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## **Opioid-Crisis Intervention: A Pilot To Moderate Patient's Use of Post-Operative Opioid Medications Using a Video-Based Perioperative Education Tool**

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Opioid-crisis intervention: A pilot to moderate patient's use of post-operative opioid medications  
using a video-based perioperative education tool

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By

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## **Executive Summary**

### **Problem Description**

The opioid epidemic has been ravishing communities in the United States for nearly two decades, resulting in opioid misuse, dependence, and overdose-related deaths. Healthcare providers have inadvertently fueled the epidemic by overprescribing opioid medications contributing to 40% of the opioid overdose-related deaths. One in every 48 patients who receives an opioid medication for the first time will become a chronic user of these medications. Furthermore, 6% of all surgical patients will continue chronic use of opioid medications 90 days after their surgeries regardless of absence of pain. With over 50 million surgical cases performed each year in the United States, the number of surgical patients adds another 2 million potential chronic users of opioid medications. Educating surgical patients about pain management choices better prepares them for shared decision making.

### **Setting**

The setting of this project is a major trauma medical center in the Pacific Northwest. The medical center's perioperative clinicians continue to largely treat pain with opioid medications, especially in the post anesthesia care unit (PACU).

### **Rationale**

Bandura's self-efficacy theory provides the rationale for using patient-education as a tool in this project. The strength of people's convictions in their own effectiveness will determine the level of coping with a given situation. Recognizing that pain is a temporary part of surgery that will subside, enables surgical patients to become self-sufficient in diverting their thoughts from sensing pain while focusing on other activities. This consequently helps them cope better with surgical pain. This leads to reduction in opioid consumption after surgery and improved outcomes.

### **Specific Aims**

The project aimed to inform patients of opioid dangers, provide expectations of surgical pain, and describe alternative non-opioid therapies for pain management. There are many methods to convey the information, however, given the wide range of healthcare literacy between patients, audio, and visual aids -specifically cartoon animations- have been proven to enhance learning and engagement. The project focused on developing an animated educational video to enhance awareness of opioid dangers.

### **Project Outcomes**

A six-minute-high quality educational video animation was developed by the project manager along with data collection, and post intervention assessment tools. All stakeholders were informed of the aims of the project and understood the intervention-related processes prior to implementation with every patient. Receiving and accessing the video animation were paramount to the success of the project. Thus, two outcomes for the project ensured focus on patients' receiving and accessing the video animation. Outcomes related to level of anxiety and pain after watching the video animation allowed for assessment of the intervention's potential influence on patients' perception of both. Patients were further assessed in achieving three or more of five desired post-surgical outcomes that are known to be highly influenced by pain and opioid consumption. Stakeholders feedback on potential improvements to the project were sought after implementation.

### **Implementation and Evaluation Plan**

12 patients were individually invited for participation between June 2022 and August 2022. The video was shown to every patient prior to surgery by the project manager, ensuring access of all participants. Intervention's influence on patients' anxiety related to surgical-pain management was assessed by direct questioning of patients during hospitalization. Electronic health records were also reviewed for reports of anxiety, pain scores, and achieving three or more of the following outcomes: 1. Ambulated early (on day of surgery or the next morning), 2. Lacked complaints of nausea and vomiting, 3. Tolerated self-care activities. 4. Reported minimal or no drowsiness, and 5. Reported readiness for discharge to home. Aggregate data was tabulated, and descriptive statistics were used to quantify results in numbers and percentages.

### **Results and Interpretation**

The initial aim was to assess the effectiveness of the educational tool exclusively on bariatric surgery patients. However, the departure of the project's bariatric surgery champion at the host institution greatly minimized the ability to enroll bariatric surgery patients in the project. Consequently, the surgical patient pool had to be broadened to allow for sufficient number of enrollees. Other types of surgeries were chosen based on their potential to produce relatively similar pain burden postoperatively as bariatric surgeries. Of the 12 patients who participated in the project, five (41.5%) were female, five (41.5%) were male, and 2 (17 %) self-identified as transgender. Eleven patients (92%) did not require an anxiolytic before surgery and after viewing the video and the opportunity to ask follow-up questions. The presence of the project manager during viewing of video allowed patients and their families to have immediate access to further clarifications and answers to questions. Ten patients (83%) did not receive opioid medications during surgery and five (42 %) did not require any pain medications after surgery. 59% of patients found the intervention educational and helpful. 67% of patients reported their pain as mild after surgery.

### **Conclusion**

Patient-focused education prior to surgery regarding surgical pain management could be a helpful tool in alleviating anxiety and reducing opioid consumption after surgery, especially using a multimedia tool such as video animation.

### **Key Words**

Opioids, opioid alternatives, post-operative pain management, video animation, pre-operative educational tool, quality improvement

## **Problem Description**

The United States (US) Department of Health & Human Services (HHS) has declared an opioid epidemic that has been ravishing US communities for over a decade (Guy et al., 2017). The opioid prevalence within our communities has resulted in drastic increases in opioid misuse, dependence, and overdose-related deaths in all 50 states. Healthcare providers in the United States continue to inadvertently fuel the epidemic by overprescribing opioid medications at three times the rate of pre-epidemic period of 1999, contributing to 40% of the opioid overdose-related deaths (Guy et al., 2017). Educating patients about pain management choices better prepares them for shared decision making regarding the various therapies available for them to manage pain. This is especially true in the perioperative period when surgical interventions are likely to result in postoperative pain and require multiple pain management interventions.

## **Problem Background**

Pain is a very frequent symptom reported by patients seeking care in both outpatient and inpatient settings. It is estimated that 84% of a hospitals' patient-population will report pain as a symptom or major reason for hospitalization (Gregory & McGowan, 2016). Moreover, 36% of these patients will qualify their pain as being severe (Gregory & McGowan, 2016). To alleviate pain, healthcare providers prescribe and administer various pain-control modalities, including opioid medications.

To combat pain and force the healthcare community to address the issue more aggressively in 2001, several organizations including The Joint Commission, formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the Veterans Health Administration (VHA), and the American Pain Society (APS), advocated for pain to be



considered the fifth vital sign and to aggressively treat it when present (Baker, 2017). The guidelines by these entities cited research that inadvertently underestimated the addictive properties of opioid medications (Baker, 2017). The increase in opioid prescriptions by healthcare providers in the early 2000s heralded a new and sudden prevalence of opioid-dependence across the United States (US), leading to a new epidemic of opioid-overdose (Pletcher et al., 2008). In fact, between 2005 and 2010 there was an annual increase of 5.1 % in teen opioid-abuse calls to poison-control centers per 100,000 teens in the US. An annual increase of 6.9% in total opioid prescriptions including prescriptions for postoperative pain was found during the same time period (Sheridan et al., 2016). In addition, there was a peak increase in opioid-related deaths in 2010-2011, which also dovetailed with an increase in opioid medications prescriptions (Guy et al., 2017). While opioid medications may pacify pain and provide some relief, research alludes to deleterious effects from acute and chronic use of opioid medications (Pletcher et al., 2008). The scope of the problem is clearly of dire and epidemic proportions, with 47,600 deaths in the US from opioid-overdose in 2017 alone (Scholl et al., 2018). The cost of dependence on opioid medications in patients with knee osteoarthritis alone is estimated at \$14 billion due to loss of work productivity, diversion, criminal justice costs, and other associated expenses (Zhao et al., 2019). The ramifications are clear, considering the above statistics and point toward a decay in society if the issue is not addressed.

It is inherent in surgery that patients will suffer some form of pain, which is expected because of the surgical manipulation and damage to skin, soft tissues, or bones. Patients are frequently prescribed pain medications to alleviate their surgical pain. Most of these patients, unfortunately, will receive opioid medications to treat their pain perioperatively. In general, one in every 48 patients who receives an opioid medication for the first time will become a chronic

user of these medications (Barnett et al., 2017). Furthermore, 6% of all surgical patients will continue chronic use of opioid medications 90 days after their surgeries (Brummett et al., 2017). More importantly, they noted that the chronic use may not be related to surgical pain. As the authors stated, with over 50 million surgical cases performed each year in the U.S., the number of surgical patients adds another 2 million potential people who may become chronic users of opioid medications.

In the setting of this scholarly project in the Pacific Northwest, the total deaths from overdose due to opioid use has significantly been reduced in part due to stricter opioid prescribing recommendations. However, the death rate due to opioid overdose remains significant within the state (Hedberg et al., 2019). Despite an endemic dependence on opioid medications, clinicians in this Pacific Northwest state continued to widely prescribe opioid medications, as evidenced by over 13,712,000 opioid prescriptions that were given to and filled by patients between October 2011 and October 2014 (Fink et al., 2017). Across the United States, opioid prescribing decreased in nearly 50% of counties between 2010 to 2015 (Guy et al., 2017). However, the same study reports a steady prescribing pattern across nearly 30% of the counties and an increase in almost 23% of other counties in the US. The study investigators concluded that healthcare providers continue to contribute to the endemic, despite the overall decrease in opioid prescribing, as they continue to issue opioid-medication prescriptions at three times the rates witnessed in 1999 or pre-pandemic. Thus, the fight against this crisis may still be influenced by the pattern of opioid prescribing.

### **Local Problem**

In 2018, this Pacific Northwest state had 339 deaths that were due to opioid medications overdose, an unchanged rate of 8 deaths per 100,000 standard population since 2012 (National

Institute on Drug Abuse [NIDA], 2020). Healthcare providers in this Pacific Northwest State prescribed opioid medications at a rate of 57.3 prescriptions per 100 patients, a moderately higher rate than the national average of 51.4 (Guy et al., 2017). Nationally, opioid prescriptions were given more frequently in counties with higher populations of non-Hispanic white Americans suffering from arthritis and diabetes (Guy et al., 2017). This trend corresponds with the increased rate of deaths due to opioid overdose in non-Hispanic whites across the United States (James & Jordan, 2018). Although death rates have moderately declined and prescribing rates had improved from peak years, the stagnant rates of both indicators continue to fuel an epidemic that is destined to become an endemic. It is imperative that social and healthcare authorities in our communities make the eradication of the opioid crisis a priority before an irreversible damage infests our communities.

The setting of this project is a major trauma medical center, which is part of a health system in the Pacific Northwest. It is an academic medical center, and according to the institution's website is the largest employer in the state, with over 18,000 employees and nearly 5000 students, and an annual operating budget of nearly 4 billion dollars. The hospital is licensed for 576 beds and cares for nearly every type of medical specialty.

The medical center's perioperative clinicians, including surgeons, anesthesia providers, and nurses, continue to largely treat pain with opioid medications, despite the national statistics given previously. Currently within the post anesthesia care unit (PACU), two thirds of the pain-alleviating medications in the PACU order-set is opioid-based. Many of the PACU nurses at this institution ensure that opioid medications have been prescribed by the anesthesia provider upon delivery of the surgical patient to the unit. Opioid medications are often used as a first line treatment for pain.

Informing patients about the dangers of opioid-medications may empower shared-decision making with providers on post-operative pain management. However, there are currently no effective educational tools, such as pamphlets or video-based educational tools, available at this institution to teach surgical patients about use of non-opioid alternatives to treat pain. This lack of proper patient education puts patients at higher risk of opioid-related adverse effects and opioid dependence.

Considering the high volume of patients entering the institution for care, there is potential for significant impact on the community if the issue is addressed at the institutional level. Even if the issue is merely considered at the departmental level of the perioperative department, the impact may still be significant in reducing the number of patients who may become dependent on opioid medications once discharged from the hospital. Yet, the benefits will not only be to the patients but to the department and the institution. There are numerous side effects to using opioid medications, from inadvertent iatrogenic harm from respiratory depression to constipation and delay in discharge of patients from hospital. Decreasing the use of opioid medications may result in lowering the incidence of such complications. As a result of such reduction, both patients and providers may have improved satisfaction. The health system could fulfill their vision of improving the health of the state's citizens and reap financial benefits in the form of cost reductions and higher turnover between patients, resulting in improved productivity and bettering the image of the institution in the community.

### **Available Knowledge**

#### **Literature Review**

The PICOT format was used to develop a searchable question. The PICOT tool is based on the following elements:

**P** – (Patient, population, problem): identified in general as surgical patients and specifically as bariatric surgery patients.

**I** – (Intervention): identified as the use of multimedia tools aimed to educate patients about postoperative pain and non-opioid based treatments

**C** – (Comparison with other interventions, if applicable) was not used.

**O** – (Outcomes that include metrics for evaluating results): identified as reducing pain, anxiety, and use of opioid medications.

**T**- (Time): identified as the perioperative period.

The searchable question was formulated as follows:

In patients admitted for bariatric surgery (P) does the use of multimedia tools aimed to educate patients about postoperative pain and non-opioid based treatments (I) assist in reducing pain, anxiety, and use of opioid medications in the perioperative period (T)?

The databases: PubMed, Google Scholar, CINAHL, OVID, AVON, and ERIC were searched, limiting results between the years 2015 to 2021. The following keywords or phrases were used: postoperative opioid management, multimedia education for opioids, postsurgical pain, management of pain, cartoon animation in education, video animation in healthcare, and video animation for pain management.

Titles and abstracts of over 500 articles were returned. 36 articles were deemed relevant to the identified problem. 19 articles were identified as better to high quality and were included in literature results.

## **Synthesis of the Evidence**

The Johns Hopkins Nursing Evidence tool was used to identify level of evidence of chosen articles. The search yielded high quality results with seven level I articles and ten level II articles. In addition, there was one level III and one level V article (see Appendix A).

There is significant paucity in preoperative patient-education regarding pain and opioid-use dangers (Schairer et al., 2017). There is substantial evidence in literature that showed improved perioperative patient-outcomes and concrete indication to providing preoperative education to patients regarding management of pain and anxiety after surgery or diagnostic procedures (Hsueh et al., 2016). Furthermore, evidence from current research alluded to higher potential of meaningful impact on outcomes when the tools used are software (Abbasi et al., 2017) or video-based tools (O'Connor et al., 2016) as compared to printed literature. The authors credit the ease of accessibility and enhanced engagement when using multimedia tools leading to increased accountability for one's own learning about the subject.

Research indicated that patients engaged in multimedia-based education (i.e., interactive web-based tools, videos, virtual reality, etc.) regarding alternative non-traditional non-opioid based methods consume less opioid-medications (Ilyas et al., 2021), report less pain (Horn et al., 2020), and have lower levels of anxiety (Zarei et al., 2018) in the perioperative period compared to traditional methods of pamphlets or no education (Lemay et al., 2017). These outcomes will result in improved patient and provider experiences (Lam et al., 2017), lower iatrogenic complications (Lemay et al., 2017), and aide in abating the opioid crisis (Horn et al., 2020).

Findings from the above referenced research substantiated the positive impact for instituting an instructional-video or cartoon-animation based education for patients during the preoperative visit to view any time prior to surgery. Thus, this project's aims will be to inform patients of opioid dangers, provide expectations of surgical pain, and describe alternative

therapies for pain management. There are many methods to convey the information, however, given the wide range of healthcare literacy between patients, audio, and visual aids -specifically cartoon animations- have been proven to enhance learning and engagement (Liu & Elms, 2019) including in the healthcare setting (Leiner, 2004).

## **Rationale**

### **Theoretical Model**

Bandura's self-efficacy theory was selected as the theoretical framework for this scholarly project (see Appendix B). Self-efficacy theory declares that a person possesses the necessary skills to deal with or maneuver around a situation (Bandura, 1977). Bandura asserts that the strength of people's convictions in their own effectiveness will determine the level of coping with a given situation. Given this perspective, bariatric surgery patients already have demonstrated they possess the intrinsic tools that can help them cope with post-surgical discomfort/pain. That's because they have already embarked on a multi-step journey of self-healing and healthier living, which started with their decision to lose excess weight. Similarly, the patients' level of conviction that they can handle pain adequately without over-reliance on medications, especially opioid medications, can set the person for higher level of self-efficacy and better outcomes. According to Bandura, self-efficacy is derived from four primary sources of information:

1. performance accomplishments (or past experiences),
2. vicarious experience (observation of others performing the same task),
3. verbal persuasion (voicing encouragements by others) and,
4. physiological states (physical and emotional states of the person).

Performance accomplishments has the highest influence in Bandura's model, where previous successes will determine the level of the negative impact of future failures on self-efficacy. The more successes a person experiences, the less likely that failures will impact a person's perception of self-efficacy. In fact, failures become a source of strength once the person recognizes one's ability to overcome failures. Vicarious experience adds an affirmation to one's ability to perform a task successfully after observing others and living vicariously through their actions. As a result, a conviction that "if they can do it, so can I" drives one's ability to develop more self-efficacious behavior. Verbal persuasion can be effective in encouraging a person to become more self-efficacious. The suggestion from others that achieving a goal or task is within reach avows one's potential to reach it. Physiological states or emotional arousal is the fourth element of Bandura's theory and suggests that people will respond to stressful situations at various levels of emotional response. High levels of emotions often lead to lower rates of success in accomplishing a goal or a task. Consequently, individuals have a notion of how successful they will be based on the level of emotions provoked by a stressful situation.

The theory is closely connected to the concept of mindfulness. The basic assumption of Bandura's theory is that the individual can carry out tasks during difficult conditions, such as during pain, because the individual already possesses the necessary skills to do so (Bayır & Aylaz, 2021). The project proposes to arm the patient with proper information regarding postoperative pain and the choices available to treat it. Thus, patients will be self-sufficient in deciding how to treat their surgical pain or, at minimum share the decision-making with the prescriber or provider. Furthermore, this self-efficacy, due to enhanced understanding of surgical pain, may result in accepting pain as a natural occurrence to surgical disruptions of homeostasis and to less reliance on opioid medications. In essence, the theory proposes one's ability to



manage pain is within one's capacity. Furthermore, this ability can potentially be without the need to rely on opioid medications through the use of opioid alternative pain management modalities. This is especially true in the presence of other more effective therapies described later in this paper, such as use of imagery and meditation.

