PAMPER: PROMOTING ALTERNATIVE METHODS FOR POSTOPERATIVE
EMPOWERING RECOVERY
IMPROVING POSTOPERATIVE PAIN MANAGEMENT FOR THE OLDER ADULT
POPULATION: A QUALITY IMPROVEMENT PROJECT

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A project submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice in the School of Nursing.

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ABSTRACT

Vanessa Sillaman: PAMPER: Promoting Alternative Methods for Postoperative Empowering
Recovery
Improving Postoperative Pain Management for the Older Adult Orthopedic Population: A
Quality Improvement Project
(Under the direction of JoAn Stanek)

This Doctor of Nursing Practice Quality Improvement (QI) project took place on a postoperative orthopedic unit where the primary patient population is older adults. The QI project aimed to translate evidence-based non-pharmacologic pain management practices into routine care for the postoperative older adult population. These aims were accomplished through the development of a population-specific non-pharmacologic pain management toolkit and educational sessions regarding non-pharmacological interventions (NPI) for nursing staff. Learning objectives from the first educational session included core concepts identified from the literature and presentation of a standardized approach to pain management. Introduction of NPI and use of the teach back method for skill competency were integrated into the second session during the annual skills day. A chart review was utilized for indirect observation of NPI documentation and completion of pain reassessments at baseline. Post-implementation the same data was collected, in addition to participant survey responses, for comparison to baseline to evaluate the impact of the toolkit and educational sessions on nursing documentation, confidence, and intention to use in the future. Findings showed that nursing confidence levels, NPI documentation, and pain reassessment frequency improved post-implementation.

To my grandparents: Wayne, Beverly, Samuel, & Alexandra.
Each one of you played a significant role in unveiling my true passion for geriatrics.

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LIST OF ABBREVIATIONS

ABCDE   Assess, Believe, Choose, Document, Empower

ANA   American Nurses Association

CDC   Centers for Disease Control and Prevention

DNP   Doctor of Nursing Practice

FTE   Full Time Equivalent

GRN   Geriatric Resource Nurse

HCAHPS   Hospital Consumer Assessment of Healthcare Providers and Systems

IASP   International Association for the Study of Pain

IRB   Institutional Review Board

KASRP   Knowledge and Attitudes Survey Regarding Pain

MEDD   Morphine Milliequivalent Daily Dose

NPI   Non-Pharmacological Intervention(s)

OA   Older Adults

PRN   As Needed

QI   Quality Improvement

SPAP   Standardized Pain Assessment Protocol

TJA   Total Joint Arthroplasty

TJC   The Joint Commission

THA   Total Hip Arthroplasty

TKA   Total Knee Arthroplasty

TRN   Travel Registered Nurse

UNC-CH   University of North Carolina at Chapel Hill

VAS   Visual Analog Scale

CHAPTER 1: INTRODUCTION

Introduction

According to the U.S. Census Bureau, older adults (OA), those over the age of 65 will account for 20% of the total United States (U.S.) population by 2030 (Colby & Ortman, 2015). In 2017, the U.S. had the highest volume of joint replacement surgery worldwide; 630,000 total hip arthroplasties and 911,000 total knee arthroplasties (Abdelaal et al., 2020). The average age of patients undergoing total hip arthroplasty (THA) and total knee arthroplasty (TKA) in the U.S. is 66.6 years and 67 years, respectively (Abdelaal et al., 2020). Between the aging baby boomer population and elevated incidence of lower extremity joint replacement surgery, orthopedic surgeries in the U.S. are projected to increase (Gjorgjievski & Ristevski, 2020).

In contemporary society, opioid use has become the standard for pain management following total joint replacement surgery, regardless of the negative repercussions associated with these high-risk medications. Opioids can increase the patient's risk of respiratory depression, abuse, and sedation. Orthopedic surgeons are the third-highest prescribers of opioids, prescribing 7.7% of all opioid prescriptions in the U.S. while representing only 2.5% of the total physician population (Hsu et al., 2019; Nazari et al., 2016). As a result, orthopedic providers have surfaced as significant contributors to the opioid epidemic. In order to ease the current epidemic, a reduction in opioid consumption and reliance on opioids for pain relief following orthopedic surgery must occur (Lovecchio et al., 2019).

In lieu of the opioid epidemic, national initiatives and clinical practice guidelines have recommended the use of non-pharmacological interventions as alternate strategies. These non-pharmacological interventions (NPI) provide an opportunity to restore patient health, improve quality of care, and manage pain with minimal adverse effects (Brewer et al., 2019). Predominantly, the responsibility of implementing and executing NPI has fallen on nurses to manage acute pain adequately. These interventions may include massage, music therapy, aromatherapy, relaxation techniques, distraction, cold therapy, and patient education (Moon et al., 2021). As the rates of orthopedic surgeries increase, efforts focusing on delivering effective pain management and incorporating NPI can improve patient-centered outcomes (Kekecs et al., 2017).

