Opioid Free Anesthesia: The Obese Population

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DNP Scholarly Project Final Approval Form

DNP Scholarly Project Final Approvals

The DNP student Maggie Jones **and the Scholarly Project** Opioid Free Anesthesia: The Obese Population **meet all the requirements for the degree of Doctor of Nursing Practice at University of Saint Francis-Fort Wayne, IN.**

Date of Final Approval: 6.24.22

DNP Student Signature:

DNP Faculty Advisor Signature:

Graduate Nursing Program Director Signature:

NAP Program Director Signature:

Copies to: Student File, Graduate office and attached to the Final Project Manuscript.

Abstract

Problem: With an increasing rate of overdose among opioid users world-wide, anesthesia providers must be at the forefront of discovering strategies to help various patient populations with this issue. To minimize risk and improve outcomes Opioid Free Anesthesia (OFA) can be used in place of traditional anesthetics to help combat the devastating effects of opioids.

Purpose: Among anesthesia providers within the PhyMed Healthcare Group, will the implementation of an evidence-based education presentation regarding OFA in the obese surgical population, increase the providers' confidence with OFA?

Methods: The project design type appropriate for the chosen DNP scholarly project was quality improvement with the aims to evaluate the anesthesia providers' baseline knowledge, knowledge gained, and perceived knowledge following the educational presentation regarding opioid free anesthesia in the obese population and to evaluate providers' perceived barriers to utilizing opioid free anesthetic techniques in the clinical setting.

Significance: A pre/post-questionnaire was completed by participants and a percent change analysis was conducted using the mean scores from these questionnaires as comparison to yield results. Following the educational intervention, providers' score on the post-test increased by 40%, and providers were able to accurately identify non-narcotic adjuncts and their appropriate dosages. The most common barriers identified were lack of familiarity with OFA drugs, pharmacy not on board, turnover pressure, and thoughts that opioids provide superior pain control. The team leader is confident that by being a life-long learner anesthesia providers can flatten the curve on the opioid epidemic by implementing new strategies for various patient populations.

Keywords: "Opioid Free Anesthesia", "Bariatric Surgical Population", and "Mulitmodal Therapy"

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Chapter 1: Introduction

DNP Project Problem Statement

With an increasing rate of overdose among opioid users world-wide, anesthesia providers must be at the forefront of discovering strategies to help various patient populations with this issue. The utilization of opioids in the obese, surgical population can have devastating effects on multiple systems including respiratory, gastrointestinal, genitourinary, and central nervous system. Obesity is diagnosed by the Body Mass Index (BMI) scale; 25 kg/ m^2 is considered normal, greater than 30-40kg/ m^2 is obese, greater than 40-50 kg/ m^2 would be morbidly obese, greater than 50kg/ m^2 is super morbidly obese (Cullen et. al, 2012; Feld et. al, 2002). The definition of obesity is the presence of elevated levels of fat stores which forms, depending on the age of the patient, hypertrophic (larger in size) and/or hyperplasia (larger in quantity) fat cells (Cullen et. al, 2012). To minimize risk and improve outcomes Opioid Free Anesthesia (OFA) can be used in place of traditional anesthetics to help combat the devastating effects of opioids. The following summary is an overview of terminology as well as implementation strategies pertaining to OFA usage within the obese, surgical patient population. Among anesthesia providers within the PhyMed Healthcare Group, will the implementation of an evidence-based education presentation regarding OFA in the obese surgical population, increase the providers' confidence with OFA?

Background of the Problem

Opioid overdose has become one of the leading causes of death from accidental injury in the United States (Data Overview, 2020). Due to alarming rates of overdose as well as overusage of prescription opioids, the Center for Disease Control (CDC) and the Food and Drug

Administration (FDA) have placed regulations on chronic pain management (Kamdar et. al, 2017). To provide non-opioid pain management, we must first look at the barriers anesthesia providers face implementing a change in practice. According to Valesco et al. (2019), barriers include perceptions opioids are superior, limited experience with non-opioid anesthesia, inconsistent analgesia with other modalities, negative experiences with opioid alternatives, and patient comorbidities. Another barrier anesthesia providers face is the surgeon's perspective, many fear OFA will result in more frequent emergency room visits, an increase in office calls, and poor patient satisfaction scores (Davies & Brummett, 2020). If anesthetists can provide adequate education and statistical evidence to other providers, we can provide a foundation for the importance of change in current practice. The new verbiage for OFA is widely linked to Enhanced Recovery After Surgery (ERAS) protocols. There are many OFA treatment modalities including intravenous and/or local anesthetics, acetaminophen, N-methyl-d-aspartate (NMDA) receptor antagonist, nonsteroidal anti-inflammatory drugs, Alpha 2 agonists, anticonvulsants, steroids, beta blockers, and lastly nonpharmacological interventions (Flood et. al, 2015). Studies suggest that the utilization of opioid free anesthesia will decrease postoperative opioid usage, decrease length of stay, and decrease total cost (Guinot et. al, 2019).

Needs Assessment/ Practice/Knowledge Gap –

A large quantity of literature regarding the benefits, application, and implementation of OFA is published. However, the literature shows there is minimal discussion regarding the barriers anesthesia providers face to the implementation of OFA. In speaking with providers regarding concerns they have about OFA within the obese population; the common theme observed is a lack of knowledge regarding implementation. The question becomes why is OFA not utilized more often?

DNP Project Overview

Statement of Project Design Type

The project design type appropriate for the chosen DNP Scholarly project is quality improvement with the aims to evaluate the anesthesia providers' baseline knowledge, knowledge gained, and perceived knowledge following the educational presentation regarding opioid free anesthesia in the obese population and to evaluate providers' perceived barriers to utilizing opioid free anesthetic techniques in the clinical setting.

Scope of Project

The DNP Scholarly project's intention is to increase knowledge and confidence in providers' utilization of OFA in the obese population, by providing an educational presentation on the benefits of OFA as well as commonly used OFA techniques. The project has no research participants or trials on subjects, simply a matter of knowledge/confidence gained for providers. A secure site has been reserved for the delivery of the pre-test (delivered via Microsoft Forms), the educational presentation, the post-test (delivered via Microsoft Forms) to participants, and a final post survey (delivered via Microsoft Forms) two weeks post intervention. The team leader will then upload data into statistical software SPSS for thorough evaluation of results.

Stakeholders

Stakeholders in the DNP Scholarly project include the team leader (Maggie Jones, SRNA), the project advisor (Dr. Greg Louck), the PhyMed group facilitator (Danette Plautz, CRNA), and the anesthesia providers working with Danette Plautz through PhyMed Healthcare Group.

Evidence of training in human subject protection

CITI training completed February 2021. See Appendix A for completed certifications.

Letter of support from project group: See Appendix B for letter of support

Budget and Resources

Cost

Resources for the project were provided by the University of Saint Francis DNP faculty while they assisted the DNP Scholarly project. The DNP faculty assisted with the planning of the implementation and evaluation of datasets via in-person and virtual meeting. Statistical Software SPSS was purchased by the team leader at a one-time cost of $59. Microsoft Forms will be used for the pre/post-tests and there was no charge for services. Travel expenses will include gas, which totaled $60, since most of the project will be completed while the team leader is working with PhyMed Healthcare Group anesthesia providers. Lastly, dinner will be provided to the providers who choose to participate, $400 will be allocated for this cost. In total, the direct cost for this project to the team leader will be $519.

Description of Resources

Resources for the DNP Scholarly project included the DNP faculty (Dr. Susan Lown, Dr. Carla Mueller, Dr. Mary Spath, and Dr. Megan Winegarden), the DNP faculty advisor (Dr. Greg Louck), the DNP group advisor (Danette Plautz, CRNA), PhyMed Healthcare Group (providers working with Danette Plautz, CRNA), Microsoft Forms, and statistical software SPSS.

Process and Outcomes

General Timeline

The general timeline for the DNP Scholarly project occurred from the start of the literature review process in January 2021 to the completion of the project in July 2022. The

literature review, though ongoing, occurred in the spring of 2021. Site selection occurred in the Spring of 2021; however due to the loss of that facilities' student coordinator, the DNP Scholarly project will now be implemented with PhyMed Healthcare Group providers (specifically those providers working with Danette Plautz, CRNA). New site selection occurred in the Fall of 2021. Stakeholders were identified, IRB approval, and USF DNP faculty approval will occur in the Fall of 2021. Implementation of the DNP Scholarly project will occur in February 2022. After implementation data collection will occur for two weeks at via chart review to see if there was an increase in OFA for obese patients. Data review and importation into statistical software SPSS will occur in March/April of 2022. Final delivery of results/manuscript and DNP Scholarly project will occur in July 2022.

Project setting

The setting for implementation of the DNP Scholarly project is a secure room at a restaurant in Warsaw, IN. Participants will be provided dinner. During the time participants are waiting on arrival of their dinner, informed consent, a demographic survey, a pretest, and an educational PowerPoint presentation will be presented (hard copies of presentation will be provided). While the participants have dinner, time will be allotted for questions to the presenter (team leader). After dinner, the participants will be asked to complete a post-test. Two weeks after the presentation a third and final survey will be sent to the providers.

Participant inclusion/exclusion criteria

Inclusion criteria is anesthesia providers with a valid license, practicing with PhyMed HealthCare group (working directly with Danette Plautz, CRNA), at least 18 years old or older, and able to read/speak English. Exclusion criteria would be non-practicing providers, providers

within PhyMed not working directly with Danette Plautz, CRNA, or they are unable to read/speak English.

