likely to implement and one participant (13%) was somewhat unlikely. The results of the responses of the pre- and post-module assessment knowledge are shown in Table 5.

Table 5

Responses	*Pre-test*	*Post-test*	*Difference*
Some patients are unable to use traditional pharmacological methods for reducing anxiety in the preoperative period; as a provider, would you implement music therapy as an alternative method to reduce anxiety in these patients?	75%	87%	**12%**
How likely are you to incorporate music therapy, a nonpharmacological method for reducing anxiety, into practice?	25%	50%	**25%**

Summary of Data

The results show a betterment in correct answers from the pre-and post-test assessments. The pre-test assessment results determined that participants would benefit from an educational module as participants chose answers apart from the correct choice. The post-test results concluded that majority of the participants were able to choose the correct answer. Overall, after completing the educational module, participants' knowledge and perspectives markedly increased.

Discussion

Limitations

Limitations of this study include the small sample size (n=8). This educational intervention module was dispersed to an anesthesia group at a single hospital. A study that included multiple institutions with multiple anesthesia groups would have confirmed the soundness of the results. Another constraint the researchers evaluated was delivery of the survey. Though practical for distribution, online delivery may have hindered participation by individuals unfamiliar with technology. Researchers concluded that issues with accessing the survey was another constraint to obtaining participants. An email was sent to an anesthesia group with the link to the survey. Multiple reminder emails had to be sent to participants as there was a lack of participation from the anesthesia group. A different online delivery method could incite more participants to partake, as email may not be the best delivery due to potential participants not accessing the email account that was given. Although there were limitations, the results of the survey showed that an evidence- based educational module can promote clinical change.

Future Implications for Advanced Nursing Practice

Anxiety is a significant problem faced by adult patients in the preoperative period. Anxiety causes tremendous stress on the body, which leads to unwanted hemodynamic responses, thus affecting the anesthetic management and surgical outcome of the patient.[3,4] Finding alternative methods to reduce anxiety can be strenuous and timely; thus, many healthcare providers use pharmacological methods like midazolam, which comes with adverse effects. The future of advanced nursing practice is based on evidence-based practice; thus, finding alternatives to reduce anxiety is needed.

Music therapy is a successful non-pharmacological method for reducing anxiety in preoperative adult patients and is a reliable method that can be easily incorporated into preoperative care. Current evidence-based research has concluded that music therapy is an alternative method for treating anxiety, which provides a comforting aspect with no unwanted side effects that benefit all patients. For music therapy to become available to adult patients, additional research and evidence-based protocols on the use of music therapy are needed. Implementing evidence-based educational modules for music therapy for anesthesia groups will aid in providing the highest quality of care to patients in their most vulnerable state.

Conclusion

Implementing an educational intervention is a proven method of disseminating knowledge. This educational intervention has yielded positive outcomes, demonstrating that an educational module can significantly enhance the knowledge and attitudes of participants, thereby promoting change. While implementing evidence-based practice can be a complex task, the use of an educational module has proven to be a beneficial tool for disseminating knowledge. Through this educational module, participants were able to gain knowledge on the adverse effects of anxiety, the prevalence of anxiety, strategies for utilizing music therapy to reduce anxiety, the benefits of music therapy, and the adverse effects of midazolam. The overall results from the participants' engagement with the educational module indicate that an online educational intervention can effectively promote clinical change by implementing music therapy into practice.

