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Pre-procedural Video Education on Liver Ablation Treatment

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Pre-procedural Video Education on Liver Ablation Treatment

A dissertation submitted in partial satisfaction of the

requirements for the degree

Doctor of Nursing Practice

by

Jhoanna Anuran-Torres

2022

ABSTRACT OF THE DISSERTATION

Pre-procedural Video Education on Liver Ablation Treatment

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Jhoanna Anuran-Torres

Doctor of Nursing Practice

University of California, Los Angeles, 2022

Professor Lauren Clark, Chair

Background: The diagnosis of cancer can increase the risk of anxiety severe enough to interfere with treatment compliance, quality of life, and treatment outcomes (Lee et al., 2017). Anxiety is a common problem in patients scheduled for a procedure, and their level of anxiety increases as the procedure date approaches (Musa et al., 2020); pre-procedural anxiety is observed in hepatocellular carcinoma patients scheduled for liver ablation treatment. There is currently a lack of standardized education provided to patients about liver ablation treatment, which may contribute to patients' anxiety.

Objectives: To test the effectiveness of a pre-procedural video educational tool to reduce patient anxiety and increase knowledge in hepatocellular carcinoma patients in an interventional radiology clinic setting.

Methods: This was a quasi-experimental, single-arm study, with a pre-test/post-test. Participant recruitment was based on a convenience sample. Inclusion criteria included: patients ages 18 and older; have biopsy-proven HCC or have a liver mass suspicious for HCC based on LI-RADS criteria imaging; no prior liver ablation treatment within three months of study onset. Exclusion criteria included patients under the age of 18 or those who have had prior liver ablation treatment within the last three months of study onset. Participants watched a 7:04 minutes video and completed a 40-item State-Trait Anxiety Inventory and 10-item Knowledge Questionnaire before and after the video intervention to assess changes in anxiety and knowledge. Demographic variables evaluated included age, gender, education, and primary language.

Results: There were 16 participants who met inclusion criteria. The state anxiety scores were significantly lower after the intervention (Md = 33.50, n = 16) compared to before (Md = 47.50, n = 16), z = - 2.67, p = 0.009, with a medium effect size, r = 0.47. The trait anxiety scores did not show sufficient evidence for a difference after the intervention (Md = 40.00, n = 16) compared to before (Md = 39.50, n = 16), z = - 0.71, p = 0.50, with a small effect size, r = 0.13. The knowledge scores were significantly higher after the intervention (Md = 9.00, n = 16) compared to before (Md = 2.00, n = 16), z = - 3.53, p = 0.0005, with a large effect size, r = 0.62. A nonparametric bootstrap and nonparametric permutation test also showed evidence for a difference in mean between the distributions of the state anxiety and knowledge pre- and post-intervention scores.

Conclusion: The results of this study showed evidence for the effectiveness of video education in decreasing anxiety and increasing knowledge in hepatocellular carcinoma patients. A standardized pre-procedural video educational tool can be a useful practice across all interventional radiology departments as it is associated with improved quality of care and positive health outcomes.

The dissertation of Jhoanna Anuran-Torres is approved.

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Karen Ann Grimley

Su Yon Jung

Lauren Clark, Committee Chair

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2022

This dissertation is dedicated to all my family, especially my loving and supportive husband Gerald and my children Brent and Lana. Their unwavering support and encouragement throughout this journey helped make it possible to achieve this goal.

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VITA

EDUCATION

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3/2015	Periprocedural Evaluation and Management of Nurse Practitioner-led Thoracentesis and Paracentesis in the Oncology Patient. [Oral Presentation]. Sue Kim-Saechao, DNP and **Jhoanna Anuran-Torres, NP**	38th Annual Educational Conference, California Association of NPs
5/2015	Periprocedural Evaluation and Management of Nurse Practitioner-led Thoracentesis and Paracentesis in the Oncology Patient. [Poster Presentation]. Sue Kim Saechao, DNP and **Jhoanna Anuran-Torres, NP**	WCIO Interventional Oncology Conference 2015, New York City, NY
10/2020	Evaluating the Effects of Music Therapy in the Interventional Radiology (IR) Nurse Practitioner-led Procedural Setting [Poster Presentation]. Presenters: Sue Kim-Saechao, DNP, **Jhoanna Anuran-Torres, NP**, and Sara Sarhangian, NP	National Conference of Nurse Practitioners Virtual Conference 2020
5/2021	Evaluating the Effects of Music Therapy in the Interventional Radiology (IR) Nurse Practitioner-led Procedural Setting [Poster Presentation]. Presenters: Sue Kim-Saechao, DNP, **Jhoanna Anuran-Torres, NP**, and Sara Sarhangian, NP	UCLA School of Nursing Virtual Research Day

CHAPTER ONE: INTRODUCTION

In 2020, there were nearly 10 million cancer deaths worldwide (Sung et al., 2021). As the population worldwide continues to grow and people are aging, cancer incidence increases with age; likely due to the associated risk factors for specific cancers caused by physical, chemical, or biological carcinogens (World Health Organization, n.d., Cancer). The International Agency for Research on Cancer produced the Global Cancer Observatory (GLOBOCAN) estimates the global burden of cancer is expected to be 28.4 million cases in 2040, which is a 47% increase from cancer diagnosis in 2020 (Sung et al., 2021). Sung et al. (2021) further examines the cancer burden based on the GLOBOCAN estimates and reveals that liver cancer is the third leading cause of death worldwide in 2020. Hepatocellular carcinoma (HCC) accounts for about 90% of the most prevalent histologic type of primary liver cancer (Kim & Viatour, 2020). Chronic liver disease is the leading risk factor for most HCC cases (Singal et al., 2020). The five-year universal survival rate is under 20% after an initial HCC diagnosis (Laube et al., 2020). Patients diagnosed with HCC need to undergo treatment to decrease tumor burden, which is the total amount of cancer cells in the body, to improve their life expectancy due to the severity of the disease.

Surgery is the standard treatment modality for HCC. While some patients are not surgical candidates, others are not interested in a major surgery and would prefer a less invasive treatment approach. Thermal liver ablation treatment is a minimally invasive procedure that destroys tumors by applying heat, cold, or chemicals via percutaneous probe that is directly inserted into the liver tumor that has been adopted and widely accepted in interventional radiology (IR) and performed in the outpatient setting. Patient recovery time is much quicker with ablation

treatment compared to surgical resection (Voglreiter et al., 2018) allowing patients to return to work and resume physical activity a few days after treatment.

Liver ablation treatment may produce anxiety for some patients. An individual's emotions such as fear, intense worries, or increased alertness can be an expression of anxiety (Clifford & Jerit, 2018). Anxiety can be due to several factors, including emotions that make one to feel not in control and the need to depend on others, the perception or tangible risk of the medical procedure, or ambiguity about the overall health prognosis and fear of death (Gambadauro et al., 2015; Musa et al., 2020). The diagnosis of cancer can increase the risk of anxiety severe enough to interfere with treatment compliance, quality of life, and treatment outcomes (Lee et al., 2017). Pre-procedural anxiety is a serious issue that can have adverse effects on patients. Anxiety can cause the body to consume more oxygen due to the body's increased metabolic rate, affecting the length of the procedure, recovery period, and length of hospital stay (Celik & Edipoglu, 2018; Musa et al., 2020). Studies have also shown that a patient's anxiety can compromise their learning and bias information processing, with negative consequences for knowledge retention (Clifford & Jerit, 2018). Anxious patients' ability to make educated medical decisions is often impaired. Adequate education about the procedure, preoperative and postoperative experiences, pain relief, medication use, length of stay in the hospital, and reassurance will help patients cope with surgical anxiety (Wilson et al., 2016).

Problem Statement

In an outpatient IR clinic at a large academic medical center in Los Angeles, there is currently a lack of standardized education provided to patients about liver ablation treatment, which may contribute to patients' anxiety. New patient consultation visits take at least 30-minutes. They include a comprehensive history and physical examination, review of

medications, information about ablation treatment, surgical risks and benefits, and preoperative instructions. The allotted time does not allow for thorough patient education about what to expect before and after the ablation treatment. Patients frequently call the IR clinic a few weeks before their scheduled procedure with repetitive questions concerning the ablation treatment plan. Some patients have also verbalized their feelings of anxiety about the ablation procedure to the nursing staff. It is unclear the degree to which patients' symptoms are related to a knowledge deficit about the procedure . For some, difficulty understanding or retaining pre-operative patient education offered during the consultation may limit learning.

Anxiety affects over 40 million adults (19.1%) and is the most common mental health disorder in the United States according to the National Alliance on Mental Illness (NAMI, 2017). The American Psychological Association (2021) describes "anxiety as an emotion characterized by feelings of tension, worried thoughts, and physical changes." Anxiety is a common problem in patients scheduled for a procedure, and their level of anxiety increases as the procedure date approaches (Jawaid et al., 2007; Musa et al., 2020). This is why providers must assess and manage anxiety early on to alleviate physical and psychological symptoms and maximize healing (Klaming et al., 2013; Parizad et al., 2021). The lack of effective communication is another factor that can affect anxiety. Kissane et al. (2012) discuss how unmet communication needs such as information about one's disease, prognosis, and treatment options can occur in 84-94% of clinical visits among cancer patients. The authors further discuss that anxiety levels can be markedly decreased when providers facilitate good communication and are responsive to the patient's needs. Liu et al. (2020) examined how the lack of patient education and awareness of the procedure process were likely causes of preoperative anxiety and depression. The authors further comment on how video-based nursing education is an effective learning method that can

decrease anxiety. The use of a standardized education program that allows patients to watch an educational video on ablation treatment before the procedure can help set patient expectations about what to expect before and after the treatment procedure, thus decreasing patient anxiety.

