

Implementation of Music to Reduce Preoperative Anxiety in Gynecologic Patients

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Abstract

Problem & Purpose: Anxiety is defined as a feeling of nervousness, fear, and high autonomic activity. An estimated 60% to 92% of patients undergoing surgery experience significant preoperative anxiety related to fear of death, mistakes from providers, and disability. Evidence suggests that preoperative anxiety is associated with patient dissatisfaction and negative outcomes such as higher levels of opioid requirement. The anesthesia providers anecdotally estimated preoperative anxiety among adult patients undergoing hysteroscopic gynecologic (GYN) procedures at the practice site at 70%. The purpose of this Quality Improvement (QI) project was to implement music in the preoperative unit to reduce anxiety in adult patients undergoing hysteroscopic GYN procedures. **Methods:** This QI project was implemented over 14-weeks from September through December 2021 following the Human Research Protection Office (HRPO) and the facility Institution Review Board (IRB) approval. Approximately 45 Medical Doctors of Anesthesiology (MDAs) and Certified Registered Nurse Anesthesiologists (CRNAs) were included in the project and educated on the project goal and implementation process. Patients who met the inclusion criteria were provided music by the anesthesia providers in the preoperative unit using music players and disposable headsets. Data was collected on providers' compliance using student developed data collection tool. Weekly run chart analysis was used to track progress. **Results:** There was an overall increase in the number of providers who offered music. Compliance ranged from 0% to 55%. On average, 26% of the providers offered music in the 14-weeks. **Conclusion:** It was feasible for the anesthesia providers to offer music in the preoperative unit to reduce anxiety.

Surgery can evoke anxiety related to fear of death, fear of the unknown, fear of mistakes from providers, postoperative pain, and disfigurement (Dehghan et al., 2019). Studies suggest that 60% to 92% of patients undergoing surgery experience significant preoperative anxiety (Jiwanmall et al., 2020). Preoperative anxiety is associated with patient dissatisfaction and negative outcomes such as postoperative nausea and vomiting, unplanned admissions, higher health care cost, and higher levels of opioid requirement (Jiwanmall et al., 2020; Kumar et al., 2019; Majumdar et al., 2019; Bedaso & Ayalew, 2019; Jacobs et al., 2020).

Hysteroscopic gynecologic (GYN) procedures are routinely performed at the project site. The anesthesia providers anecdotally estimated preoperative anxiety among patients undergoing GYN procedures at the site at 70%. A root cause analysis identified the following contributors: type of surgery, extent, length of the surgery, availability of support persons, unfamiliar environment, and lack of positive distractors. Midazolam - a pharmacologic agent, was frequently used in the preoperative unit by the anesthesia providers to reduce anxiety in surgical patients. Non-pharmacologic interventions were not in place to address anxiety in the unit. Figure 1 shows the process map.

Studies suggest that music is an effective way to reduce anxiety in surgical patients (Labrague & McEnroe-Petite, 2016; Ni et al., 2012; Thompson et al., 2014 & Ugras et al., 2018). Reduced anxiety results in faster recovery, reduction in anesthetic drugs used during surgery, reduction in length of hospital stay, and reduction in costs and complications after surgery (Dehghan et al., 2019). The purpose of this QI project was to implement music in the preoperative unit to reduce anxiety in adult patients undergoing hysteroscopic GYN procedures.

Literature Review

Evidence synthesis on the use of music to reduce anxiety in patients undergoing surgery was conducted to evaluate the body of evidence in support of the practice change. Two randomized controlled trials (RCTs) by Uğraş et al. (2018) and Ni et al. (2012), a pre and post-test experimental study by Labrague & McEnroe-Petitte (2016), and a two-group quasi-experimental study by Thompson et al. (2014), were reviewed. The results are shown in Tables 1 and 2.

Uğraş et al. (2018) conducted a randomized control trial (n=217) to determine the effect of three different types of music on patients' preoperative anxiety. While the control group did not listen to music, the experimental group respectively listened to natural sounds and classical Turkish or western music for 30 minutes. The State Anxiety Inventory (STAI), systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate (HR), and cortisol levels were monitored. The post-anxiety levels of the patients in the music group were significantly lower than the pre-music anxiety levels. The researchers concluded that music reduces preoperative anxiety.

Ni et al. (2012) conducted a randomized controlled trial to evaluate the effects of music intervention on preoperative anxiety and vital signs in patients undergoing day surgery. Patients (n=183) admitted to the outpatient surgery department were randomly assigned to either the experimental group (music group) or control group (no music) for 20 minutes before surgery. Vital signs were measured before and after the experiment. Anxiety was measured using the STAI. The intervention group reported significantly lower anxiety (mean change: 5.83 (SD 0.75) vs. 1.72 (SD 0.65), $p < 0.001$) when compared with the control group. The researchers concluded that patients undergoing day surgery may benefit significantly from music intervention.

Labrague & McEnroe-Petitte (2016) conducted a study to determine the influence of music on anxiety levels and physiologic parameters in women undergoing gynecologic surgery. A pre and post-test experimental design were used. Ninety-seven (97) women undergoing gynecologic surgery were included in the study; participants were assigned to the control group (n=49) and experimental group (n=48). Preoperative anxiety was measured using the STAI while noninvasive instruments were used in measuring the patients' physiologic parameters (BP, pulse, and respiration). The experimental group had lower STAI scores ($t = 17.41, p < .05$), SBP = 6.45, $p < .05$), DBP ($t = 2.80, p < .006$) BP, and Pulse rate (PR; $t = 7.32, p < .05$) than the control group. The researchers concluded that music reduces anxiety in women undergoing GYN surgeries.