Problem Statement

Since 1979, the International Association for the Study of Pain (IASP) has defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (p. 1977). In 2020, the IASP revised the definition of pain to "an unpleasant sensory and emotional experience associated with or resembling that associated with, actual or potential tissue damage" (p. 1977). By changing the definition of pain, a greater emphasis can be placed on holistic pain management, compromising the biological, psychological, and social factors, straying away from the current isolated physiological events (Raja et al., 2020).

Pain management in the OA population requires a unique approach. This is due to unreported pain, comorbidities, risk of side effects, the potential for adverse effects, and complications. Undertreated or inadequately treated pain can hinder physical activity levels, lead to sleep deprivation, increase the risk of falls and injury, and trigger cognitive and behavioral

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problems. In comparison to younger adults, the pain experienced by OA manifests differently, including symptoms of fatigue, inability to sleep, appetite loss, and delirium (Booker et al., 2016). Adequate postoperative pain management for the OA patient is vital since unmanaged pain can contribute to increased length of stay, immobility, delirium, anxiety, and decreased participation in the recovery process (Bouri et al., 2018).

Adverse events of opioids are rising and associated with increased mortality, prolonged length of stay, amplified hospitalization costs, and higher readmission rates, resulting in a financial burden on the healthcare system (Pizzi et al., 2012; Shafi et al., 2018). Surgical patients over the age of 65 are at increased risk for opioid-related adverse drug events due to age-related physiological changes (Baker et al., 2020). These age-related changes decrease the metabolism and elimination of opioids, leading to amplified levels of opioids and active metabolites (Baker et al., 2020). This increases the risk of developing respiratory depression, delirium, confusion, malnutrition, constipation, pneumonia, urinary tract infections, falls, nausea, and vomiting (Baker et al., 2020; Gjorgjievski & Ristevski, 2020). Older adults who have undergone THA or TKA have higher rates of postoperative complications, and longer hospital stays, potentially delaying the time to first oral intake, ambulation, and ability to take part in therapy sessions (Fang et al., 2015; Pizzi et al., 2012). Additionally, pain is a known modifiable risk factor for delirium development in OA following joint replacement surgery (Denny & Lindseth, 2020). Given the increased risk of medication side effects with aging, the Pain Management Best Practices Inter-Agency Task Force Group suggests using NPI in the OA population and developing proper pain management education for health care professionals who care for OA (U.S. Department of Health and Human Services, 2019).

The primary intervention for surgical pain and discomfort is opioid-based analgesia, which solely addresses the physical aspect of pain (Carpenter et al., 2017; Kidanemariam et al., 2020). Pain management must be patient-centered, holistic, and individualized to include the patient's psychosocial, spiritual, and cultural factors (Garcia-Monasterio et al., 2019). Pain is a complex subjective feeling requiring empathetic presence, which entails understanding the experience and perspective of the patient in combination with effective patient communication (Paul-Savoie et al., 2018). Due to the subjectivity of pain, cognitive, environmental, and cultural factors can mold the older adult's perception of pain (Noroozian et al., 2018).

Postoperative pain and anxiety are commonly reported among patients undergoing elective or emergent orthopedic surgery (Kekecs et al., 2017). Pharmacologic interventions fail to address all the complexities of the patients' experience and perception of pain, leading to the negligence of the psychosocial factors (Boyd et al., 2016). In the orthopedic setting, many patients are dissatisfied with pharmaceuticals as a primary method of pain relief and are eager to implement NPI postoperatively (Kidanemariam et al., 2020; Tracy, 2010). The use of NPI can reduce opioid use, improve patient care, decrease hospital length of stay, and prevent future financial burdens caused by opioid-related adverse events (Baker et al., 2020).

According to the Surgical Pain Consortium, effective pain management may be overlooked, resulting in underutilized evidence-based pain management practices. The National Institutes of Health and the Department of Health and Human Services recognize a deficiency in pain education and recommend that healthcare organizations prioritize strategies supporting evidence-based pain management practices. This could be due to insufficient patient education with regards to available NPI, lack of knowledge of principles of pain, inadequate skills and

assessment of pain, low institutional priority for pain management, and lack of accountability for poor pain treatment (Joshi, 2021).

Newly graduated nurses often have insufficient practice experience and lack adequate training to optimally care for patients affected by postoperative pain. Most bachelor's degree nursing curricula only require one hour of teaching on pain management education with little emphasis on NPI (Chatchumni et al., 2020). Inability to assess and treat pain in the OA population has been identified as a knowledge deficit by nurses (Balouchi et al., 2018; Bouri et al., 2018; Brewer et al., 2019; Coll & Jones, 2020; Fitzgerald et al., 2017; Hall et al., 2017; Kidanemariam et al., 2020; Mazilu et al., 2018). Despite the mounting evidence of NPI effectiveness and recommendations from national initiatives, a gap exists between organizational guidelines and current practice.