What the participants are expected to do

Participants will be asked to complete the demographic questionnaire, with pre-test, actively listen to the educational presentation regarding OFA in the obese population, complete the post-test, and lastly to complete a final survey (two weeks after the intervention). The demographic questionnaire (see Appendix C), pre/post-test (see Appendix D), and final survey (see Appedix E) will be conducted utilizing Microsoft Forms. Participation is voluntary, lasting approximately one hour in duration, and conducted after working hours on the provider's personal time. Following the educational presentation, the team leader will be working with the providers for one month. Participants will be encouraged to attempt using OFA with appropriate cases, and the team leader will be available for guidance or questions.

Length of time required from participants

Total time requirement is one hour: 10 minutes for the pretest, posttest, final survey and a 30-minute presentation.

Risk Analysis, Informed Consent Procedures, Participant Protection

Risk Analysis

There was no identification of any immediate and or long-term risks to participants. Informed consent will be obtained from participants and will occur before the demographic questionnaire and implementation of the pre/post-test and final survey. Appendix G shows a copy of the informed consent letter. Benefits participants may receive as part of participating in the DNP Scholarly project include education regarding OFA in the obese population, guidance in

utilization of OFA by team leader, access to commonly known OFA multimodal therapies for utilization in the obese population, and lastly a dinner provided by the team leader. No financial gain will occur due to this DNP Scholarly project. Deception is not necessary for the DNP Scholarly project, and this will be included in the informed consent. The team leader is not being paid or receiving any financial gain by any institution for the information being presented. The participants' information will not be used for anything other than demographic information and will be destroyed via secure data destruction shredding and permanent deletion of files following importation into SPSS. While the participants' information is in the possession of the team leader, information will be stored on a password protected MAC computer, only accessible to the team leader.

Chapter 2: Synthesis of Supporting Evidence and Project Framework

Relevant Theory and Concepts

The project design method selected for the DNP Scholarly project was quality improvement (QI). According to Butts and Rich (2018), the quality improvement scholarly method is defined as "any intervention aimed at reducing the quality gap for a group of patients representative of those encountered in routine practice" (p. 852). Quality improvement projects place emphasis on the following categories: efficacy, effectiveness, efficiency, optimality, acceptability, legitimacy, and equity. The following is a breakdown of this DNP Scholarly project and how quality improvement was implemented.

Within the group chosen for implementation, guidelines did not exist for providers to follow for utilization of OFA within the obese population. The pretest, post-test, and final survey administered with this project will grade the effectiveness, efficiency, and efficacy of the presentation put forward to educate providers. The health equity of the obese population was a major goal of this project. The team leader strove to provide an evidence-based plan for anesthesia for the obese population, allowing for the best possible outcome for this group of patients. According to an article by Nadeem et al. (2013), thirty-five states are now utilizing QI initiatives to change health care practices.

Frameworks/Models/Concepts/Theories

The framework chosen to guide the QI project was the Knowledge to Action (KTA) model. The KTA model's purpose is to help those who are translating evidence-based knowledge interventions into practice. Knowledge translation is defined as "a process which utilizes synthesis, dissemination, exchange and ethically sound application of knowledge to improve health and provide a more effective healthcare service; while promoting and strengthening the

healthcare system" (Graham et al., 1970). The integration of evidence-based guidelines into a well-established anesthesia practice could have barriers; utilization of the KTA framework provides a systematic integration of evidence-based guidelines, including three phases known as inquiry, synthesis and creation of knowledge. The implementation of the KTA model allows for a smooth transition of evidence-based guidelines into practice (Davison et. al, 2015; Field et. al, 2014, Spooner et. al, 2018). The KTA model contains two components. The first component is knowledge creation which the team leader achieved via a pre-test administered prior to an educational presentation regarding opioid free anesthesia in the obese population. The pretest was utilized to help identify barriers providers have to the utilization of OFA in the obese population. The pretest also assessed knowledge of evidence-based practice prior to the educational opportunity. The assessment phase was done to provide the team leader with a foundation of knowledge and identify gaps for improvement (Field et al., 2014; Lockwood et. al, 2016). The second component is the action phase. This process represents the actions or activity needed for application of knowledge. The action phase consisted of an educational presentation based on evidence-based guidelines regarding the implementation of opioid free anesthesia in the obese population. The action phase allows for tailoring the knowledge to each individual facility or place of implementation and is continuous. After receiving the educational presentation, a post-test was administered to determine any remaining gaps in knowledge, and further education was completed at that time.

Demographics of Project

Within Kosciusko County lies a small rural community, Warsaw, Indiana, approximately two hours north of Indianapolis. According to the 2010 United States Census Bureau (2020), Warsaw Indiana has a population of 15,804, while Kosciusko County had 80,240 people

reported. The median average income for this population was reported at $55,982, with 12.5% of the population living in poverty. The group chosen for this DNP Scholarly project, PhyMed Healthcare Group, is known for their commitment to the implementation of evidence-based research. With the group's reputation of evidence-based quality care, attention was placed on providing up to date anesthetic plans for the obese patient population.

Review of Literature

An exhaustive literature review was completed regarding opioid free anesthesia and the obese population. Multiple databases were searched including the CINAHL, EBSCOhost, DARE, TRIP, OVID, ProQuest, and Google Scholar. As a result, a listing of 42,087 articles was generated pertaining to opioid free anesthesia. Many of the articles found were duplicates and/or cross-referenced between databases. Generating a large number of articles resulted in the need to narrow search terms and apply parameters. After each database had been investigated, articles were then read and included based on the following inclusion criteria. First, the article needed to be published within the following yearly parameter (2010 to current) and in English or with translation available. Second, the article included information regarding the discussion of opioid free anesthesia. Lastly, articles had to have been peer reviewed. After reading multiple articles and applying set parameters, 38 articles were included in the exhaustive literature review.

The Cochrane Library of Systematic Reviews was searched using the following key-terms: Opioid Free Anesthesia (2), pain management (93), Enhanced Recovery After Surgery (1656), multimodal/anesthesia (19). Although several studies resulted, the studies were found to be in their maintenance phases and had yet to yield results; therefore, those involving opioid free anesthesia were not included in this review of the literature.

The National Guideline Clearinghouse was searched using “Opioid Free Anesthesia” as well as “pain management” which yielded over 20,000 hits. After sifting through several articles, it was decided that these results were unrelated to the topic and therefore not included.

Opioid Free Anesthesia in the obese population

What is opioid free anesthesia? OFA is simply practicing anesthesia intraoperatively without the administration of opioid medications (Chia et. al, 2020; Gupta, 2020; Thota et. al, 2019; Toleski & Dimitrovski, 2019; Valesco et. al, 2019). With the addition of pain being added as the fifth vital sign in the 1990s, the influx in the utilization of opioids bore an inevitable epidemic which would yield 42,000 deaths due to opioid overdose in 2016 (Lyden & Biswanger, 2019). However, most surgical procedures requiring anesthesia will cause pain; so how will those procedures be managed without the utilization of opioids? For most providers they must develop a multimodal approach to the treatment of painful stimuli. According to several sources, *multimodal therapy* is defined as the administration of two or more of the listed therapy options which work synergistically, with one another in the treatment of pain (Chia et. al, 2020; Valesco et. al, 2019). Opioids work at the mu, kappa, and delta receptors in the central and peripheral nervous system by targeting the nociceptive pathways in the dorsal horn of the spinal cord, which in turn tell the brain the body is in pain (Flood et. al, 2015; Kremer & Griffin, 2018). An OFA approach to pain treatment includes the utilization of multimodal therapy including acetaminophen, NSAIDS (ibuprofen, Toradol, celecoxib), NMDA receptor antagonists (ketamine), alpha 2 agonists (clonidine, dexmedtetomidine), esmolol, local anesthetics, magnesium, gabapentioids (gabapentin and pregabablin), caffeine, regional anesthesia, and muscle relaxers (Chia et. al, 2020; Falieres, 2020; Kremer et. al, 2018; Valesco et. al, 2019;

Veyckemans, 2019). It is unrealistic to expect every modality to be used on every patient; however, a combination of two or more of these modalities tends to yield positive outcomes.

For many organizations the terminology used to discuss OFA is aimed more towards Enhanced Recovery After Surgery (ERAS) protocols. ERAS protocols typically are implemented at the surgeon's office and are followed throughout the preoperative, intraoperative, postoperative, and post discharge timeframe. ERAS and OFA have associated improved outcomes: earlier mobilization and recovery of bowel function, prevention of adverse effects of large dose opioid administration, reduced bleeding, improved hemodynamic stability, non-delayed emergence, decreased length of stay, improved quality of life, and improved patient satisfaction (Chia et. al, 2020; Koepke et. al, 2018; P.C., 2019). The adverse effects, also known as opioid-related adverse drug events (ORADE), that are often mitigated by using OFA include nausea, vomiting, pruritis, sedation with hypoxemia, ileus, constipation, delirium, respiratory depression, hyperalgesia, biliary spasm, histamine release, potential immunosuppression, increased length of stay, delays early recovery, and addiction (Beloeil et. al, 2018; Chia et. al, 2020; Falieres, 2020; Frauenknecht et. al, 2019; Gupta et. al, 2020; Koepke et. al, 2018; Kremer et. al, 2018; Lavand'homme, 2019; P.C., 2019; Thota et. al, 2019; Velasco et. al, 2019). As you can see, the large quantity of ORADE has provoked providers to usher in the new era of OFA.

The obese population experiences associated comorbidities. Obesity is diagnosed by the Body Mass Index (BMI) scale; 25 kg/ m^2 is considered normal, greater than 30-40kg/ m^2 is obese, greater than 40-50 kg/ m^2 would be morbidly obese, greater than 50kg/ m^2 is super morbidly obese (Cullen & Ferguson, 2012; Feld et. al, 2002). The definition of obesity is the presence of elevated levels of fat stores which form, depending on the age of the patient, hypertrophic (larger in size) and/or hyperplasia (larger in quantity) fat cells (Cullen et. al, 2012).