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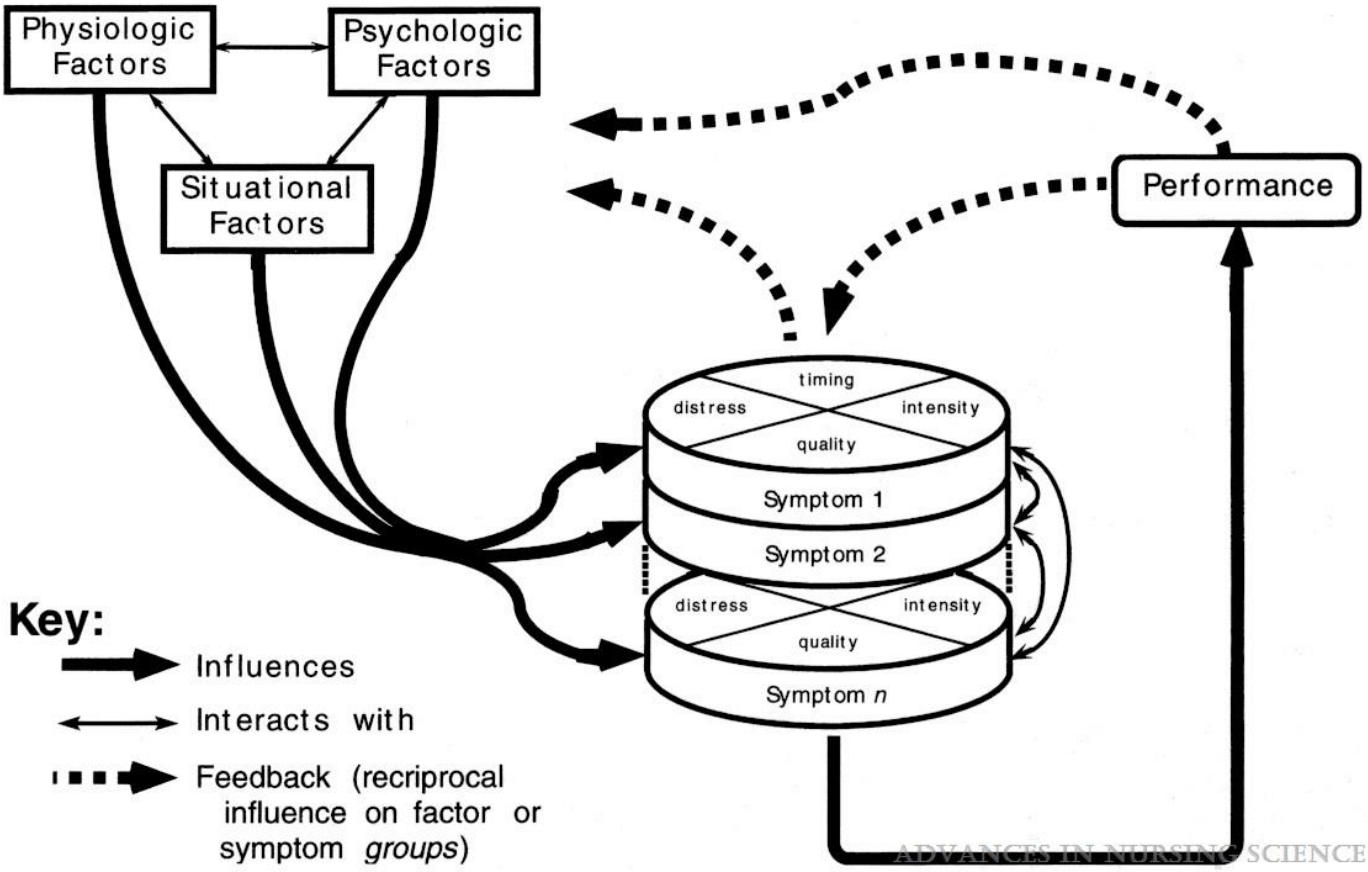
Appendix A: Theoretical Framework Design: The Theory of Unpleasant Symptoms



Appendix B: IRB Approval Form

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Office of Research Integrity
Research Compliance, MARC 430

MEMORANDUM

To:	Dr. Valerie Diaz
CC:	Kayla Wallace
From:	Kourtney Wilson, MS, IRB Coordinator KMW
Date:	February 7, 2024
Protocol Title:	"The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module"

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #: IRB-24-0050 **IRB Exemption Date:** 02/07/24
TOPAZ Reference #: 113990

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

KMW

Appendix C: Letter of Support

1/10/2024

Valerie J. Diaz, DNP, CRNA, PMHNP-BC, APRN, CNE, CHSE, CAPT, USN, NC

Clinical Assistant Professor

Department of Nurse Anesthesiology

Florida International University

Dr. Valerie Diaz,

Thank you for inviting Memorial Regional Hospital to participate in the Doctor of Nursing Practice (DNP) project conducted by Kayla Wallace, BSN, RN, CCRN**,** The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module in the Nicole Wertheim College of Nursing and Health Sciences, Department of Nurse Anesthesiology at Florida International University. I have granted the student permission to conduct the project using our providers.

