

The Utilization of Music Therapy to Improve Patient Anxiety Level

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Proposed Project Site: The Lennar Foundation Medical Center, University of Miami

## **Abstract**

Mental health conditions such as depression and/or anxiety can be improved through music therapy. In a few studies of patients undergoing invasive procedures, music therapy appeared to reduce depressive symptoms and anxiety levels (Aalbers et al., 2017; Padam et al., 2017). The objective of this clinical quality improvement project was to evaluate the role of music therapy in reducing the anxiety scores among patient with suspected chronic GERD, achalasia, or dysphagia undergoing an invasive procedure such as an esophageal manometry study. The risks to the participants were no different than patients that are currently receiving standard care. Project participants were recruited from our Neurogastroenterology & GI Motility practice. They were all 18 years of age or older, male or female, and had a diagnosis of chronic GERD, suspected achalasia, or dysphagia.

Patients completed the short version of the State and Trait Anxiety Inventory (STAI) questionnaires (the definitive instruments for measuring anxiety in adults). The objective markers such as vital signs (blood pressure, temperature, heart rate, pulse, and oxygen saturation) were collected before and after the intervention. The focus of data collection was on the essential qualities evaluated by the STAI-State (STAI-S) Anxiety scale, which are feelings of apprehension, tension, nervousness, and worry (Spielberger, 1983). Pre- and post-test scores were analyzed by conducting a paired *t*-test with the Intellectus statistical program to assess differences in pre- and post-anxiety scores of patients' receiving "comfort talk" standard care versus music therapy.

While "comfort talk" standard care therapy and music therapy were both found to be statistically significant in reducing patient anxiety scores, music therapy decreased anxiety scores more. These findings may offer insight regarding recommendations for clinical practice change.

## **The Utilization of Music Therapy to Improve Patient Anxiety Scores**

### **Problem Statement/Background Significance**

According to Healthy People 2020, mental health disorders are the most common causes of disability, resulting in the highest burden of all diseases. An estimated 44 million adults in the United States suffer from a mental illness, and close to 10 million suffer from a serious debilitating mental health condition (Healthy People, 2020). Neuropsychiatric disorders account for about 20% of all years of life lost to disability and premature mortality, the lead cause of disability in the United States (Healthy People, 2020). The National Institute of Mental Health (2017) estimated that approximately 31% of adults in the United States (U.S.) experienced an anxiety disorder (National Institute of Mental Health, 2017), and 17.3 million adults in the United States had at least one major depressive episode (National Institute of Mental Health, 2019).

As it relates to the gastrointestinal clinical disease states, Garganeeva et al. (2019) stated achalasia accounted for 20% of all esophageal disorders and is characterized by a triad of gastroesophageal symptoms such as dysphagia, regurgitation, and odynophagia. Li et al. (2018) conducted a study showing patients with persistent gastroesophageal reflux greater than 2 years in duration presented with more depression, anxiety, and psychoticism. Mental health conditions such as depression and/or anxiety can be improved through music therapy. In a few studies of patients undergoing invasive procedures, music therapy appeared to reduce depressive symptoms and anxiety levels (Aalbers et al., 2017; Padam et al., 2017).

### **Project Evolution: Call for Nursing**

C.J. is a young female patient with suspected achalasia who was referred by her general surgeon for pre-operative testing via an esophageal manometry study. Upon entering the Motility laboratory, the patient walked in teary eyed, expressing high anxiety and panic about the test. She shared her feelings of fear, anxiety, and depression. As the project leader listened to C.J., she

reflected on many patients with similar case scenarios and determined this call for nursing could be answered with an evidence-based, caring approach.

### **Nursing Response**

This evidence-based caring approach would provide for a “caring milieu” by which C.J. would feel comfortable and complete the procedure successfully. In reflection of this nursing situation, Mayeroff (1990) stated that “the growth of the other is the center of my attention” (p. 39). The purpose of the nursing response in this experience was centered on establishing trust and empowering this patient to overcome anxiety and fear. Being empathetic to her needs and serving as a motivational coach throughout the procedure would be key. If a patient exhibits signs of anxiety or fear, the project leader would offer non-verbal eye exchanges or touch through hand holding or rubbing of her shoulder, understanding she needs support and encouragement to get through the esophageal manometry study.

### **Practice Knowledge Gap**

Many providers and nursing staff will encounter patients with upper gastrointestinal motility disorders such as chronic GERD, achalasia, or dysphagia but lack the knowledge about how to identify or screen for the mental health conditions (i.e., depression and anxiety) that often accompany such diagnoses.

### **Project Objectives**

The objective of this clinical quality improvement project was to evaluate the role of music therapy in reducing anxiety scores among patient with chronic GERD, suspected achalasia, or dysphagia undergoing an invasive procedure such as an esophageal manometry study. The PICOT answered the question of whether an intervention (provider-selected music therapy) compared to standard “comfort talk” therapy would improve the anxiety scores in patients before and after the

procedure. In a meta-analyses on music intervention and psychological and physiological outcomes of patients undergoing an invasive procedure, music interventions were effective and had a significant effect on stress reduction in both physiological and psychological patient outcomes (de Witte et al., 2020). This study provided high-level evidence that music interventions can be effective in reducing stress. It also provided justification for more of their use in reducing stress in both medical and mental health care practices.

### **Clinical Question**

In patients aged 18 years or older, diagnosed with suspected chronic gastro-esophageal reflux (GERD), achalasia, or dysphagia, how does standard “comfort talk” therapy compared with provider-selected music therapy affect anxiety scores before and after an esophageal manometry procedure?

### **SMART GOALS**

The project was determined to be successful if the following objectives are met:

1. In month 1, the Motility APRN delivered a health education presentation to 75% of registered nurses (RN) of the Gastroenterology clinic on the importance of anxiety/depression screening in patients with chronic GERD, acid reflux, suspected achalasia, dysphagia, regurgitation, hiatal hernia, paraesophageal hernia, or dyskinesia of the esophagus undergoing a motility procedure such as the esophageal manometry study.
2. By the end of 3 months, GI Motility staff offered music therapy to at least 85% of patients undergoing an esophageal manometry study.
3. By the end of 3 months, GI Motility staff enrolled and recorded the anxiety scores of 85% of patients undergoing an esophageal manometry study.

4. Among patients undergoing the esophageal manometry study who received the music intervention, their post-intervention anxiety score decreased by greater than two points on the STAI questionnaire (the goal was reduction of two points).

## **Synthesis and Appraisal of Literature**

### ***Music Therapy as an Intervention***

Depression often can cause a change in mood and loss of interest and pleasure. Music therapy has been shown to improve mood through emotional expression. It also plays an important role in reducing depressive symptoms and anxiety levels (Aalbers et al., 2017). For instance, preoperative anxiety is a common condition among patients undergoing medical and/or surgical procedures. Padam and her research colleagues (2017) conducted a prospective, randomized controlled trial on patients undergoing an upper endoscopy. Patients were randomly assigned to 3 different music groups: (a control featuring no music, pre-recorded Vedic chants, and Indian classical music). This study concluded that listening to Vedic chants and classical music had therapeutic benefits by improving anxiety levels induced by the apprehension of an invasive procedure (Padam et al., 2017).

Several studies have generated level-one evidence of the beneficial effects of music therapy on the anxiety levels of patients undergoing invasive procedures. For instance, Ko et al. (2017) led a level-one experimental investigation exploring effects of music styles on procedure-related anxiety in Taiwanese patients undergoing colonoscopies without sedation. Study findings were statistically significant with a  $p < 0.05$ . A trend test for mild anxiety was performed on the patients in the three groups, and a significant trend was noted ( $p = 0.017$  for all patients;  $p = 0.014$  for analysis by sex). Multivariate analysis for mild anxiety on the patients in each group was also performed in this study, and music by Kevin Kern was found to have the lowest odds ratio (Odds ratio = 0.34,  $p = 0.045$ ) (Ko et al., 2017). Music therapy reduced patient anxiety levels; additionally, music by Kevin Kern

reduced the level of anxiety in patients undergoing colonoscopy examination without sedation (Ko et al., 2017). Several study limitations were reported such as small sample size and the fact that data collection was based on screening examinations only. Researchers recommended a larger sample size and studying of other potential confounding factors to strengthen statistical significance (Ko et al., 2017).