Likewise, Thompson et al. (2014) conducted a two-group quasi-experimental study to examine the effect of music on anxiety among preoperative patients. A convenience sample of 137 patients participated in the study. Participants were assigned to a music group (n=73) or a non-music group (n=64). Findings showed that patients who listened to music had a significant decrease in anxiety when compared with patients in the non-music group. The studies demonstrate that music reduces preoperative anxiety in patients undergoing surgery thus, supports the practice change.

Theoretical Framework

Kolcaba's Comfort Theory applies to this QI project. Kolcaba's Comfort Theory is a middle-range nursing theory for; healthcare, research, and education (Petiprin, 2016). The theory focuses on comfort as the main concept. Kolcaba described comfort as a state of being strengthened by having the human needs for relief, ease, and transcendence addressed in the four contexts of human experience: physical, psychospiritual, sociocultural, and environmental

(Petiprin, 2016). Reducing a patient's anxiety about surgery by offering music to the patient is an example of helping the patient to achieve comfort in the form of ease. The theory further suggests that when a patient gains comfort, the patient can engage in health-seeking behaviors such as discussions about post-operative care (Petiprin, 2016). Figure 2 shows how the theory applies to this project.

The framework for Complex Innovation described by Helfrich et al. (2007) was used to guide the implementation of this QI project. The framework theorized that innovations in health sectors are complex and require the use of multiple organizational members (Helfrich et al., 2007). The project involved the clinical site representative, change champions, and an administrative sponsor who identified with the change and supported its adoption. The use of multiple organizational members was instrumental in the successful implementation of the project.

Methods

This QI project was implemented over 14-weeks from September through December 2021 at the preoperative unit of a community hospital. Inclusion criteria were female patients 18 years and older undergoing hysteroscopic GYN procedures, with a designated physical status classification of 1-4 based on the American Society of Anesthesiologists (ASA) physical status classification system. Exclusion criteria were age less than 18 years, pregnancy, ASA 5 or 6, and patients with hearing impairment. About 45 Medical Doctors of Anesthesiology (MDAs) and Certified Registered Nurse Anesthesiologists (CRNAs) were included in the project. On average, 25 patients undergoing hysteroscopic GYN procedures were admitted each week. To ensure that everyone was included, the most vulnerable patients, including the non-English speaking

patients, were provided interpreter services and allotted more time. Music was also provided in different languages.

Different strategies were used to identify a practice gap and successfully implement the practice change. The high level of anxiety among patients undergoing GYN procedures at the practice site was first identified with the help of the Clinical Site Representative (CSR). A review of available literature was then conducted and a recommendation for a practice change was made based on best practice. Following approval from the HRPO and the IRB to implement a practice change at the preoperative unit of the hospital, the anesthesia providers were educated on the project goal and implementation process. Barriers to the implementation were identified and addressed. Evidence in support of the practice change was presented to gain buy-in. Two MP3 players downloaded with different types of music and disposable headsets were made available for the project.

Providers were encouraged to offer music in the preoperative unit to patients who met the inclusion criteria. Patients were offered music of their choice via the MP3 players and disposable headsets. Result showed a poor initial compliance among the providers. However, positive reinforcements such as email reminders and one-to-one conversations were used to encourage compliance. In addition, Student Registered Nurse Anesthetists (SRNAs) were involved and encouraged to remind providers to offer music to the patients. Just before the patient is wheeled to the operating room (OR), the MP3 players were retrieved, cleaned by the providers, and kept in the anesthesia command center for future use.

Structural and process measures were used to track the implementation progress. Structural measures tracked the availability of the MP3 Players and headsets. Weekly follow-ups ensured that the devices were available. This was necessary for a successful implementation.

Process measures tracked the number of anesthesia providers who offered music. Assessing providers' knowledge of the project and providing reeducation on a need be, improved awareness and contributed to the implementation success. Data were collected on providers' compliance using the student-developed data collection forms (Appendix A and B) and analyzed with a run chart (Figure 3). A visual representation of the project's progress served as motivation for providers to do better.

Data collection adhered to Health Insurance Portability and Accountability Act (HIPPA) privacy rules. The anesthesia providers and patients were de-identified using assigned codes. Completed data was stored in a locked box and entered weekly in a secure data management spreadsheet on a device that was password-protected and only accessible to the student. Completed data were destroyed after the project.

Results

Hysteroscopic GYN procedures were routinely performed at the practice site where the QI project was implemented. 100% of the anesthesia providers were successfully educated on the project goal and implementation process. Approximately n=350 patients were affected by the project. The run chart analysis was used to determine the percentage of anesthesia providers who offered music each week in the preoperative unit to patients who met the inclusion criteria. On average, 26% of the providers offered music during the 14-weeks. Compliance ranged from 0% in week one to 55% in the 14-weeks. A 100% compliance rate was not achieved. However, there was an overall improvement from baseline. Week 12 showed the highest provider compliance at 55%.

Different strategies were used to encourage compliance and contributed to the high rate seen in week 12. Change champions were used as facilitators to encourage other providers to

offer music. Weekly follow up and one-to-one conversations helped to identify barriers and employ measures to mitigate them.