Evidence-based practice's primary aim is to yield the best outcomes for patients by selecting interventions supported by the evidence. This proposed quality improvement project seeks to utilize the latest literature to increase providers awareness regarding music therapy as a successful method for reducing adult perioperative anxiety.

We understand that participation in the study is voluntary and carries no overt risk. All Anesthesiology providers are free to participate or withdraw from the study at any time. The educational intervention will be conveyed by a 15-minute virtual PowerPoint presentation, with a pretest and posttest questionnaire delivered by a URL link electronically via Qualtrics, an online survey product. Responses to pretest and posttest surveys are not linked to any participant. The collected information is reported as an aggregate, and there is no monetary compensation for participation. All collected material will be kept confidential, stored in a password encrypted digital cloud, and only be accessible to the investigators of this study: Kayla Wallace, BSN, RN, CCRN and Valerie J. Diaz, DNP, CRNA, PMHNP-BC, APRN, CNE, CHSE, CAPT, USN, NC.

Once the Institutional Review Board's approval is achieved, this scholarly project's execution will occur over two weeks. Kayla Wallace, BSN, RN, CCRN will behave professionally, follow standards of care, and not impede hospital performance. We support the participation of our Anesthesiology providers in this project and look forward to working with you.

MRH

DAN BRADY, DNP, CRNA, APRN

Chief Nurse Anesthetist

Memorial Regional Hospital

Appendix D: QI Project Consent

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CONSENT TO PARTICIPATE IN A QUALITY IMPROVEMENT PROJECT

The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module

SUMMARY INFORMATION
Things you should know about this study:

- **Purpose:** Educational module to increase providers awareness of music therapy as a successful method for reducing adult perioperative anxiety.
- **Procedures**: If the participant chooses to participate, they will be asked to complete a pretest, watch a voice PowerPoint, and then a post test
- **Duration:** This will take about a total of 20 minutes total.
- **Risks**: There will be minimal risks involved with this project, as would be expected in any type of educational intervention, which may include mild emotional stress or mild physical discomfort from sitting on a chair for an extended period.
- **Benefits:** The main benefit to you from this research is increase the participants knowledge on music therapy as a successful method for reducing adult perioperative anxiety.
- **Alternatives:** There are no known alternatives available to the participant other than not taking part in this quality improvement project.
- **Participation:** Taking part in this quality improvement project is voluntary.

Please carefully read the entire document before agreeing to participate.

NUMBER OF STUDY PARTICIPANTS:

If the participant decides to be in this study, they will be one of 10 people in this research study.

PURPOSE OF THE PROJECT

The participant is being asked to be in a quality improvement project. The goal of this project is to increase providers' knowledge of music therapy as a successful method for reducing adult perioperative anxiety. If you decide to participate, you will be 1 of approximately 10 participants.

DURATION OF THE PROJECT
The participation will require about 20 minutes

PROCEDURES
If the participant agrees to be in the project, PI will ask you to do the following things:
1. Complete an online 10 question pre-test survey via Qualtrics, an Online survey product for which the URL link is provided
2. Review the educational PowerPoint Module lasting 15 minutes via Qualtrics, an Online survey product for which the URL link is provided.

3. Complete the online 10 question post-test survey via Qualtrics, an Online survey product for which the URL link is provided.

RISKS AND/OR DISCOMFORTS
The main risk or discomfort from this research is minimal. There will be minimal risks involved with this project, as would be expected in any type of educational intervention, which may include mild emotional stress or mild physical discomfort from sitting on a chair for an extended period.

BENEFITS
The following benefits may be associated with participation in this project: An increased participants knowledge of music therapy as a successful method for reducing adult perioperative anxiety. The overall objective of the program is to increase the providers' knowledge based on the current literature.

ALTERNATIVES
There are no known alternatives available to the participant other than not taking part in this project. However, if the participant would like to receive the educational material, it will be provided to them at no cost.

CONFIDENTIALITY
The records of this project will be kept private and will be protected to the fullest extent provided by law. If, in any sort of report, PI might publish, it will not include any information that will make it possible to identify the participant. Records will be stored securely, and only the project team will have access to the records.

PARTICIPATION: Taking part in this quality improvement project is voluntary.