### **Project Framework –role of the Logic Model in project development**

The Logic Model is a depiction of the contingencies between the resources available at the project's intended place of development, the activities that are planned, the outcomes, and outputs of the project (W.K. Kellogg Foundation., 2004). It allows the stakeholders a roadmap through which they can visualize the sequence of events. Using a Logic Model as a framework for the development of the project is a proven tool that has been used in numerous healthcare fields such as nursing, medicine, dentistry, and other allied healthcare specialties (Sun & Cherry, 2018). This project uses the Logic Model framework to add quality and enhance the collaboration of stakeholders at the institution (see Appendix C).

### **Specific Aims**

The specific aims of the scholarly project are to:

1. Provide educational material on prescribed-opioid medications during the preoperative period that will allow engagement of patients in decision-making of opioid medications use.
2. Enhance the potential for accessing the educational material regarding use of opioid medications before day of surgery by having access available outside the institution (i.e., via a link on the internet).
3. Improve patient's understanding of opioid related adverse effects and expand awareness of the potential for prescribed opioid addiction.

4. Alleviate patient's anxiety regarding pain management via the enhanced education.
5. Reduce the consumption of opioid medications in the postoperative period.
6. Encourage patient's use of alternative non-allopathic modalities to control surgical pain (such as meditation, relaxation, music, and cognitive behavioral therapies).
7. Inform patients of the potential for improved pain control after surgery when utilizing safer medication alternatives to prescribed opioid medications, such as low-dose anti-inflammatories, antipyretics, and use of nerve blocks intraoperatively by surgeons or anesthesia providers.

## **Context**

### **Population**

Patients admitted for in-patient hospitalization often suffer from pain as either a primary or secondary symptom to an illness, disease, or surgical or procedural intervention. In fact, the prevalence of pain is very frequent with an estimated 84% of a hospitals' patient-population reporting having pain (Gregory & McGowan, 2016). In addition, 36% of these patients may report having severe pain. Cancer alone will result in nearly four thousand admissions to hospitals and emergency rooms each year (Jairam et al., 2019). Perioperative care clinicians including nurses, nurse anesthetists, physicians, and surgeons are faced with such patients on daily basis while treating their pain perioperatively. At the project's institutional setting in the Pacific Northwest, many of the surgical interventions are due to cancer or traumatic injuries. In 2019, there were 309,209 admissions to this Pacific Northwest institution and its clinics as reported on their main website. Extrapolating from the above statistics, approximately 260,000 patients at this institution alone suffered from pain in 2019! Based on the high prevalence of opioid prescribing at the institution, many of these patients with pain likely received opioid

medications as part of their pain therapy. Unfortunately, such practice has played a significant role in propelling an opioid epidemic that has claimed the lives of many and decayed communities for over two decades.

Surgical patients are especially more vulnerable to potential addiction because of the inherent pain that is caused by surgical manipulation. Receiving opioid medications increases their chances of becoming chronic users of opioid medications or worse yet, becoming opioid dependent. It also elevates their potential of sustaining other side effects including delirium, nausea and vomiting, severe constipation, and prolonged hospital admission which can result in increased nosocomial infections and suffering iatrogenic complications.

One specific subpopulation of surgical patients who are particularly vulnerable to adverse effects of opioid use, including opioid misuse, is the bariatric surgery patient population. Bariatric patients will typically undergo a gastric bypass, adjustable gastric band placement, sleeve gastrectomy, or biliopancreatic diversion with duodenal switch surgery. Most of these surgeries (approximately 95%) are performed laparoscopically, avoiding many of the complications associated with the invasive open approach (Finks et al., 2011). Despite this approach, patients presenting with severe obesity are at higher risk for respiratory complications from opioid medications, including respiratory depression and opioid-induced apnea (Bazurro et al., 2018). These patients are also at a significant risk for postoperative nausea and vomiting, due to surgical manipulation, use of inhalational anesthetics, and use of opioid medications. The incidence of postoperative nausea and vomiting (PONV) can be in as many as 42.7% of the bariatric surgery patient population (Ziemann-Gimmel et al., 2014).

Although these significant adverse effects continue to persist within the bariatric surgery subpopulation, many of these patients continue to receive opioid medications immediately after

surgery in the PACU, and after discharge to home to aid with pain control. Chronic use of opioid medications after surgery that is irrespective of surgical pain is a significant problem, and has been defined as the continued use of opioid medications beginning at 91 days after surgery (Sun et al., 2016). It leads to opioid dependence and has been documented to occur after both minor and major surgeries. One study examined new persistence use of opioid medications in various common surgical procedures and found the incidence within bariatric surgery patients to be over seven percent (Brummett et al., 2017). This ranks second only to colorectal surgeries which had an approximately 10 % chance of incidence within the category of major surgeries.

A primary aim of this project will be to assess the impact of patient education using video animation on this subpopulation of surgical patients. Bariatric patients have an array of options to help alleviate their pain during and after surgery that do not involve the use of opioid medications, including use of systemic intravenous (IV) Lidocaine infusion (De Oliveira et al., 2013), use of total IV anesthesia which eliminates PONV-provoking inhalational anesthetics (Ziemann-Gimmel et al., 2014), use of regional anesthetic techniques such as the transverse abdominis plane (TAP) nerve block (Sinha et al., 2013), and use of cognitive behavioral therapy as part of the mindfulness psychotherapy approach (Nicholls et al., 2018). Anti-inflammatory medications are also powerful in attenuating surgical pain caused by the trauma during surgical manipulation and tissue excising (Wick et al., 2017).

The animated video will be in English with potential translation to other languages in future implementations. All patients will have the same access to the information. Inability to access or view the educational material due to language barrier will become evident when patients report inability to view during survey questionnaire in the preoperative period during hospitalization.

## **Settings and Resources**

Opioid misuse and dependence can lead to healthcare disparities. Health disparities are gaps or inequalities in healthcare between groups or subgroups within a population (Centers for Disease Control and Prevention [CDC], 2013). Differences in health are bound to occur because of genetic make-up of individuals, environmental influences such as climates, gender, ethnicity, and personal choices. Such differences are permissible to occur in the realm of healthcare. However, disparities in healthcare are inexcusable everywhere (CDC, 2013). Much of the research and literature discussing social determinants of health alludes to income as the most common and most influential determinant of health disparity (Holtz, 2017). While money can buy health, it doesn't buy healthy! And thus, the disparity may not fully be attributable to wealth.

At the institution's hometown in the Pacific Northwest, homelessness has become a significant problem with implications to community and population health (Joint Office of Homeless Services [JOHS], 2019). In 2019, a report published in collaboration with several local and city offices, aimed at reducing the homelessness problem in the greater metropolitan area, revealed a 22.1% increase from 2017 of the number of people in chronic homeless state in the city (JOHS, 2019). The report further points to a staggering increase of 38.1% from 2017 who are persons of color and are homeless. Homeless persons are three to six times more likely to become ill and have three to four times the potential to suffer a young, untimely death than the general population (Maness & Khan, 2015). Furthermore, these authors report that 30% to 50% of homeless persons have substance abuse disorder. The city's neighborhoods are suffering from local issues of both opioid dependence and homelessness that are propelling one another creating dismay and destruction of the city's once vibrant communities. This is clearly a systemic issue where healthcare once again has failed to properly address the issue of opioid-dependence at the

community level. Social determinants continue to play their role of causing disparities among the homeless population in this Pacific Northwest city. In recent years the city's homeless population has disproportionately increased within communities of color (JOHS, 2019). Nationally, this disproportionate increase is concurrent with the opioid epidemic (Scholl et al., 2018).

### **Congruence of Project with Organizational Mission, Values, Strategies and Needs**

The benefits to reducing opioid consumption by citizens of the state are clear, and will help in further reductions of the stagnant rate of 8 deaths per 100,000 standard population in the state (NIDA, 2020). It is also worth noting that the significance of this project is beyond the reduction of number of deaths due to overdose. The side effects of opioid medications are numerous, including nausea, vomiting, hallucinations, and respiratory depression, to mention a few. Such side effects will prolong patients' stays in hospitals, causing undue stress to patient, family, community, and the entire healthcare system (Himstreet et al., 2017).

It is well established that the opioid crisis continues to prevail in the US and in the Pacific Northwest. As discussed previously, it is also well established that healthcare providers continue to fuel the opioid epidemic, contributing to 40% of the opioid overdose-related deaths (Guy et al., 2017). Thus, the need for a change continues to be urgent. In fact, the current COVID-19 pandemic has put more stress on the lives of many. One estimate of alcohol consumption revealed a concerning increase of alcohol purchasing by 52%, while another reported an increase of 262% in online sales of alcohol (Pollard et al., 2020). Such a trend can also suggest a potential for increase in opioid consumption during stressful times, as alcohol and opioid medications are often abused simultaneously (National Institute of Environmental Health Sciences [NIEHS], 2020). The individual healthcare provider can help curtail this trend by prescribing fewer opioid

medications and providing alternative therapies to pain management, especially after elective surgery when many of the patients are introduced to opioid medications for the first time.

As a large academic institution, this medical center can be a leader in setting the standards for care in the region. It is a major academic medical university with missions in patient care, education, and research. Its hospital is licensed for 576 beds and cares for nearly every type of medical specialty, with patients seeking care from around the country and the world. Its enormity provides for many choices of potential project settings within the organization, giving an increased opportunity for project implementation success.

The bariatric services practice at the health system's hospital draws nearly 300 surgical patients who are seeking to improve their health with weight loss surgery according to the institution's bariatric services website. The candidacy for surgery is a rigorous process, which begins with providing information about the surgery, expectations, benefits, and risks. The patient must go through a non-surgical weight loss program prior to surgery as well as a psychological evaluation. The service is supported by a team of surgeons, advanced practice nurses, nurses, dietitians, physical therapists, psychologists, and administrative staff. The team helps ensure patient's appropriateness and readiness for surgery. The team works on improving patient's health status and optimizing any preexisting comorbidities prior to any surgical intervention. Education about the day of surgery and expectations after surgery is provided during the final phase of preoperative assessment few weeks prior to surgery. It is during this period that this project's educational intervention will be implemented to educate patients about surgical pain, choices they have for surgical pain management, and the dangers of opioid medications use. The bariatric services department is involved in research to improve chronic pain after bariatric surgery and recently created a new protocol for anesthesia providers to use as

guidelines whenever possible to reduce use of opioids and minimize PONV-inducing medications. The bariatric services department is also studying the association between obesity and cancer. Thus, this project fits not only within the institution's vision of improving people's health, but more specifically that of the bariatric services.

The institution has tremendous financial, physical, and political support within the community and the state. Resources required for the completion of this project are readily available, but requires leadership approval to access them. The scholarly project stakeholders include patients, their families, surgeons, nurses, anesthesia providers, and the bariatric services department leadership. They are contributors to the project success, as well as the beneficiaries of the intended improvement in health outcomes.

### **Organizational Culture and Readiness for Change**

This health system is a highly influential organization in its home state in the Pacific Northwest, with federal, state, and private support, that has a palpable impact in every corner of the state. The organization fosters new innovations and is in constant transformation to keep a competitive edge and be recognized nationally and internationally. It is chiefly led by physicians, with a primary teaching objective of educating physicians, despite the presence of other schools and programs including nursing, dentistry, and other allied health programs. Thus, physician trainees are favored for any training or project opportunity over other disciplines that exist within the university system. However, recent national attention regarding social injustice and cultural disparities have mandated the institution to embrace further change and begin forward thinking. Leadership in every facet of the institution has been tested, challenged, and in many instances changed. The institution is likely experiencing one of its biggest transformational periods since its inception. Change has been recognized as essential within the leadership of the institution.



The project conforms with all three institutional missions: education (educating patients and stakeholders on the dangers of opioid medications), patientcare (using non-opioid medications is proven more effective and better overall care), and discovering new science (research is a major arm of the institution's mission and the project brings the newest research to application and care of the patient and community).

### Needs Assessment/Strengths and Weaknesses

Strengths	Weaknesses
<ol style="list-style-type: none"> <li>1. The institution is heavily funded by the federal government (and private sectors). The aim of the project aligns with highly regarded issues by the federal government as well as interested private entities.</li> <li>2. Project location is at a large academic institution with pain service which is a service uncommon in many other non-academic large institutions. This will render the project more applicable and possibly provide more resources.</li> <li>3. The institution extends to many various locations across the state. The success of the project can have a wider impact and wider support if the project is deemed innovative and needed by the communities within the institution.</li> <li>4. Many of the constituents of the institution are nationally recognized leaders in their fields of expertise. This may potentially lead to better understanding of the need for the project and use of further external resources available because of this prestige.</li> <li>5. Leadership has identified patient-education regarding use of opioid medications as lacking. This provides</li> </ol>	<ol style="list-style-type: none"> <li>1. Due to various events during the past two years, there have been numerous restructurings of departments, especially within the perioperative areas where the project is likely to be implemented. These changes have resulted in mass exodus which in turn fueled low morale within the institution and the perioperative departments.</li> <li>2. This is a heavily physician-lead institution which can make it harder for autonomous nursing undertakings. Consequently, hierarchies exist and are hindering innovative thinking.</li> <li>3. Paradoxically, outdated practices exist simultaneously with new frontiers and discoveries at this academic center and there may not be as much regard to the enormity of the opioid problem.</li> <li>4. As a federally funded institution, a large portion of the patient population presents with less-than-ideal health-literacy. Consequently, these patients maybe resistant to being educated about the opioid epidemic.</li> </ol>

for added support to the intended project.	
<b>Opportunities</b>	<b>Threats</b>
<ol style="list-style-type: none"> <li>1. Advanced nursing programs have become DNP level entry giving potential leverage for implementation of project.</li> <li>2. As an academic center, the familiarity of DNP projects is potentially higher, allowing for better understanding of this project and its aim as well as possible enhanced guidance from leaders familiar with the DNP project requirements.</li> <li>3. As an academic center, grants and projects are ever evolving. Anytime a new project related to the same aim of this project becomes known, there is a potential for “piggybacking”.</li> <li>4. Recent changes in leadership within the department may allow for a higher likelihood of implementation or support for the project.</li> </ol>	<ol style="list-style-type: none"> <li>1. The COVID pandemic has had a significant impact on the finances of the institution and resources may be decreased or unavailable for a successful implementation of a project.</li> <li>2. Recent litigation events may have potentially consumed resources and impacted morale within various departments of the institution affecting number of allotted projects for implementation.</li> <li>3. The institution is the only academic medical center in the region. Other external DNP and other healthcare programs compete for the unique opportunities available at the institution.</li> </ol>

## Interventions

### Logic Model

A logic model provided a map to the stakeholders of this project, outlining the inputs, activities, outputs, and outcomes required to achieve the desired project. See Appendix C for the scholarly project logic model, which includes the following outcomes:

#### Short-term outcomes

1. 100% of educational material including video animation and questionnaires were developed and approved by stakeholders including administration management/ leadership, bariatric surgeons, and mentor by May 30, 2022 (PO).

2. 70% of staff who will be involved in the care of bariatric patients including preoperative clinic staff (ANPs, MDs, RNs), bariatric services staff (surgeons, ANPs, RNs), preoperative care nurses, PACU nurses, and anesthesia services (CRNAs) received training to learn about the project process, aims, activities, providing questionnaires to patients, and how they can facilitate the implementation of patient education/ project by May 30, 2022 (PO).
3. 50% of bariatric surgical patients reported receiving the educational material (video animation link or pamphlets) as assessed by direct questioning during hospitalization by project manager or other project representatives (i.e., CRNA volunteers). To be measured weekly during June 2022-August 2022 project implementation (PO).
4. 40% of bariatric surgical patients reported accessing the educational material (video animation link or pamphlets) as assessed by direct questioning during hospitalization by project manager or other project representatives (i.e., CRNA volunteers). To be measured weekly during June 2022-August 2022 project implementation (PO).
5. 30% of bariatric-surgery patients reported that pain management education decreased their anxiety about post-surgical pain when assessed by direct questioning during hospitalization by project manager or other project representatives (i.e., CRNA volunteers). To be measured weekly during June 2022-August 2022 project implementation (CO). Patients will be asked to rate their anxiety on a scale of 0-10 with 10 being the most anxious they had ever felt.
6. 20% of bariatric-surgery patients reported that their pain was adequately managed when taking non-opioid medications or using alternative non-medication methods as assessed by direct questioning during hospitalization using hospital approved pain scale,

with project manager or other project representatives (i.e., CRNA volunteers). To be measured weekly during June 2022-August 2022 project implementation (CO).

Electronic medical records will also be accessed to obtain information.

7. On the morning following the day of surgery, 30% of bariatric-surgery patients achieved 3 or more of the following outcomes: 1. Ambulated early (on day of surgery or the next morning), 2. Lacked complaints of nausea and vomiting, 3. Tolerated self-care activities such as use of toileting, bathing, brushing hair, etc.), 4. Reported minimal or no drowsiness, 5. Reported readiness for discharge to home. To be measured weekly during June 2022-August 2022 project implementation (CO).

8. 50% of stakeholders including bariatric services surgeons, bariatric services team (Surgeons, ANPs, RNs), preoperative clinic personnel (ANPs, MDs), and anesthesia services (CRNAs) reported via electronic questionnaire their perception regarding the helpfulness of the educational material in reducing use of opioid-medications after bariatric surgery and eliciting for improvements of the process at completion of project in September 2022 (PO).