In an experimental study of surgical patients receiving spinal anesthesia, Lee et al. (2017) explored the effects of listening to music on anxiety levels and physiological responses. “The study found significant differences in both anxiety and physiological indices between the intervention group and control group” (Lee et al., 2017, p. 10). The mean score of the State-Trait Anxiety Inventory (STAI) questionnaire in the study group decreased from a pre-test score of 59.0 to a post-test score of 31.20 ( $t = 28.63, p < 0.001$ ). Physiological indices also known as vital signs such as heartrate ( $t = 2.61, p = 0.012$ ), respiration rate ( $t = 2.29, p = 0.026$ ), systolic blood pressure ( $t = 2.30, p = 0.026$ ), and diastolic blood pressure ( $t = 3.02, p = 0.004$ ) decreased significantly as well. There were no significant changes observed from pre-op values in the control group. “When applying independent sample *t*-test to analyze STAI scores and physiological indices after music intervention, the STAI scores for the experimental group and the control group were  $31.20 \pm 4.84$  and  $58.78 \pm 5.49$  points ( $t = 26.65, p < 0.001$ ) respectively. This suggests the music intervention significantly lowered anxiety when compared to the control group (Lee et al., 2017, p. 11). The findings confirm that the 30-minute music intervention reduced the anxiety levels for patients after spinal anesthesia as indicated by the reduced heartrate, respiration rate, systolic blood pressure, diastolic blood pressure, and STAI score (Lee et al., 2017).

Listening to music while in the recovery room decreased patient anxiety levels. Adding statistical power to their findings, Lee et al. (2017) reported several studies from different settings found similar findings that music therapy was effective in reducing patient anxiety related to

invasive procedures. Study limitations included lack of information regarding heart rate variability (HRV) due to lack of instrument in the post-anesthesia care unit (PACU), and the study did not extend listening to music during the surgery. Researchers propose future studies evaluate the role of the autonomous nervous system modulation in HRV and include listening to music during surgery to analyze if any differences exist (Lee et al., 2017).

## **Conceptual/Theoretical Framework**

### ***Caring Science Contribution***

This practice environment most identifies with Jean Watson's Theory of Transpersonal Caring, which is achieved "through 10 carative factors" (known as caritas processes) to characterize human-to-human caring" (Smith & Parker, 2015; Wade, 2006, p 163; Watson, 1996). Within this model, "caritas consciousness becomes the foundational ethical level of entry into this framework" (Smith & Parker, 2015, p. 319). It evokes and connects love, healing, and caring, thereby providing for inner healing (p. 315). The nurse enters his or her patient's world to connect with their inner world meaning of life and at a spirit level for mutual search of wholeness, healing and significance. Jean Watson's theory of human caring was integrated into the development of the intervention to support the GI provider and allied health staff in how to interact with patients from a caring perspective. By actively engaging in the caring of the patient through authentic presence, developing a helping-trust relationship, offering loving-kindness and sensitivity, and creating a healing environment, the medical and clinical staff will be able to connect with the patient on a more spiritual level to optimize patient performance and overall health outcomes (Smith & Parker, 2015; Watson, 1996).

### ***Translational Model***

There is increasing acknowledgement that endeavors to change practice should be guided by conceptual models or frameworks (Dang et al., 2019). For a translational model, the project leader



decided to use the Iowa model of evidence-based practice to promote quality care. This model provides guidance for nurses and clinicians through evidence-based practice (EBP) processes and helps with making clinical and administrative practice changes that can affect health outcomes. It is well known for its applicability and user-friendly format for use by interprofessional healthcare teams (Dang et al., 2019).

### ***Overview of the Iowa Model***

Dang et al. (2019) stated that the model starts by encouraging clinicians to identify a question or “trigger issue” to improve practice and healthcare and can be done by review of current data and evidence. In the clinical application component, the clinician identifies the important and clinically relevant practice questions that can be addressed through the EBP process and then state the question or purpose. This is where having a clear purpose establishes the charge to the team while also defining clear boundaries. At this stage, the key elements of the purpose statement, known as the PICOT (P –clinical problem, patient population, pilot area, I – intervention, C – comparison, O – desired outcome) question is presented. We then move to “topic priority” to make sure the subject matter or question fits with the organizational priorities to secure support from leadership and other departments and disciplines. Next, a team that includes stakeholders, staff nurses, managers, Advanced Practice Registered Nurses (APRNs), and interprofessional colleagues is formed. The team then works together to assemble, appraise, and synthesize available evidence on the topic question. Evidence should be enough and preferably be of high quality although lower-level evidence can also be utilized. Once evidence is gathered, “a practice change is piloted” (Dang et al., 2019, p. 392) and later evaluated to ascertain if the EBP change has worked within the clinical care setting. In the design and pilot practice change portion, the EBP protocol that was piloted must include resources and constraints in designing the change to ensure feasibility to promote adoption. This is also where the team must plan both implementation and evaluation. If the change is

appropriate for practice with positive results, rollout and integration of practice are desired. If not appropriate for practice, quality improvement monitoring is needed to ensure high-quality patient care. There are feedback loops throughout the phases that provide for reflection analysis, evaluation, and modification. When positive outcomes are realized, integration of the practice is facilitated through engagement of key stakeholders and sustainability is promoted by thought leaders and senior leadership and continuous monitoring efforts. This model ends with the dissemination of results where the project is shared to expand nursing knowledge and promote adoption of EBP in the healthcare system. This can also encourage EBP changes in other organizations or healthcare settings (Dang et al., 2019).

## **Project Description**

### ***Team Development***

#### *Project Leader*

The project leader is a board-certified family nurse practitioner (FNP-BC). Ms. Moriane Joseph joined the nursing profession in 2006 and began her practice in primary care before transitioning to gastroenterology. She currently works for The Neurogastroenterology & GI Motility Program, Division of Digestive Health and Liver Diseases, at The Lennar Foundation Medical Center, University of Miami Hospital and Clinics (UMHC), which is the proposed project site.

#### *Faculty Team Leader*

Shirley Gordon, PhD, RN, NCSN, AHN-BC, HWNC-BC served as the faculty chair for this project. Dr. Gordon's research areas of interest include caring for persons experiencing conditions involving stigma and chronicity and the development of caring theories to guide nursing practice. Dr. Gordon is co-director of the Florida School Nurse Research Initiative, which focuses on engaging school nurses in research and evidenced-based practice.

### *Community Member*

The community member for this DNP project was Il Joon Paik, MD, a neuro-gastroenterologist with extensive experience in upper and lower gastrointestinal disorders and conditions. He completed his medical degree at La Universidad Nacional de Asuncion, Facultad de Ciencias Medicas, in Asuncion, Paraguay. He went on to complete an internship, residency and fellowship programs at Columbia University College of Physicians and Surgeons, St. Luke's Roosevelt Hospital Center in New York. His interests include utilization of novel technologies to study the function of the intestines. Some of the GI motility tests he performs at the UMHC/UHealth system include: Impedance platimetry (ENDOFLIP) for the assessment of esophageal and pyloric sphincter compliance, high resolution esophageal manometry with impedance testing for the assessment of esophageal motility and flow, 24-hour ambulatory pH impedance test to diagnose acid and non-acid reflux, high-resolution anorectal manometry with rectal sensation test, rectal balloon expulsion test and sacral neuromodulation for the diagnosis and treatment of defecatory disorders. In addition, Dr. Paik provides expertise in the diagnoses and treatment of aerophagia, supragastric belching and gas reflux. He also has expertise in the management of gastroparesis using the gastric stimulator.

### *Key Stakeholders*

Key stakeholders include fellow gastroenterology colleagues, GI-affiliated advance practice providers, nursing and allied health staff and the administration at The Lennar Foundation Medical Center, University of Miami Hospital and Clinics.

### **Project Processes**

#### *Permission/Venue*

Permission was obtained (Appendix A) from the University of Miami, a non-profit tertiary medical center in Miami-Dade County that provides services to the greater metropolitan Miami-

Dade and its neighboring counties, the Caribbean and South American countries. Permission was obtained from the executive nursing director (Appendix A). This is an outpatient ambulatory care center that provides specialized, individualized care for gastroenterology, cardiology, a comprehensive diabetes center, imaging services, mammography, neurology, oncology, ophthalmology, otolaryngology, outpatient surgery (endocrine, colorectal, plastic, vascular, surgical oncology), physical therapy, pain management, primary care, sports medicine, urology, women's and men's centers, the University of Miami Student Health Service, and more.