Video-based education for learning before a procedure can positively impact nursing care. The achievement of favorable patient outcome data after video-based education would provide consistency in delivering educational information to patients. The creation of a standardized education tool to reduce patient anxiety and increase knowledge can help close the patient education communication gap that currently exists between the patients and providers in the IR clinic.

PICOT Question

The PICO question to be evaluated in the DNP Scholarly Project is: For patients with hepatocellular carcinoma who will undergo liver ablation treatment **(P)**, does the use of a pre-procedural video-based ablation education delivered prior to physician evaluation **(I)** compared to no standardized formal education **(C)** decrease anxiety as measured by the State-Trait Anxiety Inventory (STAI) questionnaire and increase knowledge of the procedure and post-operative course, as measured by the knowledge questionnaire **(O)**?

CHAPTER TWO: THEORETICAL FRAMEWORK

The application of different theoretical models depends on the identified problem when choosing a model for evidence-based practice (EBP) changes. Gawlinski and Rutledge (2008) suggest that using EBP models guide a systematic approach to maximize time and resources and prevent incomplete project implementation. Patients who self-identified as anxious pre-procedure led to the development of this DNP Scholarly Project. The cognitive learning theory and Iowa Model Revised is the theoretical framework and methodology of choice.

Cognitive learning theory for clinical teaching focuses on how learning occurs through internal processing of information and can be used by learners to retain and translate medical information (McSparron et al., 2018). This will help guide the project and help determine whether there is a relationship among anxiety, video education, and knowledge retention. The Iowa Model Revised, is known for its manageability when implementing EBP. Unique to the Iowa Model is the concept of triggers of EBP that can spur a project. The Iowa Model Revised outlines three key decision points while making a change in practice. The first decision is to identify if the problem is a priority for the organization or department. The second decision is to determine whether there is sufficient evidence about the identified problem. The third decision is to determine whether change is appropriate for the organization or department to adopt (Melnyk & Finest-Overholt, 2019). The decision points are the following: identify a triggering issue; state the question or purpose; form a team; assemble, appraise and synthesize the body of evidence; design and pilot the practice change, integrate and sustain the practice change; and disseminate results (Buckwalter et al., 2017; Melnyk & Finest-Overholt, 2019). The application of the Iowa Model Revised in relation to the DNP Scholarly Project can be found in Appendix A.

CHAPTER THREE: REVIEW OF LITERATURE

Search Strategy

The methodology for comprehensive literature search was conducted via PubMed, CINAHL, EMBASE, Google Scholar, and ProQuest databases. Most of the literature search was performed October 30 through December 3, 2020 but continued through May 2022. The literature search was limited to the English language and to peer-reviewed journals from 2015 to 2021. Keywords included varying combinations of terms related to education (e.g., video education, video instruction, video-assisted, education), terms related to anxiety (e.g., anxious,

anxiety), and terms related to procedures (e.g., intervention, surgery, procedure). Literature search database results yielded the following: CINAHL 233, EMBASE 313, PUBMED 112, Google Scholar 651, and ProQuest 91. All relevant research articles were reviewed, categorized, and appraised for PICO topic relevance. The information is limited on video-based education specifically related to liver ablation treatment and anxiety, a few articles discussed video education and its effectiveness in decreasing anxiety and increasing patient knowledge in varying target populations and procedures.

Literature Review

A study performed in Korea by Kim et al. (2019) evaluated the effects of internet-based video information on preoperative anxiety. There were 32 patients enrolled between 20-75 years old who have colorectal cancer and are scheduled to undergo colorectal surgery (CRC). This was a single-arm, prospective, pragmatic observational study. The investigators validated two questionnaires in Korean, the Amsterdam Preoperative Anxiety and Information Scale (APAIS) and the Hospital Anxiety and Depression Scale (HADS). The study coordinator collected each questionnaire at two-hour intervals before and after watching the video at the hospital. Patients answered the questionnaires using a 5-point Likert scale. The results demonstrated the anxiety score was significantly reduced from 10.8±3.8 to 8.2 ± 3.2 with $P < 0.001$, demonstrating statistical significance. The APAIS and HADS scores were also reduced after watching the video. The study did have limitations; for instance, the small sample size and any patients who had any prior surgical history, significant cognitive impairment or psychological disorder that would impact the study outcomes were excluded, and the study was designed without any comparison intervention.

Murugesan et al. (2020) showed that teaching with video relieves anxiety, improves knowledge and patient outcomes. This quantitative experimental study design enrolled 120 patients who were randomly assigned to a group. The majority in the control group ranged between the ages of 41-60, and most in the experimental group were between the ages of 18-40. Once the patients were recruited, the study investigator assessed baseline anxiety and knowledge to all patients' the day before the procedure (without video education), then gathered data again on the day of the procedure after the experimental group watched a validated 7-minute video on colonoscopy procedures and bowel prep education in their language or after the control group received the standard of care. The empirical indicators used were the State-Trait Anxiety Inventory (STAI), Knowledge questionnaire, and Boston bowel preparation scale (BBPS). Questionnaires were validated in multiple languages, including English and Indian. Medical experts validated the video content. Study results demonstrated that video instruction given to the experimental group relieves anxiety in patients showing a decrease from 45.05 to 34.47 with $P < 0.001$, demonstrating statistical significance. The video enhanced knowledge of the excellent quality of bowel cleanliness compared to conventional teaching methods such as verbal education and leaflet brochures.

Akca et al. (2020) used video-based multimedia information to reduce anxiety before office hysteroscopy. There was a total of 106 women between ages 18-65 who were enrolled and scheduled for diagnostic office hysteroscopy over four months. Fifty-two patients were included in each the experimental and control group. The experimental group received video education with procedure details; whereas, the control group received the standard written information of the procedure details. All patients completed a baseline STAI questionnaire. The same questionnaire was given to patients again 10-minutes after watching the video-based education or

standard of care. The results demonstrated that the two groups were of similar demographic data. The post-STAI-S score was significantly lower in the video-based education group compared to the standard of care. There was no significant change in the post-STAI-S scores in the control group. The authors evaluated patient satisfaction with a four-point Likert scale and procedural pain using a visual analog scale. The data suggested that the video group's satisfaction rate was significantly higher than the control group. Limitations of the study include the lack of disclosing the total time of the video education and the lack of including illiterate patients.

The study conducted by Cakmak et al. (2018), included 198 patients enrolled that was scheduled for surgery, and required spinal anesthesia. The patients were randomized into a prospective study to evaluate the effects of anxiety before and after receiving video-based education. The STAI questionnaire to determine anxiety levels was also used. The results showed that the video-based group had notably lower STAI-S scores after the education was provided. The limitation noted was its limited control over other variables regarding prior surgery exposure or hospital experience.

The meta-analysis by Dahodwala et al. (2018) reviewed patient outcomes of video-based education in various hospital settings. The authors used a scoping review style to scan the literature published between 1979-2016, using 80% of articles published after 2000 and primarily randomized controlled trials. The researchers concluded after a review of 62 studies that it was evident that patients who received video-based education effectively improved short-term patient outcomes such as improved understanding of medical information, knowledge, anxiety, and satisfaction. Limitations to the study were the broad range of health conditions evaluated, therefore making the sample heterogeneous. There was also substantial heterogeneity in the review purpose and intervention type, making it difficult to compare all the study results

against one another. Opportunities for future research in this study are to evaluate on-demand patient education during the hospital stay and evaluate the impact of video education on the way patients learn about their illness.

Sayadi et al. (2018) conducted a randomized clinical trial that included a total of 88 patients, breaking them up into two groups to assess the effects of multimedia education on anxiety in patients who will undergo a first-time cerebral angiography. The multimedia intervention (MMI) included video education as well as voice, written, and pictures compared to standard of care. The MMI video patient education intervention takes at least 30 minutes, and the researchers used the STAI instruments and analyzed data using the T-test, Chi-square, and McNamara's test. The control group received “routine care” which included education similar to the intervention group with the exception of the video component. The results showed a decrease in the level of anxiety in the MMI intervention group (95.5%) as well as in the control group (86.4%); however, they were both independently not statistically significant as the P value > 0.05. The anxiety level between the two groups was also not statistically significant at the pre-test and post-test. Limitations of the study were the large effect size and that the study was conducted in a single department and hospital site.

Haddad et al. (2018) evaluated the effectiveness of a nurse-led video intervention on anxiety in patients who are to undergo a percutaneous coronary intervention (PCI). A quasi-experimental pre-test and post-test design were used. The researchers initially used a pilot study with ten samples. A 20-minute video education on PCI along with a pamphlet was implemented in this study. The interventions were reviewed and validated by nurses, cardiologists, and psychiatric consultants. There were three data points obtained which included at baseline (T0), 2 hours before (T1), and 4-6 hours after PCI intervention (T2). The results showed that the

intervention group had lower levels of anxiety at T1 (33.08 versus 60.88) and at T2 (24.1 versus 44.17) compared to the comparison group, both reaching statistical significance with P value < 0.001. Limitations of the study noted are that it limits the generalizability of findings since the study was performed at one facility and used patient recruitment based on convenience sampling.

Another similar study by Paripoorani et al. (2015) evaluated the effectiveness of surgical instructional video on preoperative anxiety in orthopedic surgery. A pre-test and post-test quasi-experimental design was used. A 15-minute video was created and made in four different languages. Content validity was ascertained by nursing and medical experts with a background in orthopedic surgery. The article did not disclose the reliability and validity of how the information was translated to the different languages to assure consistency in the information provided in the video. The STAI instrument was used to assess anxiety, and a paired sample T-test and independent T-test were used to evaluate the data. The results demonstrated that the video intervention group had a decrease in mean anxiety, reaching statistical significance. The researchers also looked at demographic variables, but no association was seen when compared to anxiety.