According to Belcaid et. al (2019), forty percent of the United States population is classified as obese. The comorbidities linked with obesity often include metabolic syndrome, ventricular hypertrophy, atrial fibrillation, cardiac failure, obesity-related breathing disorders, decreased functional residual capacity, obstructive sleep apnea (OSA), obesity hypoventilation syndrome (OHS), pulmonary/systemic hypertension, type 2 diabetes mellitus, and ischemic cerebral vascular accident (Al-Rubeaan et. al, 2020; Cullen et. al, 2012; Feld et. Al; 2002; Hofer et. al, 2016; Mechanick, 2019; Sarr, & Wedel, 2004). The combination of adverse effects of opioids and the comorbities associated with obesity requires anesthesia providers to rethink anesthetic plans for this patient population. The respiratory effects associated with opioids on an obese patient can be catastrophic.

Each facility must develop an Enhance Recovery After Surgery (ERAS) guideline which works for them (Proczko et. al, 2016). The following paragraph offers medications which are the most suggested by the sources listed. A well-developed perioperative fluid management plan is vital, and maintenance of stroke volume and regulation of hydration is key in order to prevent injury and prepare the patient for oral hydration postoperatively (Hoehn et. al, 2019; Mechanick et. al, 2019; Thorell et. al, 2016). Secondly, the anesthesia provider must consider options to mitigate postoperative nausea and vomiting (PONV); suggestions include total intravenous anesthesia (TIVA) with propofol, 5-hydroxytryptamine receptor antagonists, corticosteroids, butyrophenones, neurokinin-1 receptor antagonists, antihistamines, and anticholinergics (Thorell et. al, 2016). Research does not recommend one anesthetic plan over the other in terms of volatile anesthetic or TIVA; however, less PONV is noted with TIVA (Thorell et. al, 2016). When a neuromuscular blockade occurs, a full reversal, has been shown to improve outcomes postoperative (Thorell et. al, 2016). Utilization of lidocaine 1.5mg/kg/hr, ketamine 0.1mg/kg/hr,

magnesium 10mg/kg/hr, and dexmedetomidine 0.3mcg/kg/hr have been shown to reduce the need for opioids as well as reduce minimum alveolar concentration (MAC) requirement from inhaled volatile anesthetics (Mulier, 2016). The combination of multimodal anesthesia has the potential to improve outcomes.

With any change in practice, being uncomfortable is not enjoyable, there will be resistance to new practice. Velasco et. al (2019) identified several barriers as issues for providers in utilizing opioid free anesthesia which were discussed earlier under gap analysis. Koepke et al. (2018) states, OFA is not an easy practice to master, it takes providers time to learn the art. However, an understanding of mechanism of actions of drugs, risks and side effects, as well as comorbidities associated with obesity could help persuade providers regarding best practice opportunities.

Key Recommendations for Practice

Key recommendations for practice are found in the literature, which suggests providers must be aware of the side effects opioids have on the obese population specifically. A thorough understanding of the side effects should trigger providers to consider opioid free anesthesia as a treatment option. Fallieres (2020) states that our current method of treating with opioids and employing non-opioid strategies for breakthrough pain should be flipped and the obese population should be treated with multimodal therapy, while using small dose opioid therapy for breakthrough pain. There are several drug therapies which are implemented in the obese population. Finding or developing an anesthetic plan, which suits the surgeon, facility, anesthesia provider, and most importantly the patient, must be the main goal of implementation. Several of the articles reviewed stated that to truly understand the lasting effects and benefits of OFA, larger studies must be conducted (Ahmed et. al, 2018; Al-Rubeaan et. al, 2020; Anamourlis, 2019;

Beloeil et. al, 2018; Forget, 2019; Gupta et. al, 2020; Koepke et. al, 2018; Lavand'homme et. al, 2017; Thorell et. al, 2016).

Summary of Supportive Evidence

Though the literature shows supportive evidence that opioid free anesthesia does include many positive outcomes regarding the obese population it still has limitations. Oya (2017) states that many of the disadvantages of opioid free anesthesia are due to side effects of OFA medications. Alpha-2 adrenergic agonists drugs can cause cardiovascular depression which would require vasopressor support. Ketamine has the potential to disrupt electroencephalogram (EEG)- based monitoring systems (Oya, 2017). An effective OFA regimen to is the usage of regional anesthesia which also has side effects associated with administration including urinary retention, pruritis, nausea, vomiting, and requires trained recovery room staff to identify issues (Kremer et. al, 2018). With any change in practice and with every patient, the anesthesia provider must have discussions with the patient, identifying the risks and benefits for each plan of care. Collaboration with the patient will help promote the best possible outcome for each person.

Chapter 3: Project Design

Methodology

The Knowledge to Action model was used as the framework for the planning, implementation, and evaluation phases of this DNP Scholarly project. The model assisted in facilitating the evaluation of the aims and outcomes previously stated. The phases necessary for successfully completion of the DNP Scholarly project included reviewing of the literature, identifying key stakeholders, developing an evidence-based presentation, and evaluating the intervention. Utilization of the KTA model provided the project with a framework which allowed for a successful intervention.

A demographic questionnaire was distributed to members of the PhyMed Healthcare Group to allow the project team leader to analyze participant work history, experience, employment status, and anesthesia practice model (see Appendix C). Additionally, both the pre and post-test contained the same questions to allow the project team leader to objectively assess knowledge gain following the educational PowerPoint (see Appendix D). The pre and post-test questions were reviewed by anesthesia experts both within USF and outside of the University for face validity.

Project Design

The project design type appropriate for the chosen DNP Scholarly project is Quality Improvement (QI) with the aims to evaluate the anesthesia providers' baseline knowledge, knowledge gained, and perceived knowledge following the educational presentation regarding opioid free anesthesia in the obese population and to evaluate providers' perceived barriers to utilizing opioid free anesthetic techniques in the clinical setting.

Ethical Considerations

The project team leader completed Collaborative Institutional Training Initiative (CITI) Training in Spring 2020. CITI training provided an additional measure for maintaining ethical standards throughout the planning, implementation, and evaluation phases of this DNP Scholarly project (see Appendix A). A letter of support from PhyMed Healthcare Group (see Appendix B) was obtained and granted the project team leader permission to implement the project with full support without the need for additional IRB approval outside of that required by USF. See Appendix H for USF IRB approval letter.

Project Schedule

The project schedule was implemented according to the following timeline. The DNP Scholarly project was formulated based on a need from PhyMed Healthcare Group in August 2020. Conversations between the anesthesia providers and team leader occurred regarding a need for education pertaining to Opioid Free Anesthesia. The team leader was passionate about the obese surgical population. In January 2020, an exhaustive literature review was conducted regarding OFA in the obese population. A concept map was devised in the Summer 2020. Discussions were had between the team leader, DNP advisement faculty, and DNP project faculty advisor to gain insight on the proper course of action for the project. CITI training was completed in February 2021. In the summer of 2021, the team leader identified aims and goals of the DNP project, developed a course of action to meet the aims, and developed the educational presentation that was presented to anesthesia providers. The team leader prepared for IRB approval from the University of Saint Francis and PhyMed Healthcare Group in the Fall 2021. After receiving IRB approval, the team leader received final DNP project approval from the DNP advisement faculty at the end of the Fall 2021. Goal for implementation was set for the first

two weeks in February. Which allowed for adequate time to complete data entry and processing. Final Dissemination of DNP Scholarly project occurred in June 2022.

Implementation Methods

The project intervention was a 30-minute educational PowerPoint presentation. The presentation addressed the risks/benefits of using OFA with the obese population. The presentation contained information regarding the commonly used multimodal methods and drug combinations utilized to treat pain. Lastly, the mechanism of action regarding the OFA drugs was covered. Following implementation of the DNP Scholarly project, the following outcomes were measured:

Aim 1: To evaluate providers' baseline knowledge, knowledge gained, and perceived knowledge following the educational presentation regarding opioid free anesthesia in the obese surgical population.

Outcome 1a: Following the educational presentation, providers' mean scores on the post knowledge questionnaire will increase by 35% compared to the baseline knowledge in the pretest.

Outcome 1b: After educational presentation, provider will be able to identify various methods of utilizing non-narcotic adjuncts for the obese population.

Aim 2: To evaluate providers' perceived barriers to utilizing opioid free anesthetic techniques in the clinical setting.

Outcome 2a: Following the educational presentation, providers will identify the most common barrier they foresee to utilizing opioid free anesthetic techniques in the clinical setting.

Collection of data was completed using Microsoft Forms. Microsoft Forms allowed participants to complete the demographic questionnaire as well as the pre/post-tests survey

anonymously. No personal information will be identified since Microsoft Forms assigns a random number to each response to ensure anonymity and confidentiality of participants.

Measures/Tools/Instruments

Instruments/tools that were used to collect data provided general and demographic information. The general and demographic questionnaire has been determined to have face validity by Dr. Greg Louck, CRNA (University of Saint Francis CRNA program director) and Audie Sisk, CRNA. To ensure confidentiality of data in clinical practice, all completed responses to questionnaires, pre/post-tests, and final surveys were collected in Microsoft Forms and then sent to the team leader's University of Saint Francis email. To ensure anonymity, responses occurred via Microsoft Forms, which randomly assigns numbers to each response. The demographic questionnaire did not include gender or age to ensure anonymity due to a small sample size. To ensure secure storage, participant responses to the questionnaire, pre/post-tests, and final surveys were collected in aggregate and stored in the team leader's password protected MAC computer until September 2022, at which point all data will be erased through software designed to permanently remove data securely.