COMPENSATION & COSTS
There is no cost or payment to the participant for receiving the health education and/or for participating in this project.

RIGHT TO DECLINE OR WITHDRAW
The participation in this project is voluntary. The participant is free to participate in the project or withdraw the consent at any time during the project. The participant's withdrawal or lack of participation will not affect any benefits to which you are otherwise entitled. The investigator reserves the right to remove the participant without their consent at such time that they feel it is in their best interest.

RESEARCHER CONTACT INFORMATION
If you have any questions about the purpose, procedures, or any other issues relating to this research project, you may contact Kayla Wallace, BSN, RN, CCRN at kwall040@fiu.edu or 561-601-2998 and Valerie J. Diaz, DNP, CRNA, PMHNP-BC, APRN, CNE, CHSE, CAPT, USN, NC at vdiaz@fiu.edu, 305-348-9027 office, or 954-520-7494 mobile.

IRB CONTACT INFORMATION

If the participant would like to talk with someone about their rights pertaining to being a subject in this project or about ethical issues with this project, the participant may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to participate in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. By clicking on the "consent to participate" button below I am providing my informed consent.

Appendix E: Recruitment Letter

Nicole Wertheim College of Nursing & Health Sciences

The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module

Dear Memorial Regional Hospital Perioperative Providers:

My name is Kayla Wallace, BSN, RN, CCRN, and I am a student from the Anesthesiology Nursing Program Department of Nurse Anesthesiology at Florida International University. I am writing to invite you to participate in my quality improvement project. The goal of this project is to increase health care providers' awareness regarding music therapy as a successful method for reducing adult perioperative anxiety. You are eligible to take part in this project because you are a part of the Memorial Regional Hospital perioperative provider.

If you decide to participate in this project, you will be asked to complete and sign a consent form for participation. Next, you will complete a pre-test questionnaire, which is expected to take approximately 5 minutes. You will then be asked to view an approximately 15 minutes long educational presentation online. After going through the educational module, you will be asked to complete the post-test questionnaire, which is expected to take approximately 5 minutes. No compensation will be provided.

Remember, this is completely voluntary. You can choose to be in the study or not. If you'd like to participate or have any questions about the study, please email or contact me Kayla Wallace, BSN, RN, CCRN at kwall040@fiu.edu or 561-601-2998.

Thank you very much.

Sincerely,

Kayla Wallace, BSN, RN, CCRN

kwall040@fiu.edu

561-601-2998

Appendix F: Pre-Test and Post-Test Questionnaire

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Pretest and Posttest Questionnaire:

The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module

INTRODUCTION

- The primary aim of this QI project is to increase providers' awareness of music therapy as a successful method for reducing adult perioperative anxiety.
- Please answer the question below to the best of your ability. The questions are either in multiple choice or true/false format and are meant to measure knowledge of music therapy as a successful method for reducing adult perioperative anxiety.

PERSONAL INFORMATION

1. **Gender:** Male Female Other_____
2. **Ages 25 and above: _____**
3. **Ethnicity:** Hispanic Caucasian African American Asian Other_____
4. **Position/Title:** CRNA Anesthesiologist Resident Anesthesiologist Assistant
5. **Level of Education:** Certificate Bachelors Masters DNP PhD
6. How many years have you been a perioperative provider?

   Over 10 5-10 years 2-5 years 1-2 years

1. Anxiety is a common occurrence in the preoperative period; what percentage of patients have fear associated with anesthesia and surgical procedures?
    a. 50%
    b. 70.8%
    c. 65.7%
    d. 80.3%
2. Some patients are unable to use traditional pharmacological methods for reducing anxiety in the preoperative period; as a provider, would you implement music therapy as an alternative method to reduce anxiety in these patients?
    a. Yes, I would implement music therapy
    b. No, I would not implement music therapy
    c. I would choose an alternative method
3. Preoperative anxiety can negatively affect surgical outcomes, anesthetic management, and patient dissatisfaction with care due to?
    a. Decreased analgesic and anesthetic usage
    b. Low admission rates
    c. prolonged hospital stays
    d. hemodynamic stability
4. Music therapy is an effective method for reducing anxiety with many avenues of music?
    a. True
    b. False