Synthesis of Literature

The various articles that were reviewed after an extensive literature search suggest that pre-procedural video-based education can decrease patient anxiety and increase knowledge. The proposed DNP Scholarly Project will utilize articles related to video education and its effect on anxiety. The studies discussed show clinical significance in outcome measures, demonstrating decreased anxiety levels using video-assisted education before a procedure. The validity of the eight studies showed a representative and a well-defined sample of patients based on their target

population at the same disease course. All patient follow-up was short and completed after the procedure. The study objectives were clearly stated with unbiased outcome criteria in all the articles.

The measures utilized in these studies, such as the Amsterdam Preoperative Anxiety and Information Scale (APAIS), Hospital Anxiety and Depression Scale (HADS), and State-Trait Anxiety Inventory (STAI), were reliable and previously validated in English and in other languages. The chosen measures were appropriate for study outcomes and were clearly described in all the articles. The STAI instrument was most commonly used among the studies, 6 out of the 8 articles. There were also 6 out of 8 articles that documented the duration of the video intervention. Researchers who clearly established the intervention as solely a video education noted that the video content was 5, 7, or 15 minutes long (Kim et al., 2019; Murugesan et al., 2020; Paripoorani et al., 2015). Three studies (Cakmak et al., 2018; Haddad et al., 2018; Sayadi et al., 2018) used video education as the experimental intervention but combined it with written and verbal education.

The literature produced a high-quality level of evidence. The majority of the studies had appropriate enrolled participants, ranging from 32-198. There was a total of six studies that had both a control and intervention group that demonstrated statistical significance in showing that video education decreased anxiety levels pre-procedure (Akca et al., 2020; Cakmak et al., 2018; Haddad et al., 2018; Murugesan et al., 2020; Paripoorani et al., 2015). Cakmak et al. (2018) demonstrates statistical significance in the pre-test and post-test experimental group but did not reach statistical significance when compared to the control group. The experimental group used in this study included video, written, and verbal education. There was one meta-analysis review by Dahodwala et al. (2018) that looked at the impact of the use of video education on patient

outcomes in the hospital setting. The researchers concluded that video education effectively improves short-term patient outcomes by increasing knowledge, comprehension of medical information, easing anxiety, and increasing patient satisfaction.

The study analysis for prognostic risk factors and confounding variables were noted in some articles. The study by Kim et al. (2019) commented on demographic characteristics; the study by Murugesan et al. (2020) commented on sociodemographic data and clinical variables; the study by Akca et al. (2020) commented on demographic and clinical features; and the study by Cakmak et al. (2018) commented on characteristic variables. The study investigators in this literature reviewed and commented on the variable data, but no specific strategies to deal with the confounding factors were stated. The researchers from all the articles declared freedom from conflict of interest. The article by Murugesan et al. (2020) was the only one who disclosed their financial funding.

The common study limitations from the review of the literature included small sample size, convenience sampling, selection bias, and single-site recruitment. Researchers may benefit from the opportunity to conduct further studies consisting of a larger sample size, with recruitment at multiple sites, and include other populations of interest. The addition of more randomized clinical trials to evaluate the effects of anxiety with socio-cultural and economic factors would also be beneficial.

The intervention and findings from the articles discussed are relevant to the proposed DNP Scholarly Project. The studies were mainly conducted in another country and had limited information about video education targeted explicitly for the HCC population. The studies were reliable with significant outcome measurements to show evidence that video education as a decisional aid is valuable and is effective in decreasing anxiety and increasing patient knowledge

in different procedural and surgical settings. The review of the literature demonstrated that it seems plausible and realistic for institutions in any country to reduce patient anxiety through video-based pre-operative patient education in different specialties with similar results. Further evaluation should be considered for future nursing research and nursing practice to assess the benefits of utilizing a video-based education in other minimally invasive procedures and other cancer populations.

Essentials of DNP Practice

Doctorally prepared nurses receive education and training in the Eight Essentials for DNP education which gives them the ability to impact patient outcomes by creating and leading projects that address everyday clinical problems within specialties (American Association of Colleges of Nursing, 2006). The DNP curriculum at the UCLA School of Nursing follows the core competencies listed by The American Association of Colleges of Nursing (2006) in which Eight Essentials for DNP education have been identified. The DNP prepared nurse must be cognizant and use the Essentials in their everyday practice, review and synthesize literature, be able to apply evidence to evaluate practice, and commence change to communicate existing best practices in the clinical setting. The proposed DNP Scholarly Project identifies Five of the Eight DNP Essentials (see Appendix B).

DNP Nursing Leadership

The DNP curriculum builds upon previous nursing knowledge and prepares clinicians to practice as leaders at the highest level. The promotion of leadership in the workplace and healthcare organizations is vital for DNP prepared nurses to influence healthcare outcomes through successful scientific findings. Many leaders across all types of professional disciplines follow a transformational leadership style. The knowledgeable leader in evidence-based practice

can build relationships and influence others to improve the organization (Giddens, 2018); it has been determined that a transformational leadership style will be utilized to implement the DNP Scholarly Project.

The literature by Boamah (2018) shows that a transformational leader is interested in the self-development and empowerment of people around them which creates a healthy environment. Transformational leadership allows staff to engage in collaborative and interdisciplinary practice, exchange ideas, and solve problems, improving outcomes. In addition, the adoption of daring leadership behaviors based on an individual's courage, passion, humility, and vulnerability will cultivate a culture of belonging, inclusivity, and trust (Brown, 2018). Doctorally prepared nurses who are transformational leaders with daring leadership qualities can help bring their knowledge, values, and skills to an organization and improve patient outcomes by implementing evidence-based practices at the clinical level.

Interdisciplinary Practice

The development of effective teamwork is essential for any organization to thrive and work at its best. Collaboration allows a team to agree on measurable processes and outcomes (Armstrong & Sables-Baus, 2020). The team-based healthcare approach would be essential to incorporate in the DNP Scholarly Project as it can help strengthen relationships and improve patient outcomes. The implementation of a team-based approach and respecting one another's perspectives in healthcare management can help improve patient outcomes (Zaccagnini & Pechacek, 2021). Interventions such as communicating and explaining the roles and responsibilities of each team member in executing the varying components of the treatment intervention would help maximize education and shared decision-making (Interprofessional Education Collaborative, 2016).

Ethical Implications

Nurses who are DNP prepared advocate for patients and follow the main principles of ethics which include beneficence, autonomy, justice, and non-maleficence (Fowler, 2015). Confidentiality and commitment to the protection of the privacy of the participants must remain a priority in performing any clinical project or research. The Health Insurance Portability and Accountability Act (HIPAA) of 1996 was established to protect health information used or disclosed by a covered entity for research purposes (US Department of Health & Human Services, 2021). The DNP Scholarly Project proposal was submitted to The UCLA Health Research, Evidence-Based Practice and Innovation Program, who works in partnership with the UCLA IRB for review. Since this was a quality improvement project, neither certification of exemption from UCLA IRB review nor UCLA IRB approval was required.

Ethical implications involving video education and completing the questionnaire are that the degree of knowledge transfer may be related to the patients' motivation and health literacy. Factors affecting anxiety can be different among cultures. Socio-cultural and economic backgrounds may play a role in anxiety; these factors should also be considered when analyzing the data. Patients with prior history of any psychiatric disease were not excluded in this project; this patient subgroup can develop frustration with completing the questionnaire and knowledge forms, increasing anxiety. The principal investigator was mindful and compassionate to all enrolled participants to avoid aggravating patient anxiety symptoms to those at higher risk.

CHAPTER FOUR: METHODS

Design

The project was a quasi-experimental, single-arm study, with a pre-test/post-test design, to assess the effect of pre-procedural video-based education on anxiety and liver ablation

procedural knowledge among patients who underwent an evaluation for liver ablation treatment. The quality improvement project duration was over a three-month period.

Sample and Setting

The project's setting was an outpatient interventional radiology clinic at a large academic center in Los Angeles, California. The participants were patients referred to the clinic for liver ablation treatment, and recruitment was based on a convenience sample. All patients with HCC presenting for outpatient IR clinic evaluation for ablation treatment were screened and recruited if they met the inclusion criteria. Inclusion criteria included patients ages 18 and older who had no prior liver ablation treatment within three months prior to project onset to avoid potential clinical experience and knowledge bias towards answering the questionnaires; have a biopsy-proven HCC; or have a liver mass suspicious for HCC based on the Liver Imaging Reporting and Data System (LI-RADS) classification score. There has been evidence to show that LI-RADS algorithms assist in stratifying the probability of HCC and overall malignancy; therefore, the American Association for the Study of Liver Diseases (AASLD) has adopted this as a part of HCC clinical practice (Chernyak et al., 2018). Exclusion criteria included patients under the age of 18 or those who had prior liver ablation treatment within the last three months prior to project onset. While the project is not a true research study, there was no need to do a power analysis. The project goal was to recruit a minimum of three patients weekly over a three-month period, providing at least 36 participants to enroll in the project. Since the IR clinic is a specialized department focused on minimally invasive treatments, recruitment and retention for this project was deemed highly feasible.