Discussion

Anesthesia providers could feasibly offer music in the preoperative unit to reduce anxiety in surgical patients. This project is consistent with the studies by Uğraş et al. (2018), Ni et al. (2012), Labrague & McEnroe-Petitte (2016), and Thompson et al. (2014). The researchers found that music is an effective way to reduce anxiety in surgical patients.

The under-achievement of a 100% compliance rate among the providers could be attributed to major challenges faced during the implementation process. There were high operating room (OR) turn over time from the time a patient exits the room after surgery to the time the next patient enters the room for surgery. Some of the providers felt that music would be time-consuming and slow the OR turnover time. The inability to educate the providers at the same time due to coronavirus disease 2019 (COVID-19) restrictions may have also posed a limitation to the project. Although compliance varied in the 14-weeks, there was a positive trend from baseline. Efforts such as ongoing education and other interventions were used to minimize and adjust for the limitations.

This QI project was intended for internal quality improvement purposes at the practice site only. The findings are not generalizable beyond the site or population and was not intended to generate new scientific knowledge. The interventions were specifically designed to address a practice gap at the project site.

Conclusion

Preoperative anxiety has been associated with patient dissatisfaction and negative outcomes such as unplanned admissions (Kumar et al., 2019). Reduced preoperative anxiety

result in decreased length of hospital stay, costs and complications after surgery (Dehghan et al., 2019). The implementation of this QI project was necessary to reduce the high level of preoperative anxiety in patients undergoing hysteroscopic procedures at the practice site. The project brought about the anesthesia providers' awareness of the use of MP3 players and disposable headsets to provide music and reduce preoperative anxiety. The project resulted in a positive trend in the number of providers who offered music in the preoperative unit to reduce surgical anxiety. At the conclusion of the project, providers were willing to continue to offer music in the unit to reduce surgical anxiety.

To sustain the practice change, it was recommended that music should be integrated into the Electronic Health Record (EHR) and as part of new anesthesia hire orientation and/or organizations policy. Additional education should be provided on quarterly bases and as needed, to maintain continuity and sustain the change. Staff meetings could be used as an avenue to remind staff. Using computer prompts can also potentially improve sustainability. Future QI projects should include strategies that utilize a multidisciplinary team approach that involves the nursing staff.

References

- Bedaso, A., & Ayalew, M. (2019). Preoperative anxiety among adult patients undergoing elective surgery: A prospective survey at a general hospital in Ethiopia. *Patient safety in surgery, 13*, 18. <https://doi.org/10.1186/s13037-019-0198-0>
- Dehghan, F., Jalali, R. & Bashiri, H. (2019). The effect of virtual reality technology on preoperative anxiety in children: A solomon four-group randomized clinical trial. *Perioper Med 8*, 5. <https://doi.org/10.1186/s13741-019-0116-0>
- Helfrich, C. D., Weiner, B. J., McKinney, M. M., & Minasian, L. (2007). Determinants of implementation effectiveness adapting a framework for complex innovations. *Medical Care Research and Review, 64*(3), 279-303. doi:10.1177/1077558707299887
- Jacobs, C. A., Hawk, G. S., Jochimsen, K. N., Conley, C. E.-W., Vranceanu, A.-M., Thompson, K. L., & Duncan, S. T. (2020). Depression and anxiety are associated with increased health care costs and opioid use for patients with femoroacetabular impingement undergoing hip arthroscopy: Analysis of a claims database. *Arthroscopy: The Journal of Arthroscopy & Related Surgery, 36*(3), 745–750. <https://doi.org/10.1016/j.arthro.2019.09.048>
- Jiwanmall, M., Jiwanmall, S. A., Williams, A., Kamakshi, S., Sugirtharaj, L., Poornima, K., & Jacob, K. S. (2020). Preoperative anxiety in adult patients undergoing day care surgery: Prevalence and associated factors. *Indian Journal of Psychological Medicine, 42*(1), 87–92. https://doi.org/10.4103/IJPSYM.IJPSYM_180_19
- Kumar, A., Dubey, P. K., & Ranjan, A. (2019). Assessment of anxiety in surgical patients: An observational study. *Anesthesia, Essays and Research, 13*(3), 503–508. https://doi.org/10.4103/aer.AER_59_19

- Labrague, L. J., & McEnroe-Petitte, D. M. (2016). Influence of music on preoperative anxiety and physiologic parameters in women undergoing gynecologic surgery. *Clinical Nursing Research, 25*(2), 157–173. <https://doi/10.1177/1054773814544168>
- Majumdar, J. R., Vertosick, E. A., Cohen, B., Assel, M., Levine, M., & Barton-Burke, M. (2019). Preoperative anxiety in patients undergoing outpatient cancer surgery. *Asia-Pacific Journal of Oncology Nursing, 6*(4), 440–445. https://doi.org/10.4103/apjon.apjon_16_19
- Ni, C.-H., Tsai, W.-H., Lee, L.-M., Kao, C.-C., & Chen, Y.-C. (2012). Minimizing preoperative anxiety with music for day surgery patients - a randomized clinical trial. *Journal of Clinical Nursing (John Wiley & Sons, Inc.), 21*(5–6), 620–625. <https://doi.org/10.1111/j.1365-2702.2010.03466.x>
- Petiprin, A. (2016). Nursing theory: *Kolcaba's theory of comfort*. <https://nursing-theory.org/theories-and-models/kolcaba-theory-of-comfort.php>
- Thompson, M., Moe, K., & Lewis, C. P. (2014). The effects of music on diminishing anxiety among preoperative patients. *Journal of Radiology Nursing, 33*(4), 199–202. <https://doi.org/10.1016/j.jradnu.2014.10.005>
- Uğraş, G. A., Yıldırım, G., Yüksel, S., Öztürkçü, Y., Kuzdere, M., & Öztekin, S. D. (2018). The effect of different types of music on patients' preoperative anxiety: A randomized controlled trial. *Complementary Therapies in Clinical Practice, 31*, 158–163. <https://doi.org/10.1016/j.ctcp.2018.02.012>