Purpose

NPI are simple, cost-effective, take little time to teach, promote patient participation, and provide relief in circumstances of unresolved postoperative pain and anxiety (Kidanemariam et al., 2020). When NPI such as music therapy, aromatherapy, and positive therapeutic communication are added to the standard of care, positive patient outcomes follow as a result of comprehensive pain treatment and reduction of opioid use (Kelleher et al., 2020). Using a variety of NPI effectively addresses the physical and psychological aspects of pain and anxiety and serves as valuable coping mechanisms for patients following orthopedic surgery (Gallagher et al., 2018; Lederer et al., 2018).

To increase the use of NPI, nurses must gain knowledge of effective, evidence-based NPI, as well as how to communicate and educate patients on these interventions. This quality improvement (QI) project aims to improve nursing knowledge of NPI and adopt relevant

elements of evidence-based practice to enhance the quality of care in postoperative patients receiving joint replacements and over the age of 65 years. Implementation will be successful if there is evidence of increased use of NPI and evidence-based pain management practices are integrated into routine patient care, increased nurse self-efficacy/confidence in delivering NPI, and a change in current nursing practice to specialize pain assessment and pain management for the OA population.

Significance to Nursing Practice

Pain control is a fundamental element of postoperative nursing care as it can dictate the patient's progress and outcomes. If acute pain is not managed appropriately, it can hinder the rehabilitation process, recovery, and lead to chronic pain (Botti et al., 2014). A position statement from the American Nurses Association (2018) reports nurses who lack pain management and assessment knowledge can limit their ability to treat pain, suggesting pain management education and evidence-based interventions be accessible to all nurses. Nurse-led educational interventions effectively reduce postoperative pain and play important roles in acute pain relief when implemented through NPI (Moon et al., 2021). Out of the members of the patient's healthcare team, orthopedic nurses are most consistently at the patient's bedside during the postoperative phase and affect how pain is interpreted and interventions are delivered (Lovecchio et al., 2019). Therefore, nurses are in a pivotal position to advocate for successful pain management and participate in this Doctor of Nursing Practice (DNP) project.

The art of nursing involves assessment, intervention utilization, and evaluation for best pain management practices. Nurses are in the position to facilitate communication and shared decision-making for pain management in OA during the postoperative period. Self-reporting is the most accurate measure of pain and nursing documentation of pain assessments and

reassessments is often deficient (Bruckenthal & Simpson, 2016; Coll & Jones, 2020; Mazilu et al., 2018; Wooldridge & Branney, 2020). Nurses agree their practice would benefit from NPI for pain management to improve patient care; however, they are often unaware of these alternatives due to a lack of education (Youngcharoen et al., 2016).

Although NPI are effective in reducing pain, they are underutilized within the hospital setting (Brewer et al., 2019). In a large level II trauma center in the U.S., 218 nurses took part in an online survey to examine nursing knowledge and beliefs about NPI. Of the nurses surveyed, 85.32% supported NPI use and holistic approaches to patient care. However, only 32.24% reported using these methods with their patients, and 43.58% reported they do not use or teach their patients about NPI. Extrinsic factors accounted for 97.49% of reported barriers for use of NPI. Barriers found were: the need for physician's order (28.90%), knowledge deficit of evidence-based practice (21.26%), time restrictions often due to understaffing (18.81%), availability of resources (13.30%), perceived liability risk, hospital policies, and cost restraints. These findings suggest that nursing knowledge motivates decision-making regarding NPI. The limited NPI nursing knowledge indicates the need for education on the nursing role in NPI. (Brewer et al., 2019).

A literature review of nurses' knowledge, attitudes, and ability to communicate about NPI was performed using twenty-one articles and represented seven studies from the United States, three from Australia, three from Turkey, and one each from Iran, Israel, Italy, Korea, Netherlands, Switzerland, Cyprus, China, Germany, and Pakistan. Overall, 66.4% of nurses were found to have a positive attitude toward complementary and alternative medicine (Balouchi et al., 2018). However, 77.4% lacked understanding, and 47.3% were uncomfortable discussing NPI with patients (Balouchi et al., 2018). Increased knowledge of NPI for healthcare providers

and patients can reduce the patient's experience of pain (Rahmani et al., 2020). Additionally, there is robust evidence discussing postoperative pain assessment and management for OA is often inadequate (Fitzgerald et al., 2017; Youngcharoen et al., 2016). Lack of resources and the misconception that a physician order is required for NPI are other common causes of underutilization (Brewer et al., 2019; Drake & Williams, 2017).