Instruments and Interventions

The DNP project utilized a pre-test/post-test design conducted on the same day of initial clinic evaluation before meeting with the interventional radiologist. The dependent variables assessed was both anxiety level and knowledge retention of the video educational intervention. The empirical indicators were the State-Trait Anxiety Inventory (STAI) questionnaire (see Appendix C) and knowledge questionnaire (see Appendix D) developed by the primary project lead. The STAI questionnaire has 40 questions, rated on a 4-point scale, that measures anxiety and was validated with internal consistency coefficients between 0.86-0.95 and test-retest reliability coefficients between 0.65-0.75 (Spielberger et al., 1983). It is owned by Mind Garden and the STAI questionnaires were available in different languages. The license to reproduce the questionnaires was purchased by the project lead.

Ten random patients were interviewed and preliminarily surveyed to answer what they thought was the most essential information to know about liver ablation treatment to determine the most useful and beneficial information to be included in the video. The answers were reviewed, and some were included in the knowledge questionnaire. The knowledge questionnaire has 10 questions, with the minimum score of zero and maximum correct score of 10. Nurse practitioners and physicians who are experts in ablation treatment in liver cancer patients, with at least five years of clinical experience, created the knowledge questionnaire which also provided construct validity. Patients were asked to provide their age, sex, education level, and primary language on the questionnaire. The video education was either in English or Spanish which included information related to liver ablation treatment and what the patient would expect after treatment. Questionnaires were administered to participants before watching the video (T1), and again within 15 minutes after watching the video (T2).

Brame (2016) reports that studies have shown that learning can be enhanced with technology, and video is a highly effective educational tool. The video script was created by the project lead with the assistance of medical stakeholders. The video was 7:04 minutes and was developed by the company, Holvan, that focuses on improving the quality of care through advanced communication. The participants watched the video on either an iPad or via web link that was directly provided to them via e-mail.

Data Collection

Questionnaires were administered to participants before watching the video (T1), and again within 15 minutes after the video observation (T2). The project lead was the sole implementer of the video delivery to the patients and the collector of questionnaires from the patients post-viewing. A sole implementer of the educational videos assured consistency in delivery, and supported reliability in the project. The questionnaires were all completed before the interventional radiologist saw the patients.

Data Analysis

The sample demonstrated that the population was not normally distributed, so the normal methods (paired t-test, classic confidence interval for mean) could not be used. The Wilcoxon test for nonparametric data was used for primary data analysis. This method compared the median scores of the STAI and knowledge pre-and post-test questionnaires. The test analyses included descriptive statistics that evaluated measures of frequency, central tendency, and variation. A nonparametric bootstrap and nonparametric permutation test were also used to show evidence for a difference in mean between the distributions of pre-intervention and post-intervention scores. Analysis was conducted by a statistician using R Version 4.2.0 (Vienna, Austria) and funded by the project lead.

CHAPTER FIVE: RESULTS

Demographics

A total of 16 patients met the inclusion criteria and participated in this quality improvement project. The majority age group evaluated for liver ablation treatment was aged 60-69, followed by 70 and older. There were 68.8% males and 31.3% females. The video was mostly shown in English. Among the patients, the preferred primary language was English 56.3%, Chinese 18.8%, Spanish 12.5%, Korean 6.3%, and Vietnamese 6.3%. The mean highest level of education completed among the patients was two years of junior college, representing 25% of the participants. The remaining patients were equally distributed among all other educational categories, with 18.8% having attended either grade school, high school, undergraduate, or graduate school (see Table 1).

Table 1: *Frequency Counts for Demographic Variables*

Variable	Category	n	%
Age Category	18 to 39 years	0	0
	40 to 49 years	1	6.3
	50 to 59 years	2	12.5
	60 to 69 years	7	43.8
	70 and older	6	37.5
Gender	Male	11	68.8
	Female	5	31.3
Highest Level of Education	Grade School (8th grade or lower)	3	18.8
	High School (12th grade)	3	18.8

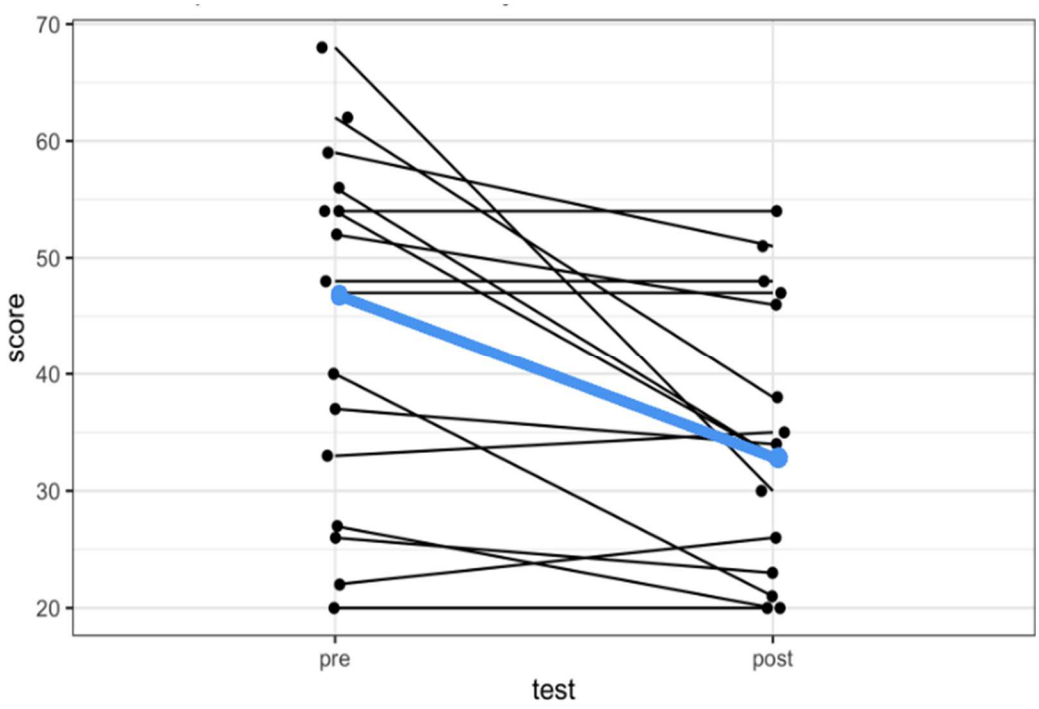
	Junior College (2 years)	4	25.0
	Undergraduate College (3-5 years)	3	18.8
	Graduate School (> Bachelor's degree)	3	18.8
Primary Language	English	9	56.3
	Spanish	2	12.5
	Chinese	3	18.8
	Korean	1	6.3
	Vietnamese	1	6.3
	Other	0	0

Anxiety

The scores from both state and trait anxiety questionnaires range from a minimum score of 20 to a maximum score of 80. The STAI scores are classified as "no or low anxiety" (20-37), "moderate anxiety" (38-44), and "high anxiety" (45-80) (Kayikcioglu, 2017). The baseline state anxiety (STAI-S) scores showed a significant decrease after watching the video education, as shown in Figure 1. The mean state anxiety score pre-intervention revealed moderate anxiety (44.06, SD = 15.09) was higher than the mean post-intervention score which revealed no or low anxiety (34.94, SD = 11.45) based on the standard interpretation. The mean change in the sample was - 9.125. Based on the state anxiety changes, the Wilcoxon signed rank test with continuity correction reveals that anxiety scores were significantly lower after the intervention (Md = 33.50, n = 16) compared to before (Md = 47.50, n = 16), z = - 2.67, p = 0.009, with a medium effect size, r = 0.47. A nonparametric bootstrap with 100000 iterations gives a 95% confidence interval for the mean change of (-14.9, -3.3). This interval is entirely negative, so it shows evidence for a decrease in mean between the pre- and post-intervention scores. A nonparametric permutation

test with null hypothesis that the mean change is zero, gives p-value 0.005. This is also evidence for a difference in mean between the distributions of pre- and post-intervention scores.

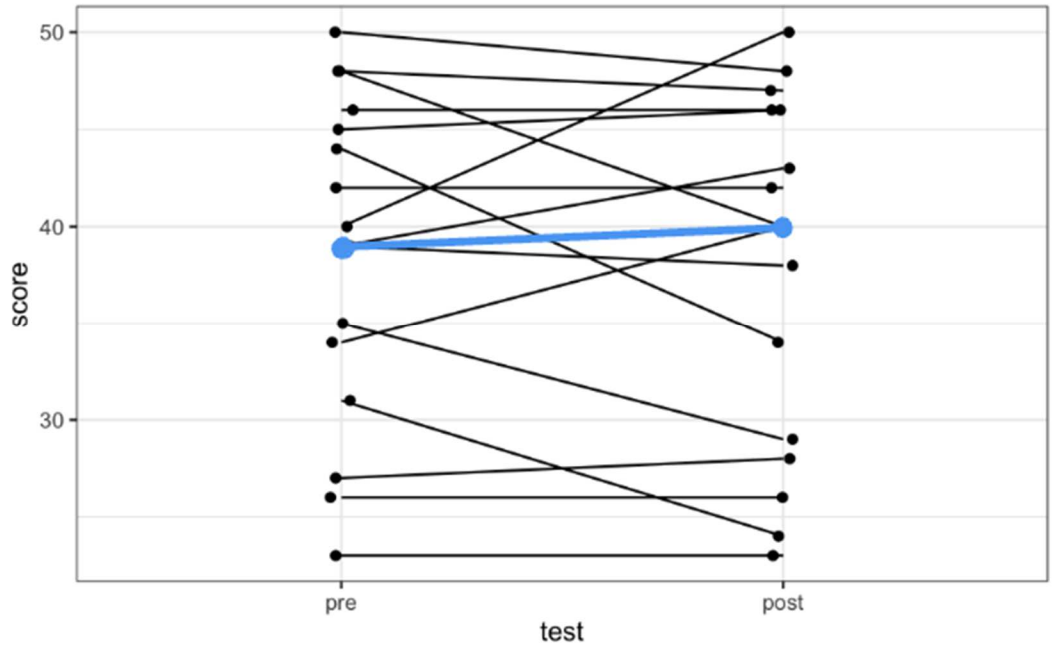
Figure 1: *Pre and Post Scores for State Anxiety*