Evaluation Plan

The responses were then sent via Excel spreadsheet to the team leader's University of Saint Francis email. The spreadsheets were then transferred to the statistical software SPSS for analysis of data and stored on the team leader's password protected computer. The team leader was the only person who had access to this information, due to the information being stored on the team leader's personal computer. Upon completion of the DNP Scholarly project, all data will be erased through software designed to permanently remove data securely. Two weeks after

implementation, a final survey was sent via Microsoft Forms to the providers, to see if OFA was attempted or utilized in obese patients.

Methods for Collection of Data

Microsoft Forms was a data source used for the implementation and evaluation of the DNP project. Microsoft Forms allowed participants to voluntarily sign the informed consent and complete all parts of the project in an anonymous and confidential fashion. Responses to the pre-test, post-test, final survey, and questionnaire were collected from Microsoft Forms into an Excel spreadsheet. The Excel spreadsheet was then transferred into SPSS to allow for data evaluation. All data collected was stored on the team leader's password-protected computer.

Data Analysis Plan

Being that an increase in the knowledge of OFA in the obese population was an aim in this DNP quality improvement project, an assessment of knowledge gained following the educational presentation was performed. The assessment occurred using the pre and post-test results as a comparative analysis. Percent of change analysis occurred using the knowledge-based questions. Another aim of the project was to evaluate providers' perceived barriers to using OFA techniques in practice. These factors were evaluated through the post-educational questionnaire, where CRNAs were asked to pick via multiple-choice question which barrier they most foresee to utilizing the technique in practice. A space was also provided for the participants to fill in what they perceive as additional barriers to utilizing OFA in the clinical setting. The results of a multiple-choice question and the most listed fill-in-the-blank answers were analyzed and written in the DNP project manuscript.

The project team leader was solely responsible for logging and entering data into SPSS for result analysis, which occurred in Spring 2022. It is important to note that all data was

collected in aggregate and participant identity was protected with a unique numerical identification code to ensure anonymity and confidentiality.

Dissemination Plan

Disseminating project findings to key stakeholders following data analysis and evaluation was vital. The findings of this DNP Scholarly project were formally disseminated to the Nurse Anesthesia Program (NAP) faculty and nursing doctoral faculty along with fellow SRNAs from the University of Saint Francis in Summer 2022. Dissemination of findings occurred using a PowerPoint presentation outlining the projects' aims and outcomes, findings, and the project team leader's conclusions. During the dissemination of the project findings, the project manager led a discussion of the future of the project topic, including how providers can increase the use of OFA within the obese population in their clinical setting. Following final dissemination of findings to the DNP and NAP faculty, a copy of the presentation was sent to key stakeholders within PhyMed Healthcare Group.

Implementation Process Analysis

The implementation process analysis occurred after the implementation intervention. A reflection of the process analysis was completed by the team leader and changes the team leader would make for future projects will be documented in this section.

Chapter 4: Results and Outcomes Analysis

Data Collection Techniques

Following approval from the Institutional Review Board by the University of Saint Francis, the team leader coordinated a timeline with Danette Plautz for implementation of the DNP project. The project implementation date was set for February 17, 2022. Due to inclement weather on February 17, 2022, an alternate date of February 24, 2022 was set. Implementation of DNP project occurred at a restaurant in Winona Lake, IN on February 24, 2022, at 5:00 PM. As stated in chapter three the data to be collected was: a demographic survey, pretest questionnaire, posttest questionnaire, and a final survey. The data collection phase occurred on the selected implementation date. Informed consent was obtained via paper signature and kept in a folder inside of a locked box, the consents were only accessible by the team leader. The demographic questionnaire (Appendix C) focused on collecting work-related data of participants. The pretest/posttest questionnaire (Appendix D and E) asked questions regarding OFA drugs, appropriate dosages of OFA drugs, and physiologic concerns regarding the obese population. A percent change analysis was conducted to evaluate the effectiveness of the educational presentation regarding OFA in the obese population. Additionally, the final survey asked two Likert style questions to assess the providers' knowledge gained and the participants' confidence in implementing OFA in their practice following the educational presentation.

All data was collected anonymously via paper handout and stored in a separate folder, which was numerically marked to keep responses of pre/post/final questionnaires together. The informed consent handouts were stored in a locked box, separately to ensure anonymity, which was accessible only by the team leader. Data was then imported by the team leader into SPSS

statistical software to allow for data analysis. The SPSS statistical software was utilized via the team leader's password protected MAC computer.

Measures/Indicators

The initial invitation to participate in the educational presentation regarding OFA drugs was sent to nine providers. Due to an increase in case production at the facility, which increased the demand for providers as well as the event being rescheduled due to inclement weather, only four providers were able to attend. All four participants completed all components required for inclusion criteria to be met. At the conclusion of the project the total number of participants who were included in the pre/post/final survey was four (n=4).

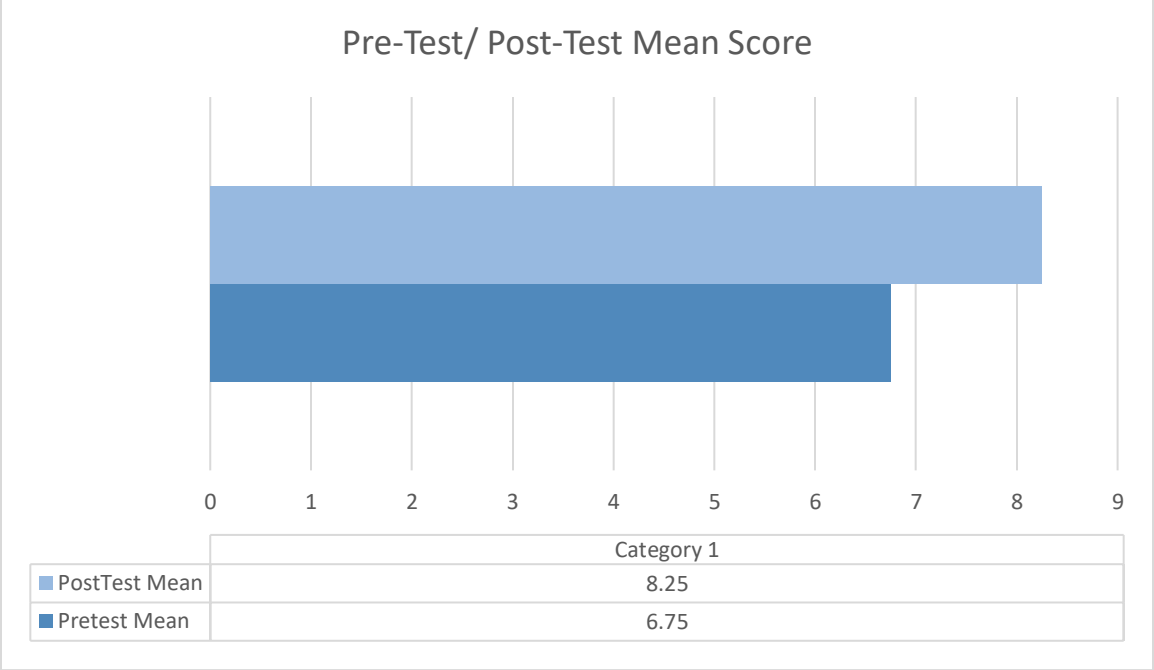
Of the four participants, all four self-identified as providers working with Danette Plautz. Of the providers, one had 21years or more experience (25%), two had 1-5 years of experience (50%), and one had less than a year of experience (25%). All but one participant indicated that they had prior experience utilizing OFA techniques. All participants marked "agree" or "strongly agree" (100%) that their confidence level utilizing OFA techniques improved because of the OFA presentation. Due to small sample size, comparison analysis on age and gender were excluded from results since reporting these results could jeopardize anonymity of participants.

Table 4.1 below reflects the hypothesis and null hypothesis of this DNP Project.

Table 4.1 Hypothesis and Null Hypothesis	
Hypothesis	Following the educational PowerPoint presentation, there was a statistically significant difference in scores between the pre and post-tests.
Null Hypothesis	Following the educational PowerPoint presentation, there was no statistically significant difference in pre and post-test results.

A G*Power Analysis was run to determine the sample size needed to calculate an accurate t-test with the comparison group. The G*Power analysis yielded and n of 45 would be required, this sample size was not met. To analyze the difference between the mean scores of the pre-test and post-test, a percent change analysis was conducted. The mean scores were generated using the IBM Statistics SPSS Version 26 Software. The mean score of the pre-test (n=4) was 6.25 and the mean score of the post-test (n=4) was 8.75. (Of note, the maximum score available for each test was nine.) This resulted in a mean score difference of 2.5 and a percent increase in post-test scores of 40% compared to pre-test scores. The pre/post-test statistical analysis yielded from SPSS can be seen in Appendix J.

Figure 4.1 below represents the pre/post-test mean scores.



The final survey assessed participants self-reporting the likelihood of utilizing learned OFA techniques in their clinical practice. Using a Likert scale, the participants were asked if they felt confident employing OFA techniques in clinical practice (question 1 in Figure 4.2). All participants (100%) selected "Agree," which means the participants felt confident they would be able to utilize learned techniques in practice. The survey also asked participants to identify potential barriers to utilization of OFA in clinical practice (question 2 in Figure 4.2). The most common barriers identified, in this order were lack of familiarity with OFA drugs, pharmacy not on board, turnover pressure, and thoughts that opioids provide superior pain control. The survey asked participants if they felt confident in addressing the barriers identified in their facility (question 3 on Figure 4.2. All participants (100%) selected "yes" to this question. Lastly, there was a comment section allotted for participants to include barriers not identified by the team leader; participants did not identify other barriers.