To combat the opioid epidemic and reduce opioid use, it is essential for orthopedic nurses to deliver NPI, be confident in assessing, managing, and educating patients about pain management, and be able to engage patients in shared decision-making about pain management. Targeted pain management education can improve pain management practices and increase nursing confidence in managing pain (Bonkowski et al., 2018). Acupressure, massage, aromatherapy, music therapy, and patient education are cost-effective nursing interventions with a low rate of adverse effects. The incorporation of NPI can promote patient-centered care and improve patient satisfaction while simultaneously decreasing pain and anxiety during the postoperative period.

CHAPTER 2: REVIEW OF LITERATURE

Search Strategy

PubMed, CINAHL, EBSCO, Scopus, and PsychInfo were the search engines used for this search strategy. The search was developed with the following search terms: orthopedics, orthopedic surgery, total joint replacement, total knee arthroplasty (TKA), total hip arthroplasty (THA), postoperative, geriatrics, older adults (OA), elderly, over 65, nursing, nurses, nurse, complementary, integrative, alternative, non-pharmacological interventions, nonopioids. Mesh terms of "aged", "orthopedics", "analgesics, opioid/adverse effects", "opioid-related disorders/mortality", "pain management" and "opioids" were also incorporated. Limitations to the search included English and full free text within the last five years.

The search terms were combined in this manner: (postoperative) AND (joint replacement surgery OR total hip arthroplasty OR total knee arthroplasty) AND (older adults OR over 65) AND (nursing education OR nursing intervention OR nurse-led OR pain management) AND (postoperative pain). This search produced a total of 530 articles; 86 articles on PubMed, 21 articles on CINAHL, 133 articles on Scopus, 42 on Web of Science, and 248 on Embase & Medline. A health librarian helped with the search and suggested reviewing citations in chosen articles and viewing related articles on Scopus for inclusion in the review.

The evidence was appraised using the John Hopkins Nursing Evidence-Based Practice Non-Research Evidence Appraisal Tool. Two evidence tables were created, and each article was

then categorized into either the non-pharmacological intervention table or the nursing education table.

Review of Literature: Non-Pharmacological Interventions

Table 1.

Non-Pharmacological Intervention Evidence Table

Non-pharmacological Intervention	John Hopkins Evidence Based Practice Non-Research Appraisal Tool	Authors
Acupressure	Level I Grade A Level I Grade A Level I Grade B Level V Grade A	Change et al., 2021 Zhong et al., 2019 Lederer et al., 2018 Monson et al., 2019
Aromatherapy	Level I Grade A Level I Grade B	Dimitriou et al., 2017 Lakhan et al., 2016 Lederer et al., 2018
Music	Level I Grade A Level I Grade B Level I Grade C Level II Grade B Level III Grade B Level III Grade C Level V Grade A Level V Grade B	Gallagher et al., 2018 Laframboise-Otto et al., 2021 Fan & Chen, 2020 Rahmani et al., 2020 Pellino et al., 2005 Bakker et al., 2020 Poulsen et al., 2018 Buyukyilmaz, 2014
Massage	Level I Grade A Level I Grade B Level III Grade B	Miller et al., 2015 Boyd et al., 2016 Kukimoto et al., 2017 Komann et al., 2019

Study Purpose

All of the level 1 evidence in the NPI evidence table (see Table I) examined the effectiveness of non-pharmacological interventions (NPI) on pain (Boyd et al., 2016; Chang et al., 2012; Dimitriou et al., 2017; Fan & Chen, 2020; Gallagher et al., 2018; Laframboise-Otto et al., 2021; Lakhan et al., 2016; Lederer et al., 2018; Kukimoto et al., 2017; Miller et al., 2015; Zhong et al., 2019). Several investigated the effects of NPI on pain and anxiety levels (Boyd et al., 2016; Gallagher et al., 2018; Kukimoto et al., 2017; Lederer et al., 2018; Miller et al., 2015;

Monson et al., 2019; Pellino et al., 2005; Poulsen & Coto, 2018). While others observed the effects of NPI specifically for postoperative pain (Bakker et al., 2020; Buyukylimaz, 2014; Chang et al., 2012; Dimitriou et al., 2017; Fan & Chen, 2020; Gallagher et al., 2018; Komann et al., 2019; Kukimoto et al., 2017; Laframboise-Otto et al., 2021; Lakhan et al., 2016; Lederer et al., 2018; Miller et al., 2015; Monson et al., 2019; Pellino et al., 2005; Poulsen et al., 2018; Rahmani et al., 2020; Zhong et al., 2019).