The trait anxiety (STAI-T) baseline scores showed a decrease after watching the video with a few score outliers, as shown in Figure 2. The raw score mean trait anxiety score pre-intervention revealed moderate anxiety (38.75, SD = 8.46) with the mean post-intervention score revealing no or low anxiety (37.75, SD =9.18). The mean change in the sample, which is the best point estimate of the mean change in the population was - 0.8125. The sample indicates that the population was not normally distributed, so the paired t-test could not be used. Applied to the trait anxiety changes, the Wilcoxon signed rank test with continuity correction reveals that anxiety scores did not show sufficient evidence for a difference after the intervention (Md = 40.00, n = 16) compared to before (Md = 39.50, n = 16), z = - 0.71, p = 0.50, with a small effect size, r = 0.13. A nonparametric bootstrap with 100000 iterations gives a 95% confidence interval

for the mean change of (-3.3, 1.6). This interval includes zero, so it does not give evidence for a difference in mean between the distributions of the pre- and post-intervention scores. A nonparametric permutation test, with null hypothesis that the mean change is zero, gives p-value 0.57. This test does not give evidence for a difference in mean between the distributions of pre-intervention and post-intervention scores.

Figure 2: *Pre and Post Scores for Trait Anxiety*

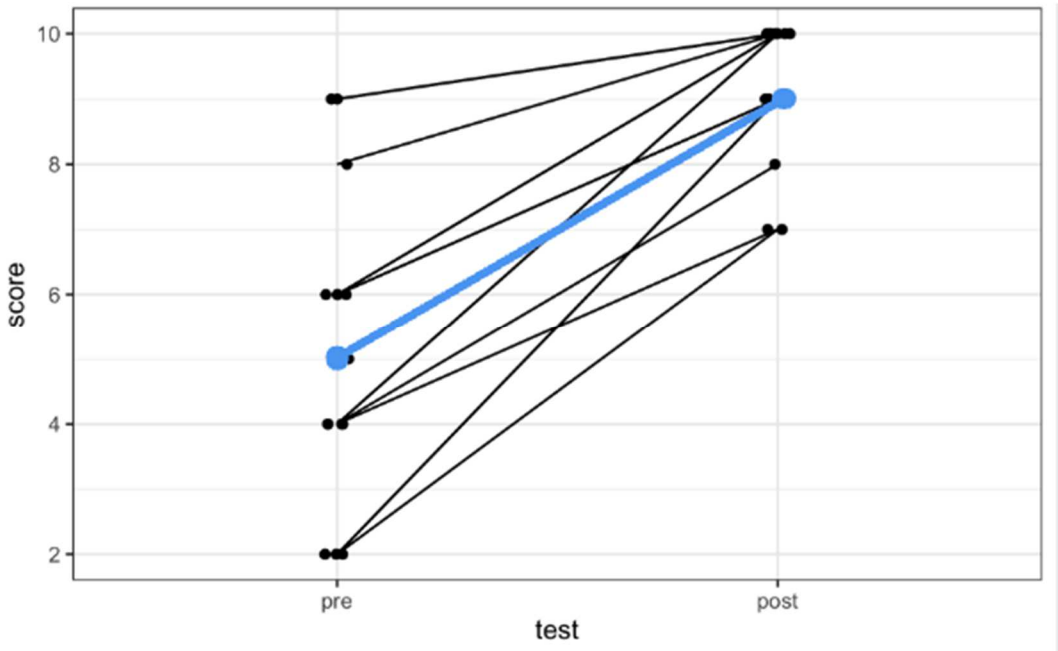


Knowledge

There was an increase in knowledge scores after having watched the video education, as shown in Figure 3. The mean knowledge score pre-intervention (5.13, SD = 2.25) was lower than the mean knowledge post-intervention score (9.13, SD = 1.03). The mean change in the sample was 4.00. The sample indicates that the population is not normally distributed, so normal methods like the paired t-test could not be used. The Wilcoxon signed rank test with continuity correction was applied to the knowledge score changes which reveals that knowledge scores were significantly higher after the intervention (Md = 9.00, n = 16) compared to before (Md =

2.00, n = 16), z = - 3.53, p = 0.0005, with a large effect size, r = 0.62. A nonparametric bootstrap with 100000 iterations gives a 95% confidence interval for the mean change of (3.2, 4.9). This interval is entirely positive, so it shows evidence for an increase in mean between the pre- and post-intervention scores. A nonparametric permutation test with null hypothesis that the mean change is zero, gives p-value 3.1*10^-5. The evidence shows a difference in mean between the distributions of knowledge pre- and post-intervention scores.

Figure 3: *Pre and Post Scores for Knowledge*



CHAPTER SIX: DISCUSSION

The project aimed to determine if implementing a liver ablation video education before clinic evaluation for ablation treatment by an interventional radiologist would decrease anxiety and increase knowledge in hepatocellular carcinoma patients. Additional demographic variables, such as gender, age, level of education, and preferred primary language, were also evaluated to determine if there were any association between the variables and anxiety. Based on the data analysis, due to the small sample size, there were no association between age and no association

between education and post-test knowledge; all participants did well on the post-intervention knowledge scores.

The utilization of both the State and Trait questionnaires allowed for a better understanding of the participant's anxiety level prior to treatment evaluation. There was good evidence for a decrease in state anxiety score after watching the video, with an average decrease of 5 points, thus showing statistical significance. Although, this was found to be statistically significant, it may not be sufficient to completely change the experience of anxiety, as the categories of low, moderate, and high anxiety are constructed with numerical ranges in which a 5-point change may not be sufficient to move a participant from one experiential category to another. There was no average for change in trait anxiety. Despite the fact that the data analysis did not support the significance of trait anxiety, the sample did show a decrease in mean scores post-intervention. Trait anxiety is more of an abiding trait or characteristic, it is generally less responsive to changes as compared to state anxiety. All participants had improvement in their knowledge score, approximately 4 points increase in change after watching the video; therefore, statistically significant association for an increase in knowledge. A table was created to demonstrate the Wilcoxon signed rank test (see Table 2). The pre- and post-intervention means of state anxiety, trait anxiety, and knowledge as well as a boxplot to demonstrate the score changes was created (see Table 3, Figure 4).

Table 2: *Pre and Post Percentiles of State Anxiety, Trait Anxiety, and Knowledge*

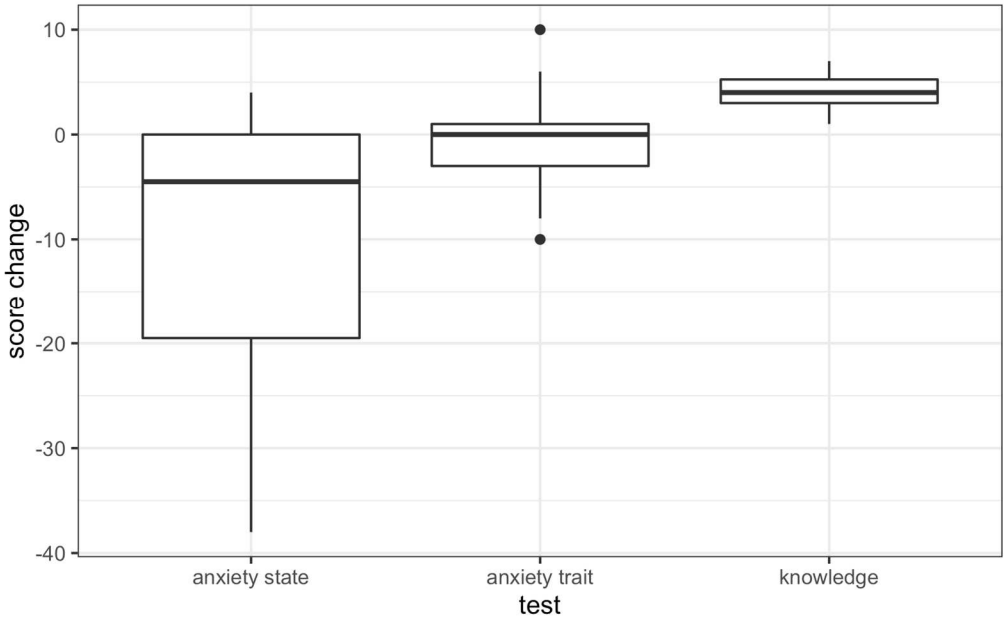
Measure	Percentiles				
	Minimum	25th	50th (Median)	75th	Maximum
STAI-S Anxiety Pre-intervention (State)	20.00	31.50	47.50	54.50	68
STAI-S Anxiety Post-intervention (State)	20.00	25.25	33.50	46.25	54.00

STAI-T Anxiety Pre-intervention (Trait)	23.00	33.25	39.50	45.25	50.00
STAI-T Anxiety Post-intervention (Trait)	23.00	28.75	40.00	46.00	50.00
Knowledge Pre-intervention	2.00	4.00	5.00	6.00	9.00
Knowledge Post-intervention	7.00	9.00	9.00	10.00	10.00
					n = 16

Table 3: *Pre and Post Mean Scores of State Anxiety, Trait Anxiety, and Knowledge*