### **Recruitment and Protection of Participants**

The inclusion criteria consisted of being a male or female, aged 18 and older with a diagnosis of an upper gastrointestinal conditions such as chronic GERD, acid reflux, suspected achalasia, dysphagia, regurgitation, hiatal hernia, paraesophageal hernia, or dyskinesia of the esophagus scheduled for an esophageal manometry study. Participants were screened for anxiety and then consented to participate. Consenting to participate meant subjects would provide an anxiety level prior to and after the “comfort talk” or music intervention using the linear numeric scale (0-10). Zero represented no anxiety and 10 denoted highest level of anxiety. Recruits also agreed to have physiologic makers such as their vital signs taken. They were also offered the standard “comfort talk” therapy or the provider-selected music intervention. Patients were randomly assigned to therapy. Odd numbered participants received the comfort talk therapy, while those with an even number received the music therapy. Participation also included completion of the State and Trait Anxiety Inventory (STAI) questionnaire, which is a definitive instrument to determine trait and state anxiety scores in adults. Exclusion criteria included the elimination of persons undergoing an esophageal manometry study for revision of a hiatal hernia repair or bariatric surgery as they may likely have undergone an esophageal manometry procedure prior. Each participant was assigned a record number and the only identifying information collected was age, gender, ethnicity and

diagnosis. All completed questionnaires were kept in a locked file cabinet in the Motility lab, accessible only to the project leader. The risks to the participants were no different than patients that currently receive standard care.

Project participants were recruited from the Neurogastroenterology & GI Motility practice. Consenting participants' vital signs such as temperature, blood pressure, pulse, and oxygen saturation were collected at baseline, prior to the start, during, and after the "comfort talk" or music intervention. They also completed the short version of the STAI questionnaire which consist of a total of 10 questions designed to measure anxiety in adults.

### **Intervention**

For this study, the anxiety scores were collected prior to and after the esophageal manometry study. The STAI questionnaire was the best approach, given to participants as a pre and post-test survey (given prior to and post the "comfort talk" or music therapy interventions) to assess change in anxiety scores prior to and after the procedure. Physiological data such as temperature, blood pressure, heart rate, and oxygen saturation were collected to assess if any differences exist when compared to pre and post-anxiety scores. The focus of data collection would be on the essential qualities evaluated by the current "state" STAI-S Anxiety scale, which are feelings of apprehension, tension, nervousness, and worry (Spielberger, 1983).

### **Instrument/Measurement Tool**

Study participants completed the short version of the State and Trait Anxiety (STAI) questionnaire (Appendix B), which includes 10 questions. The STAI clearly differentiates between the temporary condition of "state anxiety" and the more general and long-standing quality of "trait anxiety" (Spielberger, 1983; Zsido, Teleki, Csokasi, Rozsa & Bandi, 2020). This instrument tool is a psychological inventory questionnaire based on a 4-point Likert scale, answered on a self-reported

basis. While data will be collected on “trait” anxiety, which assesses day-to-day feelings of stress, worry, and discomfort, this project will focus on “state” anxiety. Data gathered will capture the essential qualities evaluated by the STAI-S Anxiety scale, which are the temporary feelings of apprehension, tension, nervousness, and worry (Spielberger, 1983). This questionnaire has been shown to have excellent psychometric properties with good validity and reliability (Barnes et al., 2002). High scores are positively correlated with higher levels of anxiety; and, ultimately can assess overall vulnerability to anxiety disorders (Chambers et al, 2004).

### **Data Analysis**

All data points were collected on a patient questionnaire, and then data was entered into a statistical program. Pre- and post-test scores were analyzed by conducting a paired *t*-test utilizing the INTELLECTUS statistical program to assess differences in patient anxiety scores. The paired *t*-test is an effective evaluation tool designed to assess if any differences do exist among the scores at two different time points. Descriptive statistics were used to illustrate the demographics of the project participants. This quality improvement project was deemed successful when most of the project objectives were met.

1. In month 1, the Motility APRN delivered a health education presentation to 80% of GI staff RNs on the importance of anxiety/depression screening in patients with chronic GERD, acid reflux, suspected achalasia, dysphagia, regurgitation, hiatal hernia, paraesophageal hernia, or dyskinesia of the esophagus undergoing a motility procedure such as the esophageal manometry study (achieved reaching over 75% of GI nursing staff).
2. By the end of 3 months, GI Motility staff offered “comfort talk” and music therapy combined to 63% of project participants undergoing an esophageal manometry study. However, of the 28 subjects that consented to participate, music therapy was offered to only 43% ( $n=12$ ) of the participants. Fifty-seven (57%) percent of the recruits ( $n=16$ ) received “comfort talk” therapy. This project goal

was not fully met as it did not enroll 85% of participants scheduled for an esophageal manometry into the music intervention arm of the project. Because subjects were randomly assigned to either receive the standard “comfort talk” therapy or the music intervention, it would have been impossible to enroll 85% of project participants into the music intervention arm.

3. By the end of 3 months, GI Motility staff recorded the anxiety scores of 64% of patients undergoing an esophageal manometry study (collected and recorded the anxiety scores of 28 out of the 44 participants recruited). The goal of recording the scores of 85% of project participants was not met. This was also partly because 36% (16 of 44) of patients recruited declined participation and received the standard “comfort talk” therapy.

4. Among patients undergoing the esophageal manometry study who received the music intervention, their post-intervention anxiety scores decreased by greater than two points on the STAI questionnaire. The goal of reducing participant anxiety scores by at least two points was achieved.

### **Resources/Technical Equipment**

There was no cost associated with conducting this quality improvement project. Resources utilized for this project included use of the Motility lab at The Lennar Foundation Medical Center, a satellite location for the UMHC. Other resources included the State Trait Anxiety Inventory (STAI) questionnaire known as the “state” STAIS-5 and “trait” STAIT-5. Meditation music taken from Yellow Brick Cinema live on Youtube.com (Yellow Brick Cinema Relaxing Music, 2022) was the form of music therapy used for all participants. The music was offered through the speakers of a desktop computer. Music therapy was introduced at 5-10 minutes prior and through completion of the esophageal manometry study. Technical equipment to perform the procedure was conducted with a Medtronic’s high resolution (HR) esophageal manometry machine and HR esophageal manometry catheter, electronic blood pressure machine, electronic thermometer, and oxygen

saturation device. All patients received topical anesthetics such as benzocaine and lidocaine prior to the procedure.

## Results/Findings

### *Assigned Intervention*

According to Table 1 below, of the forty-four ( $n=44$ ) subjects that were recruited in this quality improvement project, 28 subjects were randomly assigned to receive the standard “comfort talk” therapy or music intervention. Twelve ( $n=12$ ) participants were enrolled into the music intervention, sixteen ( $n=16$ ) participants received the standard “comfort talk” therapy, while the remaining 16 patients who reported no anxiety, declined participation in the quality improvement project.

**Table 1:**

### *Frequency Table for Assigned Interventions*

Variable	<i>Number of Participants</i>	<i>Percentages</i>
Assigned Intervention		
Music	12	27.27
Comfort Talk	16	36.36
No Intervention	16	36.36

*Note.* Due to rounding errors, percentages may not equal 100%.

In analysis of the descriptive data, there were more female participants ( $n = 22, 79\%$ ) compared to males ( $n = 6, 21\%$ ) subjects as demonstrated in Table 2. For ethnicity, the largest group enrolled were Hispanics ( $n = 16, 57\%$ ) followed by Non-Hispanic Whites ( $n = 7, 25\%$ ), Blacks ( $n = 4, 14\%$ ) and Other, a South Asian participant ( $n = 1, 4\%$ ) (as shown in Table 2).



**Table 2:***Frequency Table for Gender and Ethnicity*

Gender	<i>Number</i>	<i>Percentage</i>
F	22	78.57
M	6	21.43
Ethnicity		
Hispanic	16	57.14
Black	4	14.29
Other	1	3.57
Non-Hispanic White	7	25.00

*Note.* Due to rounding errors, percentages may not equal 100%.