5. Music therapy is a successful nonpharmacological method for reducing anxiety in preoperative patients because it is simple, cost-effective, feasible, and non-invasive?
    a. True
    b. False
6. Midazolam can adversely affect a patient's clinical condition by eliciting dose-dependent sedation leading to?
    a. Respiratory depression
    b. Increased blood pressure
    c. Excitement
    d. Hallucinations
7. Anxiolytics can trigger?
    a. Faster healing
    b. Decreased healthcare utilization
    c. Postoperative delirium
    d. Decrease financial expenditure
8. Music therapy is supported by which organization as a proficient technique to regulate anxiety and pain?
    a. American Society of Critical Care Medicine
    b. Food and Drug Administration
    c. Centers for Disease and Control Prevention
    d. National Institute for Occupational Safety and Health
9. Listening to music suppresses which branch of the autonomic nervous system to initiate relaxation?

a. Sympathetic

b. Parasympathetic

c. Enteric

10. How likely are you to incorporate music therapy, a nonpharmacological method for reducing anxiety, into practice?

a. Most likely

b. Somewhat likely

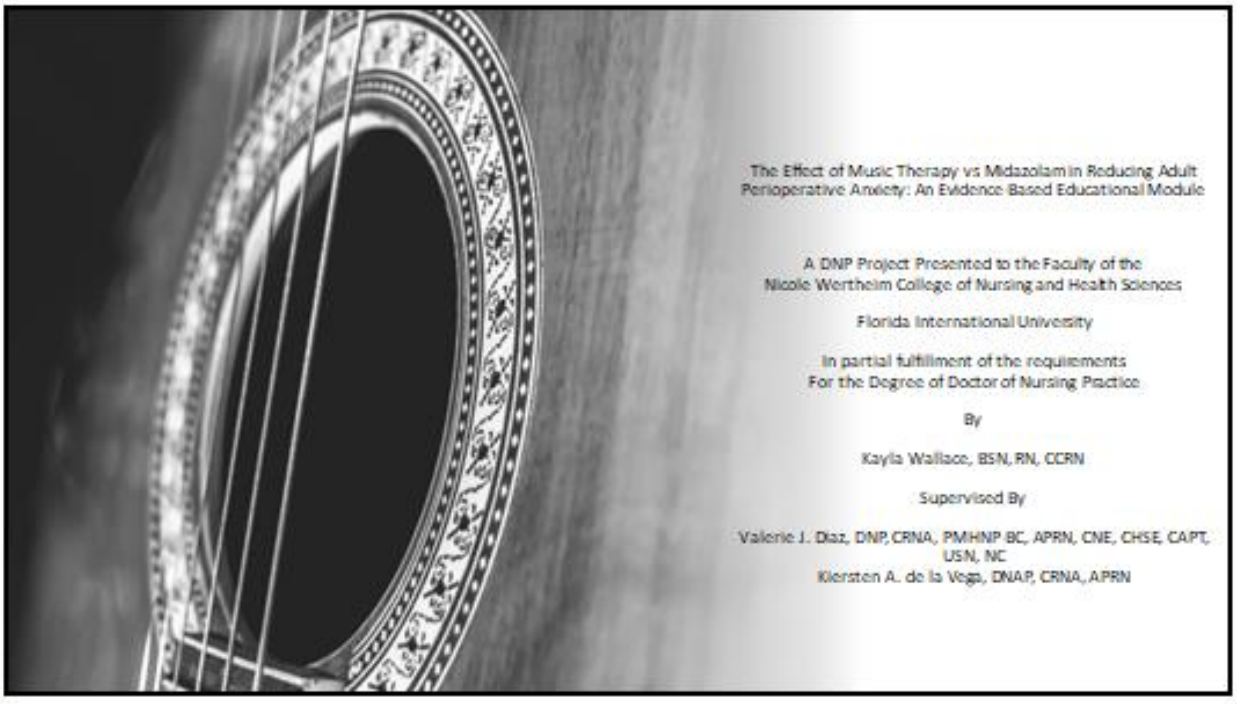
c. Somewhat unlikely

d. Most unlikely

Appendix G: Educational Module


Music Therapy
The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence-Based Educational Module