Measure	Pre-intervention: mean (95% CI)	Post-intervention: mean (95% CI)	Difference: mean (95% CI)	Wilcoxon signed rank test: p-value	Paired permutation test: p-value
Anxiety (State)	44.1 (36.9, 51.2)	34.9 (29.6, 40.4)	-9.1 (-15.2, -3.8)	0.009	0.005
Anxiety (Trait)	38.6 (34.5, 42.4)	37.8 (33.3, 42.0)	-0.8 (-3.2, 1.6)	0.50	0.57
Knowledge	5.1 (4.1, 6.2)	9.1 (8.6, 9.6)	4.0 (3.1, 4.9)	<0.001	<0.001
					n = 16

Figure 4: *Boxplot of Score Changes of State Anxiety, Trait Anxiety, and Knowledge*



Limitations

The limitation of the study is that the quasi-experimental design may not yield the most reliable evidence on the intervention's effectiveness to support causality; thus, results cannot fully exclude confounding variables (Gopalan et al., 2020). The sampling plan may raise the external validity concern to generalize the same outcome to different patient populations or settings. A key barrier that posed a challenge in recruitment was The Coronavirus disease 2019 (COVID-19). The pandemic caused some patients to either delay or avoid seeking treatment due to the fear of contracting COVID-19. There was also a significant increase in the use of telemedicine consultation. This made it challenging to recruit patients during telemedicine consultation who were either of older age or one that was not technologically savvy, making it difficult for patients to print and completely answer the questionnaires in a timely manner. There were less participants recruited, giving us a much smaller sample size (n = 16) than expected. A bivariate analysis was conducted but due to the small sample size, there were no association between anxiety and age and no association between education and post-test knowledge; thus, limiting any further inferential results. A few participants verbalized that the STAI questionnaire was long and time consuming to complete that they required some verbal encouragement to finish the forms. Another limitation of the project in regard to knowledge retention that could have occurred is reactive measure. Since knowledge was being evaluated by using the same questionnaire twice, it is possible that it can affect participants' responses when tested again, causing a threat to internal validity (Flannelly et al., 2018). In regard to data analysis, a bivariate analysis was conducted but due to the small sample size, there were no association between anxiety and age and no association between education and post-test knowledge.

Implications for Practice and Research

The project demonstrated favorable results in decreasing pre-procedural anxiety and increasing knowledge with video education. Although, the data analysis offered evidence of significance in decreasing anxiety and increasing knowledge, the plan is to continue to recruit and obtain data until 50 participants have been reached, whereupon all data will be re-analyzed. Upon completion, the manuscript will be submitted to The Journal of Radiology Nursing for possible publication. The final results will be disseminated within the department organization, including the key stakeholders.

The video-based education will be used as a standardized educational tool for all HCC patients to watch during initial evaluation in the outpatient setting. Sustainability will require that all patients referred for liver ablation will observe the educational video prior to initial evaluation for treatment. The liver ablation video will be uploaded onto the IR website ready to be viewed and accessible to the general public when browsing online. The plan to further sustain the results include adapting the video education in different languages.

The use of technology in the form of educational videos has been shown to help patients understand more clearly about their treatment plan. This improves any communication gaps between patient and provider, and decreases anxiety due to apprehension of the unknown. The creation of a video educational tool and application in the clinical setting proves to be highly feasible and cost-effective for improving patient outcomes. Positive project outcomes can promote the development of additional video-based educational tools related to other procedures such as embolization. Access to these tools before treatment evaluation can provide the patient with the additional knowledge and confidence to undergo the procedure and to better understand what to expect post-operatively, thus decreasing pre-procedure anxiety.

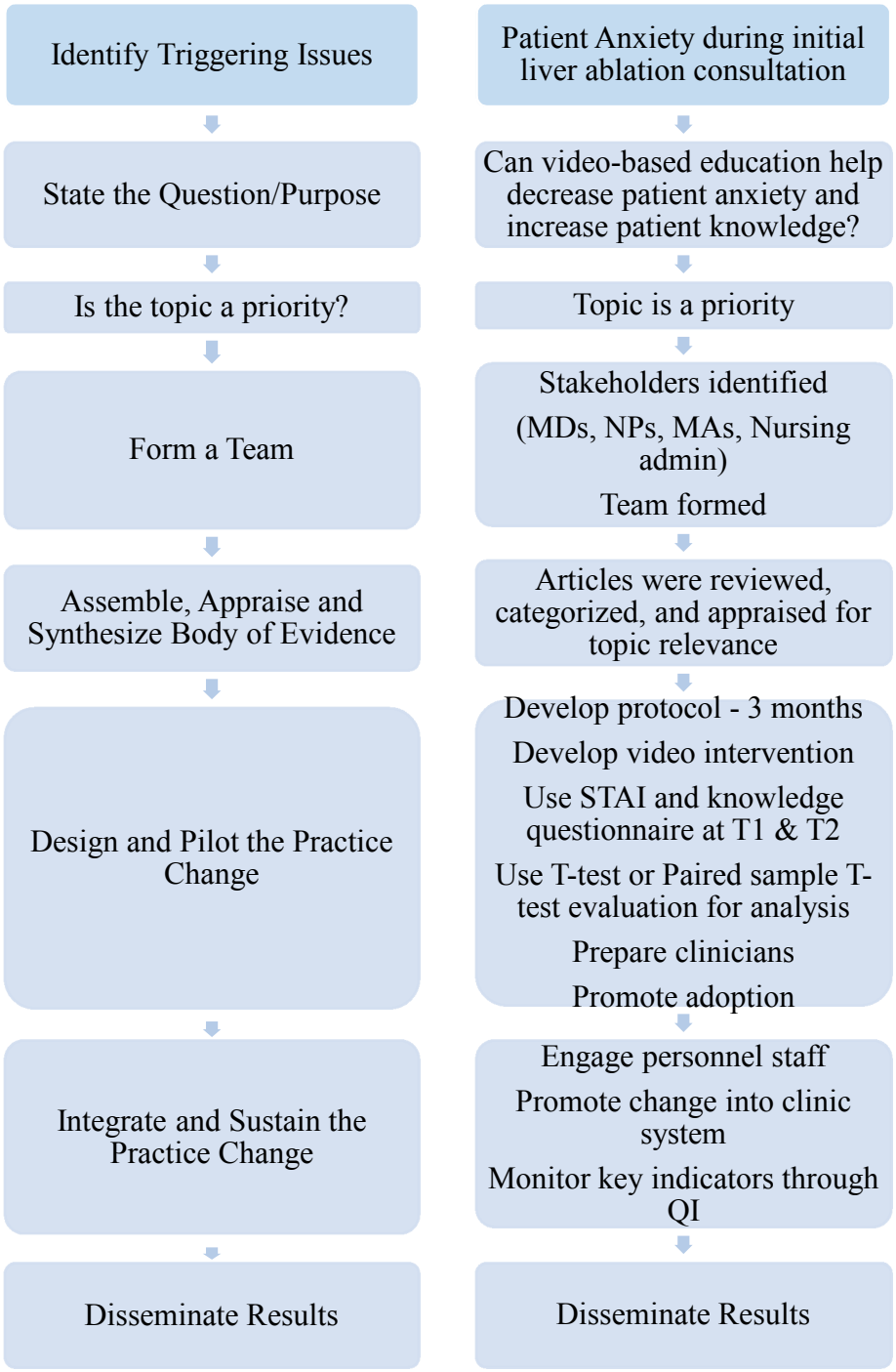
CONCLUSION

Many healthcare providers refer patients to consult with interventional radiologists for advanced minimally invasive treatments. Patient feedback, despite current education being provided, revealed gaps related to knowledge and education that may contribute to the patient's anxiety. The lack of standardized pre-procedural education in the IR clinic was an apparent oversight that was addressed in this project to alleviate anxiety. The problem has encouraged clinicians to pursue solutions in this target population. Video-based education offers a promising teaching modality and has proven effective in prior research on patients undergoing surgical procedures to positively increase knowledge and dispel fears, thus decreasing patient anxiety. Future research may investigate the impact of virtual education in waiting rooms at major medical centers to help prepare patients and families on procedures and post-operative care, thus, decreasing anxiety, encouraging active partnership in care, and empowering providers to continue towards creative mechanisms to improve outcomes.

In conclusion, interventional radiology is a growing medical specialty. The mission of interventional radiology at UCLA Health is to provide outstanding patient care by combining excellence in clinical imaging, research, and educational programs with state-of-the-art technology (UCLA Radiology, n.d., About Us section). The academic center's mission directly aligns with the underlying foundation of The Essentials of Doctoral Education for Advanced Nursing Practice. Therefore, the doctorally prepared nurse, an expert in clinical nursing practice, can influence positive healthcare outcomes through direct patient care, organizational leadership, and health policy implementation.