*Summary Statistics*

The average age for all participants enrolled in the project was 49.86 years old; females averaged 51.59 years and males averaged 43.50 years as shown in Table 3 below. The average anxiety score for all participants was 3.93. Women had an average pre-intervention and post-intervention anxiety score of 6.68 and 3.55, respectively, and men had an average pre-intervention and post-intervention anxiety score of 4.33 and 1.60 respectively (Table 4). In summary, most of the women participants were middle aged, while the men were younger with an age range in the early 40s.

**Table 3:***Summary Statistics Table for Age by Gender*

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	<i>SE<sub>M</sub></i>	Min	Max	Skewness	Kurtosis
Age								
F	51.59	9.85	22	2.10	34.00	72.00	0.009	-0.55
M	43.50	8.24	6	3.36	33.00	56.00	0.27	-0.96

*Note.* '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

Summary statistics were calculated for pre-intervention anxiety scores (Pre\_Anxiety\_Score) and post-intervention anxiety scores (Post\_I\_Anxiety\_Score) among those receiving music therapy and standard “comfort talk” therapy. Of the 28 participants enrolled into the quality improvement project, Table 4 shows the average pre-intervention and post-intervention anxiety scores were 6.18 and 3.19 respectively as indicated in Table 4. Post-intervention anxiety scores dropped by an average of 3 points when compared to pre-intervention anxiety scores. The average pre- and post-intervention anxiety scores were higher among female participants compared to the male recruits as illustrated in Table 5. The higher scores among women likely positively correlated with higher levels of anxiety among this group as well (Chambers et al, 2004).

**Table 4:**

*Summary Statistics Table for Pre-Intervention Anxiety Score and Post-Intervention Anxiety Score*

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	<i>SE<sub>M</sub></i>	Min	Max	Skewness	Kurtosis
Pre_Anxiety_Score	6.18	2.23	28	0.42	2.00	10.00	0.02	-0.78
Post_I_Anxiety_Score	3.19	2.99	27	0.57	0.00	10.00	0.63	-0.79

*Note.* '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

**Table 5:**

*Summary Statistics Table for Pre-intervention anxiety and post-intervention anxiety score by Gender*

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	<i>SE<sub>M</sub></i>	Min	Max	Skewness	Kurtosis
Pre_Anxiety_Score								
F	6.68	2.19	22	0.47	2.00	10.00	-0.33	-0.43
M	4.33	1.21	6	0.49	3.00	6.00	0.05	-1.39
Post_I_Anxiety_Score								
F	3.55	3.08	22	0.66	0.00	10.00	0.47	-1.01
M	1.60	2.07	5	0.93	0.00	5.00	0.97	-0.52

*Note.* '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

*Nurses and Health Education Presentation*

Of the 10 nurses working in the multidisciplinary clinic, 80% attended the health education presentation on depression and anxiety in patients with neurogastroenterology and GI motility disorders or conditions. Participation in the health education presentation is illustrated in Table 6 below.

**Table 6:***Frequency Table for Nurse Practitioners Receiving the Health Education*

Variable	<i>Nurse Participants</i>	<i>Percentage</i>
Health_Education		
Yes	8	80.00
No	2	20.00

*Comparison of Pre-Anxiety and Post-Anxiety Scores*

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of pre-intervention anxiety score, labelled (Pre\_Anxiety\_Score) and post-intervention anxiety score, labelled (Post\_I\_Anxiety\_Score) was significantly different from zero. The result of the two-tailed paired samples *t*-test was significant based on an alpha value of .05,  $t(26) = 5.46$ ,  $p < .001$ , indicating the null hypothesis can be rejected. This finding suggests the difference in the mean of Pre\_Anxiety\_Score and the mean of Post\_I\_Anxiety\_Score was significantly different from zero. The mean of Pre\_Anxiety\_Score was significantly higher than the mean of Post\_I\_Anxiety\_Score. In other words, post-intervention anxiety scores decreased by more than 3 points and were noted to be statistically significant. The results are presented in Table 7. A bar plot of the means is presented in Figure 1.

**Table 7:**

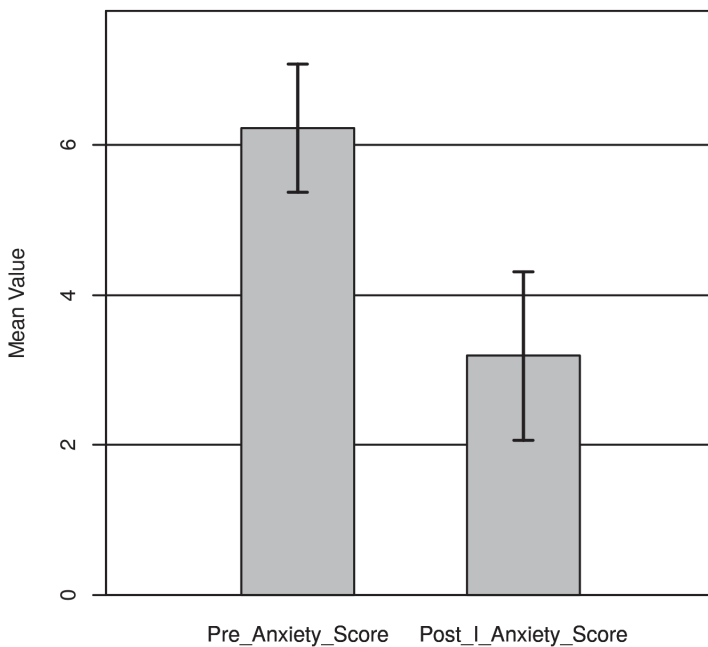
*Two-Tailed Paired Samples t-Test for the Difference Between Pre\_Anxiety\_Score and Post\_I\_Anxiety\_Score*

Pre_Anxiety_Score		Post_I_Anxiety_Score		<i>t</i>	<i>p</i>	<i>d</i>
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
6.22	2.26	3.19	2.99	5.46	< .001	1.05

*Note.* N = 27. Degrees of Freedom for the *t*-statistic = 26. *d* represents Cohen's *d*.

**Figure 1**

*The means of Pre\_Anxiety\_Score and Post\_I\_Anxiety\_Score with 95.00% CI Error Bars*



*Comparison of State Anxiety Scores*

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of pre-intervention “state” STAI scores (Pre\_STAIS\_5) and post-intervention “state” STAI scores (Post\_STAIS\_5) were significantly different from zero. The result of the two-tailed paired samples *t*-test was significant based on an alpha value of .05,  $t(26) = 3.13$ ,  $p = .004$ , indicating the null hypothesis can be rejected. This finding suggests the difference in the mean of Pre\_STAIS\_5 and the mean of Post\_STAIS\_5 was significantly different from zero. The mean of Pre\_STAIS\_5 was

significantly higher than the mean of Post\_STAIS\_5. Post-intervention state anxiety scores decreased by close to 3 points (2.70) and were found statistically significant. It appears the “comfort talk” and the music interventions were both beneficial in reducing participant anxiety scores. The results are presented in Table 8. A bar plot of the means is presented in Figure 2.

**Table 8:**

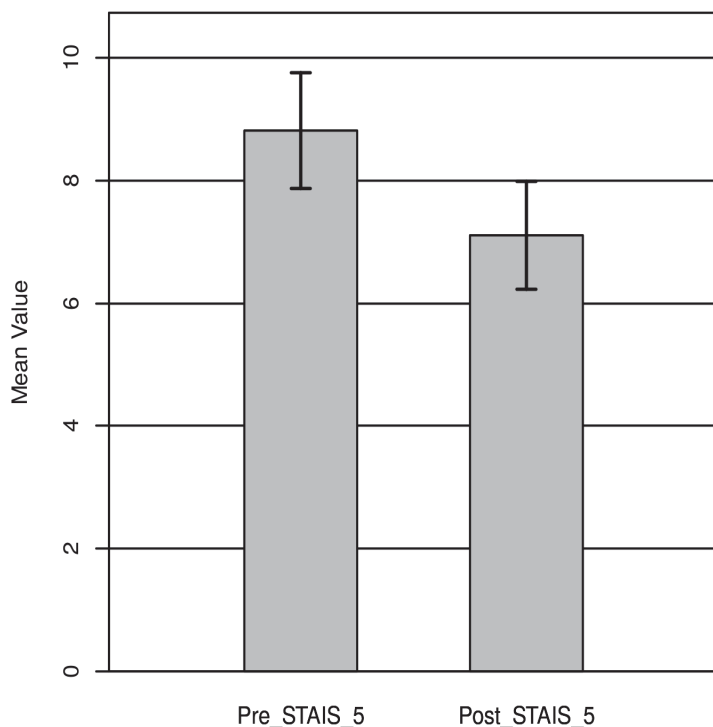
*Two-Tailed Paired Samples t-Test for the Difference Between Pre\_STAIS\_5 and Post\_STAIS\_5*

Pre_STAIS_5		Post_STAIS_5		<i>t</i>	<i>p</i>	<i>d</i>
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
8.81	2.50	7.11	2.33	3.13	.004	0.60

*Note.* N = 27. Degrees of Freedom for the *t*-statistic = 26. *d* represents Cohen's *d*.