Table 1
Evidence Review Table

Citation: Uğraş, G. A., Yıldırım, G., Yüksel, S., Öztürkçü, Y., Kuzdere, M., & Öztekin, S. D. (2018). The effect of different types of music on patients' preoperative anxiety: A randomized controlled trial. <i>Complementary Therapies in Clinical Practice, 31</i> , 158–163. https://doi-org.proxy-hs.researchport.umd.edu/10.1016/j.ctcp.2018.02.012					Level II
Purpose/Hypothesis	Design	Sample	Intervention	Outcomes	Results
“The purpose of this study was to determine the effect of three different types of music on patients' preoperative anxiety”	A randomized controlled trial	<p>Sampling Technique:</p> <p>Convenience sampling</p> <p># Eligible: 217 patients</p> <p># Accepted: 180</p> <p>Participants were randomly divided into four groups (45 in each group)</p> <p># Control: 1</p> <p># Intervention: 3</p> <p>Power analysis: 80% power</p> <p>Group Homogeneity:</p> <p>Significant differences in ages, educational statuses and diagnoses were found between the experimental groups</p>	<p>Control- Did not listen to any music.</p> <p>Intervention- The 1st experimental group listened to relaxing music consisting of natural sounds. The 2nd experimental group listened to Classical Turkish Music. The 3rd experimental group listened to Classical Western Music. The music lasted at least 30 minutes.</p> <p>The music therapy took place in the surgery waiting room using headphones.</p> <p>Intervention fidelity: Participants were divided into 4 groups based on randomization.</p> <p>The decisions on which type of music to be listened to by the three experimental groups were made through random draws.</p>	<p>DV: State-Trait Anxiety Inventory (STAI) scores, physiologic responses to anxiety: SBP, DBP, HR and serum cortisol levels.</p> <p>Measurement tool (reliability), time, procedure: The STAI was used to measure anxiety levels. The internal consistency coefficient of the tool ranged from .86 to .95. Evidence attests to the construct and validity of the tool in detecting anxiety.</p> <p>Participants rated their anxiety levels on a 4-point scale ranging from 1 (not at all) to 4 (the most). The score ranged from 20 to 80 points and the higher scores indicated higher</p>	<p>Statistical Procedures(s) and Results:</p> <p>Similar to the previous studies, music significantly reduced preoperative anxiety and STAI score of all the patients who listened to music compared to pre-music time in the study.</p> <p>The effects of music between the experimental groups and the control group were analyzed with ANOVA and Post Hoc Tukey HSD tests. The results were evaluated in 95% confidence interval, and at 0.05 Type I error level.</p> <p>There was a statistically significant difference between the pre-music and post-music STAI values of the control and the music groups ($p < 0.001$). In the post-hoc analysis, it was determined that the types of music significantly reducing the STAI scores were Classical Turkish Music, Classical Western Music, and natural sounds, respectively ($p < 0.001$)</p>

		and the control group ($p < 0.05$). To prevent this from affecting the results of the study, the effects of age, gender and education were adjusted for by model analysis while comparing the pre- and post-music mean values between the groups.		levels of anxiety. The total Cronbach's Alpha value for all the variables of the STAI was 0.89 for this study. STAI, SBP, DBP, HR and blood samples (to assess cortisol level) were obtained before and after 30 minutes of exposure to music in the experimental group and 30 min after the initial assessment in the control group	Post-music SBP, DBP, HR and cortisol levels decreased compared to pre-music period in the music groups. However, these values increased in the control group. There was a statistically significant difference between the pre-music and post-music SBP, DBP, HR and cortisol levels of the control and the music groups ($p < 0.001$; $p = 0.003$; $p = 0.039$; $p < 0.001$, respectively)
Citation: Labrague, L. J., & McEnroe-Petitte, D. M. (2016). Influence of Music on Preoperative Anxiety and Physiologic Parameters in Women Undergoing Gynecologic Surgery. <i>Clinical Nursing Research</i> , 25(2), 157–173. https://doi-org.proxy-hs.researchport.umd.edu/10.1177/1054773814544168					Level III
Purpose/Hypothesis	Design	Sample	Intervention	Outcomes	Results
“The aim of this study was to determine the influence of music on anxiety levels and physiologic parameters in women undergoing gynecologic surgery”	A pre and posttest experimental design with nonrandom assignment	Sampling Technique: Purposeful sampling # Eligible: 105 patients. However, 8 women withdrew- 4 were referred to highly specialized facility, 3 revealed having hearing difficulties, and 1	Control: 49 women allocated to the non-music group Intervention: 48 women assigned to the experimental group (music group). The music intervention took place in the preoperative waiting room. The researchers used headphones to deliver the music. The experimental group received and was exposed to music	DV: Measures of anxiety with the use of the STAI and physiologic parameters (RR, BP, PR). Measurement tool (reliability), time, procedure: Preoperative anxiety was measured using the STAI- a 20-item	Statistical Procedures(s) and Results: This study provides empirical evidence to support the use of music during the preoperative period in reducing anxiety and unpleasant symptoms in women undergoing gynecologic surgery The data were analyzed using the SPSS (version 19). Descriptive statistics such as the mean, frequency, and standard deviation