Study Characteristics

In the NPI evidence table, there were four randomized control trials (Chang et al., 2012; Gallagher et al., 2018; Laframboise-Otto et al., 2021; Miller et al., 2015), one non-randomized control trial (Rahmani et al., 2020), eight systematic reviews (Baker et al., 2020; Boyd et al., 2016; Dimitriou et al., 2017; Fan & Chen, 2020; Kukimoto et al., 2017; Lakhan et al., 2016; Lederer et al., 2018; Zhong et al., 2019), two literature reviews (Buyukyilmaz, 2014; Poulsen & Coto, 2018), one descriptive comparative and correlational (Pellino et al., 2005), one observational study (Komann et al., 2019), one quasi-experimental (Rice et al., 2019), and one QI project (Monson et al., 2019).

Interventions

Several articles examined numerous NPI or a bundle of NPI (Bakker et al., 2020; Buyukyilmaz, 2014; Fan & Chen, 2020; Lederer et al., 2018; Komann et al., 2019; Moon et al., 2021; Pellino et al., 2005; Rahmani et al., 2020; Rice et al., 2019; Szeverenyi et al., 2018).

Music as an intervention constituted the largest group of relevant articles found within the NPI evidence table. Two studies incorporated patient education as a supplement to the music intervention (Pellino et al., 2005; Rahmani et al., 2020). There were several different time lengths and frequencies noted for the music intervention. Gallagher et al. (2018) and

Laframboise-Otto et al. (2021) both had a thirty-minute period for music therapy as the intervention, while Poulsen & Coto (2018) had a fifteen to thirty-minute period for music therapy. One protocol required music therapy twice a day (Poulsen & Coto, 2018), whereas one only offered music therapy once a day (Gallagher et al., 2018). Laframboise-Otto et al. (2021) described a more specific frequency of three times a day during the postoperative period and twice a day following hospital discharge in their protocol. Preselected music served as the intervention in two studies (Gallagher et al., 2018; Pellino et al., 2005). Self-selected music served as the intervention in one study (Laframboise-Otto et al., 2021). Poulsen & Coto (2018), Pellino et al. (2005), and Rahmani et al. (2020) all described the music intervention as relaxing music. However, Poulsen & Coto (2018) indicated the music chosen had to be flowing, nonlyrical, with low tones and minimal brass percussion.

Massage therapy, acupressure, and aromatherapy are additional NPI discussed in the literature. Nursing staff or massage therapists were the ones responsible for providing the massage intervention (Boyd et al., 2016; Kukimoto et al., 2017; Miller et al., 2018). Several different techniques for delivering massage were notable. Boyd et al. (2016) and Kukimoto et al. (2017) evaluated back massage, M technique massage, foot and hand massage, light pressure massage, and Swedish massage. Kukimoto et al. (2017) additionally included integrative massage. Miller et al. (2015) provided patients with a hand and arm massage. The duration of the massage intervention ranged from five minutes (Miller et al., 2015) and ten to forty-five minutes (Kukimoto et al., 2017). For acupressure as the intervention, two used auricular acupressure (Chang et al., 2012; Zhong et al., 2019), and one used a sixteen-point acupressure protocol (Monson et al., 2019). The systematic review included both auricular acupressure and acupressure points (Lederer et al., 2018).

For aromatherapy, Lakhan et al. (2018) and Lederer et al. (2018) evaluated various application techniques and essential oils. For Dimitriou et al. (2017), the intervention must include one single essential oil and one method of application (topical, inhalation, massage) to remain within the inclusion criteria (Dimitriou et al., 2017). All three systematic reviews included the essential oil lavender in the interventions (Dimitriou et al., 2017; Lakhan et al., 2018; Lederer et al., 2018).

Outcomes and Measures

Throughout the literature, the effectiveness of NPI was recurrently evaluated by the level of pain, anxiety, patient satisfaction, and analgesic consumption. Pain levels were primarily measured before and after the intervention through self-rated pain scores from the patients, using the standard mean deviation for outcome measurement. The most commonly reported scales were the visual analog scale (VAS) and numerical rating scale (Bakker et al., 2020; Boyd et al., 2016; Chang et al., 2012; Dimitriou et al., 2017; Fan & Chen, 2020; Gallagher et al., 2018; Kukimoto et al., 2017; Lakhan et al., 2016; Lederer et al., 2018; Miller et al., 2015; Monson et al., 2019; Moon et al., 2021; Rahmani et al., 2020). Chang et al. (2012) applied a shortened format of the McGill Pain Questionnaire to measure pain in addition to a goniometer for assessing improvement in knee motion. Pellino et al. (2005) used the Acute Postoperative Brief Pain Inventory survey to measure pain.