Figure 4.2 below shows the questions pulled from pre-test and final survey.

1. Following the PowerPoint Presentation regarding Opioid Free Anesthesia, I have confidence employing the technique in clinical practice:
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

2. Please indicate what you believe is the most significant barrier to the employment of OFA techniques in clinical practice.
    a. Lack of familiarity with OFA
    b. Turnover pressure
    c. Thoughts that OFA is inferior pain coverage
    d. Patient co-morbidities not conducive to utilizing OFA
    e. Facility pharmacy not on board
    f. Surgeon not on board with anesthetic plan

3. Do you feel confident addressing the identified barrier in the question above in your clinical setting?
    a. Yes
    b. No

Data Analysis Inferences

Data analysis of knowledge-based questions on the pre-intervention survey and post-intervention survey assisted the team leader in determining the effectiveness of the educational intervention as well as whether the project achieved its intended objectives. The items listed below show the aims and outcomes from chapter one of this DNP project manuscript, with the ways the aims and outcomes were met highlighted below them in yellow.

Aim 1: To evaluate providers' baseline knowledge, knowledge gained, and perceived knowledge following the educational presentation regarding opioid free anesthesia in the obese surgical population.

Outcome 1a: Following the educational presentation, providers' mean scores on the post knowledge questionnaire will increase by 35% compared to the baseline knowledge questionnaire.

Following the educational intervention, providers' score on the post-test increased by 40% as compared to the baseline questionnaire mean score.

Outcome 1b: After the educational presentation, provider will be able to identify various methods of utilizing non-narcotic adjuncts for the obese population.

Following the educational intervention, four out of the four participants, or 100%, correctly answered the two questions (question number six and seven on Appendix D) which identified non-narcotic adjuncts and their appropriate dosages.

Aim 2: To evaluate providers' perceived barriers to utilizing opioid free anesthetic techniques in the clinical setting.

Outcome 2: Following the educational presentation, providers will identify the most common barrier they foresee to utilizing opioid free anesthetic techniques in the clinical setting. The most common barriers identified in this order were lack of familiarity with OFA drugs, pharmacy not on board, turnover pressure, and thoughts that opioids provide superior pain control.

After importing data using SPSS Statistical Software, the software found that there was a statistically significant difference in mean scores between the pre-intervention test and post-intervention test and the post-test mean score increased over 35% from the pre-test mean score. Therefore, one could conclude that the educational PowerPoint was effective in educating providers on the use of opioid free anesthesia in the obese surgical patient.

Regarding aim 2, the fill-in the blank question (question 13, Appendix D) allowed respondents to self-report the foreseen barriers to utilizing OFA techniques in their clinical practice. Providers identified lack of familiarity with OFA drugs, pharmacy not on board, turnover pressure, and thoughts that opioids provide superior pain control as being the most common barriers to utilizing OFA techniques in practice.

Gaps

The group chosen for implementation was already a small sample size, and with a 44.4% response rate that sample size became smaller. A potential limitation of this DNP Scholarly project was that anesthesia providers may not have been adequately represented based on sample size. The team leader also completed training with this anesthesia group and responses could have been biased based solely on relationships formed while completing training.

Unanticipated Consequences

Unanticipated consequences of the DNP project included loss of clinical site, scheduling conflicts, inclement weather, a drastic increase in case load at the facility resulting in a need for more providers to be at the hospital. Initially the implementation site selected was a facility in Marion, Indiana. The facility in Marion, Indiana chose a different anesthesia company to provide services for their hospital. Thus, the team leader lost the site coordinator at this facility. Due to a lack of a site coordinator a new facility had to be chosen for implementation. At the new site selected for implementation, the team leader was scheduled for clinical assignment with the PhyMed group during the implementation phase. However, due to provider to student ratio, the clinical assignment was changed. Providers' lack of access to the team leader to discuss OFA during cases potentially yielded in low participation from the providers.

Expenditures

Expenditures for this DNP project were the voluntary contribution of key stakeholders' time. Dr. Greg Louck and Danette Plautz assisted with the planning and implementation phases of the project through donating their time to communicate with the team leader via in person, emails, and phone calls. Throughout the years of planning and during the implementation and evaluation phases of the project, Dr. Carla Mueller engaged in frequent communication with the team leader regarding roadblocks encountered during the project. Dr. Carla Mueller offered appreciated guidance regarding overcoming roadblocks The dinner provided to the participants was covered by a generous donation from the University of Saint Francis Nurse Anesthesia Program. The only expenditure acquired by the team leader was the purchasing of the statistical analysis software (SPSS) for $76.

Chapter 5: Leadership and Management

Organizational Culture

Organizational culture must be discussed to align the goals of the Doctor of Nursing Practice implementation site with the interest of the team leader. Without a discussion of culture and a willingness to strive towards innovation, there is chaos and lack of clarity between the two parties. The goal is to find a common ground between the organization and the team leader to satisfy the objectives for key stakeholders. A deep dive into organization culture starts with identifying the main purpose of the organization. According to PhyMed's website, the listed values consist of quality, patient service excellence, effective communication, resource management, teamwork, and community drive ("About Us", n.d.). After having spent sixteen weeks with these providers, the author knows first-hand the passion and charisma PhyMed provides to their patients. PhyMed employees serve the community with the utmost respect and genuinely enjoy providing a service. Lindell (2015) states that, the idea that innovation should start with those at the bedside. At PhyMed, the anesthesia team was open to new ideas and suggestions on how to improve communication as well as policy improvement strategies to streamline care. Daily huddles were conducted to inform staff regarding updates as well as to receive feedback.

Ingersoll et al. (2000) explores "cultural readiness" to change, stating that an organization must decipher their readiness to determine their willingness to adapt to new challenges. Readiness may also be determined by prior success and/or failure to change within an organization's structure (Ingersoll et al., 2000). Change is difficult as well as uncomfortable and though longevity with an organization is desirable, employees must remain open to new trends in line with evidence-based care. Ingersoll et al. (2000) offers a definition of organizational culture

which includes the idea that members of the organization think, behave, and believe in similar ways. Assessing these qualities within an organization is vital and will affect the implementation of a Doctor of Nursing Practice project.

A thorough organizational assessment was completed utilizing the Burke-Litwin change model. This change model is elaborate and focuses on 12 key elements that organizations must examine when considering change. The 12 elements are divided into categories: external, strategic, operating, and individual factors. Providers at the site wanted an evidence-based guideline to follow for this patient population. The external factors were discussed in the demographics section of the manuscript in chapter 2. The strategic factors to examine include mission statement, leadership qualities, and the culture within the organization ("The Burke-Litwin Organizational Change Framework: A Simple Summary," 2021). Operating factors entail the structure, management practices, and policy or procedures already in place at the facility. There is currently no policy in place for this patient population, so evidence-based guidelines were made available. Management practices intertwine with leadership style and PhyMed has a firm foundation and adequate support in place. Individual factors include skills, the climate within the operating room, motivation to change, and the individual beliefs/bias identified. PhyMed has skilled providers, and each brings a vast degree of knowledge and experience to the group. The presentation regarding OFA simply added to their arsenal of tools. The climate in the operating room was open to new ideas and helpful in terms of carrying out detailed anesthetic plans. Open communication with the team regarding expectations, was necessary. In regard to motivation to change and bias or beliefs, since the providers were unfamiliar with OFA techniques, they expressed buy-in early. Lastly, output must be considered. This would be determined by looking at the individual providers' and organization's performance.

Change Strategy

To accurately decipher how change will take place within an organization, there must be a framework in place to guide the success of implementation. Many of the developed theories of change depend upon Kurt Lewin's classic theory of change which views change as a dynamic balance of forces which work in opposite directions within an organization (White et al., 2021). There are two opposing forces; one which drives an organization or individual towards change and one which pulls the organization or individual away from change (White et al., 2021). The change strategy used for implementation was Havelock's theory of planned change, which is derived from Lewin's initial theory. Havelock's theory has six steps. Those steps can be seen in the acronym CREATER: C represents care or the attention to the need for change, R represents relate or to build a relationship with the individuals in which change is indicated, E represents examine or diagnose why change is indicated, A represents acquire which pertains to the research or evidence-based resources to support change, T represents try or trial implementation, the second E represents extend or the dissemination of the results, and lastly R represents renew or sustain change. As noted, evidence-based research shows that opioid free/sparing anesthesia is beneficial in the obese surgical candidate, so a guideline which promotes this practice is needed for this group. Current practice does not include OFA in this patient population so there is a need for change. The team leader was able to establish rapport with the providers at the implementation site. Examining why change is needed includes a recognition of evidence-based care and the awareness that the implementation currently deviates from that recommendation. Acquiring the information to support change has occurred through an exhaustive literature review as well as a review of policies at other well-known bariatric centers. Within the post-test,

sustainability of practice or likelihood of a change in practice was assessed. The assessment of change theory was completed by comparison of pre-test and post-test results.

Leadership Style

Oftentimes conflict occurs when leadership styles are not compatible. A team leader must assess and adapt their style when reviewing the leadership components already in place within an organization. The team leader should be self-aware and have an adequate understanding of expectations and goals of an organization to adjust guidelines to fit appropriately within the structure of the group. The Institute of Medicine (IOM) challenges healthcare providers to keep the patients at the center and in control of their own care (White et al., 2021). In anesthesia it is difficult to allow patients to be in control of their care based solely on circumstance. However, the provider is responsible for educating the patient on the best possible options for them regarding their care and helping them to make the appropriate decision regarding the anesthetic plan.