		<p>refused to wear the required headset.</p> <p># Accepted: 97 women</p> <p># Control: 1</p> <p># Intervention: 1</p> <p>Power analysis: Not reported.</p> <p>Group Homogeneity:</p> <p>Demographic data between the two groups showed no significant statistical difference ($p > 0.05$).</p>	<p>intervention for 20 minutes prior to admission to the operating room, whereas the control group did not receive music intervention.</p> <p>Intervention fidelity: Both groups did not receive anxiety medications during the course of the study.</p> <p>To ensure an accurate measurement of physiologic measures, the researcher underwent intensive training in vital signs monitoring</p>	<p>report instrument designed to evaluate patients' feeling of apprehension, tension, nervousness, and worry. The instrument has been extensively utilized with a high level of reliability and validity. The 20-item inventory scale of the STAI yielded a Cronbach's alpha of .92</p> <p>Noninvasive instruments were used in measuring the patients' physiologic parameters- BP, HR, RR. BP and heart rate were measured with an automatic BP monitor. The RR was obtained by the researchers counting one full minute the number of times the chest rose and fell</p> <p>The measures were obtained before and after 20 min of exposure to music in the experimental group and 20 min</p>	<p>were used to quantify the participants' demographic profile. To test for the homogeneity and normality of the two groups, chi-square and Fisher's exact test were used. Paired t tests were utilized to examine any significant difference between the pre- and posttest STAI, and physiologic parameters for each group. To compare the control and experimental group, the unpaired t test was used. The level of significance was set at $p < .05$.</p> <p>Women allocated in the experimental group had lower STAI scores ($t = 17.41, p < .05$), SBP ($t = 6.45, p < .05$), DBP ($t = 2.80, p < .006$), and HR ($t = 7.32, p < .05$) than in the control group.</p>
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				after taking physiologic parameters in the control group.	
Citation: Thompson, M., Moe, K., & Lewis, C. P. (2014). The Effects of Music on Diminishing Anxiety Among Preoperative Patients. <i>Journal of Radiology Nursing</i> , 33(4), 199–202. https://doi.org/10.1016/j.jradnu.2014.10.005					Level III
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
“The purpose of this project was to examine the effect of music on anxiety among preoperative patients”	A two-group quasi-experimental design	<p>Sampling Technique: Convenience sampling</p> <p># Eligible: Not stated however, inclusion criteria included English speaking and at least 18 years old. Patients who required anxiolytics were excluded.</p> <p>#Accepted: 137 patients</p> <p># Control: 1</p> <p># Intervention: 1</p> <p>Power analysis: Not reported</p> <p>Group Homogeneity:</p> <p>Demographic data between the two groups showed no</p>	<p>Control- 64 participants were assigned to nonmusic group</p> <p>Intervention: 73 participants were assigned to music group.</p> <p>After completion of the preintervention anxiety assessment, participants in the designated music group listened to music for periods that ranged from 30 to 60 min.</p> <p>Intervention fidelity: To promote standardization of the data collection process, the principal investigators provided comprehensive education regarding the study to all employees involved in care delivery throughout the preoperative phase.</p> <p>The principal investigators educated 3 research assistants on the appropriate use of the</p>	<p>DV: Anxiety scores using the Visual Analog Scale (VAS)</p> <p>Measurement tool (reliability), time, procedure:</p> <p>A VAS was used to assess the patients’ level of anxiety at two points in time.</p> <p>The VAS is an effective approach to assessing global and subjective phenomena. VAS has a predictive validity for mood states such as anxiety</p> <p>After completion of the preintervention anxiety assessment using VAS, participants in the designated music</p>	<p>Findings show that patients who listened to music had a decrease in anxiety when compared with patients in the nonmusic group.</p> <p>Data were analyzed using SPSS, version 21. Descriptive and inferential statistics were used to analyze differences in anxiety scores between participants who listened to music preoperatively versus those who did not. A paired t test was calculated to compare differences in anxiety over time in the music and nonmusic groups. An independent t test was calculated to compare the change in anxiety between music and nonmusic groups. A two-way analysis of variance (ANOVA) was calculated to test the presence of an interaction effect between initial anxiety and music on change in anxiety scores.</p> <p>The results of the paired t tests showed that patients who listened</p>