Intermediate outcomes:

9. 90% of bariatric surgical patients reported receiving the educational material (video animation link or pamphlets) as assessed by direct questioning during hospitalization by project manager or other project representatives (i.e., CRNA volunteers). To be measured monthly from end of project implementation in August 2022 through May 2023 (PO).

10. 70% of bariatric surgical patients reported accessing the educational material (video animation link or pamphlets) as assessed by direct questioning during hospitalization by

project manager or other project representatives (i.e., CRNA volunteers). To be measured monthly from end of project implementation in August 2022 through May 2023 (PO).

11. 60% of bariatric-surgery patients reported that pain management education decreased their anxiety about post-surgical pain when assessed by direct questioning during hospitalization with project manager or other project representatives (i.e., CRNA volunteers). To be measured monthly from end of project implementation in August 2022 through May 2023 (PO).

12. 40% of bariatric-surgery patients reported that their pain was adequately managed when taking non-opioid medications as assessed by direct questioning during hospitalization by project manager or other project representatives (i.e., CRNA volunteers). To be measured monthly from end of project implementation in August 2022 through May 2023 (PO).

Long-term outcomes:

13. Opioid medications -prescribing and administration significantly decreased in the perioperative period for bariatric patients.

14. Adverse side effects and complications from opioid medications use was significantly lowered at the institution.

15. Surgical patients reported higher levels of satisfaction regarding the general care and pain control at the institution.

Outcomes 1-8 were evaluated during implementation of the project. Educational materials, including an animation-video, were developed in collaboration with the Information Technology (IT) department and further approved by the bariatric services department, including surgeons and department's manager. IT aided in developing a web-site link for patients to view

the video via the internet on the bariatric services web page for access anytime and location the patient wished to explore the educational material. Furthermore, printed pamphlets included the same message described in the animation-video were made available as an alternative and reinforcement to the video. All stakeholders, including bariatric services surgeons, bariatric services team (advanced nursing practitioners (ANPs), registered nurses (RNs), perioperative department nurses, and project assistants including certified registered nurse anesthetists (CRNAs) received the link for video and were provided expectations and instructions on how to approach the patient with the intervention. The link was also shared with the faculty and Boise State University (BSU) faculty mentor/committee chair. The education to stakeholders listed above was presented via in-person meetings and Power-Point presentations sent to stakeholders via email. The educational video link was provided to patients during the preoperative clinic visit by project manager and volunteer assistants. These interventions were reflected in Outcomes 1-4. Questionnaires were developed in collaboration with project stakeholders and were provided to volunteer CRNAs to assist in gathering data and readying it for data analysis. I also educated the CRNAs on the type of data to collect and the mechanism of obtaining the data. Nurses on the perioperative care units and the medical surgical unit for bariatrics were shown the educational video and were prepared before project implementation to answer questions that patients may have on day of surgery. These interventions were reflected in Outcomes 5-8.

### **Correlation of interventions with the Theoretical Model elements/phases**

Utilizing the video animation educational tool to prepare the bariatric surgery patient for the postoperative pain and how to effectively manage it without the use of opioid medications works in the same manner as that of verbal persuasion described in Bandura's self-efficacy theory. Furthermore, the surgeon, the bariatric services team, the preoperative clinic staff, the

anesthesia team, and the nurses all play a significant role in the ability to be that active persuasive voice that assists the patient in elevating their convictions that pain management can be done with the use of evidence-based effective methods that are devoid of opioids. That voice of encouragement may be most augmented by the patient's previous experiences with pain. If the patient has dealt with past pains in daily life or from previous surgeries effectively with minimal use of opioid medications, then the likelihood of the patient harnessing that self-efficacy will be influenced further as described by the first source that derives efficacy in this theory. If the patient has never had surgery, or the previous experiences to pain are insignificant, then their self-efficacy maybe influenced by vicarious experiences lived through observation. Patient's family or friends may have experienced pain and the manner the pain was dealt with will likely influence the patient's level of self-efficacy in dealing with their own pain. Patients will be asked during the preoperative course if they have had previous surgical pain prior to their current admission. If the answer is "yes", information regarding their methods of pain relief will be elicited, see Appendix "K". Clearly, any preexisting physical or emotional stressors will further influence being self-efficient when dealing with pain. In other words, life -experiences have significant impact in all the sources deriving self-efficacy. Thus, having an educational tool that focuses bariatric patients on the possibilities existing to help with surgical pain and inform of the dangers of opioid medications, may further the patient's convictions of being self-efficacious. Jensen's mindfulness theory framework is closely connected to Bandura's self-efficacy theory. The key elements of mindfulness theory are the consideration of the psychosocial aspect of pain (Day et al., 2014). It does not consider pain as a sole symptom arising from disease or illness, but rather as a complex process influenced by many aspects of one's psychology and social interactions. Since the intent of this project was to reduce the consumption of opioids by

educating patients about pain and the negative effects of opioid medications, it was appropriate to employ a model that would consider a non-opioid alternatives approach to pain management, such as the constructs provided by mindfulness and self-efficacy theory as described above.

The project focused on educating bariatric surgical patients to understand that pain is a natural occurrence resulting from surgery and that there are effective non-opioid alternatives to managing their post-operative pain. Guided by the theoretical model of self-efficacy, the bariatric patient already possesses the ability to attenuate pain perception without the use of opioid medications. Furthermore, given the proper education, the patient will be prepared with the expectations of having some pain. Frequently, patients arrive to surgical theaters with the expectations that pain will be obliterated upon emergence from anesthesia. Furthermore, patients may expect that any pain felt immediately after surgery will be dealt with swiftly by the nurses in the PACU. The project provided a more reasonable expectation that allowed the patient to be psychologically prepared and self-efficacious in dealing with pain, while being treated with non-opioid modalities to alleviate the pain. In addition, the educational tools allowed them to recognize alternatives to pain management beyond the conventional use of opioid medications. It granted patients shared decision-making rights with nurses and other healthcare providers. Recognizing the dangers of opioid-medications and adverse effects, patients were armed with knowledge that helped empower their innate self-efficacy.

### **Timeline**

For the DNP scholarly project, the project planning phase took place from August 2020 through May 2022. Project development was scheduled for January 2021 through May 2022. The project development was followed by the project implementation from June 2022 until August 2022. Data analysis commenced from August 2022 to December 2022. Dissemination



began in January 2023 culminating with project presentation and completion in April of 2023. See Appendix D for timeline graph.

### **Measures**

Appendix E lists every short-term outcome and the corresponding instrument that was used for measuring related data. The three most common forms of obtaining data are: participant observation, interviews, and focus group discussions (Moser & Korstjens, 2017). This project used interviews as a primary method of obtaining data. Stakeholders were asked about receiving information concerning the educational intervention prior to project implementation and a post-implementation survey to solicit ideas for improvements. Patients also received questionnaires regarding the education they received about opioid medications, pain, and pain management options prior to surgery and after receiving the educational intervention.

For Outcome 1, a project readiness check list was developed to assess the readiness of the project for immediate implementation and that all tools had been developed. The checklist included the following items:

1. Website link to video animation- completed
2. Website link to educational material- completed
3. Printed material- produced
4. Pre and post patient questionnaires- developed
5. Pre and post stakeholder questionnaires- developed

This is a report checklist that provided clear and concise list of the completed tools listed above for the project to be successfully implemented. Checklists are a reliable method to measure readiness before implementation (W.K. Kellogg Foundation., 2004). This tool was developed by the project manager and required no prior permissions to utilize.

For Outcome 2, a questionnaire titled: Pre-implementation Staff Questionnaire was developed and shared with stakeholders on Surveyface.com. The questionnaire asked the questions using either a yes/no or a Likert scale of 0-10 with 0 denoting least and 10 denoting most. Such survey questionnaires platforms provide an easy, flexible, and reliable method to store and then analyze data (Sylvia, 2018). Likert scales are routinely developed and used in scholarly projects such as this one.

For Outcomes 3 and 4, a patient preop questionnaire was developed and provided to volunteer CRNAs and project manager to ask patients in the preoperative area on day of surgery, using Yes/No and Likert scale questions. The questions are listed in Appendix E.

For outcomes 5 and 6, a patient postop questionnaire was developed and shared with volunteer CRNAs. using Yes/No and Likert scale questions. The questions are listed in Appendix E.

For Outcome 7, electronic health records were reviewed to obtain the necessary data for the outcome based on answers to the following outcomes:

1. Ambulated early (on day of surgery or the next morning),
2. Lacked complaints of nausea and vomiting,
3. Tolerated self-care activities such as use of toileting, bathing, brushing hair, etc.),
4. Reported minimal or no drowsiness,
5. Reported readiness for discharge to home.

For Outcome 8, a post implementation staff questionnaire was developed, using Yes/No and Likert scale questions. The questions are listed in Appendix M. The tools developed to measure the outcomes were approved by stakeholders and did not required permission from a third-party entity. Electronic survey tools were free for use and development. All questionnaires

listed in appendices J, K, L, and M, were shared with and approved by stakeholders prior to project implementation.

### **Analysis**

During the period of implementation, data were gathered and tabulated for analysis. The Outcomes Evaluation Table (Appendix E) provided analysis-goal and technique. Analysis of the data collected was then performed for future dissemination with stakeholders.

For Outcome 1, the resulting data were exclusively informational and did not yield data that needed analysis. The information obtained provided either completed or incomplete development of tools needed in the implementation phase.

For Outcome 2, descriptive statistics were used to quantify number and percentage of stakeholders' Yes/No answers. For Likert scaled items, an aggregated mean score and range of responses to each item was calculated. The descriptive statistics and aggregated mean score and range assessed the overall level of readiness and understanding of participating individuals in the project implementation process and goals.

For Outcomes 3 through 6 and Outcome 8, descriptive statistics to quantify number and percentage of Yes/No answers were again employed along with aggregated mean scores for each of the Likert scale items. Range of responses was also analyzed.

For Outcome 7, count and percentage of frequency of the listed outcomes were tabulated and calculated. For Outcome 8, descriptive statistics to quantify number and percentage of Yes/No answers was once again used, along with aggregated mean scores for each of the Likert scale items.

### **Ethical Considerations**

**Ethical considerations and protection of participants**

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) was strictly followed. This was not an experimental intervention and followed established institutional protocol for anesthesia providers. The existing pain management protocol for anesthesia providers advocated the reduction of opioids whenever possible to reduce adverse effects. The aim of the project was simply to educate patients and make available to them information that is well-established and is readily available via other venues. The information would enable patients to have shared decision making with providers regarding the modality for pain control and provide a realistic expectation of postoperative pain. The intent of the animation part of the project was to make it more appealing to explore and thus enhance the chances of engagement by participants (patients and their families). The pain management information will be included in the bariatric services educational packet; however, patient participation in the scholarly project is voluntary. There will be no disparities in care because of patient's choice to not view the educational intervention. No personally identifying information will be stored for this project. Patients will be assigned a number associated with their information that will be accessible only to the project manager while collecting the data. Once the data are collected, the patient is not identifiable and only a number denotes the collected data.

**Conflicts of Interest**

There are no conflicts of interest with this project. The resultant benefits will only enhance patients care and utilization of the health system. There will be no benefits explicit or implied to the bariatric services or other participating entities. Patients will not receive compensation for participation in the project. The educational tool may lead to enhanced care,

which may lead to higher patient satisfaction which would improve the image of the institution in the community.

### **Biases**

The use of video animation may diminish biases in visual representations. The intended message within the tool is unified and applicable to all patients from all backgrounds. The tool is intended to empower decision-making by the patients by informing them of the available choices. The patient will decide their level of engagement in decision making regarding the choice of medications or modality used to alleviate their surgical pain. The educational tool will be developed in English with potential for development of future versions in different languages.

### **Threats to Quality**

This is a quality improvement project with an aim of improving patient care. I followed accepted standards of care for bariatric surgery patients when developing and implementing project interventions. Data collected and evaluated in the scholarly project was used for quality improvement purposes only in the institutional project setting.

Given that the institution houses many other healthcare programs, there are potential threats to the quality of the project as identified in the SWOT analysis. Other projects that may stem from the School of Medicine could potentially displace this project to a lower priority, making it less likely to implement the project as envisioned and described in this proposal. The recent COVID pandemic also put many restraints on institutional expenditure, which could impact the quality of the animation-video, and that in turn could have significant impact on the quality of the entire project. It is essential that the video is made thoughtfully and aesthetically to invite patients' participation and viewing. A low-quality video will be easily dismissed by participants and stakeholders.

**IRB determination**

The institution's Internal Review Board (IRB) at the scholarly project setting reviewed the scholarly project application which was submitted in February, 2022 and issued a letter of determination prior to the implementation of the DNP project. The letter of determination was issued on March, 2022 stating that "the proposed activity is not research involving human subjects. IRB review and approval is not required". Please see Appendix N.

**Project Budget**

Expenses associated with the implementation of this project are categorized as follows: personnel, material & supplies, equipment & technology, office space, marketing & communication, and travel. Year 1 budget (Appendix F) shows that the highest costs are personnel and equipment, representing most of total expenditures. The production of the video animation educational tool is a one-time expense. It is unlikely that further video animation modifications will be necessary for several years after initial implementation. Hence, the video animation costs are eliminated in the two to three-year budget (Appendix G)., The project's expenses in Years 2 to 3 will primarily stem from personnel costs. Continued production of educational pamphlets and the need for office space rental for occasional meetings will also contribute to related expenses in the two to three years following implementation.

The project revenue will entirely come from in-kind donations from the Anesthesiology & Perioperative Medicine (APOM) department, and from donation of my project management hours as a DNP student.

**Sustainability**

Once the educational material is developed, this scholarly project will require low-cost expenses for the continued use and improvements of the intervention. The largest expense will

be in the development of the animation video. If it is developed through a robust software that produces excellent quality animation, there will be minimal need for further improvements in the foreseeable future. Once the project is deemed successful, the information can easily be applied to almost all other surgical services. With such potential, further financial support can easily be provided by the institution to make the video accessible to other patient populations.

For as long as the project manager is associated with the institution in continued employment, the project manager will continue to seek further enhancements and continued support for the project. The aim of the project fits perfectly within the needs of the institution and the community and may likely receive further support if the findings from the data analysis are robust.

## **Results**

### **Timeline**

Appendix D provides an illustration of the timeline that was adhered to during this project. Planning of the project spanned the period between August of 2020 and the end of May 2022. The planning was guided by review of literature (Appendix A) and synthesis of evidence to provide an evidence-based intervention. Implementation proceeded after the IRB approval and determination of the project to be non-human involved (Appendix N), and development of the interventional tool (Appendix O). Data gathering tools (Appendices J, K, L, and M) were also developed in May of 2022. Upon completion of the planning phase, the implementation phase followed immediately in June of 2022 and was completed at the end of August 2022. Data analysis was ongoing during implementation and finalized at the end of September 2022. The project matured with dissemination of data to stakeholders and publication of this project in Scholarworks at the end of April 2023.

## Steps of the Intervention

As discussed in the SWOT analysis, one of the biggest threats to the project implementation was the highly physician-oriented leadership at the institution and the primary emphasis on physician-focused projects and learning experiences. This consequently prevented the project from being implemented as planned. This included the need to change the project's population to a general surgical population instead of the more specific bariatric surgery patients. Lack of support from leadership disallowed the use of preoperative clinic as the first place for viewing the educational video. Furthermore, significant job burnouts across the institution due to the COVID-19 pandemic and the ensuing severe shortages in healthcare personnel reduced willingness of provider participation in the project. This resulted in the project manager assuming all project-functions, including development of the entire video animation without technology department assistance, consenting all patients, providing access of the animation video to every enrolled patient, being immediately available for questions, gathering all data and performing analysis. In addition, the bariatric surgery services experienced considerable departmental restructuring, including the departure of the surgeon who was the biggest supporter of the project. Fortunately, the aim of this project has a broader implementation potential and is applicable in many types of surgical and even non-surgical patients.

Surgeons received a description of the project's aims and a request to proceed with presenting the video animation to their patients. The description and request occurred either the day before surgery via e-mail, or in person at the beginning of the day. All participating surgeons were enthusiastic about the proposed education for their patients and agreed to proceed with implementation of the project interventions for those who met the criteria described in the Process Measures and Outcomes section below. On the day of surgery, patients meeting the inclusion criteria received a brief description of the project's aims and were invited to



participate. Each patient who agreed to voluntarily watch the educational video viewed it with their family member in the preoperative area prior to surgery on an iPad provided by the project manager. Patients were then asked if they had any questions. Family members were also asked if they had any input or required any clarifications regarding the material presented. Data to assess the effectiveness of the intervention were obtained from electronic charting or by personal visit from the project manager prior to discharge. All patients agreed to be followed up via phone call for further data collection if needed.

### **Process Measures and Outcomes**

Minimally invasive non-surgical cases which routinely do not produce lasting pain or the need for post-procedural pain control were excluded to prevent falsely favorable results. However, from June 2022 to September 2022, 12 patients ranging in age between 28-71 with an average age of 50 participated in the project. Five patients (41.5%) self-identified as male, five as female (41.5%), and two as transgender (17%). Elective surgical cases included one bariatric surgery, three gynecological surgeries, two urology surgical cases, four plastics-surgeries, and two orthopedic surgeries. These types of surgeries were chosen based on their potential to produce relatively similar pain burden postoperatively due to relatively similar level of tissue disruption.