For measuring anxiety, the VAS was similarly applied (Gallagher et al., 2018; Miller et al., 2015). The State-Trait Anxiety Inventory scale was also used to determine the level of anxiety (Kukimoto et al., 2017; Pellino et al., 2005). The International Pain Outcomes Questionnaire was useful for measuring pain level and NPI use (Komann et al., 2019). The quality of pain management for an entire nursing unit was measured with the Pain Care Quality-

Interdisciplinary and Pain Care Quality-Nursing surveys once a month, four months prior to the intervention, and thirty days after the intervention (Rice et al., 2019). Furthermore, decreased analgesic consumption demonstrated intervention effectiveness in reducing the level of pain (Bakker et al., 2020; Chang et al., 2012; Laframboise-Otto et al., 2021).

Results

Music therapy is effective for pain relief and anxiety following orthopedic surgery (Bakker et al., 2020; Buyukyilmaz, 2014; Fan & Chen, 2020; Gallagher et al., 2018; Kukimoto, et al., 2017; Laframboise-Otto et al., 2017; Lederer et al., 2018; Pellino et al., 2005; Poulsen et al., 2018; Rahmani et al., 2020; Rice et al., 2019). Massage can reduce pain intensity, severity, and anxiety in the postoperative patient population (Boyd et al., 2016; Buyukyilmaz, 2014; Fan & Chen, 2020; Komann et al., 2019; Kukimoto et al., 2017; Pellino et al., 2005; Rice et al., 2019). Acupressure demonstrates a significant decrease in self-rated pain and anxiety scores in orthopedic surgical patients (Chang et al., 2012; Lederer et al., 2018; Monson et al., 2019). Aromatherapy is efficacious for controlling pain postoperatively and increases patient satisfaction (Dimitriou et al., 2017; Lakhan et al., 2016; Lederer et al., 2018; Rice et al., 2019; Stea et al., 2014).

Several clinical practice guidelines recommend the use of aromatherapy, acupressure, music therapy, massage, psychosocial interventions, and patient education for pain management (Cornelius et al., 2017; Hsu et al., 2019; Tick et al., 2018). Evidence supports the use of patient education and psychosocial interventions to decrease postoperative pain and anxiety levels and increase patient satisfaction (Bruckenthal & Simpson; 2016; Buyukyilmaz, 2014; Cornelius et al., 2017; Hsu et al., 2019; Lamframboise-Otto et al., 2021; Lovecchio et al., 2019; Moon et al., 2021; Rahmani et al., 2020; Rice et al., 2019; Soffin et al., 2017; Szeverenyi et al., 2018; Tamer

& Dag, 2020). Little to no adverse effects have been observed from the use of NPI (Boyd et al., 2016; Brewer et al., 2019; Dimitriou et al., 2017; Gallagher et al., 2018; Lakhan et al., 2016; Lederer et al., 2018; Monson et al., 2019; Moon et al., 2021; Pehlivan & Karadakovan, 2018; Poulsen & Coto; 2018; Tick et al., 2018). Nurse-led NPI enhances nursing practice, conveys patient-centered care, and encourages patient participation in shared decision making (Balouchi et al., 2018; Bakker et al., 2020; Brewer et al., 2019; Cornelius et al., 2017; Fitzgerald et al., 2017; Hall et al., 2017; Kidanemariam et al., 2020; Lakhan et al., 2016; Moon et al., 2021; Tick et al., 2018).

Review of the Literature: Nursing Pain Management Education

Table 2.

Nursing Pain Management Education Evidence Table

John Hopkins Evidence Based Practice Non-Research Appraisal Tool	Authors
Level II Grade B	Keen et al., 2017 Germossa et al., 2019 Gonzalez et al., 2020
Level III Grade A	Brewer et al., 2019 Kidanemariam et al., 2020
Level III Grade B	Balouchi et al., 2018 Bouri et al., 2018 Brant et al., 2017 Drake & Williams, 2017 Fitzgerald et al., 2017 Hall et al., 2017 Jang et al., 2020 Youngcharoen et al., 2018
Level III Grade C	Tamer & Dag, 2020
Level V Grade B	Bonkowski et al., 2018 Chatchumni et al., 2020 Kemper & Hill, 2017 Monasterio et al., 2019 Schroeder et al., 2016 Trail-Mahan et al., 2016 Xuelian et al., 2021

Study Purpose

One systematic review and meta-analysis examined the effects of nurse-led pain management interventions for patients following THA or TKA (Moon et al., 2021). Tamer & Dag (2020) investigated patients' pain experience and nursing care quality in managing acute postoperative pain. Brant et al. (2017) surveyed nurses to distinguish the correlation between patient satisfaction with pain management and nurses' knowledge and attitudes. A review by Fitzgerald et al. (2017) included both quantitative and qualitative studies on assessment and management of acute pain in OA and nursing barriers and facilitators to nursing practice. Youngcharoen et al. (2016) aimed to determine the relationships among nursing beliefs, attitudes, perceived norms, behavior control, and intentions for pain management in hospitalized elderly patients with postoperative pain.