**Figure 2**

*The means of Pre\_STAIS\_5 and Post\_STAIS\_5 with 95.00% CI Error Bars*

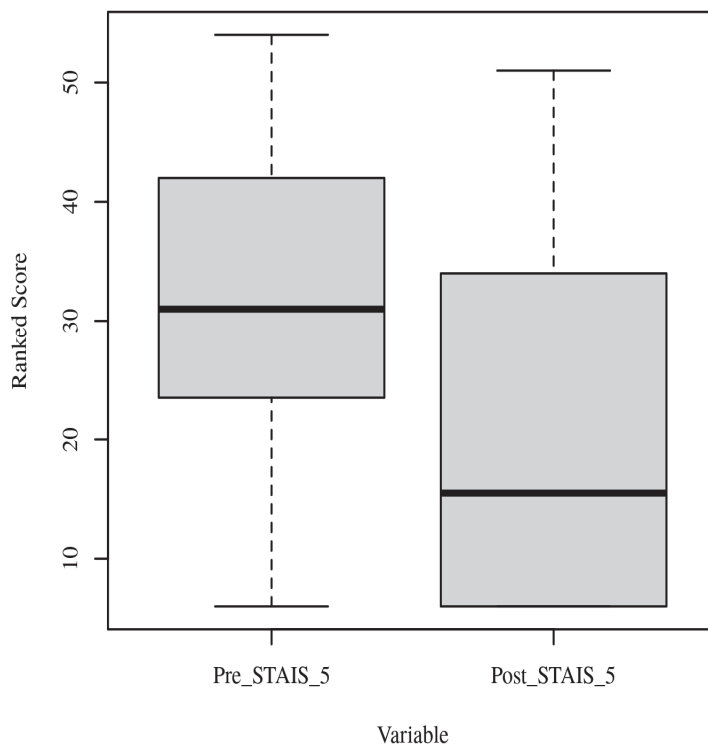


*Two-Tailed Wilcoxon Signed Rank Test*

A two-tailed Wilcoxon signed rank test was conducted to examine whether there was a significant difference between Pre\_STAIS\_5 and Post\_STAIS\_5. The two-tailed Wilcoxon signed rank test is a non-parametric alternative to the paired samples *t*-test and does not share its distributional assumptions (Conover & Iman, 1981). The results of the two-tailed Wilcoxon signed rank test were significant based on an alpha value of .05,  $V = 236.50$ ,  $z = -2.49$ ,  $p = .013$ . This indicates that the differences between Pre\_STAIS\_5 and Post\_STAIS\_5 are not likely due to random variation. The median of Pre\_STAIS\_5 ( $Mdn = 8.00$ ) was significantly larger than the median of Post\_STAIS\_5 ( $Mdn = 6.00$ ). Figure 4 presents a boxplot of the ranked values of Pre\_STAIS\_5 and Post\_STAIS\_5.

**Figure 3**

*Ranked values of Pre\_STAIS\_5 and Post\_STAIS\_5*



*Comparison of Trait Anxiety Scores*

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of Pre\_STAIT\_5 and Post\_STAIT\_5 was significantly different from zero. The result of the two-tailed paired samples *t*-test was significant based on an alpha value of .05,  $t(26) = 2.10, p = .045$ , indicating the null hypothesis can be rejected. This finding suggests the difference in the mean of Pre\_STAIT\_5 and the mean of Post\_STAIT\_5 were significantly different from zero. The mean of Pre\_STAIT\_5 was significantly higher than the mean of Post\_STAIT\_5. While there was less of a difference noted between the pre and post mean trait anxiety scores of participants receiving “comfort talk” and the music intervention (0.96), the findings were still considered statistically significant. The results are presented in Table 9. A bar plot of the means is presented in Figure 4.

**Table 9:**

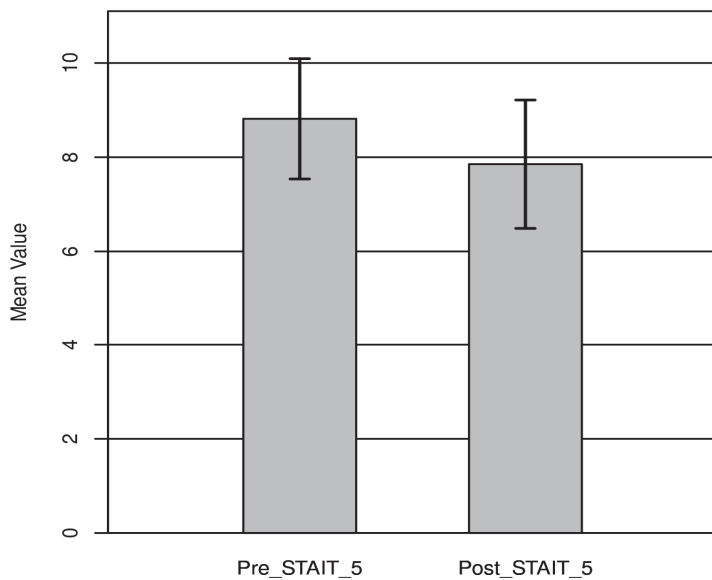
*Two-Tailed Paired Samples t-Test for the Difference Between Pre\_STAIT\_5 and Post\_STAIT\_5*

Pre_STAIT_5		Post_STAIT_5		<i>t</i>	<i>p</i>	<i>d</i>
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
8.81	3.39	7.85	3.61	2.10	.045	0.41

*Note.* N = 27. Degrees of Freedom for the *t*-statistic = 26. *d* represents Cohen's *d*.

**Figure 4**

*The means of Pre\_STAIT\_5 and Post\_STAIT\_5 with 95.00% CI Error Bars*

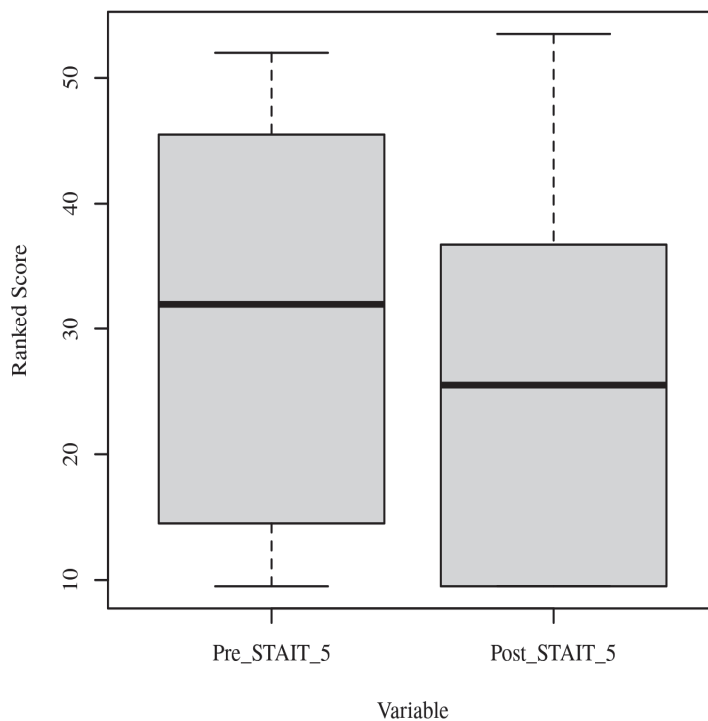


*Two-Tailed Wilcoxon Signed Rank Test*

A two-tailed Wilcoxon signed rank test was conducted to examine whether there was a significant difference between Pre\_STAIT\_5 and Post\_STAIT\_5. The two-tailed Wilcoxon signed rank test is a non-parametric alternative to the paired samples *t*-test and does not share its distributional assumptions (Conover & Iman, 1981; Razali & Wah, 2011). The results of the two-tailed Wilcoxon signed rank test were not significant based on an alpha value of .05,  $V = 73.00$ ,  $z = -1.93$ ,  $p = .054$ . This indicates that the differences between Pre\_STAIT\_5 ( $Mdn = 8.00$ ) and Post\_STAIT\_5 ( $Mdn = 7.00$ ) are explainable by random variation. Figure 5 presents a boxplot of the ranked values of Pre\_STAIT\_5 and Post\_STAIT\_5.