The leadership style with PhyMed was consistent with transformational leadership. The chief CRNA was charismatic and encourages growth and consistency within the organization. She encourages other providers to become the best version of themselves both as healthcare professionals and human beings. She was considerate and kind, and people enjoy working with her regardless of title. She was driven to seek out opportunities for change and implement evidence-based care for the community. She was easy to work with and a pleasure to be around. The leadership style of the team leader for the DNP project was authentic leadership, which was consistent with providing transparency to their followers, utilizing their moral compass, and internalizing information in a just and fair way (White et al., 2021). Authentic and transformational leadership styles complement one another and work well together. The team

leader and organizational leader had open communication and discussed potential pitfalls and areas of concern, which was vital to the implementation of the project. Effective leadership relies on the ability to recognize innovation when applicable and the need for change at the same time.

Interprofessional Collaboration

Collaboration occurred between the team leader and both the University of Saint Francis and PhyMed Healthcare Group. Team members included the project advisor, Dr. Greg Louck, CRNA; the team leader's academic advisor, Dr. Keith Cotrell, CRNA; and the group coordinator Danette Plautz, CRNA. The organization could potentially have benefitted from the DNP project; however organizational involvement was limited to the providers on staff. The providers were then responsible for integrating the information obtained, from the educational presentation, within their own anesthetic plans.

Conflict Management

Conflict management was handled between the team leader and site facilitator and/or advisement team. Opposition included scheduling the presentation on an evening accessible to most staff, inclement weather, and an increase in surgical cases. The conflicts were handled by Danette Plautz who carefully coordinated an evening that worked for their schedule. Buy-in from the pharmacy post presentation was a conflict; however, its resolution is not pertinent to the completion of the DNP project. The author offered evidence-based suggestions and guidelines as well as cost analysis for the pharmacy if it will be helpful for the providers on site. Vigilance in looking at the big picture will be key for providers to successful change their practice at this site.

SWOT Analysis

Strengths:	Opportunities:
Group commitment to evidence-based care Experienced providers with strong knowledge base, open and receptive to learning new techniques Buy-in established based on obese patient population Strong leadership with-in anesthesia group Healthy operating room environment with staff (open to new techniques) Communication between site facilitator and DNP team leader was open	New implementation site Learning opportunity (small group of anesthesia providers, but could spread among partners)
Weaknesses:	**Threats:**
Lack of policy to treat the obese population Difficult collaboration efforts between anesthesia and pharmacy Anesthesia providers unfamiliar with OFA technique and therefore resistant to change	Buy in from general surgeon Buy in from pharmacy Bias technique from anesthesia providers

Chapter 6: Discussion

Impact of Project

The objective of this DNP Scholarly project was to increase knowledge and confidence in providers' utilization of OFA in the obese population by providing an educational presentation on the benefits of OFA as well as commonly used OFA techniques. A thorough evaluation of the collected data (chapter 4) shows how each aim was met by the completion of the associated outcomes. The objective was completed by taking previous knowledge generated by researchers and translating that knowledge into the clinical setting. The OFA presentation and discussion of commonly used techniques increased baseline knowledge as well as increased providers' confidence in utilizing these techniques.

Decisions and Recommendations

During planning, implementation, and evaluation of data the team leader observed an area where information is lacking. There is minimal information regarding the barriers providers face to implementing evidence-based practice into the clinical setting. Participants were asked to identify barriers they felt would be encountered at their facility within this DNP Scholarly project. However, more research is warranted to discover why providers perceive these as barriers. While addressing the most common barriers to utilizing the technique in clinical practice is beyond the scope of this project, it could be a potential future DNP Scholarly project or administrative/anesthesia provider project at a particular facility to better facilitate the use of OFA with the obese population in the clinical setting.

Limitations of the Project

While the project met all aims and objectives made during the planning stage the Scholarly Project had its limitations. A significant limitation was the low participation rate of

providers within the group. Due to the low response rate, adequate representation of providers may not be represented in the final data analysis.

Another limitation to this DNP Scholarly project the assessment of providers' utilization of OFA techniques in the clinical setting. The final survey asked providers if they would utilize the techniques and had a response rate of 100%. This response, self-reported, indicated the providers would utilize the OFA techniques discussed in the educational presentation. However, the team leader was unable to assess whether the providers implemented these techniques in practice. This limitation continues in that the team leader was unable to assess whether the provider felt the OFA techniques were effective.

Application to Other Settings

The opioid epidemic continues to impact patients world-wide. This DNP Scholarly project could be implemented in any facility that treats the obese patient population. Continuing to educate providers on evidence-based, best practice techniques for various patient populations should be at the forefront of each providers' continuing education requirements.

Strategies for Maintaining and Sustaining

This DNP Scholarly project warrants further discussion in other healthcare facilities. As obesity continues to be a health concern and as the opioid epidemic continues to unfold, new anesthetic plans will be needed to treat these patient populations. Further discussion and collaborations with key stakeholders as well as experts in these fields should lead providers to developing and implementing techniques that allow for the greatest possible outcomes. The team leader is confident that by being a life-long learner anesthesia providers can flatten the curve on the opioid epidemic by implementing new strategies for these patients.

Lessons Learned

Strengths and limitations were apparent in the various phases of this DNP Scholarly project. Through a discussion of these strengths and limitations, it is the team leaders' goal that this project will assist other doctoral students in the future. First, the team leader would schedule implementation at a time that is more convenient for providers at the selected implementation site. By implementing off site, the team leader had no access to providers who were unable to attend the presentation. As the team leader, it is crucial you have access to providers. Implementation on site could potentially lend to higher response rates. The team leader did feel it was vital to implement in person, since answering questions in real time allowed further conversation regarding OFA techniques. However, if the team leader would have been available at the facility, participation levels might have increased. Allowing the team leader to show providers how to implement techniques could have increased confidence with the techniques presented during the educational presentation.

Each project has its strengths and limitations; the knowledge gained from this DNP Scholarly project will continue to shape the career of the team leader. Understanding the planning, implementation, and evaluation phases of the DNP Scholarly project will assist the team leader in their future growth as an anesthesia practitioner.

DNP Essentials

The DNP essential objectives are the underpinnings of the Doctoral degree. A brief discussion of these objectives and how this DNP Scholarly project met the objectives is necessary for the completion of this project. DNP Essential I: Scientific underpinnings for practice was met according to the completion of an exhaustive literature review, the construction and delivery of the PICOT question (defined in chapter 1 of this manuscript), and the

development of new practice approaches which are evidence-based (Appendix F). DNP Essential II: Organizational and system leadership for quality improvement and systems thinking; Communication with the site coordinator revealed lack of knowledge regarding Opioid Free Adjuncts. A quality improvement plan was set in to motion, after an organizational assessment was completed, to provide a thorough educational presentation regarding this topic within the obese patient population. A SWOT analysis was completed and is presented in Chapter 5. DNP Essential III: Clinical scholarship and analytical methods for evidence-based practice; allowed the team leader to complete implementation of the DNP Scholarly project, data collection, data analysis (utilizing SPSS), and the final dissemination of the results. DNP Essential IV: Information systems/technology and patient care technology for improvement and transformation of health care; was met by providing the anesthesia providers with access to an educational presentation developed specifically for their demographics. DNP Essential V: Health care policy for advocacy in health care: on February 15, 2022, the team leader attended legislation session at the capitol building in Indianapolis, IN. The team leader spoke with the Indiana State Senators as well as Representatives regarding the role Certified Registered Nurse Anesthetist share in Indiana. Several peer review sessions were completed in coordination with DNP Essential V: as well as providing an evidence-based tool for anesthesia providers regarding a special health population (the obese patient). Multiple meetings held with mentors: Dr. Greg Louck, Dr. Carla Mueller, Dr. Megan Winegarden, and Danette Plautz, CRNA, allowed for successful completion of DNP Essential VI: Interprofessional collaboration for improving patient and population health outcomes. DNP Essential VII: Clinical prevention and population health for improving the Nation's health: epidemiological data, regarding the opioid crisis, was investigated to provide a background for the problem statement. Finally, DNP Essential VIII:

Advanced nursing practice: was met by providing follow-up after intervention regarding implementation of techniques with providers. The DNP Essentials provided a structured guideline for the team leader to complete DNP Scholarly project: Opioid Free Anesthesia: The Obese Population.

Chapter 7: Conclusion

Potential Project Impact on Health Outcomes Beyond Implementation Site

The World Health Organization (World Health Organization, n.d.) reports that the opioid crisis, both in the United States and abroad, will continue to worsen because of COVID-19. Anesthesia providers will be relied upon to manage surgical pain. While the information contained in this project was intended for a group of rural health anesthesia providers, it can easily be implemented in other settings. By providing best practice information regarding the obese population to anesthesia providers not only ensures the safest anesthetic to this patient population; it also allows providers to reduce overall opioid consumption, and therefore, flatten the curve on the opioid epidemic.

Health Policy Implications of Project

As obesity continues to be a problem in the United States as well as the opioid crisis worsening, anesthesia providers must implement change. It is unknown who once said, "the definition of insanity is doing the same thing over again and expecting a different result". The quote certainly applies to this situation. Evidence-based practice exists, implementing that practice into the clinical setting is the outcome. Utilizing the various techniques discussed as well as doing a thorough investigation of the culture to change within an organization is the best course of action. Adopting evidence-based practice into a specialized anesthetic plan for each patient is truly the objective in providing the best possible outcomes.