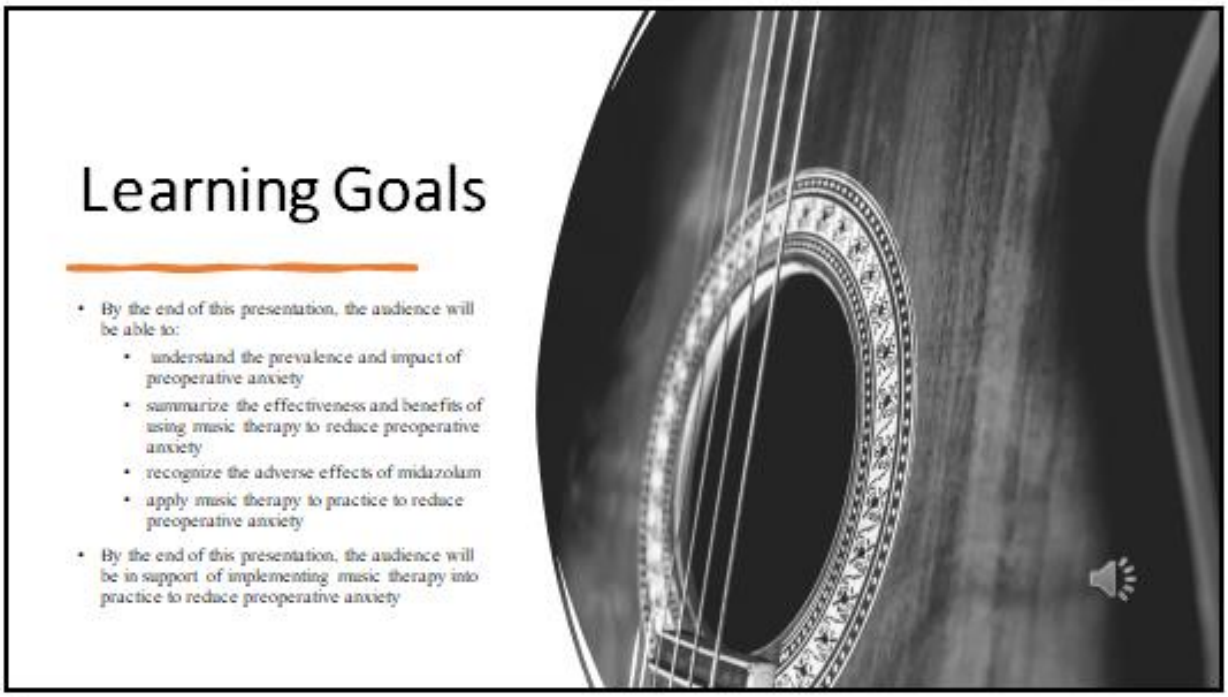
1


The Effect of Music Therapy vs Midazolam in Reducing Adult Perioperative Anxiety: An Evidence Based Educational Module
A DNP Project Presented to the Faculty of the
Nicole Wertheim College of Nursing and Health Sciences
Florida International University
In partial fulfillment of the requirements
For the Degree of Doctor of Nursing Practice
By
Kayla Wallace, BSN, RN, CCRN
Supervised By
Valerie J. Diaz, DNP, CRNA, PMHNP BC, APRN, CNE, CHSE, CAPT, USN, NC
Kiersten A. de la Vega, DNAP, CRNA, APRN

2


PICO
• In adult patients 18 years old and older, how does preoperative music therapy implementation, compared to midazolam administration, reduce patient anxiety?