APPENDICES

Appendix A: DNP Scholarly Project Application of The Iowa Model Revised



Appendix B: DNP Scholarly Project Application of Essentials of DNP Practice

DNP Essential II Organizational and Systems Leadership for Quality Improvement	• DNP project is related to the needs of a specific population. • Improve patient anxiety and increase pateint knowledge in HCC patients who will undergo ablation treatment
DNP Essential III Clinical Scholarship and Analytical Method for Evidence-Based Practice	• Existing literature was critically appraised • Table of evidence was created • Synthesis of literature was created • Develop project proposal • Submit for IRB review • Project data analsyis
DNP Essential IV Information Systems/Technology and Pateint Care Technology for the Improvement of and Transformation of Health Care	• Assess data resuts throughout the intervention timeframe
DNP Essential V Health Care Policy for Advocacy in Health Care	• Advocay in health care by disseminating results • Influence change at the institutional, regional, state, and national level may be utilized after the DNP Scholarly Project is completed depending on outcomes and knowledge learned from project
DNP Essential VI Interprofessional Collaboration for Improving Patient and Population Health Outcomes	• Ongoing collaboration will occur among the stakeholders and project team
DNP Essential VIII Advanced Nursing Practice	• Advanced nursing practice is ongoing and demonstrated by educating the medical assistants, nurse practitioners, and physicians about the project goals and planned intervention

Appendix C: State-Trait Anxiety Inventory

State-Trait Anxiety Inventory for Adults

English: Forms and Scoring Guide
Spanish: Forms

Developed by Charles D. Spielberger
in collaboration with R.L. Gorsuch, R. Lushene, P.R. Vagg, and G.A. Jacobs

Published by Mind Garden, Inc.

info@mindgarden.com
www.mindgarden.com

Appendix D: Liver Ablation Knowledge Questionnaire

Date:

Patient:

Age:

a) 18-39
b) 40-49
c) 50-59
d) 60-69
e) 70 and older

Gender:

a) Male
b) Female
c) Non-binary
d) Decline to state

What is your highest level of education?

a) Grade school (8th grade or lower)
b) High school (12th grade)
c) Junior College (2 years with or without associate degree)
d) Undergraduate college (3-5 years with or without bachelor's degree)
e) Graduate school (more than bachelor's degree)

What is your primary language?

a) English
b) Spanish
c) Chinese
d) Korean
e) Vietnamese
f) Iranian
g) Armenian
h) Other

1.	Liver ablation treatment is a procedure where cancer is treated with heating or freezing by placing a needle inside the tumor using an ultrasound or CT scan?	True	False	I don't know

2.	You **CAN** eat breakfast on the day of your scheduled liver ablation procedure?	True	False	I don't know
3.	You **CAN** drink water and medications at least two hours prior to the procedure	True	False	I don't know
4.	You will need to arrange for a ride home after the liver ablation procedure?	True	False	I don't know
5.	Some people feel like they have flu-like symptoms or pain for a few days after the procedure	True	False	I don't know
6.	Liver ablation treatment is a safe and effective treatment for liver cancer.	True	False	I don't know

7. Let your doctors and nurses know if you take
    a) Blood thinners (Warfarin, Coumadin, Eliquis, Pradaxa)
    b) Aspirin
    c) Metformin
    d) Marijuana
    d) all of the above

8. After the liver ablation procedure, **MOST** patients stay at the hospital for:
    a) 1 hour
    b) 3-6 hours
    c) 8-10 hours
    d) overnight stay

9. After 24 hours from having the procedure, you can do all of the following **EXCEPT** for:
    a) shower
    b) remove the site band-aid
    c) lift 10 pounds or less
    d) soak inside a hot tub or bath

10. You should call your medical provider or go to the emergency room if you develop persistent symptoms of:
    a) fever (> 101F), chills, and difficulty breathing
    b) sick to your stomach that you cannot eat or drink
    c) increased pain not helped with pain medication
    d) all of the above

TABLE OF EVIDENCE

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Akca, A., Yilmaz, G., Esmer, A., Yuksel, S., Koroglu, N., & Cetin, B. (2020). Use of video-based multimedia information to reduce anxiety before office hysteroscopy. *Videosurgery and Other Miniinvasive Techniques*, 15(2), 329–336. https://doi.org/10.5114/wiitm.2019.89378	Investigate the impact of video-based multimedia information (MMI) on the anxiety levels of patients undergoing office hysteroscopy (OH)	Sample: • 102 pts (51 pts each group) • Scheduled for office hysteroscopy (April-July 2019) • 18-65 years old Setting: Outpatient OB clinic in Turkey	Design: Prospective randomized study Methods: • Before random, STAI • Random software allocation • Experi: video w/ proc details • Control: written info proc details • Repeat STAI 10 min after intervention • Standardized transvaginal hysteroscopy by same gynecologist Measures: • Anxiety level • STAI question • Pt satisfaction • 4-point Likert scale • Procedural pain • VAS (10 points) • paired samples t-test pre/post STAI	• Mean 2 grps similar w/ age, parity, BMI, menopausal & edu status, STAI-T score, & hysteroscopy • Pre-info STAI same for 2 grps • Post info STAI-S score lower than pre in video grps (49.0 ±8.0 vs. 45.0 ±8.0, p > 0.001, 95% CI for the difference: 2.60–5.2) • No sig change STAI-S control (49.3 ±8.3 vs. 49.4 ±8.4, p = 0.15, 95% CI: –0.18 – 0.03) • Sat rate video grps higher c/t control grps • VAS score same	Discussion: • Video edu reduces pre-procedural anxiety • Pt satisfaction higher in video grps • Outpatient more comfortable and has reduced medical costs • Anxiety before hysteroscopy is c/t experience by women who does GYN surgery w/ anesthesia • Suspect video improves recovery process • Video failed to reduce procedural pain Limitations: • Lack illiterate pts • Lack comparison hemodynamic data • Selection bias • No MMI time given Opportunities: • Include other than pt diagnostic purposes • hormonal therapy agents

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Cakmak, M., Kose, I., Zinzircioglu, C., Karaman, Y., Tekgul, Z., Pektas, S., Balik, Y., Gonullu, M., & Bozkurt, P. (2018). Effect of video-based education on anxiety and satisfaction of patients undergoing spinal anesthesia. *Brazilian Journal of Anesthesiology (English Edition),* 68(3), 274–279. https://doi.org/10.1016/j.bjane.2018.01.004	Investigate the effect of video-based education on anxiety and satisfaction in patients about to undergo spinal anesthesia.	Sample: • 1292 referred for assessment • 222 enrolled • 24 excluded • 198 patients • Sched elective surg spinal anesthesia • Age > 18 years • Ability to consent • Excluded: <18 yrs, on antidepressant, cognitive disorders, incomplete question, prior surgical anesthesia hx Setting: Anesthesia outpatient clinic in Turkey	Design: Randomized prospective Methods: • STAI-T completed PAI • STAI-T & STAI-S competed before/after info • VAS before/after • Likert postop • Computer-based randomization, 2 groups • Video watched computer • Group 1: 100 pts written, verbal, video • Group 2: 98 pts written & verbal • After info, pts did question Measures: • Anxiety level • STAI question • VAS = anxiety • 5-point Likert scale measure sat • SPSS, chi-square, Mann-Whitney U-, Wilcoxon signed-rank, Kruskal-Wallis test	• No differences STAI-S, STAI-T, or VAS scores b/w the 2 groups before the info • difference observed in STAI-S score after info period (36.5 ± 10.0 in Group 1 and 39.6 ± 8.6 in Group 2 ($p = 0.033$)) • 5-point Likert score different b/w the 2 groups (4.5±0.6 Group 1 & 3.5±1.2 Group 2 ($p<0.001$)) • No differences in VAS score found b/w groups either before or after the info period. • Change in STAI-S score significant in Group 1 ($p < 0.001$).	Discussion: • Video edu PAI dec anxiety & inc sat • No sig relationship b/w STAI-S score & demographic & non-demographic • Pt selection was focused on interpret effect of video info • Conflicting results reported in pt sat after video edu • Sat influenced sense of relief after proc Limitations: • Presumed spinal anesthesia inc preop pt anxiety • Pt attitude not scientific proven in Turkey • Use of video edu does not guarantee pt retains info • No knowledge question used • Factors affecting anxiety differ among countries & cultures Opportunities: • Anxiety-related, sociocultural, economic

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Dahodwala, M., Geransar, R., Babion, J., De Grood, J., Sargious, P. (2018). The impact of the use of video-based educational interventions on patient outcomes in hospital settings: A scoping review. *Patient Education and Counseling*, 101, 2116–2124.http://doi.org/10.1016/j.pec.2018.06.018	The impact of the use of video-based educational interventions on patient outcomes in hospital settings: A scoping review	Sample: • Video-based edu intervention • Inpatient hospital settings • Adults Setting:In-pt hospitals in US, UK, Taiwan, Australia w/video education interventions	Design: Meta-analysis review Methods: • Scan literature for evidence on impact of video edu in acute care setting • Scoping review • Abstracts reviewed & selected according to predetermined criteria • Assessed clinical outcome: quantitatively (lab,pt ratings, questionnaires) or qualitatively (pt narrative) • Full text scrutiny Measures: • Info tabulated using Microsoft excel	• Initial, 785 papers • Final reviewed 62 • Published b/w 1979-2016 (80% published 2000) • Primarily RCT • Participants range 20-1119 • Various health conditions (15 heart; 13 cancer; 34 other diseases • All but 7 studies eval video edu against control • 5 studies delivered edu >1 • 8 studies edu material avail to family • 9 studies used interactive edu computer program • Video formats: animated (25), professionals (15), narrative (9), mixed (13) • Effect video pt outcomes	Discussion: • Cancer = 9 out of 13 studies show sig improvement in outcomes measured • Clear evidence to support effectiveness of video edu in short term outcomes including increased knowledge, understanding medical info, alleviating anxiety, improving pt sat Limitations: • Reviewed video edu for a broad range condition, sample heterogeneous • Same general category of conditions (heart disease), was sig heterogeneity purpose & type of intervention applied = hard to compare study results since not standardized • Quality of education content Opportunities: • On-demand pt edu during hospital stay • impact of video about their illness