		significant statistical difference (p>0.05)	instrument and the procedure to collect data for the study Data were collected throughout preassigned shifts by one or more of the individuals on the research team.	group listened to music for periods that ranged from 30 to 60 min. Anxiety levels were reassessed postintervention also using the VAS The control group did not listen to music but rated their anxiety on two occasions (approximately 1hr before surgery and then 15 min before surgery)	to music had a pre and post significant decrease in anxiety scores (p<.001). There was no significant difference in the decrease of anxiety for patients who did not listen to music (p = .06). There was a significant difference in change in anxiety between the music and the nonmusic groups (p = .001)
Citation: Ni, C.-H., Tsai, W.-H., Lee, L.-M., Kao, C.-C., & Chen, Y.-C. (2012). Minimising preoperative anxiety with music for day surgery patients - a randomised clinical trial. <i>Journal of Clinical Nursing</i> (John Wiley & Sons, Inc.), 21(5–6), 620–625. https://doi.org/10.1111/j.1365-2702.2010.03466.x					Level II
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
“The objective of this study was to evaluate the effects of musical intervention on preoperative anxiety and vital signs in patients undergoing day surgery”	A Randomized, controlled study.	Sampling Technique: Convenience sampling # Eligible: 183 were selected. However, 3 failed to meet inclusion criteria and 6 did not complete the questionnaire # Accepted: 174 # Control: 1	Control- (87) Did not listen to music Intervention- (87) Listened to music for 20 minutes after initial preoperative assessment. After preoperative registration, a registered nurse took vital signs and administered the STAI following standardized instructions. A computer-generated list then randomized the patients to receive either musical intervention or control. Music consisted of an	DV: Anxiety level as measured by STAI. Vital signs (blood pressure and HR). Measurement tool (reliability), time, procedure: The STAI, and vital signs were measured before and after the experimental protocol.	The study shows that patients undergoing day surgery may benefit significantly from musical intervention to reduce preoperative anxiety and improve physiological parameters. Categorical variables were analyzed using Chi-square analysis/Fisher’s exact test. Paired t-tests in both groups were employed to analyze the results of differences in improvement after intervention. Independent two-sample t-tests were used to detect group

		<p># Intervention: 1</p> <p>Power analysis: Not stated</p> <p>Group homogeneity:</p> <p>Demographic data between the two groups showed no significant statistical difference (p>0.05)</p>	<p>investigator-selected mini library that included soothing popular Chinese and Minan Taiwanese Pop songs (low-tone, slow-rhythm ballads only) in compact disc format delivered by headphones and a compact disc player. The patients were free to select from the musical menu. After 20 minutes, anxiety and vital signs were measured again.</p> <p>Intervention fidelity:</p> <p>A registered nurse took vital signs and administered the STAI following standardized instructions.</p> <p>A computer-generated list was used to randomize the patients to receive either musical intervention or control</p>	<p>The STAI is a two-part 20-item self-report measure. It contains 40 items rated on a Likert scale and used to measure feelings of apprehension, tension, nervousness, and worry. Total scores range from 20–80, with higher scores indicating greater anxiety (low anxiety: 20–39; moderate anxiety: 40–59; and high anxiety: 60–80).</p> <p>The Chinese STAI used in this study has been previously validated and exhibited high internal consistency (0.90–0.94)</p>	<p>differences in baseline-to-postintervention changes. Continuous data were presented as mean ± standard deviation, while categorical data were represented by a number and a percentage. All statistical assessments were two-tailed and considered significant at the 0.05 level.</p> <p>Statistical analyses were performed using SPSS 15.0 statistics software.</p> <p>There was a statistically significant difference between the music and control groups (p < 0.001). The STAI score decreased by means of 5.83 in the music group. The secondary endpoints, the mean changes in vital signs from baseline after intervention were also observed in the group.</p>
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Table 2
Synthesis Table

Evidence Based Practice Question (PICO): Does the Use of Music Reduce Preoperative Anxiety in Patients Undergoing Gynecologic Procedures?			
Level of Evidence	# of Studies	Summary of Findings	Overall Quality

<p>II</p>	<p>2</p>	<p>Uğraş, et al. (2018). The post-music STAI, SBP, DBP, HR and cortisol levels of the patients in music groups were significantly lower than pre-music time. All types of music decreased the STAI, SBP, and cortisol levels.</p> <p>Ni et al. (2012). The study found a reduced anxiety levels and improved vital signs from baseline values in the intervention group compared with the control group.</p>	<p>A- Included studies showed a consistent result with sufficient sample size. The study included consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence. Expertise is clearly evident</p> <p>B- Reasonably consistent results, sufficient sample size, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence</p>
<p>III</p>	<p>2</p>	<p>Thompson et al. (2014). Patients who listened to music had a decrease in anxiety scores. There was no significant difference in the decrease of anxiety for patients who did not listen to music ($p > .06$).</p> <p>Labrague & McEnroe-Petitte. (2016). This study provides empirical evidence to support the use of music during the preoperative period in reducing anxiety and unpleasant symptoms in women undergoing gynecologic surgery. The experimental group had significantly lower STAI scores, and physiologic parameters post intervention compared to the control group.</p>	<p>B- Expertise seems to be credible. Sufficient sample size, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.</p> <p>B- Sufficient sample size, some control, with fairly definitive conclusions.</p>