**Figure 5**

*Ranked values of Pre\_STAIT\_5 and Post\_STAIT\_5*





### Mixed Model ANOVA

A mixed model analysis of variance (ANOVA) with one within-subjects factor and one between-subjects factor was conducted to determine whether significant differences exist among Pre\_Anxiety\_Score and Post\_I\_Anxiety\_Score between the levels of therapy. The results were examined based on an alpha of .05. The main effect for Therapy was not significant,  $F(1, 25) = 0.94$ ,  $p = .342$ , indicating the levels of therapy were all similar for Pre\_Anxiety\_Score and Post\_I\_Anxiety\_Score. The main effect for the within-subjects factor was significant,  $F(1, 25) = 29.85$ ,  $p < .001$ , indicating there were significant differences between the values of Pre\_Anxiety\_Score and Post\_I\_Anxiety\_Score. Table 10 illustrates the mixed model ANOVA analysis where the interaction effect between the within-subjects factor and Therapy was not significant,  $F(1, 25) = 0.55$ ,  $p = .467$ . This indicates that the relationship between Pre\_Anxiety\_Score and Post\_I\_Anxiety\_Score was similar between the levels of therapy.

**Table 10:**

*Mixed Model ANOVA Results*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Between-Subjects						
Therapy	1	9.26	9.26	0.94	.342	0.04
Residuals	25	247.00	9.88			
Within-Subjects						
Within Factor	1	126.76	126.76	29.85	< .001	0.54
Therapy: Within.Factor	1	2.31	2.31	0.55	.467	0.02
Residuals	25	106.17	4.25			

**Between Effects.** For the Comfort Talk category of Therapy, Pre\_Anxiety\_Score was significantly greater than Post\_I\_Anxiety\_Score,  $t(25) = 3.54$ ,  $p = .002$ . For the Music category of Therapy, Pre\_Anxiety\_Score was significantly greater than Post\_I\_Anxiety\_Score,  $t(25) = 4.16$ ,  $p < .001$ . Both “comfort talk” therapy and music therapy were noted to be statistically significant in reducing anxiety scores among project participants; music therapy recipients more so than the standard “comfort talk” subjects. Table 11 presents the marginal means contrasts for the Mixed Model ANOVA.

**Table 11:**

*The Marginal Means Contrasts for each Combination of Within-Subject Variables for the Mixed Model ANOVA*

Contrast	Difference	SE	df	t	p
Therapy Comfort Talk					
Pre_Anxiety_Score - Post_I_Anxiety_Score	2.67	0.75	25	3.54	.002
Therapy Music					
Pre_Anxiety_Score - Post_I_Anxiety_Score	3.50	0.84	25	4.16	< .001

*Note.* Tukey Comparisons were used to test the differences in estimated marginal means.

While the marginal mean differences were statistically significant for both the standard “comfort talk” therapy and music therapy, the music intervention had a larger difference value. In Table 11, this larger difference can be seen and may suggest music therapy was more beneficial in reducing anxiety scores in patients undergoing esophageal manometries.

### **Key Barriers/Challenges**

Several challenges were presented and addressed during the period of running this quality improvement project. Initially, there were no study findings or available research literature on the use of music therapy to help patient anxiety when performing esophageal manometry studies. However, esophageal manometry is an invasive procedure and the studies reviewed generally noted the beneficial effects of music therapy to reduce anxiety level among patients undergoing invasive procedures. This project is unique in the sense that it specifically evaluated the effects of music or “comfort talk” on the anxiety scores of patients undergoing esophageal manometry studies. While physiologic data was collected, it was difficult to ascertain a significant association or to observe a trend regarding anxiety scores. Another limitation was the lack of variety in the type of music offered. All participants received meditation music. One may question if other forms of music such as classical, Vedic chant, patient-selected music or alternative options would have produced similar findings. In addition, the sample size of 28 participants was small. A longer enrollment period could

have allowed for a more robust and larger sample size, adding more statistical power to the project. It was rather interesting to note the high number of participants who reported no anxiety and declined to participate ( $n=16$ ).

Other barriers include confounding factors that may have had an underlying effect on the anxiety score reductions. For example, the timing of measuring anxiety following removal of the catheter, which signifies study completion, could have led to a reduction in anxiety scores impacting Post\_I\_Anxiety\_Level scores. Including continuous physiologic measures such as heart rate and blood pressure to assess anxiety throughout the intervention would have enhanced understanding. Finally, some patients from a Latin heritage had difficulty comprehending the questionnaire in English. Offering a Spanish version of the form could have led to different scoring sequence.

### **Unintended Consequences**

This quality improvement project provided meditation music for patients undergoing an esophageal manometry. It was provided via speakers from a desktop computer. This meditation music may have had a calming effect on the overall mood of the Motility staff performing the procedure. They subconsciously may have benefitted from therapeutic effects of the music therapy as well, translating into a more calming and caring approach to which the participants received. On another note, it was observed that patients would sometimes get distracted with asking questions prior to the procedure while the music was playing in the background. For future reference, providing headphones maybe a more useful format to offer music therapy, thereby altering pre and post-test anxiety scores. The headphones may ensure participants are more focused and experience less external stimuli.

## **Key Facilitators of Project Success**

Key facilitators of project success included the senior leadership and administration of the LFMC/UMHC, The Neurogastroenterology & GI Motility program, the project participants, the community member, faculty leader and on-site staff. This project would not have been possible without the approval from the leadership team at LFMC/UMHC. The support of the administration enabled engagement of the nursing and allied health staff regarding how to appropriately screen patients for mental health conditions. It also allowed for the recruitment and enrollment of patients with a neurogastroenterology & GI motility disorder or condition into the project. Many were willing participants and did not hesitate to support the idea of contributing to practice change to optimize patient performance and overall health outcomes. Drs. Il Joon Paik and Shirley Gordon who served as community member and faculty leader respectively, provided research guidance and support, contributing to the success of this clinical quality improvement project. And finally, this project would not have been as successful without the support of an experienced GI technician, Ms. Karla, who went above and beyond her daily responsibilities to recruit patients, collect and record physiologic and pre and post-intervention questionnaire data. This staff person also was instrumental in helping our Latin patients who did not speak English complete the STAI questionnaires. She adopted Jean Watson's caring perspective and engaged in the practice of creating a sensitive and helping environment that provided loving-kindness to our project participants (Smith & Parker, 2015; Watson, 1996).

## **Project Evaluation**

### ***Formative***

Initially, the objective of this project proposal sought to identify and recruit participants with achalasia only. When recruitment was limited, the study objectives were modified to include patients with upper GI disorders such as chronic GERD, dysphagia, regurgitation, and achalasia along with

patients being referred by general surgeons or pulmonologists. This new inclusion factor led to the recruitment of more participants, which allowed for a more robust project finding. Being able to recruit a more diverse pool of participants provided stronger evidence for the importance of music therapy before and during an invasive procedure, such as the esophageal manometry study, that create high anxiety. A larger pool of participants leads to greater reliability and statistical power.

### ***Summative***

The results of this analysis show this quality improvement project succeeded in fulfilling its purpose and met most of its initial goals and objectives. This project sought to educate GI nursing staff on identifying patients with a neurogastroenterology and GI motility disorder or condition with depression and anxiety through a depression/anxiety screening tool, recording and collecting patient anxiety scores. The anxiety scores decreased by 2 or more points in patients receiving the music or the standard “comfort talk” intervention. On average, those receiving the music intervention reduced their anxiety scores by approximately 4 points whereas those from the “comfort talk” group reduced anxiety scores by 2 points. Participants were randomly assigned to an intervention group through a numbering system. Subjects with an odd record number were assigned to the music intervention group and those with an even record number were provided with the “comfort talk” intervention. This format hindered maximizing the number of patients assigned to the music therapy group, resulting in a lower enrollment number in this arm. Despite this issue, positive outcomes were achieved.