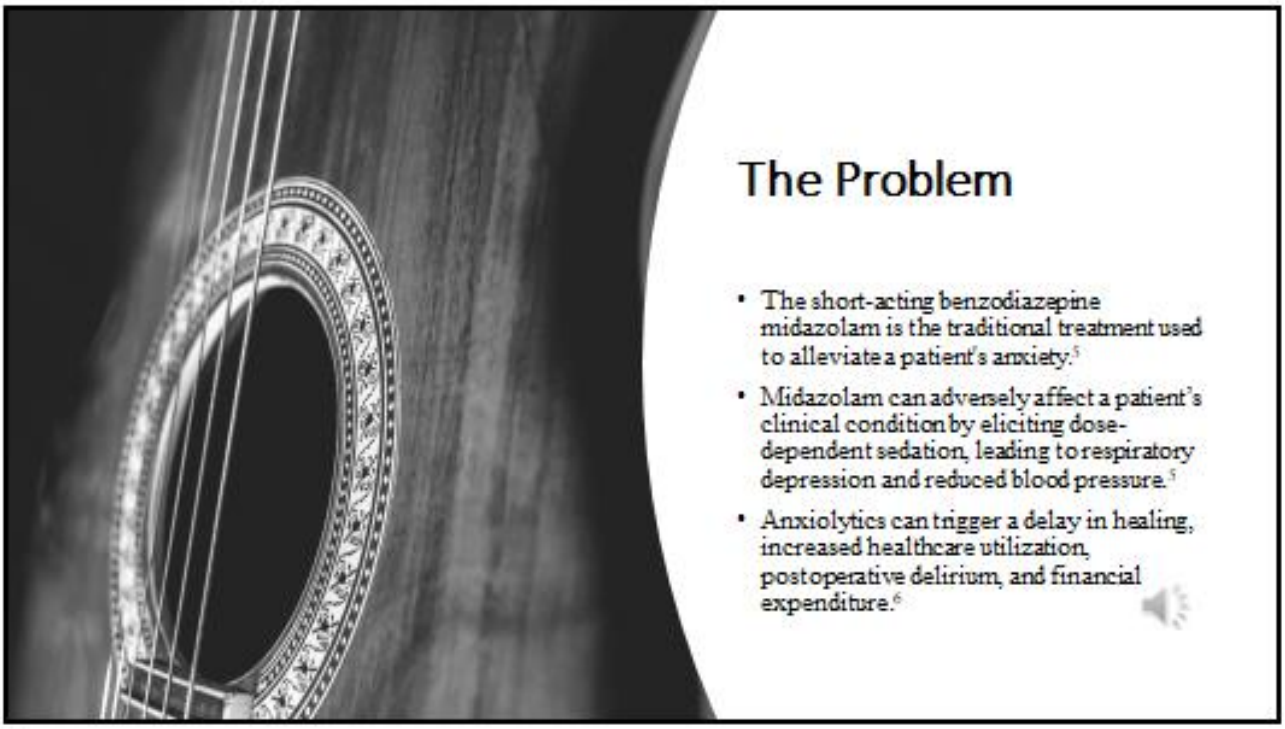
3


Learning Goals
• By the end of this presentation, the audience will be able to:
• understand the prevalence and impact of preoperative anxiety
• summarize the effectiveness and benefits of using music therapy to reduce preoperative anxiety
• recognize the adverse effects of midazolam
• apply music therapy to practice to reduce preoperative anxiety
• By the end of this presentation, the audience will be in support of implementing music therapy into practice to reduce preoperative anxiety