Outcome 1 was met. 100% of educational materials, including video animation and questionnaires, were developed by the project manager, and approved by stakeholders. The video animation was fully developed by the project manager using professional video animation programs.

Outcome 2 was met. Although bariatric surgery patients were the initial intended population for the project, the inclusion of other surgical patients yielded appropriate results due to surgeons' support of the project's aims. As it was the project manager describing the project to each surgeon on or before day of surgery and collecting the data, 100 % of the staff involved in

the project's process received the training on the project aims, processes and protocols.

Outcomes 3 and 4 were met. All 12 patients viewed the video animation prior to receiving surgery. An iPad with the educational video was readied by the project manager for viewing by each patient prior to surgery, allowing for 100% patient access of the educational material. Patients were asked if they had received any education about pain management immediately prior to showing them the video animation. Eight patients (67%) reported not receiving education about pain management until the intervention was provided by project manager on the day of surgery. See Appendix Q.

Outcome 5 was met. Seven patients (59 %) reported that the information was useful and well developed, allowing them enhanced experience, and assuring them of appropriate care. Likert scores for helpfulness of video animation ranged between 2-9 on a scale of 0-10 with zero being least helpful and 10 being most helpful. Seven patients reported a score of seven or above on the Likert scale, while four patients gave a score of four to six, and one patient reported the video's helpfulness at two. See Appendix R. Family members also volunteered their input regarding the effectiveness of the educational tool. Most family members stated that the information was useful and well-developed and assured them of appropriate care delivery to their loved-one. One patient (8%) continued to require an anxiolytic medication (anti-anxiety medication) to relieve stress pre-operatively resulting from fear of potential surgical pain or other complications. Seven patients had pre-existing/ pre-surgical anxiety-disorder diagnosis. Their diagnosis of anxiety was independent of the surgical intervention and is a long-standing condition. After watching the pain management video, the participants' Level of Anxiety regarding pain management ranged between zero to five on Likert scale of 0-10, with zero having no anxiety and 10 being most anxious. The mean score was 2.1. See Appendices Q and

R.

Outcome 6 was met. Five patients (41.5%) did not require the administration of an opioid medication after surgery in the recovery room or prior to discharge to home. However, although this project addresses the paucity in patient education regarding opioid dangers, it does not address the continued over-reliance on opioid medications administration by nurses and other healthcare providers. Patients may still receive opioid medications prophylactically prior to discharge to home, regardless of level of patient's comfort. Eight patients (67%) reported mild or no pain after surgery, with a range of pain scoring between 0-3 on a Likert scale of zero having no pain and 10 as the worst pain ever. Three patients (25%) stated their pain as moderate in a range of 4-6 after surgery. Only one patient reported severe pain at a rate of seven after surgery. The patient suffered other chronic pains and reported the pain was not exclusively from surgery. Patients were also asked to rate adequacy of their pain management with non-opioid medications. A Likert scale was used with zero indicating least adequate or not adequate at all, and 10 indicating most adequate. Responses ranged between five to 10, with a mean average score of 7.5. See Appendices Q and R.

Outcome 7 was met. 11 patients (92%) achieved three or more of the following criteria: 1. Ambulated early (on day of surgery or the next morning), 2. Lacked complaints of nausea and vomiting, 3. Tolerated self-care activities such as use of toileting, bathing, brushing hair, etc.), 4. Reported minimal or no drowsiness, 5. Reported readiness for discharge to home. Criteria 1 and 4 were met by 12 patients (100%). Criteria 2, 3, and 5 were met by 11 patients (92%). See appendices S and T.

Outcome 8 was met. 100% of surgeons who agreed to enroll their patients in the project enthusiastically verbalized agreement with the message of the educational tool and were eager to

have their patients educated about opioid dangers and alternative pain modalities. Albeit minimally, surgeons were the only other participatory stakeholder in the implementation phase. Therefore, the post-implementation staff questionnaire (Appendix M) was not distributed or utilized. One surgeon was able to view the video animation and reported agreement and thought it was well done. Another surgeon enthusiastically reported on how much the patient enjoyed the information and the video animation.

There were no missing data, unexpected findings, or unintended consequences from the implementation of this project. Proper preparations for potential complications and alternative planning during the implementation phase mitigated the potential devastating consequences of the loss of the bariatric-surgery project champion.

### **Project Budget**

Given the constraints in time, the lack of support from the perioperative and anesthesia departments, the bureaucracies involved in producing the animation by the institution, and prevailing sense of exhaustion among every sector and department at the institution due to the COVID-19 pandemic, the institutional ITG department's help was not sought. This allowed the project to be significantly less expensive. In addition, the inability to recruit other anesthesia providers to assist in the implementation process allowed for significant reduction in costs. Utilizing professional software intended for such productions and utilizing the project's manager time instead of utilizing ITG department's resources allowed this project to be well under the projected budget, with expenses below \$4000 instead of the projected cost of over \$75,000 dollars. See Appendices G and H. The video took approximately three weeks to produce. It is also likely that future similar endeavors can be achieved in the same manner using such software without the need for ITG involvement. The financial implications for the institution and for the

patients from savings due to reduction in opioid consumption were not estimated in this project.

### **Interpretation**

This project aimed to inform patients of opioid dangers, provide expectations of surgical pain, and describe alternative non-opioid therapies for pain management. The video animation was developed completely on these three tenets. Consequently, and congruent with available literature, the results indicated that informing patients of these three tenets may be a factor in reducing opioid consumption, especially after surgery.

Although the project aimed to evaluate the impact of the pain management education program on one single population of bariatric surgery patients, the final patient sample included various surgical procedures demonstrating a potential need for educating broader types of surgical patients on intra- and postoperative pain management. Research findings and anecdotal experiences have shown that there is significant deficiency in patient education regarding opioid medications and their proper use after surgery (Schairer et al., 2017). The findings from this project further reiterate this point with eight (67%) of the project's 12 participants reporting not receiving education about surgical pain management until the project's educational intervention was provided.

Seven (59%) patients reported that the information in the video was useful, and that the aesthetics of the cartoon animation made it more enjoyable to watch the video. Literature in education has shown that cartoon animation has been proven to enhance learning and engagement in the classroom (Liu & Elms, 2019) as well as in the healthcare environment (Leiner, 2004). Many family members who were present during the showing of the video animation voiced their approval of the educational message. Some family members requested further information and exhibited engagement by asking questions about information presented

in the video. The project manager was readily available and answered all questions and pointed out possible resources.

Despite a large prevalence of pre-existing/ pre-surgical anxiety-disorder in the participants, with seven patients having that diagnosis, only one patient required an anxiolytic medication before going into surgery. An anxiolytic is a medication -typically a benzodiazepine- that when ingested or given intravenously will provide the patient with sedative effects that allows the person to experience enough euphoria causing minimization or obliteration of worries or anxious tendencies. The fact that 11 of the 12 patients required no anxiolytic, despite the presence of chronic anxiety, tells of potential and significant impact of proper education on the perceptions/attitudes of the surgical patient. This is also consistent with research findings which reveals that preoperative education leads to improved perioperative patient outcomes (Hsueh et al., 2016). By eliminating benzodiazepines (anxiolytics), these 11 patients further experienced less deleterious anesthesia and may have favorably impacted the rapidity of discharge to home.

Pain is one of the biggest issues that many patients deal with while hospitalized. It's reasonable to arrive with concerns about surgical pain management on and after the day of surgery. The education that this cohort received may have allowed for the meaningful reduction in opioid consumption on the day of surgery. Five (41.5%) did not require the administration of an opioid medication after surgery in the recovery room or prior to discharge to home, and eight patients (67%) reported only mild to moderate pain. It's worth reiterating however, that the prevailing culture at this project's institution is to administer opioid medications to patients in the form of Oxycodone prior to discharge, despite the presence of only minimal pain. This may have reduced the number of patients who could have gone without needing to take any opioid medications prior to discharge. Three patients who reported pain of 3 or less received

Oxycodone despite the minimal pain scoring. One of these patients received Oxycodone twice with such ratings (see Appendix R). This, however, does not speak of the potential that the ratings are subjective, and that the numerical values are not always uniformly applied by patients to mean the same thing.

The biggest possible impact of this intervention is perhaps evident in Outcome 7, with 11 (92 %) patients achieving three or more of the five discharge criteria prior to discharge to home (see Appendix S). While there are other possible factors that could be involved, such as patient's eagerness to go home, receiving fewer opioids during hospitalization has been proven to lead to faster discharge to home (Wick et al., 2017).

This data has the potential to influence institutional policymaking that may mandate or at minimum highly recommend educating patients about the dangers of opioids. Ideally, this educational intervention or a similar intervention could be broadcasted on monitors all around the institution as an informational video while patients await their appointments. The data collected from this project can be replicated with other departments that perform non-surgical procedures such as gastrointestinal department, interventional radiology, and emergency department. Many patients in hospitals may receive interventions that can result in lasting pain that requires use of pain-modulating therapy. This educational program can guide these patients in understanding pain, recognizing its normalcy, and understanding the dangers of opioid medications. In addition, the setting of this project is a large institution with various locations around the state. The utilization of the education can impact policymaking around various locations and partner-institutions resulting in enhanced patient care and outcomes across the state.

## **Conclusions**

Given the similarity of the results obtained from this quality improvement project with the current findings from the literature, it appears that this project has the potential to be highly influential in the care of the surgical patient. The discharge criteria in Outcome 7 are highly desirable outcomes. Hospital administration will look favorably on quicker turnovers with associated financial benefits, as well as improved reputation in the community of superior care compared to other institutions. Quicker discharges will also allow surgeons to more expeditiously accommodate the long surgery waitlists that resulted from two years of stagnations due to COVID restrictions. But most importantly, the impact is most favorable to the patient who will suffer less pain, less consequences of side effects from opioids, and ultimately less risk of addictions and possibly less opioid-related deaths in the community.

These effects are clearly not limited to the surgical patients. Many other patients could benefit from an education with an aesthetically pleasing tool, such as video animation, that would help inform them about opioid dangers and non-opioid medication alternatives. This educational intervention could be applied in other contexts of patient care, with minor tweaking to the video animation to be more inclusive of all other patients.

The next steps will be to disseminate the findings to the institution in the hopes that it will influence the wide adaptation of this educational tool to additional surgical services and in the future to other sectors of the institution. The project as implemented resulted in very low-cost but high-quality production that can have high positive impact on patient care. The project manager can easily assist other departments and partner institutions in the development of similar tools aimed at educating specific population of patients. In fact, direct sustainability planning discussions with leadership at a partner institution have already taken place to propel the project forward. The project manager also provides services at that institution and may assist



in planning a continuation of this pilot project, or another interested clinician (nurse or physician) may be willing to begin such implementation. Once leadership is fully vested in this project, the potential for its continuation is real and its impact can be echoed across the state due to the wide geographical reach of this health system. With increased acceptance and resource allocation, more data and more staff may be utilized to establish the intervention more definitively in patient care. The success of the project can reach high levels, necessitating a dedicated team of nursing educators to ensure its continued administration and improvement.

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## Appendices

### Appendix A-Literature Review Summary Table

Articles with evidence of opioid-prescribing contributions to the opioid crisis

TITLE OF ARTICLE	AUTHORS	RESEARCH QUESTION OR AIM OF THE ARTICLE	TYPE OF STUDY (DESIGN)	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE (IF APPLICABLE)	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Association of overall opioid prescriptions on adolescent opioid abuse	David C. Sheridan, Amber Laurie, Robert G. Hendrickson, Rongwei Fu, Bory Kea, and B. Zane Horowitz	Assess for a relationship between opioid prescribing practices across the United States and adolescent opioid ingestion calls to poison centers.	Retro-spective observational study.	LEVEL II-A	A sample of 4186 total teen opioid abuse calls to poison centers across the United States between 2005 and 2010.	The number of teen opioid abuse poison center calls within each region and the related opioid prescriptions per 100 persons within each region.	Annual increase of 5.1 % in teen opioid abuse calls per 100,000 teens corresponds to annual increase of 6.9% in total opioid prescriptions
Trends in opioid prescribing by race/ethnicity for patients seeking care in US emergency departments	Mark J. Pletcher, Stefan G. Kertesz, Michael A. Kohn, Ralph Gonzales	Determine whether opioid prescribing in emergency departments has increased, whether non-Hispanic white patients are more likely to receive an opioid than other racial/ethnic groups, and whether differential prescribing by race/ethnicity has diminished since 2000.	Retro-spective analysis using a 4-stage probability sample design	LEVEL II-B	Patients who visited emergency departments in the US with primary complaint of pain between 1993-2005.	Prescription of an opioid analgesic.	<p>-Whites made 66% of all pain-related visits; blacks, 20%; Hispanics, 11%; and Asians/others, 2%.</p> <p>-Opioid prescribing for pain increased from 23% in 1993 to 37% in 2005.</p> <p>-Differences in opioid prescribing by race/ethnicity have not decreased.</p>
Emergency department visits for opioid overdoses among patients with cancer	Jairam, V., Yang, D. X., Yu, J. B., & Park, H. S	Examine overdoses from opioids leading to emergency department (ED) visits among patients with cancer in the United States.	Statistical analysis	LEVEL III-B	Nationwide Emergency Department Sample (NEDS) was queried for all adult cancer-related patient visits with a primary diagnosis of opioid overdose between 2006 and 2015	Rates of opioid-related ED visits, as well as comorbid risk factors for opioid overdose, among patients with cancer	<p>-Opioid overdoses in patients with cancer increased from 2078 in 2006 to 5324 in 2015.</p> <p>-The majority of opioid-related visits involved prescription opioids (94.3%).</p> <p>- Opioid-related ED visits increased by two folds</p>

TITLE OF ARTICLE	AUTHORS	RESEARCH QUESTION OR AIM OF THE ARTICLE	TYPE OF STUDY (DESIGN)	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE (IF APPLICABLE)	OUTCOME MEASURES	RESULTS/KEY FINDINGS
The opioid crisis in Black communities	Keturah James, Ayana Jordan	Discuss the opioid epidemic in Black communities in historical context, and to suggest why targeted evidence-based interventions are appropriate.	Historical perspective  Analysis of current data.	LEVEL V-A	Black Americans who suffer from opioid dependence, and opioid-overdose related deaths.	Rates of opioid use and overdose-related deaths in Black and White communities.	-Opioid use disorder is more widespread ethnically and geographically and is getting worse -The epidemic is increasingly affecting more Black people, for whom overdose death rates have more than doubled. -Despite the shift to a public health framework, not enough has changed for Black people, in terms of treatment.
Opioid-prescribing patterns of emergency physicians and risk of long-term use	Barnett, M. L., Olenski, A. R., & Jena, A. B.	Examine the extent to which emergency physicians within the same hospital varied in rates of opioid prescribing	Retrospective analysis	LEVEL II-B	Medicare beneficiaries who had an index emergency department visit in the period from 2008 through 2011 and had not received prescriptions for opioids within 6 months before that visit. Sample consisted of 215,678 patients who received treatment from low-intensity prescribers and 161,951 patients who received treatment from high-intensity prescribers.	Rates of long-term opioid use, defined as 6 months of days supplied, in the 12 months after a visit to the emergency department among patients treated by high-intensity or low-intensity prescribers.	Long-term opioid use was significantly higher among patients treated by high-intensity prescribers than among patients treated by low-intensity prescribers
Vital signs: Changes in opioid prescribing in the United States 2006-2015	Guy, G. P., Zhang, K., Bohm, M. K., Losby, J., Lewis, B., Young, R., Murphy, L. B., & Dowell, D.	Changes in national-level and county-level opioid prescribing during 2006–2015	Data analysis	LEVEL I-A	Retail opioid prescription data from QuintilesIMS in the United States from 2006 to 2015, and counties from 2010-2015 including rates, amounts, dosages, and durations prescribed	Rates of prescribed opioid-medication	- opioids prescribing in 2015 remained approximately three times as high as in 1999. - Disparities of opioid prescribing between social class, ethnicity, and comorbid disease exist at county level.