Figure 1
Current Process Map

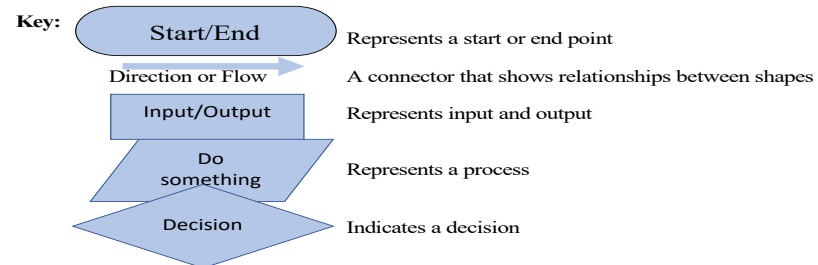
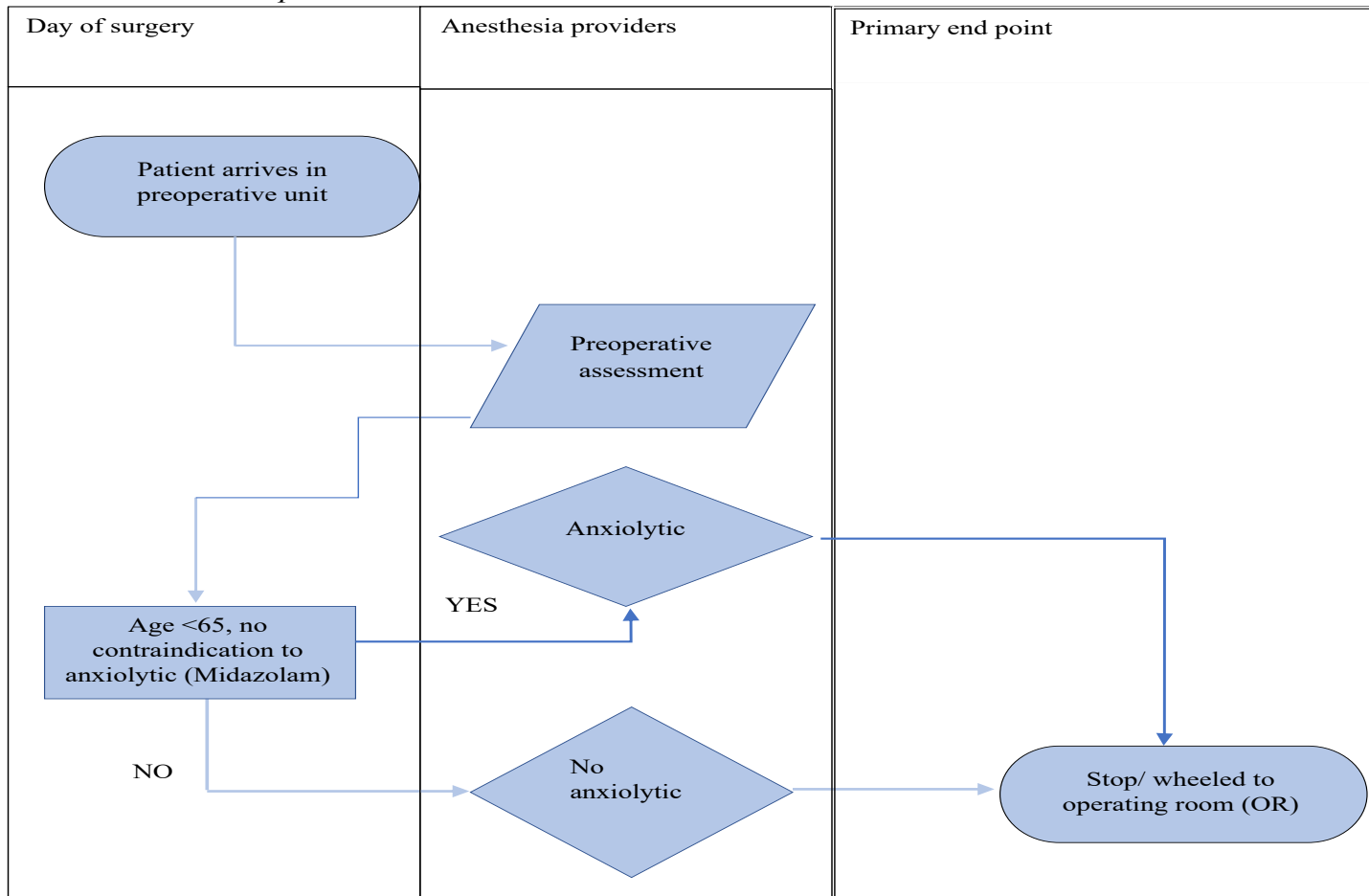