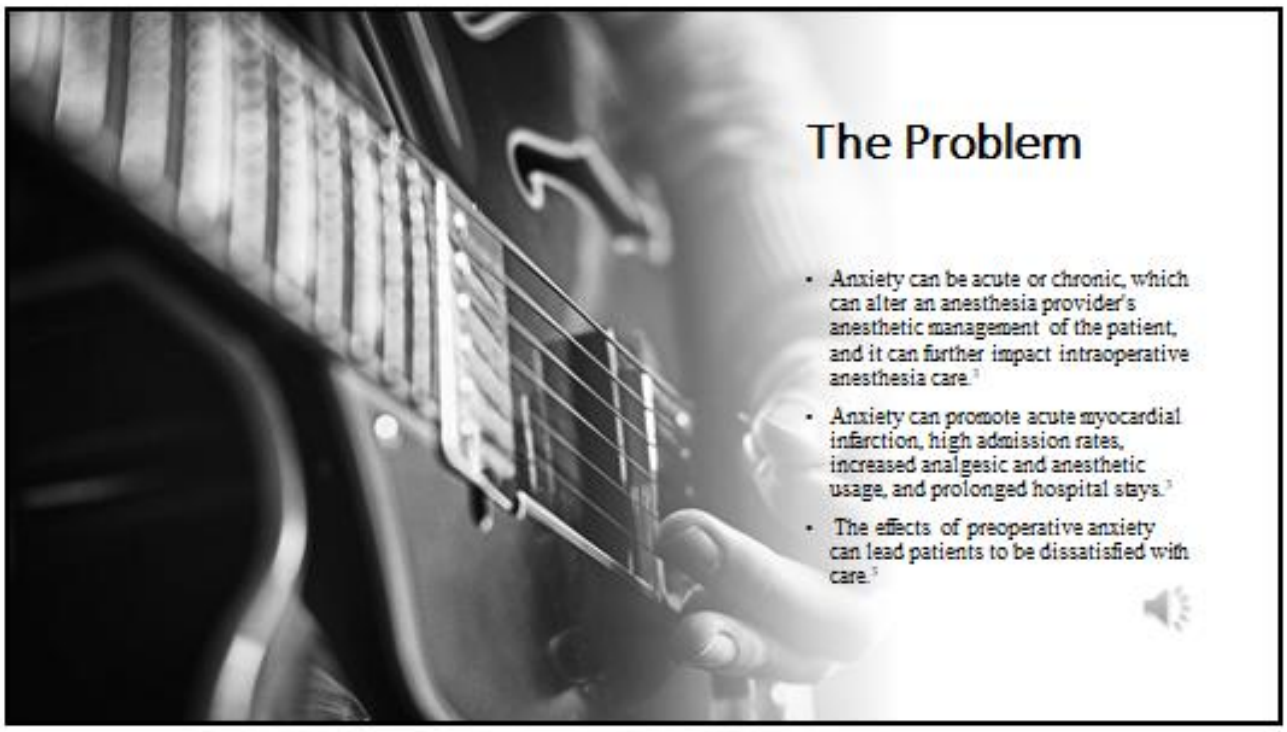
4


Background of Problem
Most individuals experience anxiety in the preoperative setting, which causes the body to develop a stressful state.[1]
Music therapy has been recognized as a practice that reduces anxiety and pain levels.[2]
Preoperative anxiety can significantly lead to unwanted hemodynamic responses due to sympathetic, parasympathetic, and endocrine stimulation, affecting the surgical outcome and anesthetic management.[3,4]
Many health care providers provide pharmacological treatment methods, such as the short-acting benzodiazepine midazolam, for anxiety relief, and other non-pharmacological methods are not considered.

5


The Problem
• The short-acting benzodiazepine midazolam is the traditional treatment used to alleviate a patient's anxiety.[5]
• Midazolam can adversely affect a patient's clinical condition by eliciting dose-dependent sedation, leading to respiratory depression and reduced blood pressure.[5]
• Anxiolytics can trigger a delay in healing, increased healthcare utilization, postoperative delirium, and financial expenditure.[6]

6


The Problem
• Anxiety can be acute or chronic, which can alter an anesthesia provider's anesthetic management of the patient, and it can further impact intraoperative anesthesia care.[1]
• Anxiety can promote acute myocardial infarction, high admission rates, increased analgesic and anesthetic usage, and prolonged hospital stays.[1]
• The effects of preoperative anxiety can lead patients to be dissatisfied with care.[1]

7


Music Therapy
• Since the 19th century, music therapy has been an alternative intervention to aid in reducing anxiety levels.[2]
• Music therapy is supported by the American Society of Critical Care Medicine Clinical Practice Guidelines as a proficient technique to regulate anxiety and pain.[2]
• Music therapy can be delivered in numerous configurations such as binaural tone and patient's choice of music.[3]
• Music therapy is effortless to administer, non-invasive, cost-effective, and adequate for reducing preoperative anxiety levels.[4]

8


Music Therapy
• Listening to music suppresses the sympathetic branch of the autonomic nervous system and activates the parasympathetic branch to initiate relaxation.[7]
• Music therapy, in comparison to midazolam, has exhibited a decrease in a patient's mean arterial pressure, preventing vast hemodynamic changes associated with anxiety as the patient experiences greater relaxation and anxiolysis.[4,7]

9


Practice Change
• Implementing music therapy will prevent unpleasant symptoms
• A protocol on music therapy for reducing preoperative anxiety will be implemented
• Providers can begin the music therapy method at the start of the preoperative period allowing patients to have anxiety relief throughout the entire preoperative process.
• Patients who are unable to use midazolam will now be given an option to reduce their anxiety in the preoperative period through music therapy

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