## Articles providing evidence of lack in patient-education

TITLE OF ARTICLE	AUTHORS	RESEARCH QUESTION OR AIM OF THE ARTICLE	TYPE OF STUDY (DESIGN)	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE (IF APPLICABLE)	OUTCOME MEASURES	RESULTS/KEY FINDINGS
What is the quality of online resources about pain control after total knee arthroplasty?	Schairer, W. W., Kahlenberg, C. A., Sculco, P. K., & Nwachukwu, B. U.	Evaluate the quality of online resources that patients may use to learn about pain control after total knee arthroplasty	Systematic Review	LEVEL II-B	32 websites that aim at teaching patients about pain after total knee arthroplasty	A grading rubric was created with 25 maximum points, consisting of items that were deemed important for patients to know about the subject. Three authors then independently graded websites and the results averaged. Flesch-Kinkaid reading level was also evaluated.	-There is a paucity of online information for TKA patients to read about pain control.  -Most websites provide limited educational content, particularly about opioids.
Receipt of pain management information preoperatively is associated with improved functional gain after elective total joint arthroplasty	Lemay, C. A., Lewis, C. G., Singh, J. A., & Franklin, P. D.	Evaluate patient-reported receipt of preoperative pain management information in a national prospective cohort evaluating postoperative pain and function following elective total joint arthroplasty.	Prospective Cohort Study	Level I-A	1609 primary unilateral total joint arthroplasty patients.	Statistical analysis including descriptive analysis of collected data preoperatively and postoperatively. Likert scale used to assess satisfaction of educational material received.	Lack of pain management information was associated with poorer 6-month postoperative function

## Articles pertaining to potential solutions

TITLE OF ARTICLE	AUTHORS	RESEARCH QUESTION OR AIM OF THE ARTICLE	TYPE OF STUDY (DESIGN)	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE (IF APPLICABLE)	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Patient communication: a multi-disciplinary approach using animated cartoons	Leiner, M., Handal, G, Williams, D.	Compare the effectiveness of a printed message about polio vaccinations with the same message converted into a production of animated cartoons.	RCT	LEVEL I-B	192 parents of polio patients randomized to printed sheet vs. animated cartoon having the same information about polio. The parents took a test pre and post exposure to method of learning.	Author-developed questionnaire validated with content and face validity and its reliability were confirmed using test – retest. The intra-class correlation coefficient (ICC) was equal to 0.76 and the Cronbach alpha was calculated to be 0.82.	Cartoon animation facilitates better understanding of healthcare educational material and improves engagement of caregivers
The impacts of cartoon instructional videos on learning experience	Liu, C., & Elms, P.	Investigates the impacts of animated teaching videos on students' learning process.	Case Study Survey	Level II-A	254 students at an Australian university enrolled in accounting	Descriptive statistical analysis of Likert scale and commentary responses.	Animated teaching videos can enhance students' learning experience through increasing student interest, improving students understanding of the materials, facilitating flexible and self-paced learning, and providing a refreshing change from conventional teaching.
Preemptive and preventive pain psychoeducation and its potential application as a multimodal perioperative pain control option	Horn, A., Kaneshiro, K., & Tsui, B. H.	Examine the possibility of using psychological intervention in the form of preoperative psychoeducation to achieve both preemptive benefit and multimodal advantage.	Systematic Literature Review	LEVEL II-A	24 studies qualified for inclusion in the review of psychoeducation influence on opioid consumption after surgery. Studies were of various designs.	Oxford levels of evidence tool used to assess 5 domains: (1) preoperative pain anticipated education, (2) procedural pain knowledge, (3) anxiety and pain catastrophizing effect, (4) information delivery strategy, and (5) psychoeducational cost	-Procedural pain knowledge has a significant impact on pain control and recovery time.  -Preemptive psychoeducation reduces opioid consumption and hospitalization.
TITLE OF ARTICLE	AUTHORS	RESEARCH QUESTION OR AIM OF THE ARTICLE	TYPE OF STUDY (DESIGN)	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE (IF APPLICABLE)	OUTCOME MEASURES	RESULTS/KEY FINDINGS
The impact of patient interactive systems on the	Aldekhyyel, R. N., Bakker, C. J., Pitt, M. B., & Melton, G. B.	Determine whether patient engagement through the use	Systematic Literature Review	LEVEL II-A	18 studies qualified for inclusion with 13 RCT's and 5	(1) changes in patient-reported pain levels; (2) patient	Interactive forms of education tools especially with technology

management of pain in an inpatient hospital setting: A systematic review		of interactive systems for pain management leads to improvements in clinical care, clinical workflows, patient outcomes, or user satisfaction.			non-RCT studies about interactive systems to engage patient with management of their pain.	engagement; (3) user satisfaction; (4) changes in clinical workflow; and (5) changes in clinical documentation practices.	integration (such as virtual reality and videos) improve patient communication, education, and pain scoring.
A study on the effects of a health education intervention on anxiety and pain during colonoscopy procedures	Hsueh, F.-C., Chen, C.-M., Sun, C.-A., Chou, Y.-C., Hsiao, S.-M., & Yang, T.	Explore the effects of providing procedure related information to patients in reducing pain and anxiety during and after colonoscopy.	Quasi-experimental	LEVEL II-A	213 patients receiving colonoscopy procedures between January and April 2011.	- State-Trait Anxiety Inventory (STAI) used for measuring anxiety outcome: 20 to 39= mild, 40 to 59= moderate, 60 to 80= severe - numerical rating scale (NRS) used to measure pain on 0-10. 0 = no pain, 10 severe pain.	Using multimedia health informatics CD-ROM to provide information on the colonoscopy procedure effectively reduced the examination-related anxiety and pain of patients.
The effect of preoperative opioid education on opioid consumption after outpatient orthopedic surgery: A prospective randomized trial	Ilyas, A. M., Chapman, T., Zmistowski, B., Sandrowski, K., Graham, J., & Hammoud, S.	Understand the effect of preoperative opioid education on opioid consumption following outpatient orthopedic surgeries.	Prospective randomized study	Level I-A	237 patients undergoing outpatient orthopedic surgeries were prospectively randomized to receive preoperative opioid education or not.	Effect of education was measured by statistical analysis: -mean of total pills consumed -mean of total morphine equivalents consumed -visual analog scale -number of days taking opioids -number of days taking multimodal.	Preoperative opioid education allows for significant reduction in opioids consumption when compared to not receiving education.
Use of multimedia in patient and caregiver education for cancer pain management: A literature review	Lam, M., Choi, M., Lam, H. R., Agarwal, A., Chow, R., Chow, S., Rowbottom, L., McDonald, R., Lam, H., Chan, S., Chow, E., & Henry, B.	Examine the literature surrounding the use of multimedia interventions for patient and caregiver education on pain management compared to traditional educational interventions.	Systematic Literature Review	LEVEL II-B	68 full-text papers assessed, 7 were deemed relevant, of which 5 were RCTs and 2 were observational studies.	-Data extraction was conducted by two reviewers independently, with consensus established via discussion. -Results were synthesized qualitatively without a meta-analysis.	Quantitative data suggests that use of multimedia in pain management education for patients/caregivers has greater value-added benefit compared to standard education.
<b>TITLE OF ARTICLE</b>	<b>AUTHORS</b>	<b>RESEARCH QUESTION OR AIM OF THE ARTICLE</b>	<b>TYPE OF STUDY (DESIGN)</b>	<b>LEVEL OF EVIDENCE</b>	<b>DESCRIPTION OF SAMPLE (IF APPLICABLE)</b>	<b>OUTCOME MEASURES</b>	<b>RESULTS/KEY FINDINGS</b>
The effect of multimedia-based nursing visit on preoperative anxiety and vital signs in patients	Zarei, B., Valiee, S., Nouri, B., Khosravi, F., & Fathi, M.	Determine the effectiveness of a multimedia-based nursing visit on preoperative anxiety and vital	RCT	Level I-B	60 patients undergoing lumbar disc herniation surgery randomized to treatment group	Mann-Whitney test was used to compare the rate of anxiety and vital signs in the two groups at different times.	Patients' anxiety before lumbar disc herniation surgery was reduced after multimedia-based nursing visit (videos, photos,

undergoing lumbar disc herniation surgery: A randomized clinical trial		signs in patients undergoing spinal disc herniation surgery.			which received video and printed material vs. control with only preparation by ward nurses.		pamphlets).
Youtube videos to create a “virtual hospital experience” for hip and knee replacement patients to decrease preoperative anxiety: A randomized trial	O'Connor, M. I., Brennan, K., Kazmerchak, S., & Pratt, J.	Evaluate the potential impact of viewing an educational YouTube playlist about joint surgeries on preoperative anxiety	RCT	Level I-B	53 patients undergoing either hip or knee arthroplasty evaluated preoperatively and postoperatively	Generalized Anxiety Disorder (GAD) score assessment was provided pre and post operatively and statistically analyzed.	Less anxiety in patients who viewed enhanced education (YouTube videos) preoperatively vs. traditional education. Less anxiety = less pain
The impacts of cartoon instructional videos on learning experience	Liu, C., & Elms, P.	Investigates the impacts of animated teaching videos on students' learning process.	Case Study Survey	Level II-A	254 students at an Australian university enrolled in accounting	Descriptive statistical analysis of Likert scale and commentary responses.	Animated teaching videos can enhance students' learning experience through increasing student interest, improving students understanding of the materials, facilitating flexible and self-paced learning, and providing a refreshing change from conventional teaching.
Comparing the effect of educational software and booklet on knowledge level regarding labor pain management: A randomized controlled clinical trial.	Abbasi, P., Mohammad-Alizadeh Charandabi, S., & Mirghafourvand, M.	Compare the effect of software and booklet on knowledge regarding labor pain management.	RCT	Level I-B	153 pregnant women referring to healthcare centers of Miandoab city in West Azerbaijan province, Iran in 2015-2016.	Analysis of covariance (ANCOVA) with baseline score adjustment was used to compare the mean score of knowledge between the study groups.	-Both software and booklet are effective in improving maternal knowledge about managing the labor pain.  -Software is more effective than booklet

## Appendix B- Theoretical Model - Bandura's Self-Efficacy as Applied to the Scholarly Project



**Appendix C- Logic Model Table**

<b>Step 5</b> <b>Resources/Inputs</b>	<b>Step 3</b> <b>Activities</b>	<b>Step 4</b> <b>Outputs</b>		<b>Step 2a</b> <b>Outcomes: Short term</b>	<b>Step 2b</b> <b>Outcomes: Intermediate</b>	<b>Step 1</b> <b>Outcomes: Long term</b>
<b>What we invest: resources and contributions</b>	<b>What we do</b>	<b>What we accomplish or produce from the activities</b>	<b>Who we reach with our activities</b>	<b>The expected changes attainable during the DNP Scholarly Project timeline.</b>	<b>The expected changes attainable 6 months - 2 years after the DNP Project is implemented.</b>	<b>Fundamental changes for participants or community because of project activities, 3-5 years after project implementation.</b>



Step 5	Step 3	Step 4		Step 2a	Step 2b	Step 1
Resources/Inputs	Activities	Outputs		Outcomes: Short term	Outcomes: Intermediate	Outcomes: Long term
<p>*Equipment:</p> <ul style="list-style-type: none"> <li>-Computer with excellent graphic capabilities.</li> <li>-Programing app capable of developing quality animation videos.</li> <li>-Printer and office supplies</li> </ul> <p>*Personnel:</p> <ul style="list-style-type: none"> <li>-IT Department technicians and website developers.</li> <li>-Stakeholder including surgeons, administration leadership, and project manager.</li> </ul> <p>*Fiscal:</p> <ul style="list-style-type: none"> <li>-Budget of \$1000-2000 dollars for video production allotted through bariatric services.</li> <li>-Hourly rate of IT, administrative, and technician personnel.</li> <li>-Office space and material associated costs (i.e., booking, electricity, paper, pamphlets, video program)</li> </ul>	<ul style="list-style-type: none"> <li>-Develop (department) educational animation video about surgical pain, opioid medications dangers, and alternatives to opioids.</li> <li>-Develop surveys to assess project progression.</li> <li>-Provide stakeholders with educational animation video and link to view and approve prior to launch date.</li> </ul>	<ul style="list-style-type: none"> <li>-Bariatric surgery services and preoperative clinic have access to educational animation video and pamphlets to dispense to patients.</li> </ul>		<ul style="list-style-type: none"> <li>- Preoperative clinic staff including advanced nurse practitioners (ANPs), registered nurses (RNs) medical assistants (MAs) and medical doctors (MDs).</li> <li>- Stakeholders including organizational leadership, bariatric services and other surgeons, Pre-operative/ PACU nurses, Anesthesia providers (CRNAs &amp; MDs), BSU mentor, and project manager.</li> </ul>	<p>1.100% of educational material including video animation and questionnaires were developed and approved by stakeholders including administration management/ leadership, surgeons, and mentor by May 30, 2022 (PO).</p>	<p>13. Opioid medications - prescribing and administration significantly decreased in the perioperative period for bariatric patients.</p>

<p>*Equipment:</p> <ul style="list-style-type: none"> <li>-Computer with Wi-Fi and e-mail account.</li> <li>-Power Point app and internet access.</li> <li>-Printers and office supplies to produce reference cards.</li> </ul> <p>*Personnel:</p> <ul style="list-style-type: none"> <li>-Project manager.</li> <li>-Administrative office staff.</li> </ul> <p>*Fiscal:</p> <ul style="list-style-type: none"> <li>-Hourly rate of administrative office staff and technician personnel.</li> <li>-Office space and material associated costs to produce reference cards.</li> </ul>	<ul style="list-style-type: none"> <li>-Develop training tools to share with stakeholders (staff and clinicians involved in the project implementation) including PowerPoint presentation accessible via hyperlink or email sent to stakeholders, in-person informative session with project manager explaining project during huddles or professional staff meetings, and reference cards placed at workstations.</li> </ul>	<ul style="list-style-type: none"> <li>-Stakeholders and project supporters received training about project processes and implementation</li> </ul>	<ul style="list-style-type: none"> <li>- Preoperative clinic staff including advanced nurse practitioners (ANPs), registered nurses (RNs) medical assistants (MAs) and medical doctors (MDs).</li> <li>- Stakeholders including organizational leadership, bariatric services and other surgeons, bariatric services team (ANPs, RNs, physical therapists (PTs), &amp; registered dietitians (RDs), Pre-operative/ PACU nurses, Anesthesia providers (CRNAs &amp; MDs), BSU mentor, and project manager.</li> </ul>	<p>2. 70% of staff who will be involved in the care of surgical patients including Surgeons, perioperative care nurses, and anesthesia personnel received training to learn about the project process, aims, activities, providing questionnaires to patients, and how they can facilitate the implementation of patient education/ project by May 30, 2022 (PO).</p>		
<p>*Equipment:</p> <ul style="list-style-type: none"> <li>-Computer with</li> </ul>	<ul style="list-style-type: none"> <li>-Provide bariatric-surgical patients with access to TV</li> </ul>	<ul style="list-style-type: none"> <li>-Bariatric-surgery patients are educated</li> </ul>	<ul style="list-style-type: none"> <li>-Bariatric surgery patients.</li> </ul>	<p>3. 50% of surgical patients reported receiving the</p>	<p>9. 90% of surgical</p>	<p>14. Adverse side effects and</p>

<p>excellent graphic capabilities.</p> <p>-Production of a visually appealing video animation cartoon or educational material.</p> <p>-Development of website-link for easy access of educational material.</p> <p>-Brochures and printed material for reference.</p> <p>-Access to preoperative monitors/ TV to run continuous loop of the educational video.</p> <p>*Personnel:</p> <p>-IT Department personnel.</p> <p>-Nursing &amp; medical personnel to offer education.</p> <p>-Surgical, post anesthesia care unit (PACU), and departmental administrative personnel.</p> <p>-Certified Registered Nurse Anesthetists (CRNAs) who agreed to assist with project.</p>	<p>monitors with looped informational video about opioid medications while waiting to be seen in preoperative clinic. And again, while waiting on day of surgery.</p> <p>-Provide bariatric-surgical patients with link for informational video about the benefits of non-opioid based analgesia to view at leisure.</p> <p>-Provide bariatric-surgery patients with printed material about alternatives to prescribed-opioid medications to manage pain.</p> <p>-Survey patients, during hospitalization, or via telephone, after discharge about having been given educational material prior to surgery.</p>	<p>about the dangers of prescribed opioid medications during preoperative visit.</p> <p>-Bariatric-surgery patients are informed of alternatives to opioid medications to treat post-surgical pain during the surgical planning and admission process before and on day of surgery.</p> <p>-Bariatric surgery patients are informed about pain as a natural part of the healing process from surgery.</p>	<p>- Stakeholders including organizational leadership, bariatric services and other surgeons</p>	<p>educational intervention as assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (PO).</p>	<p>patients reported receiving the educational material (video. animation) as assessed by direct questioning during hospitalization by project manager measured monthly from end of project implementation in August 2022 through May 2023 (PO).</p>	<p>complications from opioid medications use was significantly lowered at the institution.</p>
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Step 5 Resources/Inputs	Step 3 Activities	Step 4 Outputs		Step 2a Outcomes: Short term	Step 2b Outcomes: Intermediate	Step 1 Outcomes: Long term
-Project manager.  *Fiscal: -Budget of \$1000-2000 dollars for video production.  -Hourly rate of IT, administrative, and nursing personnel.  -Office space associated costs (i.e. booking, electricity, etc.)						