Proposed Future Direction for Practice

A thorough investigation of best practice evidence as well as emerging trends in health care literacy is just one responsibility of anesthesia providers. Maintaining appropriate anesthetic plans that yield the highest possible outcome for each patient should be the goal of each provider. The information presented in this DNP Scholarly project allows each provider to

arrange an anesthetic plan that meets the needs of the obese patient. By implementing collaborative efforts with the patient, surgical team, surgeon, and pharmacy, the anesthesia provider will play a pivotal role in the postoperative success for their patient.

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APPENDICES

APPENDIX A

CITI TRAINING CERTIFICATES

CITI PROGRAM

Completion Date 01-Feb-2021
Expiration Date 01-Feb-2024
Record ID 40699275

This is to certify that:

Maggie Jones

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

GCP – Social and Behavioral Research Best Practices for Clinical Research
(Curriculum Group)
GCP – Social and Behavioral Research Best Practices for Clinical Research
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

University of Saint Francis

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wb3f0b9cb-984a-42b6-bbf6-7993e5ee6c74-40699275

CITI PROGRAM

Completion Date 01-Feb-2021
Expiration Date N/A
Record ID 40699273

This is to certify that:

Maggie Jones

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Information Privacy Security (IPS)
(Curriculum Group)
Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

University of Saint Francis

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w2a83f128-ea64-43b1-967f-7e4b32efa4b2-40699273

CITI PROGRAM

Completion Date 02-Feb-2021
Expiration Date 02-Feb-2024
Record ID 40699272

This is to certify that:

Maggie Jones

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social & Behavioral Research - Basic/Refresher
(Curriculum Group)
Social & Behavioral Research
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

University of Saint Francis

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wed7810eb-7d3e-45ee-84df-4611162b4f90-40699272

CITI PROGRAM

Completion Date 03-Feb-2021
Expiration Date 03-Feb-2024
Record ID 40699274

This is to certify that:

Maggie Jones

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social and Behavioral Responsible Conduct of Research
(Curriculum Group)
Social and Behavioral Responsible Conduct of Research
(Course Learner Group)
1 - RCR
(Stage)

Under requirements set by:

University of Saint Francis

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w45106097-56e2-4900-81b9-774ad7b7f541-40699274

CITI PROGRAM

Completion Date 01-Feb-2021
Expiration Date 01-Feb-2024
Record ID 40699276

This is to certify that:

Maggie Jones

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Public Health Research
(Curriculum Group)
Public Health Research
(Course Learner Group)
1 - Basic
(Stage)

Under requirements set by:

University of Saint Francis

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wf363165b-70ed-42be-830a-c36d78619a84-40699276

APPENDIX B

October 7, 2021

To the University of Saint Francis Institutional Review Board:

This letter is being written in support of University of Saint Francis NAP/DNP Maggie Jones; Doctor of Nursing Practice Project Scholarly Project entitled Project Opioid Free Anesthesia in the Obese Population. PhyMed Healthcare Group understands that the aims of the DNP Scholarly Project are to evaluate anesthesia providers' baseline knowledge, knowledge gained, and perceived knowledge following the educational presentation regarding opioid free anesthesia in the obese population and to evaluate anesthesia providers' perceived barriers to utilizing opioid free anesthetic techniques in the clinical setting.

PhyMed Healthcare Group is supportive of the aims of the project. PhyMed Healthcare Group's role in the DNP Scholarly Project will be access to anesthesia providers for one evening to allow for evidence-based educational presentation and distribution of surveys to staff. PhyMed Healthcare Group does require Institutional IRB approval for the implementation of this project.

PhyMed Healthcare Group and our leadership are committed to the growth of evidence-based practice as well as to Maggie Jones' DNP Scholarly Project Opioid Free Anesthesia in the Obese Population.

Sincerely,

Lori Pagan

Lori J. Pagan
Vice President of Operations
Midwest Region
PhyMed Healthcare Group

10315 Dawsons Creek Blvd. l Suite A/B l Fort Wayne IN 46825
Ph 260.436.7875 l fax 260.442.3597 l www.phymed.com

APPENDIX C

Demographics Questionnaire

Instructions: Please read each question and check the answer that best represents your response.

1. How many years have you practiced anesthesia?

a. Less than one year

b. 1-5 years

c. 6-10 years

d. 11-20 years

e. 21 years or more

2. What range does your age fall under?

a. 20-30 years old

b. 31-45 years old

c. 46-60 years old

d. 61 years old or greater

3. What is your current employment status?

a. Full-time

b. Part-time

c. Per diem

4. What kind of practice do you currently work?

a. ACT Model

b. Independent Practice

c. Locum Tenens

d. Other

6. How many times have you utilized opioid free anesthetic techniques during the management of obese surgical patients?

a. 0 times

b. 1-15 times

c. 16-50 times

d. 51 times or more

APPENDIX D

Pre-test and Post-educational Survey

Instructions: Please read each question and circle the answer or fill in the blank that best represents your response.

1. Which of the following medications would not be included in an opioid free anesthetic plan?
    a. Ketamine
    b. Dexmedetomidine
    c. Magnesium
    d. Fentanyl

2. True or false: The definition of opioid free anesthesia is simply practicing anesthesia intraoperatively without the administration of opioid medications.
    a. True
    b. False

3. Of the following ventilatory parameters which one will be reduced first by the administration of Opioids?
    a. Tidal Volume
    b. Minute Ventilation
    c. Respiratory Rate
    d. Opioids do not cause a reduction in ventilatory parameters.

4. True or False. Metabolic syndrome, ventricular hypertrophy, atrial fibrillation, cardiac failure, obesity-related breathing disorders, decrease functional residual capacity, obstructive sleep apnea (OSA), obesity hypoventilation syndrome (OHS), pulmonary/systemic hypertension, and type 2 diabetes mellitus are all co-morbidities linked with obesity.
    a. True
    b. False

5. True or False: Best practice literature states that for OFA to be effective multi-model anesthesia (2 or more modalities) must be implemented.
    a. True
    b. False

6. An appropriate dosage of Dexmedetomidine infusion for the maintenance dosage in utilization of OFA is?
    a. 1mcg/kg/hr
    b. 0.4mcg/kg/hr
    c. 1mg/kg/hr
    d. 4mcg/kg/hr

7. An appropriate dosage of the Lidocaine infusion for the maintenance dosage in utilization of OFA is?
    a. 0.03mg/kg/min
    b. 1-2mg/kg/min
    c. 10mg/hr
    d. 300mg

8. The most common side effects seen with the administration of Dexmedetomidine are:
    a. Excessive Saliva and Irritability
    b. Tachycardia and Miosis
    c. Bradycardia and Hypotension
    d. All of the above

9. According to the CDC, what percentage of drug related overdose deaths occur due to opioids?
    a. 50%
    b. 30%
    c. 90%
    d. 70%

General Questions:

10. Following the PowerPoint Presentation regarding Opioid Free Anesthesia, I have confidence employing the technique in clinical practice:
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

11. Following the PowerPoint Presentation, I will use OFA techniques in patients at high risk for postoperative ventilatory depression.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

12. The PowerPoint Presentation enhanced my knowledge about OFA.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

13. Please indicate what you believe is the most significant barrier to the employment of OFA techniques in clinical practice.
    a. Lack of familiarity with OFA
    b. Turnover pressure
    c. Thoughts that OFA is inferior pain coverage
    d. Patient co-morbidities not conducive to utilizing OFA
    e. Facility pharmacy not on board
    f. Surgeon not on board with anesthetic plan

14. Do you feel confident addressing the identified barrier in the question above in your clinical setting?
    a. Yes
    b. No

15. Please list any other barriers you can identify to utilizing OFA techniques in the clinical setting.

Additional comments:

Thank you for your time in completing this survey.

APPENDIX E

Final Survey

1. Since completing the PowerPoint Presentation regarding Opioid Free Anesthesia, I have confidence employing the technique in clinical practice:
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

2. Since the PowerPoint Presentation, I have used OFA techniques in obese patients.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

3. Since the PowerPoint Presentation, I will seek opportunity to utilize OFA with obese patients.
    f. Strongly agree
    g. Agree
    h. Neutral
    i. Disagree
    j. Strongly disagree

Additional comments:

Thank you for your time in completing this survey.

APPENDIX F

Opioid Free Anesthesia: The Obese Population

Maggie Jones, SRNA
University of Saint Francis
DNP Scholarly Project

Disclosure Statement

The presenter of this DNP Scholarly Project is not being paid or receiving any financial gain by any institution for the information being presented.

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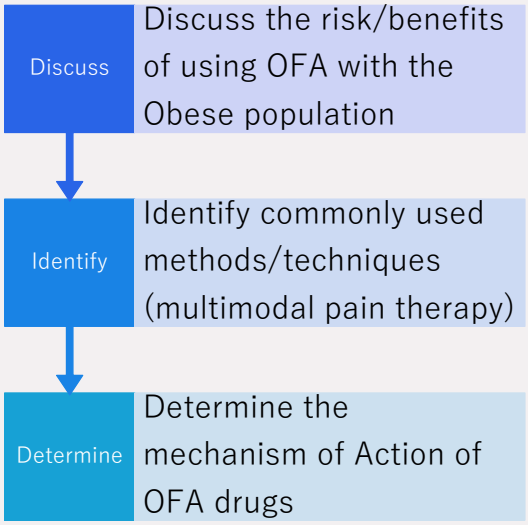
Objectives



Background

- 1990's PAIN is identified as the 5th vital sign
- Opioid overdose has become one of the leading causes of death from accidental injury in the United States (Data Overview, 2020).
- 75% of heroin abusers state that their first exposure to an opioid occurred following a prescription (Cicero et al., 2014).
- 70% of drug overdose deaths occurred due to opioids in 2019 (Data, 2020)

Why Is OFA Important?