A common theme included investigating the effects of an educational program on pain management. One systematic review (Drake & Williams, 2017) of nursing education interventions for pain management in surgical units reviewed twelve articles and included data from ten different countries with various policies, protocols, and guidelines on pain management informing the intervention. A quasi-experimental design was utilized to introduce a standardized pain assessment protocol (SPAP) in an orthopedic surgical unit in a tertiary hospital in Saudi Arabia (Gonzales et al., 2020). A nurse-based pain management program with two components: nursing education (enhance nursing knowledge and attitude towards pain) and organizational elements (increase systematic monitoring), aimed to improve pain management practices (Germossa et al., 2019). A targeted pain management program was implemented to improve the quality of care (Keen et al., 2017).

Study Characteristics

In the nursing education evidence table, there were three quasi-experimental studies (Keen et al., 2017; Germossa et al., 2019; Gonzalez et al., 2020), two descriptive correlational studies (Bouri et al., 2018; Brewer et al., 2019), three descriptive cross-sectional studies (Kidanemariam et al., 2020; Tamer & Dag, 2020; Youngcharoen et al., 2016), one descriptive cross-sectional correlation study (Brant et al., 2017), four systematic reviews (Balouchi et al., 2018; Drake & Williams, 2017; Fitzgerald et al., 2017; Hall et al., 2017), one scoping review (Chatchumni et al., 2020), one qualitative study (Jang et al., 2020), and six QI projects (Bonkowski et al., 2018; Kemper & Hill, 2017; Garcia-Monasterio et al., 2019; Schroeder et al., 2016; Trail-Mahan et al., 2016; Xuelian et al., 2021).

Several of the articles utilized a convenience sample. A convenience sample of 47 patients, who underwent joint replacement surgery, had a mean age of 70.4 years, served as participants for a tailored teaching intervention (Tracy, 2010). A convenience sample of 247 surgical patients in the hospital setting was studied by Tamer & Dag (2020). Youngcharoen et al. (2016) had a 90% response rate in a convenience sample of 140 nurses, who provided direct care to hospitalized patients over the age of sixty with postoperative pain and worked at least twenty hours per week, in adult surgical units at the university, public health, and military hospitals in Thailand. A total of 9,161 older adult patients and 756 nurses were represented in the systematic review (Fitzgerald et al., 2017). A descriptive cross-sectional study was conducted among 154 nurses (Kidanemariam et al., 2020). At a large integrated health facility in the Northwest, 217 nurses who worked in acute, ambulatory, and long-term care settings represented the convenience sample in a study by Brant et al. (2017). A quasi-experimental design using a sample pretest-posttest approach was conducted on a convenience sample of 845 patients

(Germossa et al., 2019). One study used a randomized sample, where 101 patients were randomly assigned to either the comparison (n=50) or the experimental (n=51) group (Gonzales et al., 2020).

The hospital and inpatient adult surgical units were the most common sites in the studies. Moore et al. (2019) performed a quality improvement project on an inpatient medical unit at a regional academic medical center. Bonkowski et al. (2018) performed their quality improvement project on a surgical oncology unit at a large academic medical center. A pain education program was conducted in two medical and one surgical progressive unit in a university-affiliated teaching hospital in the Midwest (Keen et al., 2017). Nurses worked in the postoperative surgical units in the hospital setting in Eritrea (Kidanemariam et al., 2020). Another study involved four inpatient units at a university medical center (Germossa et al., 2019).

Interventions

A standardized process to increase the utilization of NPI for managing patient discomfort was implemented in two studies (Gonzales et al., 2020; Moore et al., 2019). Nurses asked patients to rate their comfort level using a four-item rating scale called the Clinically Aligned Pain Assessment (CAPA) Tool (Moore et al., 2019). This tool was selected as it prompted a better conversation with patients about discomfort levels and helped guide nurses' intervention selection (Moore et al., 2019). Another SPAP intervention was developed based on acute pain guidelines on pain level and analgesic consumption and included eight components: informing the patient and family about pain assessment, assessing pain level by the patient, using the pain scale with the help of the nurse before the surgery, identifying pain alleviating and initiating factors, assessing pain post-operatively every two hours in the first eight hours and every four hours for the rest of the stay, reassessing the pain thirty minutes after analgesia or pain

management actions, measuring the pain at rest and with movement, and recording the pain scale in the medical record (Gonzales et al., 2020). Nursing responsibilities included pain assessment, pain rating, patient and family involvement in pain management, physician communication with unmanaged pain, medication administration, patient and family involvement in NPI, patient and family education, involvement of ancillary services, interdisciplinary communications, pain evaluation, and valuable principles of pain management with the "ABCDE" method (Gonzales et al., 2020). Germossa et al. (2019) utilized standardized organizational elements, including regular pain assessment using the numerical rating scale, charting in rounding logs when it was necessary to consult the physician, scripted dialogue with the patients, and how to assess patients using the four P's (presence, pain, position, and personal needs) and a script for initiating conversations regarding pain (Germossa et al., 2019). The script read: "We are going to do everything we can to keep your pain under control. Your pain management is our number one priority. Given your (condition, history, diagnosis, status), we may not be able to keep your pain level at zero. However, we will work very hard with you to keep you as comfortable as possible" (Germossa et al., 2019, p.3).