<p><b>*Equipment:</b></p> <ul style="list-style-type: none"> <li>-TV monitors for presenting looped informational video on pain management alternatives to opioid medications.</li> <li>-Web link development tools and software.</li> <li>-Printed material/alternatives to video.</li> <li>-Printer and printer material (ink, paper, etc.)</li> </ul> <p><b>*Personnel:</b></p> <ul style="list-style-type: none"> <li>-Administrative staff to provide link.</li> <li>-IT personnel to develop link and imbed link on institution's website.</li> <li>-CRNAs who agreed to assist with project.</li> <li>-Project manager.</li> </ul> <p><b>*Fiscal:</b></p> <ul style="list-style-type: none"> <li>-Cost for paper and material used.</li> <li>-Hourly rate for personnel used.</li> <li>-Office space associated costs.</li> </ul>	<ul style="list-style-type: none"> <li>-Provide bariatric-surgery patients with a link to video or printed material on pain management and alternatives to prescribed-opioid medications before arrival on day of surgery and provide continued access to educational material.</li> <li>-Develop survey with question asking patient if the educational material was accessed prior to arrival for surgery.</li> <li>-Provide project manager or other project representative (i.e., CRNA volunteer) questionnaire tool to assess patient's compliance with accessing educational material.</li> </ul>	<ul style="list-style-type: none"> <li>-Bariatric surgery patients can access video animation or printed pamphlets on post-surgical pain management and alternatives to prescribed-opioid medications at any time before and after surgery.</li> </ul>	<ul style="list-style-type: none"> <li>-Bariatric-surgery patients and other surgical patients.</li> </ul>	<p>4. 40% of surgical patients reported accessing the educational material (video animation) as assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (PO).</p>	<p>10. 70% of surgical patients reported accessing the educational material (video animation) as assessed by direct questioning during hospitalization by project manager. To be measured monthly from end of project implementation in August 2022 through May 2023 (PO).</p>	<p>15. Surgical patients reported higher levels of satisfaction regarding the general care and pain control at OHSU.</p>
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<p><b>*Equipment:</b></p> <ul style="list-style-type: none"> <li>-TV monitors for presenting looped informational video on pain management alternatives to opioid medications.</li> <li>-Web link development tools and software.</li> <li>-Printed material/alternatives to video.</li> <li>-Printer and printer material (ink, paper, etc.)</li> </ul> <p><b>*Personnel:</b></p> <ul style="list-style-type: none"> <li>-Administrative staff to provide link.</li> <li>-IT personnel to develop link and imbed link on institution's website.</li> <li>-CRNAs who agreed to assist with project.</li> <li>-Project manager.</li> </ul> <p><b>*Fiscal:</b></p> <ul style="list-style-type: none"> <li>-Cost for paper and material used.</li> <li>-Hourly rate for personnel used.</li> <li>-Office space associated costs.</li> </ul>	<p>-Provide bariatric-surgery patients with a link to video or printed material on pain management and alternatives to prescribed-opioid medications before arrival on day of surgery and provide continued access to educational material.</p> <p>-Develop questionnaire to gauge patient's perception about the educational material decreasing patient's anxiety related to surgical pain management.</p> <p>- Provide project manager or other project representatives (i.e., CRNA volunteers) questionnaire tool to assess patient's levels of perceived anxiety.</p>	<p>- Bariatric surgery patients can identify non-opioid resources and alternatives in pain management allowing for reduction of anxiety during the perioperative care.</p>	<p>-Bariatric surgery patients and other surgical patients.</p>	<p>5. 30% of surgery patients reported that pain management education decreased their anxiety about post-surgical pain when assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (CO).</p>	<p>11. 60% of surgery patients reported that pain management education decreased their anxiety about post-surgical pain when assessed by direct questioning during hospitalization with project manager. To be measured monthly from end of project implementation in August 2022 through May 2023 (PO).</p>	
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<p>*Equipment:</p> <ul style="list-style-type: none"> <li>-TV monitors for presenting looped informational video on pain management alternatives to opioid medications.</li> <li>-Web link development tools and software.</li> <li>-Printed material/ alternatives to video.</li> <li>-Printer and printer material (ink, paper, etc.)</li> <li>-Computer to develop questionnaires and data gathering tools.</li> </ul> <p>*Personnel:</p> <ul style="list-style-type: none"> <li>-Administrative staff and healthcare providers to provide link to patients.</li> <li>-IT personnel to develop link and imbed link on institution's website.</li> <li>-CRNAs who agreed to assist with project.</li> <li>-Project manager.</li> </ul> <p>*Fiscal:</p> <ul style="list-style-type: none"> <li>-Cost for paper</li> </ul>	<ul style="list-style-type: none"> <li>-Provide bariatric-surgery patients with a link to video or printed material on pain management and alternatives to prescribed-opioid medications before arrival on day of surgery and provide continued access to educational material.</li> <li>- Develop questionnaire to gauge patient's perception about non-opioid medications adequacy of controlling patient's pain.</li> <li>- Provide project manager or other project representatives (i.e., CRNA volunteers) questionnaire gathering tool to assess patient's perception of non-opioid medication effectiveness in controlling their pain.</li> </ul>	<p>Bariatric surgery patients who received opioid and non-opioid medications (or other alternative therapies) experienced similar or better pain-relief as compared to exclusively using opioid medications during the perioperative course.</p>	<p>-Bariatric-surgery patients and other surgical patients.</p>	<p>6. 20% of surgery patients reported that their pain was adequately managed when taking non-opioid medications or using alternative non-medication methods as assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (CO).</p>	<p>12. 40% of surgery patients reported that their pain was adequately managed when taking non-opioid medications as assessed by direct questioning during hospitalization by project manager. To be measured monthly from end of project implementation in August 2022 through May 2023 (PO).</p>	
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Step 5 Resources/Inputs	Step 3 Activities	Step 4 Outputs		Step 2a Outcomes: Short term	Step 2b Outcomes: Intermediate	Step 1 Outcomes: Long term
and material used.  -Hourly rate for personnel used.  -Office space associated costs.						



<p>*Equipment:</p> <ul style="list-style-type: none"> <li>-TV monitors for presenting looped informational video on pain management alternatives to opioid medications.</li> <li>-Web link development tools and software.</li> <li>-Printed material/alternatives to video.</li> <li>-Printer and printer material (ink, paper, etc.).</li> <li>-Computer to develop questionnaires and data gathering tools.</li> </ul> <p>*Personnel:</p> <ul style="list-style-type: none"> <li>-Administrative staff and healthcare providers to provide link to patients.</li> <li>-IT personnel to develop link and embed link on institution's website.</li> <li>-CRNAs who agreed to assist with project.</li> <li>-Project manager.</li> </ul> <p>*Fiscal:</p> <ul style="list-style-type: none"> <li>-Cost for paper and material</li> </ul>	<ul style="list-style-type: none"> <li>-Provide bariatric-surgery patients with a link to video or printed material on pain management and alternatives to prescribed-opioid medications before arrival on day of surgery and provide continued access to educational material.</li> <li>- Develop questionnaire or data-gathering tool to assess patient's return to function one day after surgery including: ability to ambulate, absence of nausea/vomiting, ability to care for oneself, report of minimal or no sedation, report of readiness to go home</li> <li>- Provide project manager or other project representatives (i.e., CRNA volunteers) questionnaire or data-gathering tool to assess patient's return to function one day after surgery.</li> </ul>	<p>-Bariatric surgery patients who viewed educational material have better immediate outcomes one day after surgery.</p>	<p>-Bariatric-surgery patients</p> <ul style="list-style-type: none"> <li>- Stakeholders including bariatric services surgeons and other surgeons, PACU nurses, ward nurses, anesthesia providers (CRNAs &amp; MDs), and project manager.</li> </ul>	<p>7. On the morning following the day of surgery, 30% of bariatric-surgery patients achieved 3 or more of the following outcomes: 1. Ambulated early (on day of surgery or the next morning), 2. Lacked complaints of nausea and vomiting, 3. Tolerated self-care activities such as use of toileting, bathing, brushing hair, etc.), 4. Reported minimal or no drowsiness, 5. Reported readiness for discharge to home. To be measured weekly during June 2022-August 2022 project implementation (CO).</p>		
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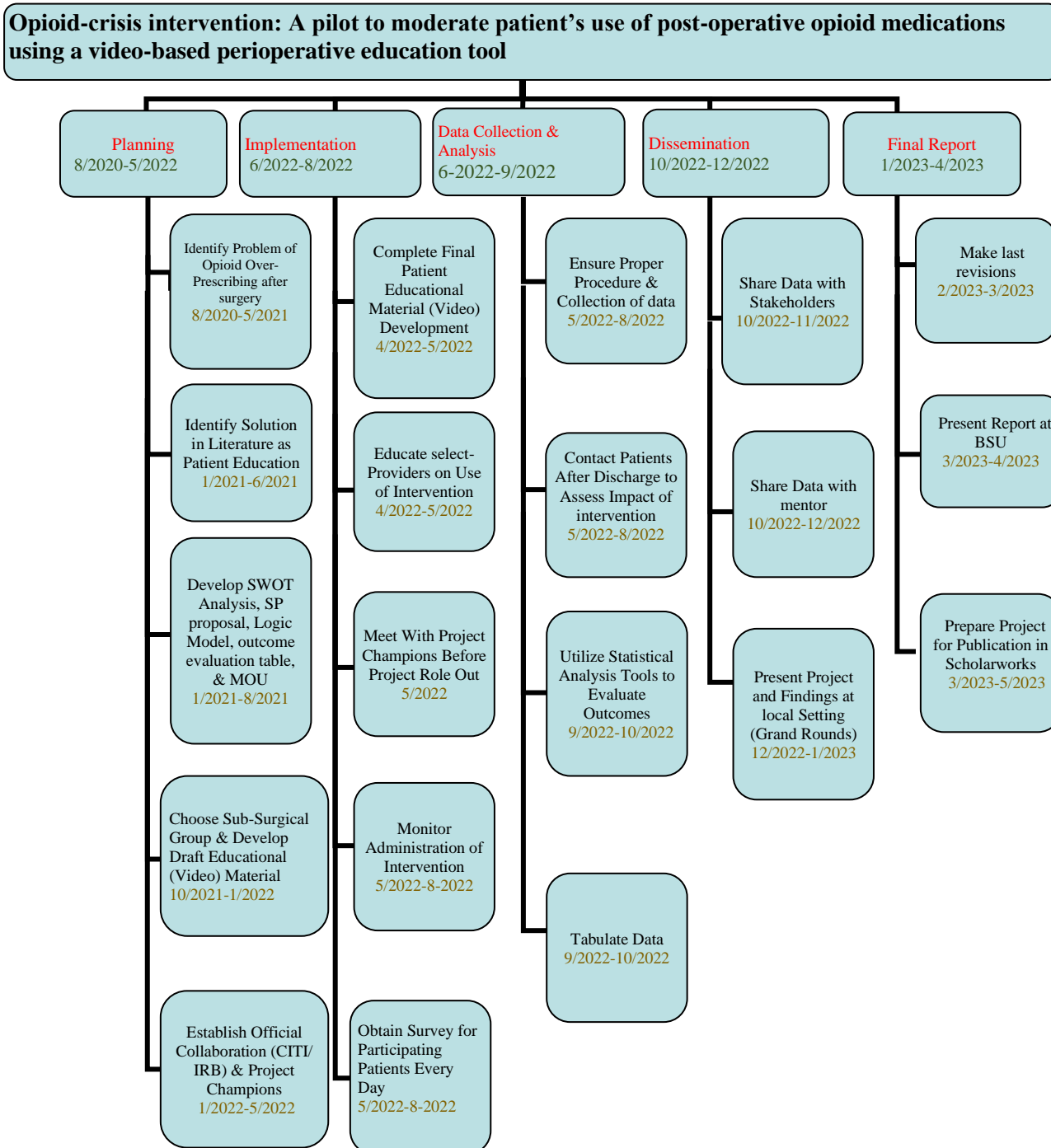
Step 5 Resources/Inputs	Step 3 Activities	Step 4 Outputs		Step 2a Outcomes: Short term	Step 2b Outcomes: Intermediate	Step 1 Outcomes: Long term
<p>used.</p> <p>-Hourly rate for personnel used.</p> <p>-Office space associated costs.</p>						

<p><b>*Equipment:</b></p> <ul style="list-style-type: none"> <li>-TV monitors for presenting looped informational video on pain management alternatives to opioid medications.</li> <li>-Web link development tools and software.</li> <li>-Printed material/alternatives to video.</li> <li>-Printer and printer material (ink, paper, etc.)</li> </ul> <p><b>*Personnel:</b></p> <ul style="list-style-type: none"> <li>-Administrative staff to provide link.</li> <li>-IT personnel to develop link and imbed link on institution's website.</li> <li>-CRNAs who agreed to assist with project.</li> <li>-Project manager.</li> </ul> <p><b>*Fiscal:</b></p> <ul style="list-style-type: none"> <li>-Cost for paper and material used.</li> <li>-Hourly rate for personnel used.</li> <li>-Office space associated costs.</li> </ul>	<ul style="list-style-type: none"> <li>-Develop questionnaire to send to stakeholders to assess perceived level of helpfulness of project in mitigating opioid medications use in bariatric surgery.</li> <li>-Disseminate questionnaire to stakeholders.</li> <li>-Analyze and tabulate returned questionnaires.</li> </ul>	<ul style="list-style-type: none"> <li>- Stakeholders involved in the scholarly project report significant contributions of the project in reducing opioid consumption in bariatric surgery and offer further enhancements to the project process.</li> </ul>	<ul style="list-style-type: none"> <li>- Stakeholders including bariatric services personnel and surgeons, preoperative clinic personnel, PACU nurses, ward nurses, anesthesia providers (CRNAs &amp; MDs), and project manager.</li> </ul>	<p>8. 50% of stakeholders including bariatric services surgeons, bariatric services team (Surgeons, ANPs, RNs), preoperative clinic personnel (ANPs, MDs), and anesthesia services (CRNAs, MDs) reported via electronic questionnaire their perception regarding the helpfulness of the educational material in reducing use of opioid-medications after bariatric surgery and eliciting for improvements of the process at completion of project in September 2022 (PO).</p>		

Adapted from: Logic Model Foundation Development Guide, pg 4.

<http://www.wkkf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide>

## Appendix D – Time Graph



### Appendix E- Outcome Evaluation Table

Outcome	Data Collection Instrument / Data	Analysis Goal	Analytic Technique
<b>1.100% of educational material including video animation and questionnaires were developed and approved by stakeholders including administration management/ leadership, surgeons, and mentor by May 30, 2022 (PO).</b>	<b>Instrument: Name:</b> “Project readiness checklist” sheet - Appendix J- <b>Data:</b> List of developed material including: -Video animation -Questionnaires The checklist will have the following items: 1. Video animation- completed 2. Website link to video/ educational material- completed 3. Patient questionnaires- developed 4. Stakeholder survey questionnaires- developed	Assesses the readiness of the project for immediate implementation and that all tools have been developed	Report provides data indicating completion of items listed in the outcome.
<b>2. 70% of staff who will be involved in the care of surgical patients including Surgeons, perioperative care nurses, and anesthesia personnel received training to learn about the project process, aims, activities, providing questionnaires to patients, and how they can facilitate the implementation of patient education/ project by May 30, 2022 (PO).</b>	<b>Instrument: Name:</b> “Pre-implementation Staff Questionnaire”-see Appendix J- will be utilized to send electronic survey to individuals participating in patient education. <b>Data:</b> The questionnaire will have the following questions: all rating questions are on a Likert scale of 0-10 with 0 denoting least and 10 denoting most: 1. Did you receive information or training regarding this project (Pilot to moderate bariatric patient’s use of post-operative opioid medications using a video-based perioperative education)? Yes/ No 2. On a scale of 0-10 how much do you understand the material? 3. On a scale of 0-10, how easy is it for you to direct patients to the information and educational link?	Assesses the readiness and understanding of participating individuals in the project implementation process and goals.	Descriptive statistics to quantify number and percentage of staff Yes/No answers. For scaled items, aggregated mean scores and range of responses to each item
<b>3. 50% of</b>	<b>Instrument: Name:</b> “Preop	Quantifies the	Descriptive statistics to

<p><b>surgical patients reported receiving the educational intervention as assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (PO).</b></p>	<p>Patient Questionnaire” report indicating each patient’s receipt of educational material prior to surgery via direct questioning by project manager</p> <p><b>Data:</b> The patient will be asked the following question on day of surgery:</p> <p>Have you received prior to surgery educational material regarding surgical pain, pain management, and opioid medications? Yes/No</p>	<p>number of patients who have received the primary intervention for this project which is the educational material to inform them about pain and pain medications.</p>	<p>quantify number and percentage of patients who have received the educational material.</p>
<p><b>4. 40% of surgical patients reported accessing the educational material (video animation) as assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (PO).</b></p>	<p><b>Instrument: Name:</b> “Preop Patient Questionnaire” report indicating each patient who did or did not access the educational material based on direct questioning by a project staff member prior to surgery.</p> <p><b>Data:</b> Data will be gathered by asking patients in the preoperative area on day of surgery the following question:</p> <p>-Did you watch the video animation regarding surgical pain, pain management, and opioid medications? Yes/ No</p> <p>-On a scale of 0-10, how easy was it for you to access the educational material?</p>	<p>Measures level of compliance of accessing the provided educational material.</p>	<p>Descriptive statistics to quantify number and percentage of Yes/No answers. For scaled items, aggregated mean scores and range of responses to each item</p>
<p><b>5. 30% of surgery patients reported that pain management education decreased their anxiety about post-surgical pain when</b></p>	<p><b>Instrument: Name</b> “Postop Patient Questionnaire” report indicating each patient’s answer to the questions listed below.</p> <p><b>Data:</b> Data will be gathered by asking patients in the preoperative area on day of surgery (or via phone if missed opportunity) the following questions:</p>	<p>Assesses effectiveness of the intervention (educational material) in reducing level of anxiety.</p>	<p>Descriptive statistics to quantify number, percentage, and range of patient responses to each of the scaled question.</p>

assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (CO).	<p>-On a scale of 0-10 how anxious were you about pain management after surgery?</p> <p>-On a scale of 0-10, how helpful was the video or handout in reducing your anxiety about pain after surgery?</p>		
6. 20% of surgery patients reported that their pain was adequately managed when taking non-opioid medications or using alternative non-medication methods as assessed by direct questioning during hospitalization by project manager. To be measured weekly during June 2022-August 2022 project implementation (CO).	<p><b>Instrument: Name</b> “Postop Questionnaire”. Scaled survey questionnaire will be used to identify magnitude of pain reduction due to education, if any. Numeric pain rating scale (NPRS) will be used to assess pain level intensity. Electronic Health Records (EHR) may also be utilized</p> <p><b>Data:</b> Data will be gathered by asking patients to rate their pain before discharge to home with the following questions:</p> <p>-What is your pain score on a scale of 0-10?</p> <p>-On a scale of 0-10 how adequate was your pain controlled when you received non-opioid medications?</p>	Assesses pain level when patients are managing pain with non-opioid medications or mechanisms as will be encouraged in the educational material	Descriptive Statistics will be used to measure the mean, median, and range of the scores from NRPS tool.
7. On the morning following the day of surgery, 30% of surgery patients achieved 3 or more of the following outcomes: 1.	<p><b>Instrument:</b> Review of electronic health records (EHR). Then tabulated by the five categories listed in the outcome:</p> <ol style="list-style-type: none"> <li>1. Ambulated early (on day of surgery or the next morning),</li> <li>2. Lacked complaints of nausea and vomiting,</li> <li>3. Tolerated self-care activities such as use of toileting, bathing,</li> </ol>	Assesses the impact of the educational material on the outcomes listed. The outcomes are desired by surgeons and are indicators of improved care.	Count and percentage of frequency of listed outcomes: <ol style="list-style-type: none"> <li>1. Ambulated early (on day of surgery or the next morning),</li> <li>2. Lacked complaints of nausea and vomiting,</li> <li>3. Tolerated self-care activities such as use of</li> </ol>