As for participants who declined participation, they too may have received overall benefit. While there was no data collected in the form of STAI scores or physiologic markers, they were still engaged through the caring perspective and still received the standard “comfort talk” therapy. Given there was no data collected to detect anxiety score reductions, it is believed they still received its beneficial effects through patient experience and likely overall patient health outcomes.

Eventually, results of this project will be disseminated to key stakeholders with the purpose of expanding nursing knowledge about the subject matter and possibly advocating for the adoption of this practice into the UMHC healthcare system. This project can also promote changes in other clinic settings throughout the LFMC and UMHC system and other outside organizations (Dang et al, 2019).

## **Recommendations**

### *Site-Specific Recommendations*

This quality improvement project which proposed reducing anxiety levels through music therapy mostly achieved its desired goals. The measurement of anxiety level should be integrated as a standard of practice for patients undergoing an esophageal manometry. They should also be offered music therapy as an intervention to reduce anxiety levels during the esophageal manometry procedure, to optimize patient performance and overall health outcomes. The use of headsets over a desktop speaker to offer music therapy should be evaluated to determine best practice and patient preference in co-creating a caring, trusting, and healing environment.

Educating staff about the importance of the perceptions of patients receiving invasive procedures such as an esophageal manometry is needed to support interacting with them from a caring perspective. Also, it is equally important that staff receive health education on how to assess, identify, and care for patients with depressive and/or anxiety symptoms to optimize patient performance and overall health outcomes.

### *Project Appraisal*

While participant enrollment was modest at best, the statistical findings were significant. The project results showed the beneficial effects of music therapy on patient anxiety scores. The overall

anxiety scores of patients improved by 4 points among those enrolled in the music intervention compared to 2 points for those receiving the “comfort talk” therapy. This project affirms music therapy as an intervention within the clinic practice environment had positive effects. These findings offer strong evidence to warrant practice change to implement this form of therapy prior to and during invasive procedures within the Neurogastroenterology and GI Motility program. Music therapy as an intervention positively influenced the patient care experience and impacted overall patient health outcomes. Additional quality improvement projects are recommended to continue the evidence-based process to improve health care quality and health outcomes.

## **Conclusion**

The aim of this quality improvement project was to reduce the anxiety scores of patients with a neurogastroenterology and GI motility disorder or condition undergoing an esophageal manometry study while interacting with patients from a caring perspective. Researchers have consistently reported the efficacy of using music therapy to improve the anxiety levels of patients undergoing invasive procedures. While the standard “comfort talk” and music therapy interventions were both statistically significant in reducing post-intervention anxiety scores, the scores were higher for those receiving meditation music therapy. Guided by the American Association of Colleges of Nursing’s *Essentials of Doctoral Education for Advanced Practice Nursing* (2006) such as evidence-based practice, clinical scholarship, systems leadership for quality improvement, patient care technology and inter-professional collaboration, the findings of this quality improvement project provide an excellent opportunity to consider a practice change whereby patient experience and overall patient outcomes can be improved.

## **Plan for Dissemination**

The stakeholders are the members of the Neurogastroenterology and GI Motility team, GI-affiliated advance practice providers, nursing and allied health staff, and the hospital administration

of The Lennar Foundation Medical Center (LFMC), the faculty team leader, DNP Committee and fellow DNP classmates at the Florida Atlantic University (FAU), Christine E. Lynn College of Nursing. Results of this quality improvement project will be shared with key stakeholders in the form of a poster presentation on December 8, 2022 before the DNP Committee, fellow DNP classmates and the FAU Community. The best manner by which to disseminate the findings of this project to the LFMC stakeholders will likely be through a formal presentation to the Quality Improvement Council. This committee consists of advance practice providers, nursing staff, and allied health professionals from several disciplines and is inclusive of the inpatient and outpatient settings and the hospital administration. This council meets monthly to share evidence-based quality improvement projects. Guided by Jean Watson's Theory of Caring, this project offers meaningful evidence to improve the anxiety levels of patients undergoing real-time invasive procedures. Being able to share the data from this project would certainly guide medical and clinical staff towards improving the quality of the patient experience and overall health outcome.



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## Appendix A. Project Site Permission Letter



March 10, 2022

Kathy Zanelli, BSN, RN, AMB-BC  
Executive Director of Nursing  
The Lennar Foundation Medical Center  
5555 Ponce De Leon Blvd, Suite 226  
Coral Gables, FL 33146

Dr. Debra Hain  
DNP Program Director  
Christine E. Lynn College of Nursing  
777 Glades Road  
Boca Raton, FL 33431

Dear Dr. Hain,

This letter is to confirm that we have granted Moriane Joseph, Doctor of Nursing Practice student, approval to complete her (his) DNP Project at The Lennar Foundation Medical Center, University of Miami Health System, Miller School of Medicine. The project entitled "The Utilization of Music Therapy to Improve Patient Anxiety Levels" is based on the clinical question, in patients aged 18 years or older, diagnosed with suspected achalasia or dysphagia, how does standard care "comfort talk" therapy offered before and during an esophageal manometry procedure compared to music therapy affect the anxiety levels of patients?

Ms. Joseph currently works for our Neurogastroenterology and GI Motility Program where she treats and manages patients with upper and lower gastrointestinal disorders. We look forward to learning more about the effectiveness of music therapy for this procedure. We are hopeful that the findings from this study will be useful to other departments that also perform invasive outpatient procedures.

Sincerely,

Kathy Zanelli

**The Lennar Foundation Medical Center**  
5555 Ponce De Leon Blvd  
Coral Gables, FL 33146  
(305) 689-5555

## Appendix B. IRB Approval for Quality Improvement Project

UNIVERSITY  
OF MIAMI



University of Miami  
Human Subject Research Office (M809)  
1400 NW 10th Avenue, Suite 1200A  
Miami, FL 33136

Ph.: 305-243-3195  
Fax: 305-243-3328  
www.hsro.med.miami.edu

### NOT HUMAN SUBJECTS RESEARCH

August 29, 2022

Moriane Joseph, FNP-BC, MSN, MPH  
Advanced Registered Nurse Practitioner  
Neurogastroenterology and GI Motility Program  
The Lennar Foundation Medical Center  
5555 Ponce de Leon Boulevard, Suite 225  
Miami, FL 33146  
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Fax: (305) 689-0972

*Re: The Utilization of Music Therapy to Improve Patient Anxiety Levels*

Dear Moriane Joseph,

Thank you for letting me evaluate the above-referenced project. I reviewed the abstract and Non-Human Subjects Research application you provided and determined that this project is not human subject research requiring IRB review, approval, or oversight. This determination is based on the definition of "research" found at 45 CFR 46.102(l), which states:

(l) Research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Activities that meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program that is considered research for other purposes.

The objective of this clinical quality improvement project will evaluate the role of music therapy in reducing anxiety levels among patient with suspected chronic GERD, achalasia or dysphagia undergoing an invasive procedure such as an esophageal manometry study. Because you have indicated that you have no plans to publish this data and would only be sharing the findings with the DNP committee at FAU and also the nursing quality improvement council at the University of Miami, this is considered quality improvement and not research.

This determination is based solely on the information provided to the Human Subject Research Office (HSRO) and is not valid if the proposed project is not exactly as described. You must notify the HSRO if the proposed activity changes and becomes human subject research.

If you have questions, please call the HSRO at (305) 243-3195.

Sincerely,

A handwritten signature in blue ink that reads "V. Carrasco".