Current practice observed with the Obese population utilizes opioids as first line therapy for pain treatment.

40% of current US population classified as Obese (Belcaid et al., 2019)

We all know someone who has been affected by the opioid epidemic.

Obese Patient Population

Body Mass Index Scale:

- 25 kg/ m^2 is considered normal
- greater than 30-40kg/ m^2 is obese
- greater than 40-50 kg/ m^2 is morbidly obese
- greater than 50kg/ m^2 is super morbidly obese

(Cullen et. al, 2012; Feld et. al, 2002).

Opioids within the Obese Population

Utilization of opioids in the obese, surgical population can have devastating effects on multiple systems including

- Respiratory
- Gastrointestinal
- Genitourinary
- Central nervous system

Benefits of OFA

- Earlier mobilization and recovery of bowel function
- Prevents adverse effects of large dose opioid administration (ORADE)
- Reduced bleeding
- Improved hemodynamic stability
- Non-delayed emergence
- Decrease postoperative opioid use
- Shown to decrease length of stay
- Improve quality of life
- Improved patient satisfaction
- Decrease total cost (Chia et. al, 2020; Guinot et. al, 2019; Koepke et. al, 2018)

Risk with OFA

- Adverse reaction to OFA drugs
- Lack of knowledge and technique with OFA
  could lead to inadequate pain control
- A true thorough understanding of the lasting effects of OFA drugs continues to be studied

Methods

Management of Peripheral Sensitization

- Local Anesthetics (Peripheral nerve blocks and Lidocaine Infusion)
- Steroids (Decadron)
- NSAIDS (Toradol and Celebrex)

Management of Central Sensitization

- Substance P inhibition (Clonidine and Dexmedetomidine)
- Glutamate antagonist (Ketamine, N_2O, Magnesium, and Gabapentanoids)

Common Techniques

- Perioperative fluid management plan is vital (Hoehn et. al, 2019; Mechanick et. al, 2019; Thorell et. al, 2016).
- Lidocaine 1.5mg/kg/hr
- Ketamine 0.1mg/kg/hr
- Magnesium 10mg/kg/hr
- Dexmedetomidine 0.3-0.5mcg/kg/hr (Mulier, 2016).

Continuous Infusion Mix

- Lidocaine 2mg/kg/hr
- Ketamine 5mcg/kg/min
- Magnesium 10mg/kg/hr
- Precedex 0.4mcg/kg/hr

- Take a 100ml Sodium Chloride bag and remove 20ml.
- Inject Lido 2% 20mL, Ketamine 60mg, Magnesium 2gm, and Precedex 80mcg into bag.
- Infuse at 0.5ml/kg/hr
- Run Infusion until start of the closure of incision (McLott, 2021)

Mechanism of Action Review

Lidocaine

- Anti-inflammatory effect by prostaglandin inhibition

Ketamine

- NMDA antagonist: Prevents glutamate from activating NMDA receptor

Magnesium

- Exogenous magnesium changes concentration gradient and prevents disassociation of Mg^{2+} ion from NMDA receptor channel, preventing depolarization of postsynaptic neuron

Dexmetetomidine

- activates a2-adrenoreceptors in the dorsal horn, decreased release of Substance P and Norepinephrine

Considerations

Is the surgeon planning on using Local Anesthetics at the site? (Max dosages)

Each patient responds differently to OFA drugs (tailor anesthetic plan)

Is there support (PACU and Inpt/Outpt) to continue OFA post-op

Does Pharmacy stock OFA drugs?

Summary

OFA is defined as practicing anesthesia without the administration of opioids intraoperatively.

Have a conversation with the patient prior to surgery (they may feel slightly different than prior surgeries).

New techniques can be awkward at first (start slow).

The more you use the techniques the more comfortable/confident you will become with them.

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APPENDIX G
INFORMED CONSENT FORM
(Opioid Free Anesthesia: The Obese Surgical Population)

Introduction and explanation of the purpose of the research.

I am Maggie Jones, Student Registered Nurse Anesthetist of the Nurse Anesthesia program at the University of Saint Francis. I am conducting a project in regard to the implementation of an evidence-based protocol presentation pertaining to opioid free anesthesia in the obese surgical patient population. I will be receiving guidance from Dr. Gregory Louck, as this project pertains to my Doctor of Nursing Practice project. I would appreciate your participation in this project, as it will assist me in making recommendations for improving anesthetic plans in the obese population.

1. The project will entail both a pre-test and post-test, including multiple choice questions as well as a Likert scale rating system.
2. The Pre-test and Post-test should take no more than fifteen minutes each to fill out.
3. The total amount of participation time required of the participants should be no more than one hour. The evidence-based presentation will last approximately thirty minutes.
4. Project duration for participation will include approximately one hour.
5. There are no experimental procedures within this study.
6. The approximate number of participants in the study will be ten anesthesia provider participants.

List any alternative procedures.
Although we could study this question by emailing a large population of providers it was felt, at this time, a smaller presentation to a targeted group would be more beneficial.

Explanation of the risks and benefits of the study.
1. Foreseeable risks or discomforts include: inconvenience of time requirements, scheduling conflict, or additional costs in travel time to the presentation.
2. Benefits to the subjects include: further education on opioid free anesthesia, a meal provided for participants, presentation of current evidence-based literature on methods of utilization of opioid free anesthesia.

Explanation of the safeguards.

1. Participants will not be identifiable; data collected has no identifying information to link a participant to his/her data, the data is anonymous. Investigator will not share participants' data with anyone except in the aggregate form, the data is confidential.
2. Security of data will be obtained, and confidentiality of the participants will be protected via examiner not collecting identifiable data. All pre and post-test will be stored in a password protected computer which will only be accessible to the team leader.
3. Published data will be in aggregate form with no identifiable information released.

4. Deception is not necessary for this project.

Freedom to Withdraw.
1. Participation is completely voluntary and participants may withdraw from the project at any time and for any reason without penalty.
2. Participation or the decision not to participate will not affect treatment or involve penalty or loss of benefits to which the participant is otherwise entitled.
3. Information obtained up until the point of participant withdrawal will be shredded and not included in the study.
4. Circumstances under which participant's participation might be terminated without regard to the participant's consent would include: known or stated bias to the obese surgical population.

Offer to Answer Inquiries.
Once the project is completed, we would be glad to give the results to you. In the meantime, if you have any questions, please contact me at: Maggie Jones: Mobile Contact: 260-399-7700 ext. 8556 (USF Nurse Anesthesia Program) or email: jonesm2@cougars.sf.edu.

If you have any complaints about your treatment as a participant in this project, please call or write: IRB Chairperson University of Saint Francis 2701 Spring Street Fort Wayne, Indiana 46808 (260) 399-7700 Administration email: IRB@sf.edu

I have received an explanation of this project and agree to participate. I understand that my participation in this project is strictly voluntary.

Name _____ Date _____

This research project has been approved by the University of Saint Francis' Institutional Review Board for the Protection of Human Subjects for a one-year period.

APPENDIX H

University of Saint Francis
Institutional Review Board
Human Subjects Review Committee/ACUC/IBC
Institutional Review Board Approval Form

Protocol Number: 16336505449
Reviewed by (underline one): HSRC ACUC IBC
Date Reviewed: Monday, November 1, 2021
Principal Investigator: Maggie Jones
Faculty Advisor: Greg Louck
Protocol Title: Opioid Free Anesthesia: The Obese Population
Study Site(s): University of Saint Francis, Main Campus

Type of Proposal:
☐Original research
☐ Replication or extension of previous research
☒Quality Improvement/Evidence-Based Practice Project

Items submitted for review:
☒CITI Certificate
☒Initial protocol
☒Abstract
☒Informed Consent Form (if applicable)
☒Approval letter from outside institution
☐Other – explain: Email request was made for waiver

Type of Review:
☒Full Review
☐Expedited Review
☐Exempt Review

Approval:
☒Approval granted on Monday, November 1, 2021 for a period of one year.
☐Conditional approval* granted on _____for a period of one year.
☐Not approved*
☐IRB approval is not required
☐Other

*Comments:

The committee performing this review is duly constituted and operates in accordance and compliance with local and federal regulations and guidelines.

Michael P. Bechill, IRB Chair	Michael P. Bechill	2021-11-01
Printed Name (Chair or designee)	Signature	Date

APPENDIX I

USF DNP Faculty Letter of Approval

Policy 4.15.1
Created June 2019

DNP Scholarly Project Proposal Initial Approval

TO:	Caitlin Krouse, DNP, FNP-BC, RN Assistant Professor and Graduate Nursing Program Director
FROM:	Maggie Jones, BSN, RN, DNP-NAP Student
RE:	DNP Project Proposal Review Council Endorsement
DATE:	November 12, 2021

DNP Scholarly Project Title: Opioid Free Anesthesia: The Obese Population

DNP Scholarly Project Review Council:

DNP Project Advisor Signature: _____ DNAP CCNA
Dr. Gregory Louck

DNP Project Proposal Review Council Member Signature: Susan Lown, DNP, RN, CNE
Dr. Susan Lown

DNP Project Proposal Review Council Member Signature: _____ DNP, CRNA
Dr. Michael K. Cotrell

Date of initial approval to implement: November 12, 2021

1 - Student File
3 - Attached to Proposal

6-2019. Rev. 11-2021

APPENDIX J

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRETESTSCORE	6.2500	4	1.70783	.85391
	POSTTESTSCORE	8.7500	4	.50000	.25000

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PRETESTSCORE & POSTTESTSCORE	4	.878	.122

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PRETESTSCORE - POSTTESTSCORE	-2.50000	1.29099	.64550	-4.55426	-.44574	-3.873	3	.030