Figure 2
 Diagram showing an Application of Kolcaba's Theory to the Project

Theoretical and Implementation Science Framework

Kolcaba's Comfort Theory

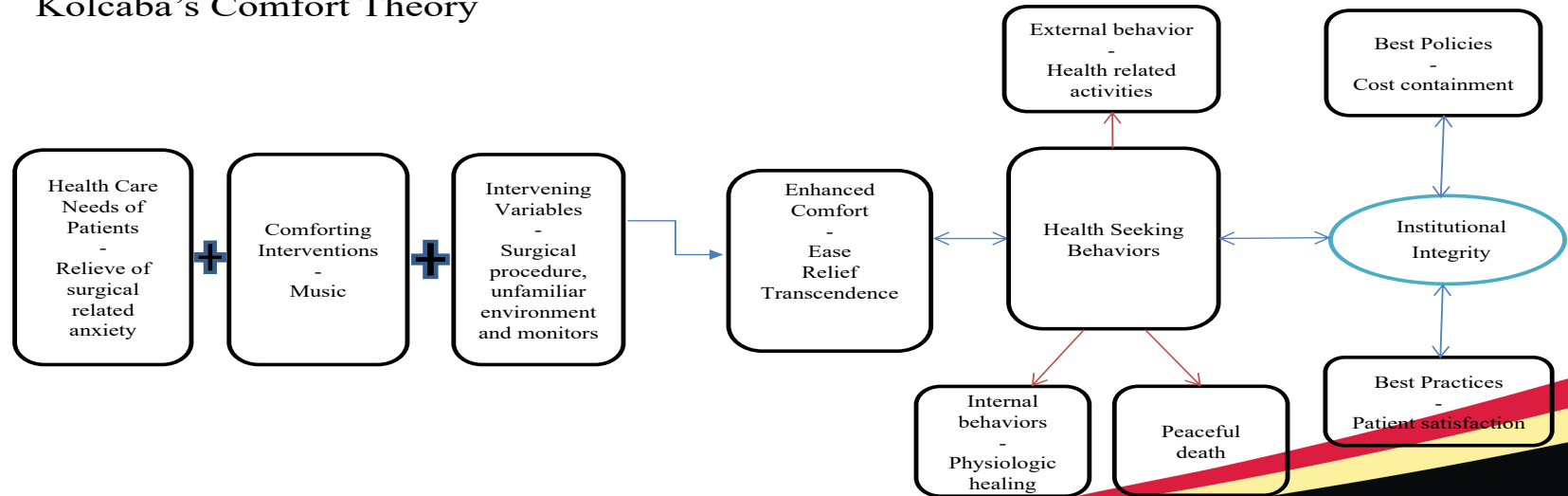
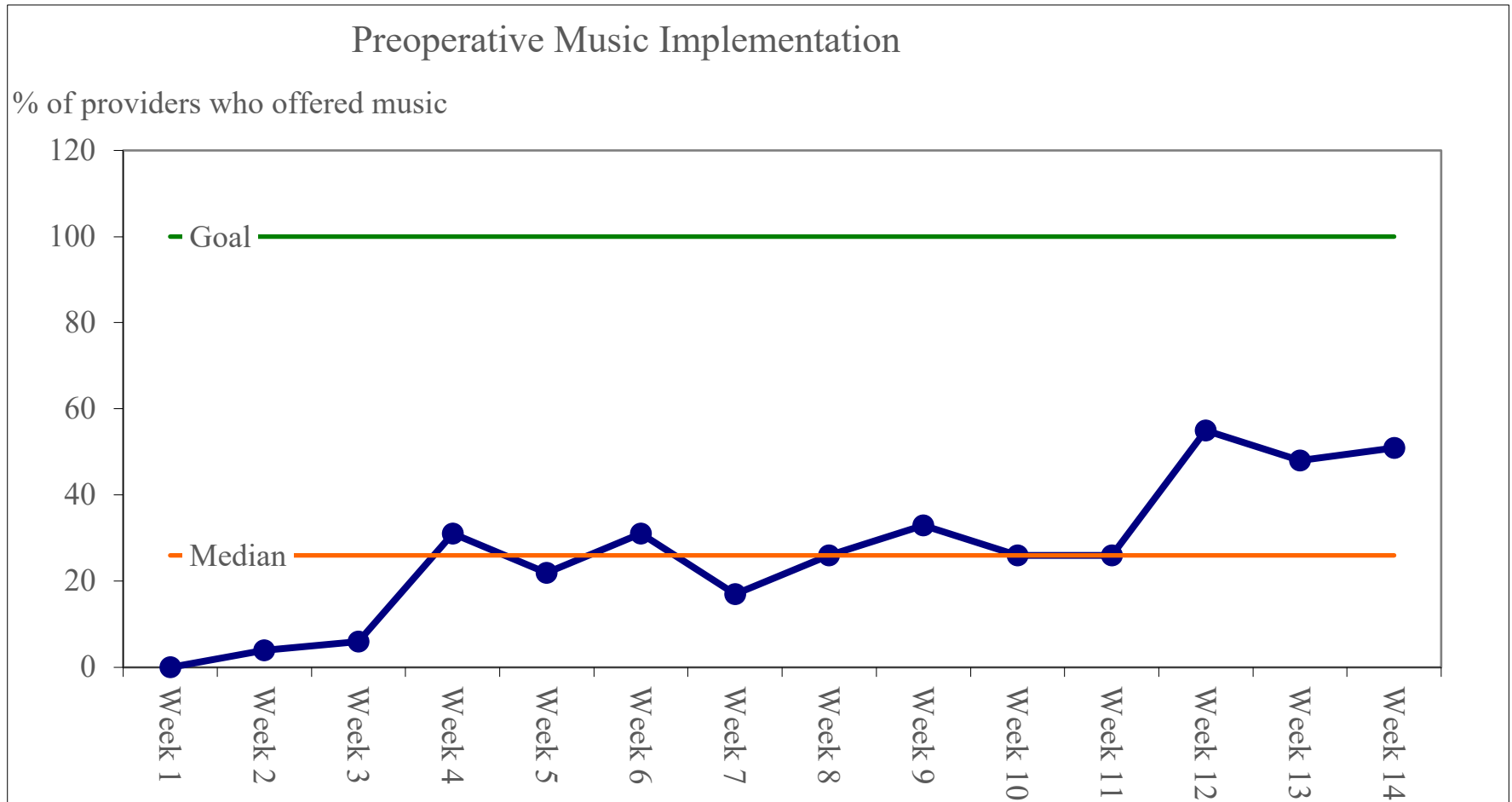


Figure 3
Run Chart Showing Weekly Progress



Appendix A*Training tool*

Date	Educated on the use of MP3 player and headsets to provide music? (Yes=1, NO=2)	De-identification code for CRNAs and MDAs

Appendix B*Observation tool*

Surgery Date	De-identified patient ID	Inclusion criteria met (Yes=1, No=2)	Music provided (Yes=1, No=2)	Code for CRNAs and MDAs