Vivienne Carrasco, MPH, CIP  
Associate Director, Regulatory Oversight-- HSRO

**Appendix C. STAIS-5 & STAIT-5 Anxiety Questionnaires****STAIS-5**

A number of statements which people have used to describe themselves are given below. Read each *statement and then circle the number at the end of the statement that indicates HOW YOU FEEL RIGHT NOW*, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

Item nr.		Not at all	Somewhat	Moderately so	Very much so
1	I feel upset.	1	2	3	4
2	I feel frightened.	1	2	3	4
3	I feel nervous.	1	2	3	4
4	I am jittery.	1	2	3	4
5	I feel confused.	1	2	3	4

**STAIT-5**

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the number at the end of the statement that indicates *HOW YOU GENERALLY FEEL*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

Item nr.		Not at all	Somewhat	Moderately so	Very much so
1	I feel that difficulties are piling up so that I cannot overcome them.	1	2	3	4
2	I worry too much over something that really doesn't matter.	1	2	3	4
3	Some unimportant thoughts run through my mind and bothers me.	1	2	3	4
4	I take disappointments so keenly that I can't put them out of my mind.	1	2	3	4
5	I get in a state of tension or turmoil as I think over my recent concerns and interests.	1	2	3	4

### Appendix D. Participant Data Collection Form

Record no. \_\_\_\_\_ Date: \_\_\_\_\_ Verbal Consent: Y/N \_\_\_\_\_ Anxiety level (1-10): \_\_\_\_\_  
 Comfort talk therapy \_\_\_\_\_ Music intervention \_\_\_\_\_ Feeling nervous/anxious: Y/N \_\_\_\_\_ Post-I Anxiety level (1-10): \_\_\_\_\_  
 Age/sex \_\_\_\_\_ Hispanic \_\_\_\_\_ Non-Hispanic \_\_\_\_\_ Black \_\_\_\_\_ Asian \_\_\_\_\_ Other \_\_\_\_\_  
 Chronic GERD \_\_\_\_\_ GERD/Acid Reflux \_\_\_\_\_ Dysphagia \_\_\_\_\_ Hiatal Hernia \_\_\_\_\_ Achalasia \_\_\_\_\_ Paraesophageal hernia \_\_\_\_\_ Other \_\_\_\_\_

**Baseline Vital Signs:** T: \_\_\_\_\_ BP: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_ P: \_\_\_\_\_ O2 SAT: \_\_\_\_\_  
**Pre-intervention Vital Signs:** T: \_\_\_\_\_ BP: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_ P: \_\_\_\_\_ O2 SAT: \_\_\_\_\_

Consent: We are conducting a quality improvement project to see if comfort talk vs music therapy helps patients undergoing an esophageal manometry study. You will be assigned either an even or odd number with no other identifiable information. Your name will not be used. You can decline participation.

STAI5-5: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the number at the end of the statement that indicates HOW YOU FEEL RIGHT NOW, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best. Thank you.

Item nr.	Empty Cell	Not at all	Somewhat	Moderately so	Very much so
1	I feel upset.	1	2	3	4
2	I feel frightened.	1	2	3	4
3	I feel nervous.	1	2	3	4
4	I am jittery.	1	2	3	4
5	I feel confused.	1	2	3	4

SCORE: \_\_\_\_\_

STAIT-5: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the number at the end of the statement that indicates HOW YOU GENERALLY FEEL. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel. Thank you.

Item nr.	Empty Cell	Not at all	Somewhat	Moderately so	Very much so
1	I feel that difficulties are piling up so that I cannot overcome them.	1	2	3	4
2	I worry too much over something that really doesn't matter.	1	2	3	4
3	Some unimportant thoughts run through my mind and bothers me.	1	2	3	4
4	I take disappointments so keenly that I can't put them out of my mind.	1	2	3	4
5	I get in a state of tension or turmoil as I think over my recent concerns and interests.	1	2	3	4

SCORE: \_\_\_\_\_

Record no. \_\_\_\_\_ Date: \_\_\_\_\_  
 Comfort talk therapy \_\_\_\_\_ Music intervention \_\_\_\_\_

**Mid-intervention Vital Signs:** T: \_\_\_\_\_ BP: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_ P: \_\_\_\_\_ O2 SAT: \_\_\_\_\_  
**Post-procedure Vital Signs:** T: \_\_\_\_\_ BP: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_ P: \_\_\_\_\_ O2 SAT: \_\_\_\_\_

STAI5-5: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the number at the end of the statement that indicates HOW YOU FEEL RIGHT NOW, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best. Thank you.

Item nr.	Empty Cell	Not at all	Somewhat	Moderately so	Very much so
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5	I feel confused.	1	2	3	4

SCORE: \_\_\_\_\_

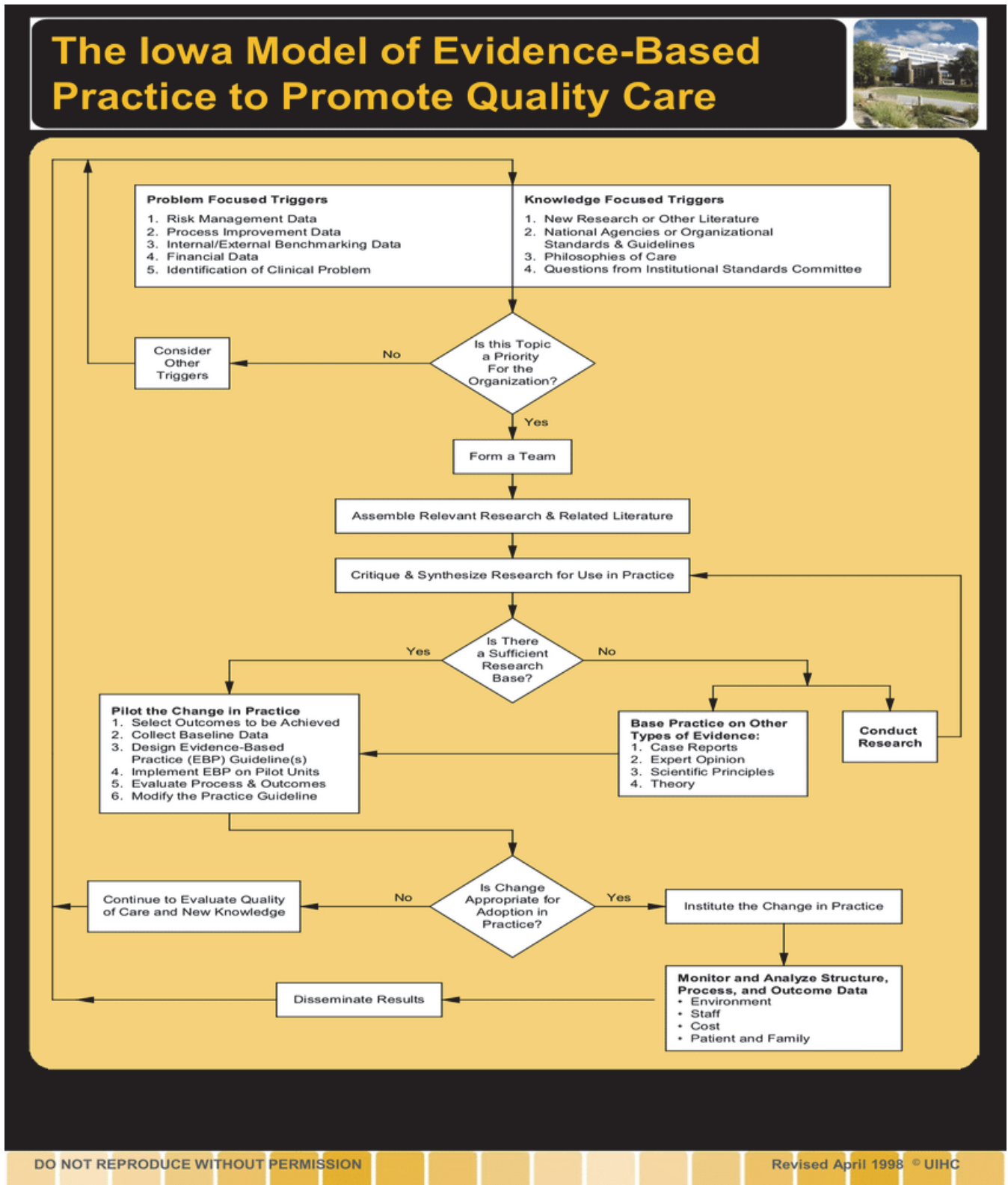
STAIT-5: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the number at the end of the statement that indicates HOW YOU GENERALLY FEEL. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel. Thank you.

Item nr.	Empty Cell	Not at all	Somewhat	Moderately so	Very much so
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3	Some unimportant thoughts run through my mind and bothers me.	1	2	3	4
4	I take disappointments so keenly that I can't put them out of my mind.	1	2	3	4
5	I get in a state of tension or turmoil as I think over my recent concerns and interests.	1	2	3	4

SCORE: \_\_\_\_\_



Figure 1. The Iowa Model of Evidence-Based Practice



Titler et al. (2001). The Iowa model of evidence-based practice to promote quality care. *Critical Care Nursing Clinics*, 13(4), 497-509.