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Haddad, N., Saleh, M., Eshah, N. (2018). Effectiveness of nurse-led video interventions on anxiety in patients having percutaneous coronary intervention. *International Journal of Nursing Practice*, 24(4):e12645.http://doi.org/10.1111/ijn.12645	Effectiveness of nurse-led video interventions on anxiety in patients having percutaneous coronary intervention	Sample: • 2 groups • Data collect b/w 6/2015-7/2016 • Exper vs comparison • Odd MRN = comp = 48 pts • Even MRN = experi = 51 pts • 99 pts total • 7 withdrew • Data at 3 pts • Convenience sampling • Recruit pts getting PCI in QAHI • > 18 yo Setting:Queen Alia Heart Institute (QAHI) in Jordan 170 bed facility	Design: Pre/post-test design, Quasi-experimental Methods: • Pilot = 10 • Video 20 min on PCI, content according AHA guidelines + pamphlet • Intervention reviewed by 2 cards, 2 psych consults, & 2 nurses • 3 data points (T0,T1,T2) Measures: • STAI • Likert scale • T-test •	• Mean age 53 (21-74) • Comp = mean 54 yo • Experi = mean 53 yo • Majority men, married, not working • T0 = no sig diff anxiety b/w groups • T1/2h prior = experi stat sig b/w groups T2/4h prior = experi stat sig b/w groups	Discussion: • All pts expressed high anxiety at baseline T0 • No sig diff b/w 2 T0 • Intervention = lower anxiety level at T1 • Comparison = highest anxiety at T1 • At T2, both groups had dec anxiety Limitations: • Few studies in Jordan to eval nurse-led video • Limits generalizability of findings since only 1 hospital, convenience sampling • Not feasible to provide pts an equal chance to enroll in the study • Recruited from the day care unit only • 40% of study sample had prior hx of PCI Opportunities: • Recruit from more than 1 hospital • Consider excluding pts w/ prior hx PCI • Randomized trial • Eval edu for pts w/ hearing or visual diff

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Kim, M., Oh, H.-K., Lee, K., Yang, H., Koo, B.-W., Lee, J., Kim, M.-H., Kang, S., Kim, D.-W., & Kang, S.-B. (2019). Effects of an internet-based informational video on preoperative anxiety in patients with colorectal cancer. *Annals of Surgical Treatment and Research*, *96*(6), 290.https://doi.org/10.4174/astr.2019.96.6.290	Evaluate the effect of an Internet-based informational video on preoperative anxiety level in patients with colorectal cancer.	Sample: • 32 patients • Sched elective CRC surg • No prior surgical • hx 20-75 yrs • can understand questionnaire • can do informed consent Setting: Seoul National University Bundang Hospital	Design: Single-arm, prospective, pragmatic observational study Methods: • 5-minute Korean video • Edu by study coordinator 1 day before surgery, and after bowel prep • 2 questionnaires used: APAIS and HADS • Questionnaires validated in Korean. • Questionnaires before/ after watching video Measures: • Anxiety level: surgery & anesthesia. • APAIS • 5-point Likert scale	• Mean age 57.9±10.3 • 75% men • 78% > high school edu • Initial preop anxiety score 10.8 ± 3.8, reduced after video • APAIS and HADS score reduced after video (both P<0.001) • 2 pts had incr anxiety • 15% comp rates • 3 pts had ileus > 5days post sur • 1 pt voiding diff • 1 pt diarrhea • preop anxiety did not sig differ b/w pts who dev postop comp & who did not (P>0.05)	Discussion: • recall is low • Internet accessible + media = syn pos effect • Video best tool • Video accurate info if done by medical ctr • Video effective to reduce preop anxiety in pts no surgical experience. Limitations: • Sample size too small • Selection bias • single-arm study Opportunities: • Involve larger sample • Use randomized controlled trial • Include other types of patient surgery

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Murugesan, M., Anand, J., Durai, S., Dutta, A., & Mahasampath, G. (2020). Effectiveness of video instruction on anxiety, knowledge of procedure, and quality of bowel cleanliness among patients undergoing colonoscopy. *Indian Journal of Continuing Nursing Education (IJCNE)*, 21(1), 64–69. https://doi.org/10.4103/IJCN.IJCN_49_20	Determine the effectiveness of video instruction regarding bowel preparation on anxiety, knowledge of procedure, and quality of bowel cleanliness among patients undergoing colonoscopy.	Sample: • 120 pts total • 60 control • 60 experimental • Undergo colonoscopy • Written informed consent • Randomly allocated to experi or control groups Setting: Endoscopy Services Unit of a tertiary hospital in South India.	Design: Experimental study design, quantitative Methods: • 7-min video on colo proc & bowel prep edu • Investigator assessed anxiety & knowledge of proc day before w/o intervention & day of the proc before proc • Boston bowel prep scale (BBPS) • 2 question: STAI & Knowledge question • Questions validated Measures: • Anxiety level • Knowledge level • Boston bowel prep • Check sociodemo: age, gender, edu, marital, language, residence, family • variables: presence polyps, reason for colo, duration illness	• Experi group: lower level anxiety, stat sig $P < 0.001$ • Experi group: inc mean knowledge, stat sig $P < 0.001$ • Pos correlation b/w knowledge of proc & quality bowel cleanliness, stat sig $P < 0.001$. • Quality bowel cleanliness inc as knowledge inc • Experi: 75% pts had excellent bowel cleanliness • Control: 25% pts excellent bowel cleanliness • Control: 56.7% 41–60 yrs • Experi: majority 18-40 yrs old (63.3%). • Most (63.3% & 66.7%) males both control & experi. • Control group (3.3%) pts w/polyps colo	Discussion: • Video relieves anxiety • Video enhances knowledge and quality of bowel cleanliness c/t conventional teaching (oral, leaflet) • Good preparation aids in accurate diagnosis, reduced cancellation rates, lowers waiting times for pts, and saves healthcare personnel time by avoiding procedure repetitions. Limitations: • Single site study • Question performed on day of proc, may have inc anxiety d/t anticipation of proc • Video may not be useful for all patient care situations. Opportunities: • Involve other institutions to replicate similar study design • Nurses & physicians should make accurate info on colo prep

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Paripoorani, D., Babu, V., Poongodi, K., Cherian, V.M. (2015). Effectiveness of instructional video on preoperative anxiety of patients undergoing orthopedic surgery. *Indian Journal of Continuing Nursing Education (IJCNE)*, 16:36-41.	Effectiveness of instructional video on preoperative anxiety of patients undergoing orthopedic surgery	Sample: • 2 groups • Elec ortho surg • Cluster randomization • > 18 yo Setting: Orthopedic wards of Christian Medical College, Vellore. India	Design: Pre/post-test design, Quasi-experimental Methods: • surgical orientation video, 15 min • 4 languages Measures: • STAI • Likert scale • Paired sample T-test • Independent T-test	• Experi = 25% b/w 25-35 yo; 71% males • Control = 5.7% b/w 36-45 yo; 68% males • Exeri = mean anxiety dec pre 37 to post 35 • Control = anxiety inc pre 40 to post 44 • Experi = stat sig dec anxiety •	Discussion: • Majority subjects had average anxiety level • Video dec preop anxiety • No ass b/w anxiety and demo variables Limitations: • Effect of potential sources of anxiety (ie. anesthesia, fear, technique, info) • Doesn't show effect of prior surgical experience on anxiety Opportunities: • Protocols can be made for pt prep • Do in multiple setting • Larger sample size

CITATION	PURPOSE	SAMPLE/SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Sayadi, L., Varaei, S., Faghihzadeh, E., Ahmadkhani, Z. (2018). The effects of multimedia education on anxiety and physiological status among patients with cerebral angiography: A randomized controlled clinical trial. *Nursing Practice Today*, 5(4):375-384. http://doi.org/10.18502/npt.v5i4.116	The effects of multimedia education on anxiety and physiological status among patients with cerebral angiography: A randomized controlled clinical trial	Sample: • 88 pts total • 44 pts each group • Age > 16 yrs • Elective angio admit Setting:12-bed angiography unit of a university hospital in Tehran, Iran	Design: Randomized clinical trial Methods: • Multimedia (video, voice, written, pictures) vs. standard of care • Intervention ~ 30min Measures: • STAI • T-test • Chi-square • McNamara's test •	• No b/w group sig diff • 74% video = positive knowledge • 75% video = positive physical/clinical outcome 57.9% video = positive mental/emotion	Discussion: • Dec anxiety in intervention c/t control, not stat sig • No sig dec in anxiety after intervention • Intervention was not effective in dec procedural anxiety Limitations: • Conducted in a single angiography unit • Large effect size Opportunities: • Larger sample size • Include interdisciplinary approach to edu • Multi-center study

Note: admin = administration; AHA = American Heart Association; APAIS = Amsterdam Preoperative Anxiety and Info Scale; angio = angiography b/w = between; BMI = body mass index; cards = cardiologist; c/t = compared to; CI = confidence interval; colo = colonoscopy; comp = complications; CRC = colorectal cancer; ctr = center; dec=decreased; diff = difficulty; edu = education; EP = Education program; experi = experiment; GP = General Practitioner; grp = groups; GYN = gynecological; HADS = Hospital Anxiety and Depression Scale; HTN = hypertension; Info = information; inc=increased; interpret=interpretation; min = minute; op = operation; PAI=pre-anesthetic interview; pci = percutaneous coronary intervention; pos = positive; prep = preparation; proc = procedure; pt/pts = patient(s); psych = psychiatric; PVT = Portal vein thrombosis; question = questionnaire; random = randomization; sat=satisfaction; sched = scheduled; sig = significant; sociodemo = sociodemographic; stat = statistically; syn = synergistic; VAS = Visual analog scale; VAT = Video-assisted teaching; vs = versus; w/ = with; yo = years old; yrs = years; < = less than; > = greater than; & = and

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