<p><b>Ambulated early (on day of surgery or the next morning), 2. Lacked complaints of nausea and vomiting, 3. Tolerated self-care activities such as use of toileting, bathing, brushing hair, etc.), 4. Reported minimal or no drowsiness, 5. Reported readiness for discharge to home. To be measured weekly during June 2022-August 2022 project implementation (CO).</b></p>	<p>brushing hair, etc.), 4. Reported minimal or no drowsiness, 5. Reported readiness for discharge to home.</p> <p><b>Data:</b> Data pertaining to the listed outcomes can be obtained by healthcare providers directly associated with the care of the patient.</p>	<p>The results may be compared to surgeon-reported outcomes of patients prior to project implementation or/and compared to patients who do not receive the educational material during project implementation.</p>	<p>toileting, bathing, brushing hair, etc.), 4. Reported minimal or no drowsiness, 5. Reported readiness for discharge to home.</p>
<p><b>8. 50% of stakeholders reported their feedback regarding the helpfulness of the educational material in reducing use of opioid-medications after bariatric surgery and eliciting for improvements of the process at completion of project in August 2022 (CO).</b></p>	<p><b>Instrument: Name:</b> “Post-implementation Staff Questionnaire” will be utilized to send electronic survey to stakeholders listed in the outcome before implementation and after the implementation of the pilot project</p> <p><b>Data:</b> The survey will ask the following questions before implementation and again within two weeks of project completion: 1. Do you believe opioid medications (such as Fentanyl, Hydromorphone, or Oxycodone) are the most effective in reducing pain? Yes/No 2. On a scale of 0-10 how likely do you believe nausea or vomiting will be instigated by use of opioids?</p>	<p>The aim of this outcome is to solicit improvements on this pilot project from the stakeholders who were directly involved in the project implementation.</p>	<p>Qualitative data will be tabulated and listed in categories based on responses.</p> <p><b>Quantitative Data:</b> Descriptive statistics to quantify number and, percentage of Yes/No answers. For scaled items, aggregated mean scores and range of responses to each item</p>

	<p>3. On a scale of 0-10 how likely do you believe that constipation will be instigated by use of opioids</p> <p>4. On a scale of 0-10 how likely do you believe that drowsiness will persist after opioid administration?</p> <p>5. On a scale of 0-10 how likely do you believe that opioid addiction may result after the use of opioids in postoperative patients?</p> <p>6. On a scale of 0-10 how likely do you believe that relaxation techniques (such as deep breathing, meditation, visualization, listening to music) help in reducing pain?</p> <p>The following questions will be added to the questionnaire after completion of the implementation phase:</p> <p>1. What aspect of the educational material was most useful?</p> <p>2. What improvements on the educational material and the process of implementation would you like to see?</p>		
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Appendix F- Scholarly Project Expense Report						
					Grand Total	\$ 78,640.00
Expense Category	Expense Description	Explanation of Expense	Type of Cost (variable/fixed )	Volume	Cost per Unit	Total
Personnel	PACU RN wages	PACU RNs participating in education program. Hourly rate is an average rate.	Variable	60 hrs X 5 RNs=300 hrs	\$40/hr	\$ 12,000.00
Personnel	CRNAs wages	CRNAs gathering data and performing surveys. Hourly rate is average rate.	Variable	50 hrs X 4 CRNAs=200 hrs	\$100/hr	\$ 20,000.00
Personnel	IT Technician wages	IT technicians setting up website with animated video, ensuring proper access by patients and providers. Hourly rate is average rate	Variable	70 hrs X 3 IT techs=210 hrs	\$25/ream	\$ 5,250.00
Personnel	Bariatric-surgery surgeons	Bariatric-surgery surgeons participating in informing patients of the educational material and answering questions from patients. Each surgeon will spend an average 5 minutes per patient. Hourly rate is average rate	Variable	10 hrs X 2 Surgeons=20 hrs	\$190/hr	\$3,800.00
Personnel	Preoperative clinic medical staff: Advanced Nurse Practitioners (ANPs)	ANPs spending an average of 5 minutes per patient, informing and answering questions about the educational information.	Variable	10 hrs X 4 Practitioners =40 hrs	\$70/hr	\$2,800.00
Personnel	Preoperative clinic medical staff: Physicians	Preop physicians spending an average of 5 minutes per patient, informing and answering questions about	Variable	10 hrs X 4 Practitioners =40 hrs	\$100/hr	\$4,000.00

		the educational information.				
Personnel	Preoperative clinic administrative staff	Preop clinic administrative staff will provide information answer questions related to availability of information and provide internet link	Variable	10 hrs X 4 Staff = 40 hrs	\$25/hr	\$1,000
Personnel	Project Manager wages	Project manager will act as the primary contact for any project related work and will perform all teaching, training, assisting in gathering data, performing calculations, and complete the project	Variable	100 hrs	\$110/hr	11,000
Material & Supplies	Paper	20 educational packets, 20 pre & post surveys and flyers	Fixed	2 Reams of paper	\$45/ream	\$90.00
Material & Supplies	Ink	Ink cartridges for surveys, flyers, and supporting project materials	Fixed	2 Cartridges	\$200/cartridge	\$400.00
Equipment/Technology	Computer	1 computer for program development, communication, and planning, 1 computer for graphics development, and 2 computers for data gatherers (i.e. CRNAs)	Fixed	4 Computers	\$1420/computer	\$5,680.00
Equipment/Technology	Microsoft office software	Software will be used to perform recordings, tabulate, make spread sheets, and develop flyers	Fixed	1 Software license/ Computer X 4 computers = 4 software license	\$600/software license	\$2,400.00
Equipment/Technology	Graphics development software	Software for developing initial educational video	Fixed	1 License	\$1500/ license	\$1,500.00
Equipment/Technology	Internet Access	Project manager Internet access for communication at home and office	Fixed	1 user	\$100/month/user X 8months	\$800.00
Office Space	Office Space	Office for	Fixed	1 Office for	\$150/ hr	\$600.00

		meetings, discussions, and training		1 hr meeting X 4 = 4 hours		
Marketing/Comms	Animated video	Professional development of an animated instructional video	Fixed	1 Animated video	\$7000/ animation	\$7,000.00
Marketing/Comms	Poster for professional presentation of project	End of project poster presentation	Fixed	1 Poster	\$200.00/ poster	\$200.00
Travel	Driving for meetings, etc.	Driving to meetings in the office or to meet with stakeholders	Variable	20 miles/ round trip X 10 trips = 200 miles	\$.60/ mile	\$120.00

<b>Appendix G- 2-3 Year Budget</b>				
<b>Yearly Totals:</b>	<b>\$78,640.00</b>	<b>\$18,479.00</b>	<b>\$19,034.00</b>	
<b>Expense Category</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Rationale</b>
Personnel	\$ 59,850.00	\$ 17,356.00	\$ 17,877.00	Year 1 includes wages for PACU RNs, CRNAs, IT, surgeons, preop medical (ANPs, surgeons) and administrative staff, and the project manager. Years 2-3 includes surgeons, preop medical and administrative staff, and IT staff. All year 2-3 expenses assume a 3 percent increase for inflations. The rate was assumed slightly higher than published on the referenced website due to the current COVID pandemic and its impending financial consequences.
Material & Supplies	\$ 490.00	\$ 505.00	\$ 520.00	Includes paper and ink. Years 2 & 3 assume an inflation rate of 3%
Equipment/Technology	\$ 10,380.00	\$ 0	\$ 0	Year 1 includes computers, MS software, graphics software, and internet access. These costs are one-time cost over the 3-year period.
Office Space	\$ 600.00	\$ 618.00	\$ 637.00	Year 2 & 3 assumes similar use and frequency of office space and an inflation rate of 3%
Marketing/Comms	\$ 7,200.00	\$ 0.00	\$ 0.00	One time development of video animation and DNP poster board. Reproduction of the animated video may be required after 5 or more years based on social and cultural changes within society.
Travel	\$ 120.00	\$ 0.00	\$ 0.00	Travel not required after the pilot phase.

Appendix H- Statement of Operations		
<b>Operating Income</b>		<b>\$0</b>
	<b>Revenue Total</b>	<b>\$3740.00</b>
Source	Description	Amount
In-kind contributions from project manager and anesthesia department	In-kind personnel wages: Project manager wages	\$3,000
	In-kind material and supplies	\$20.00
	In-kind equipment and technology	\$0.00
	In-kind office supplies	\$600.00
	In-kind marketing/comms	\$0.00
In-Kind contribution by DNP student.	In-kind travel	\$120.00
	<b>Expenses Total</b>	<b>\$ 3740.00</b>
Expenses	Description	Amount
Personnel		\$ 3000.00
Material & Supplies		\$ 20.00
Equipment/Technology		\$ 0.00
Office Space		\$ 600.00
Marketing/Comms		\$ 0.00
Travel		\$ 120.00

\*The project will not bring in revenue. The revenue total will be in the exact amount of project's expenses and the operating income will net zero.

## Appendix-I

### Memorandum of Understanding

#### Memorandum of Understanding

Between

*Ahmed Alshaarawi*, Doctor of Nursing Practice (DNP) student  
Boise State University

and

*Oregon Health & Science University*

This Memorandum of Understanding (MOU) outlines the terms and understanding between *Ahmed Alshaarawi*, a DNP student at Boise State University, and *Oregon Health & Science University*, to pilot an educational intervention to increase bariatric-surgery patients' awareness about non-opioid pain management options after surgery.

#### **Background**

There is significant paucity in preoperative patient-education regarding pain and opioid-use dangers. Providing preoperative education to patients about management of pain and anxiety after surgery has been proven to yield positive outcomes on patients' care. Research indicates that patients engaged in multimedia-based education (i.e., interactive web-based tools, videos, virtual reality, etc.) regarding alternative non-traditional non-opioid based methods consume less opioid-medications, experience less pain, and have lower levels of anxiety in the perioperative period compared to traditional methods of pamphlets or no education. These outcomes will result in improved patient and provider experiences, lower iatrogenic complications, and aide in abating the opioid crisis. Bariatric-surgery patients are one such population who can benefit from multimedia preoperative education regarding surgical pain and opioid use.

#### **Purpose**

This project's intervention will specifically assess the impact of patient education regarding surgical pain and opioid-use to manage pain, utilizing video animation and printed pamphlets on bariatric-surgery patients. These patients have an array of options to help alleviate their pain in the perioperative period that do not involve the use of opioid medications. The educational tool will encourage bariatric-surgery patients to seek these alternatives to reduce consumption of opioid-medications after surgery and their negative impact on the outcomes of the procedure, quality of life for patients, and the community.

#### **Intended Project Outcomes**

Develop educational material to inform patients of non-opioid alternatives to managing surgical pain and inform about opioid medications dangers.

Train staff and stakeholder on educational material intended to inform patients as described above.

Improve bariatric-surgery patients' knowledge of surgical pain and pain management expectations.

Improve bariatric-surgery patients' knowledge of opioid dangers and improve access to information.

Improve knowledge of appropriate medication management and resources.

Reduce consumption of opioid medications



Improve bariatric surgery experience and decrease anxiety related to surgical pain.

### **Duration**

The project collaboration will begin in January 2022. The implementation phase of the project will be from May/June 2022 to August/ September 2022. The period prior to implementation will be used for development of the educational materials, project planning, training and dissemination of information to project assistants and stakeholders. Post implementation activities, including data analysis and project results dissemination, will conclude in April of 2023.

### **Reporting**

*(Brief 1-2 paragraphs) Include the month/year when you will present your Final Project Report to organizational stakeholders. Also include month/year for any interim reports that have been agreed upon by the DNP Student and organization.)*

The DNP Scholarly Project will include a final report, an abstract, an oral presentation of the report and potential publication. The DNP student will submit a Final Project Report for publication in ScholarWorks. ScholarWorks is a collection of services designed to capture and showcase all scholarly output by the Boise State University community, including doctoral dissertations and doctoral project reports.

Upon completion of the implementation phase, the data gathered will be analyzed and a full report will be performed delineating all findings and recommendations. An oral presentation will be given at both BSU and OHSU as part of the project completion and to share data and findings with both institutions. The report will be shared with the organization in April 2023. No personal identifiers will be included, and all data will be reported in aggregate form. The author welcomes any comments or suggestions from OHSU but reserves the right to publish findings and analysis according to professional standards and principles of academic freedom. OHSU will be referred to as "A health system in the Pacific Northwest".

### **Student Contact Information**

Ahmed F. Alshaarawi, CRNA MS  
[ahmedalshaarawi@u.boisestate.edu](mailto:ahmedalshaarawi@u.boisestate.edu)



Date: February 3, 2022

Boise State University DNP student

*Kristin Bowden*

Kristin Bowden DNAP, MBA, CRNA

Assistant Professor, Chief CRNA, OHSU Date: February 3, 202

## Appendix-J

### “Project readiness checklist”

<b>Material</b>	<b>Status</b>
1. Video animation	<b>Completed</b>
2. Website link to educational material- completed	<b>Completed</b>
3. Patient questionnaires- developed	<b>Completed</b>
4. Stakeholder survey questionnaires- developed	<b>Completed</b>

### “Pre-implementation Staff Questionnaire”-Not Used

1. Did you receive information or training regarding this project (Pilot to moderate bariatric patient’s use of post-operative opioid medications using a video-based perioperative education)? Yes/ No
2. On a scale of 0 to 10, how much do you understand the material?
3. On a scale of 0 to 10, how easy is it for you to direct patients to the information and educational link?

Likert scale of 0-10 with 0 denoting least and 10 denoting most

## **Appendix-K**

### **“Patient Preop Questionnaire”**

1. Have you received, prior to surgery, educational material regarding surgical pain, pain management, and opioid medications? Yes/No
2. Did you watch the video animation regarding surgical pain, pain management, and opioid medications? Yes/ No
3. On a scale of 0 to10, how easy was it for you to access the educational material?
4. Have you had pain from surgery in the past?
5. If yes, how did you deal with the pain, what did you do to lessen your pain?

Likert scale of 0-10 with 0 denoting least and 10 denoting most

## **Appendix-L**

### **“Postop Patient Questionnaire”**

1. On a scale of 0 to 10, how anxious were you about pain management after surgery?
2. On a scale of 0-10, how helpful was the video animation in reducing your anxiety about pain after surgery?
3. What is your pain score on a scale of 0-10?
4. On a scale of 0 to 10, how adequate was your pain controlled when you received non-opioid medications?

Likert scale of 0-10 with 0 denoting least and 10 denoting most

## **Appendix-M**

### **“Post-implementation Staff Questionnaire”**

1. Do you believe opioid medications (such as Fentanyl, Hydromorphone, or Oxycodone) are the most effective in reducing pain. Yes/No
2. On a scale of 0-10, how likely do you believe nausea or vomiting will be instigated by use of opioids?
3. On a scale of 0-10, how likely do you believe that constipation will be instigated by use of opioids?
4. On a scale of 0-10, how likely do you believe that drowsiness will persist after opioid administration?
5. On a scale of 0-10, how likely do you believe that opioid addiction may result after the use of opioids in postoperative patients?
6. On a scale of 0-10, how much do you believe that relaxation techniques (such as deep breathing, meditation, visualization, listening to music) help in reducing pain?
7. What aspect of the educational material was most useful?
8. What improvements on the educational material and the process of implementation would you like to see?

Likert scale of 0-10 with 0 denoting least and 10 denoting most

## Appendix N-IRB Letter of Determination

Dear Investigator:

On 3/11/2022, the IRB reviewed the following submission:

Title of Study:	Opioid-crisis intervention: A pilot to moderate patient's use of post-operative opioid medications using a video-based perioperative education tool
Investigator:	<a href="#">Ahmed Alshaarawi</a>
IRB ID:	STUDY00024181
Funding:	None

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval is not required.

Certain changes to the research plan may affect this determination. Contact the IRB Office if your project changes and you have questions regarding the need for IRB oversight.

If this project involves the collection, use, or disclosure of Protected Health Information (PHI), you must comply with all applicable requirements under HIPAA. See the [HIPAA and Research website](#) and the [Information Privacy and Security website](#) for more information.

Sincerely,

The IRB Office

## Appendix O-Educational Video Frames



 <p>Tell the recovery room nurse if the pain is tolerable. We want to make you comfortable but also ensure your safety</p>	 <p><b>Medications are not the only way to control pain.</b></p>	 <p>The best tool to manage your pain is often YOU!</p>	 <p><b>It is amazing what you can accomplish with positive thinking and relaxation</b></p>
 <p><b>Listening to music or doing something you like is a very effective way to control your pain</b></p>	 <p>Talking to people you love helps you concentrate on other things and keeps you positive</p>	 <p><b>Nutrition is also an important part of reducing your pain from surgery. Eating healthy foods will help your body heal after surgery.</b></p>	 <p>Resting and sleeping are also important. Your body can not heal well without rest.</p>
 <p><b>Your journey to control your pain starts before surgery. Rest and eat well to reduce inflammation</b></p>	 <p><b>Make a plan</b></p>	 <p><b>Resources: Oregon Pain Guidance and the CDC</b></p>	 <p><b>Pain is expected after surgery. And we will work with you to make you more comfortable. Only you have the control!</b></p>
<p><b>We wish you a speedy recovery!</b></p> 	 <p><b>Thanks!</b></p> <p>Video animation and writing created by Ahmed Alshaarawi, CRNA.</p>		



### Appendix P-Patients' Demographics

#### Demographics

Patient	01	02	03	04	05	06	07	08	09	10	11	12
Type of surgery	Ortho-pedic	Plastics	Ortho-pedic	Plastics	Bariatrics	Plastics	Plastics	Urology	Urology	Gyn-ocology	Gyn-ocology	Gyn-ocology
Gender	Male	Male	Male	Female	Female	Trans gender	Trans gender	Male	Male	Female	Female	Female
Age	32	71	50	71	55	28	37	43	46	65	70	32

Aggregate data:

Age range: 28-71

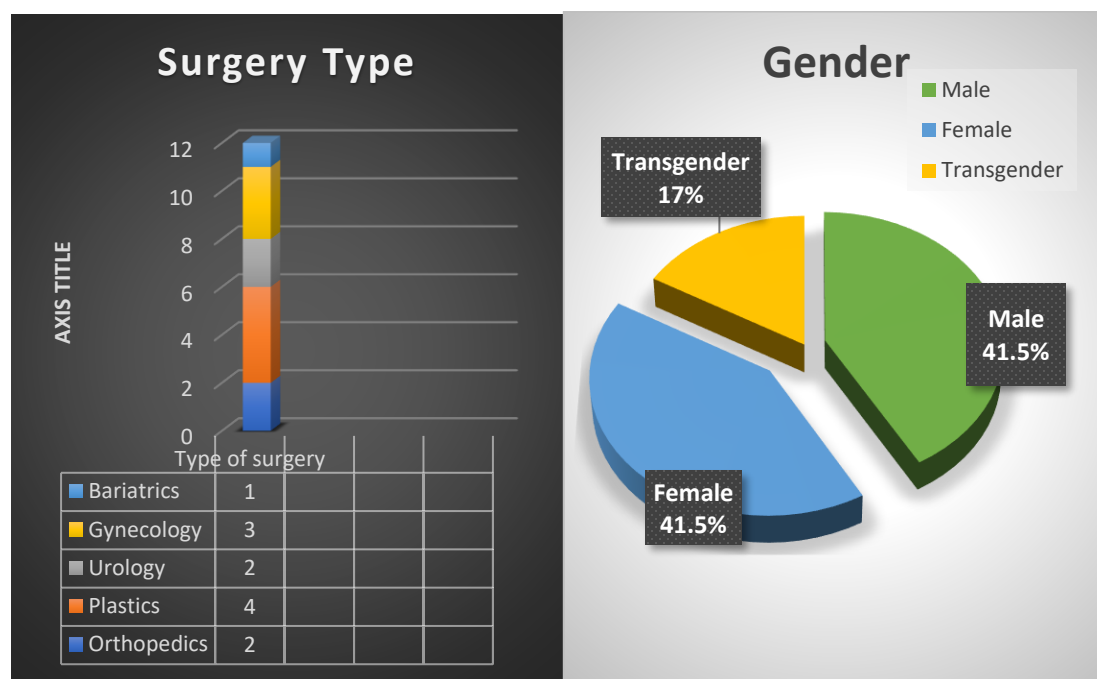
Mean age: 50

Ages 25-40: 4

41-55: 4

56-65: 1

66-75: 3

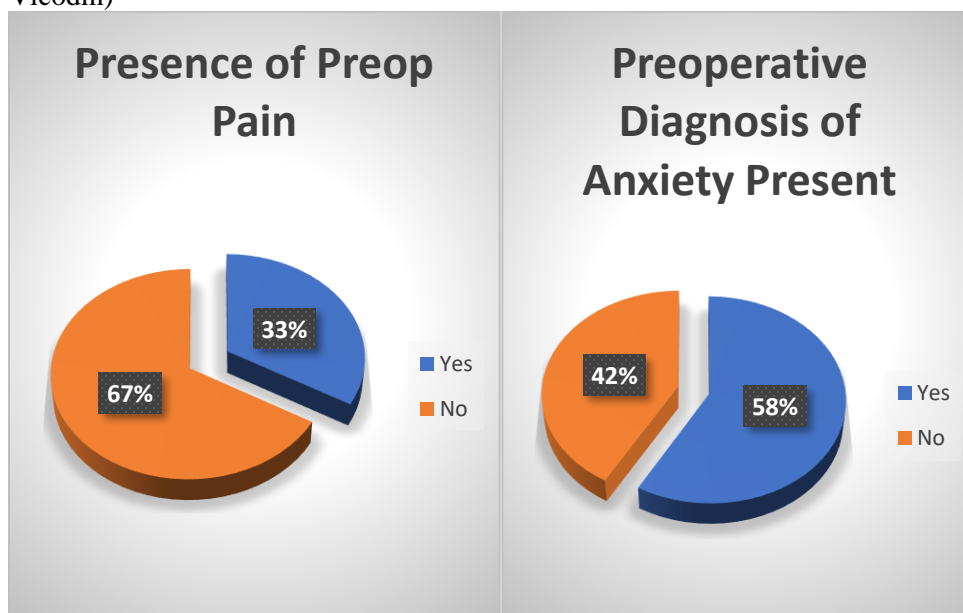


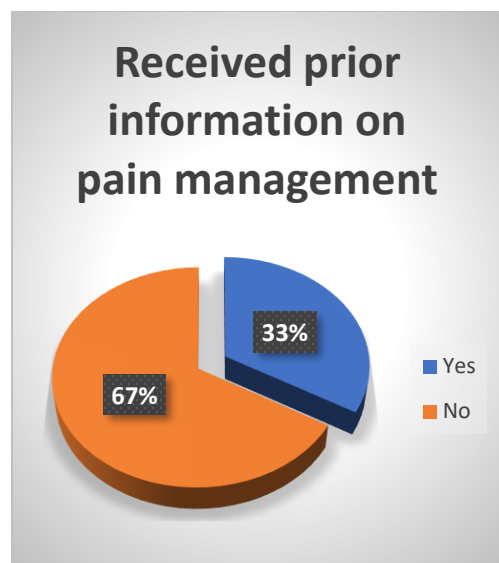
### Appendix Q- Pre-Intervention Data

Patient	01	02	03	04	05	06	07	08	09	10	11	12
Preoperative Pain- Presence	No	Yes	No	Yes	Yes	No	No	No	No	No	No	Yes
Preoperative Pain- Number	0	3	0	8	5	0	0	0	0	0	0	7
Preoperative Anxiety diagnosis	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes
Received prior information on pain management	No	No	No	Yes	Yes	No	No	No	No	Yes	No	Yes
Watched Animation-video (intervention)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ease of Access of video*	10	10	10	10	10	10	10	10	10	10	10	10
Previous surgical pain experience	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Method of pain management of previous surgical pain	OM	OM	OTC	OTC	OTC	OM	OM	OTC	OTC	OTC & OM	OTC & OM	OTC & OM

\* Likert scale of 0-10 with 0 denoting least and 10 denoting most

OTC = Over the counter (non-opioid medications), OM = Opioid medications (Oxycodone/ Fentanyl/ Vicodin)





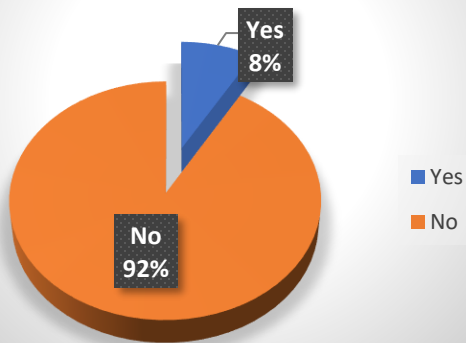
**Appendix R-Post-Intervention Data**

Patient	01	02	03	04	05	06	07	08	09	10	11	12
Received anxiolytic medication prior to surgery	No	No	No	No	No	No	No	No	No	No	No	Yes
Received opioid medication in surgery	No	No	No	No	No	No	No	No	No	No	Yes	Yes
Received opioid medication before discharge	No	Yes Oxy X 2	No	No	Yes Oxy X 1	Yes Fent & Oxy	Yes Oxy X 1	No	No	Yes Oxy X 1	Yes Oxy X2	Yes Oxy X 1
Postoperative Pain score*	2	3	1	2	4	7	3	0	2	6	4	2
Level of Anxiety regarding pain management*	0	2	0	0	3	4	5	2	2	0	5	3
Helpfulness of video in reducing anxiety*	7	8	7	5	7	8	9	5	6	7	4	2
Adequacy of pain management with non-opioid medications*	10	6	10	7	5	4	7	10	9	9	5	8

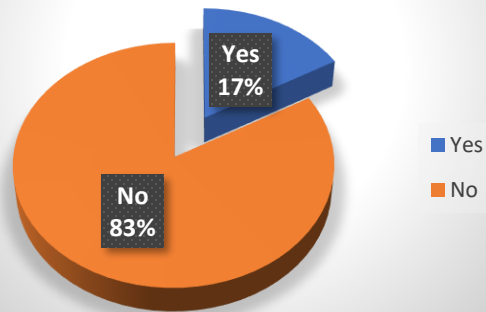
\* Likert scale of 0-10 with 0 denoting least and 10 denoting most.

Oxy = Oxycodone

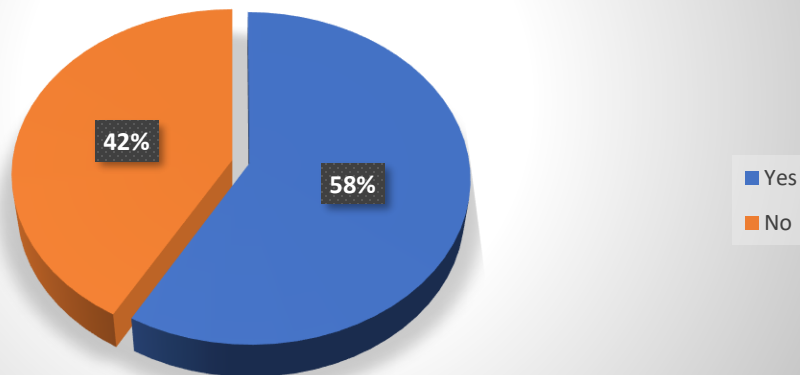
### Required anxiolytic medication prior to surgery



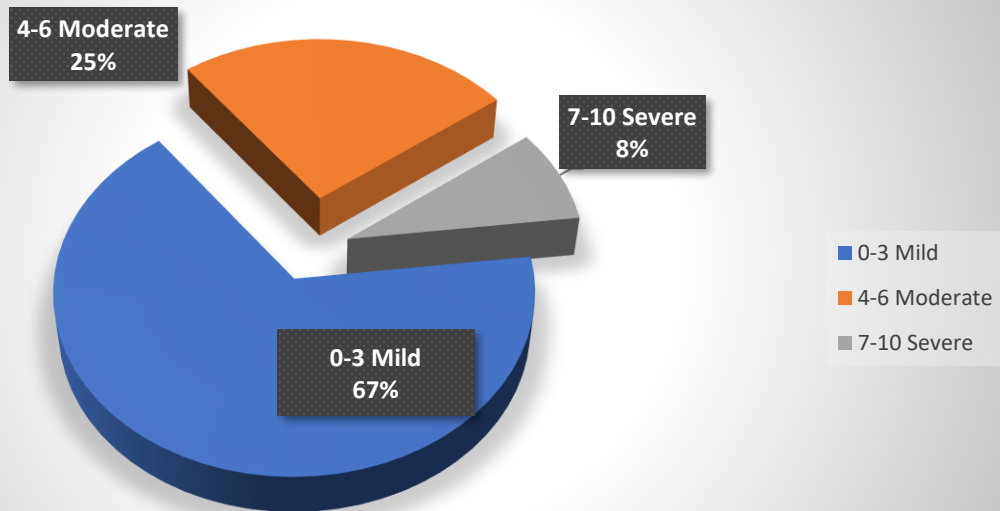
### Received opioid medication during surgery



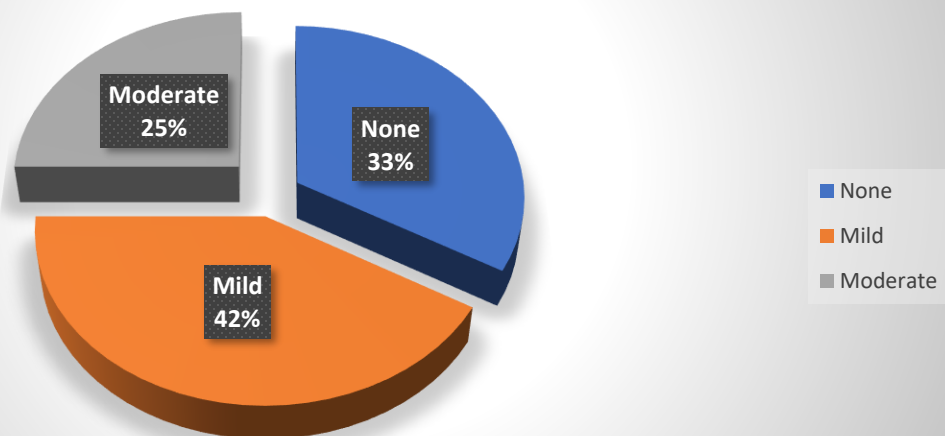
### Received opioid medication before discharge in recovery room, day surgery, or ward



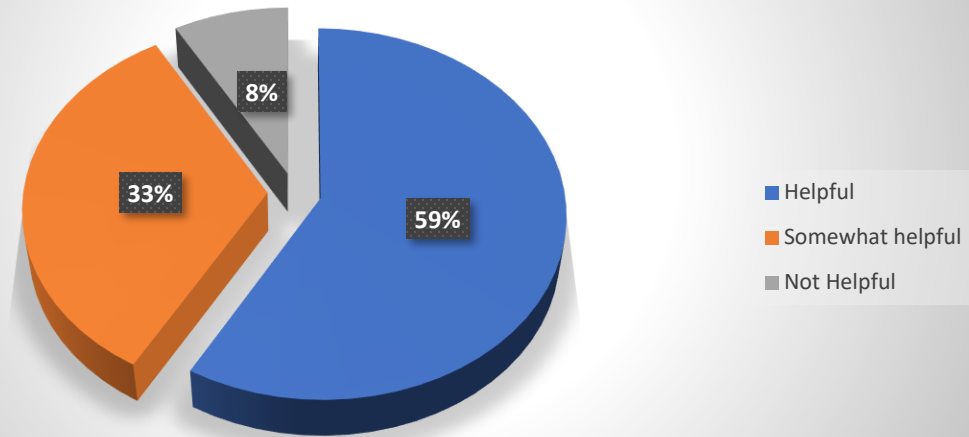
### Postoperative Pain Score after Intervention



### Level of Anxiety regarding pain management after intervention



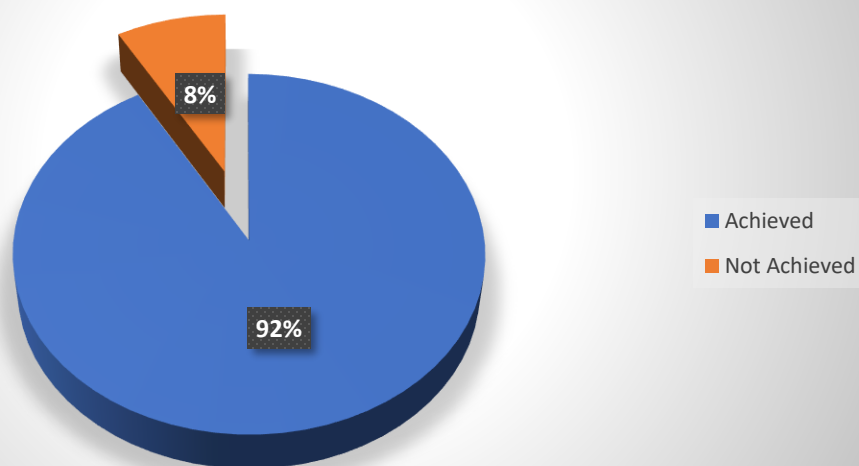
### Helpfulness of video in reducing anxiety and informing patient



**Appendix S- Outcome #7 Criteria**

Patient	01	02	03	04	05	06	07	08	09	10	11	12
Ambulated early (on day of surgery or the next morning),	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lacked complaints of nausea and vomiting	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tolerated self-care activities such as use of toileting, bathing, brushing hair, etc.)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reported minimal or no drowsiness	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reported readiness for discharge to home	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### Outcome# 7: Achieving surgeon-endorsed discharge criteria





**Appendix T-Aggregates for Outcome #7**

<b>Criteria</b>	<b>Number of patients achieving Criteria</b>	<b>Percent of patients achieving Criteria</b>
1.Ambulated early (on day of surgery or the next morning),	<b>12</b>	<b>100%</b>
2.Lacked complaints of nausea and vomiting	<b>11</b>	<b>92%</b>
3.Tolerated self-care activities such as use of toileting, bathing, brushing hair, etc.)	<b>11</b>	<b>92%</b>
4.Reported minimal or no drowsiness	<b>12</b>	<b>100%</b>
5.Reported readiness for discharge to home	<b>11</b>	<b>92%</b>