Several quality improvement projects were implemented with pain management education serving as the common intervention. Similarly, all the interventions reviewed included a didactic teaching component about pain, current best practice guidelines, and skills training (Drake & Williams, 2017). Tracy (2010) described a tailored teaching intervention for NPI implementation in the hospital setting. This intervention included assessing the patient's information coping style, assessing prior use of NPI, supplying a pamphlet on music and massage, viewing a video further explaining the pamphlet, developing a personalized pain management plan, with daily follow up and revision of the plan as needed (Tracy, 2010). One

educational intervention provided two days (sixteen hours) of pain management training in-services, take-home reading assignments, and refresher training (eight hours) four weeks later for all the nurses on the unit (Germossa et al., 2019). Another program consisted of two thirty-minute educational sessions one month apart with educational content generated by the clinical nurse specialist and a pharmacist (Keen et al., 2017). Session one was didactic with information focused on pain knowledge, pain pathophysiology, adjuvant and non-opioid pain medications, pharmacokinetics, opioid side effects, and opioid conversion (Keen et al., 2017). Session two incorporated case studies and video scenarios designed for nurses to engage and apply the knowledge from session one into clinical practice (Keen et al., 2017).

Another pain management continuing education program and operational guideline used a Knowledge to Action framework (Bonkowski et al., 2018). The project coordinator and nurse educator developed an operational guideline based on the hospital's pain management policy, including patient and family education and collaboration, pain assessment, medication administration, reassessment, documentation, and NPI (Bonkowski et al., 2018). The nursing staff viewed a twenty-minute online module on pain pathways, the impact of medications on pain, opioid and nonopioid medication use, pain assessment and monitoring, NPI, the hospital pain protocol, and an introduction to the pain management guideline. Nurses then attended a live thirty-minute educational session to review pain management, the operational guideline, and participate in a real-life case scenario (Bonkowski et al., 2018).

Opportunities for nursing education were identified in several areas: education on pain management, understanding the risks of analgesics, assessment of pain, and clinical decision-making regarding opioid administration (Brant et al., 2017). These opportunities were incorporated into nursing grand rounds using roleplay and discussion to demonstrate patient

20

assessment and behaviors (Brant et al., 2017). The nursing grand rounds were broadcasted on several telemedicine sites, highlighting the importance of patient communication, respect, and safety (Brant et al., 2017). Fitzgerald et al. (2017) recommends implementing mandatory in-service education on pain management, focusing specifically on OA. This education should include barriers to pain management, assessment principles, use of as-needed and multimodal medications, and encourage patient participation in pain management (Fitzgerald et al., 2017). Computer-based simulation, web-based facilitation, and video scenarios using an evidence-based algorithm can provide nurses with strategies to improve the quality of care and pain management outcomes in the postoperative setting.

Outcomes and Measures

Many different measurements were utilized throughout the literature. Nursing staff completed a survey before viewing the online module and again after the live session six weeks later (Bonkowski et al., 2018). The program's effectiveness was evaluated using nursing survey scores and a convenience sample of patient chart reviews (Bonkowski et al., 2018). A structured questionnaire was utilized with three different sections, including demographics, the use of NPI in pain management (five categories using a five-point Likert scale on cognitive-behavioral methods, preparatory information, physical methods, emotional support, helping with daily activities, and creating a comfortable environment), and perceived barriers which hinder the nursing implementation of NPI (Kidanemariam et al., 2020). Data was collected during both morning and evening shifts during the routine work schedule. (Kidanemariam et al., 2020). One hour after intervention administration, patients were asked to reassess their level of discomfort using CAPA and how likely they were to use the NPI again (Moore et al., 2019). Two programs

were evaluated using pretest/posttest scores from the Knowledge and Attitudes Survey Regarding Pain (KASRP) (Brant et al., 2017; Keen et al., 2017).

The patient's pain experience was measured using a tool adapted from the Brief Pain Inventory and the American Pain Society Pain Outcome Questionnaire-Revised (Germossa et al., 2019). Data was collected at baseline, before the intervention six weeks after pain management education, and immediately after four months of rounding using an interview-administered questionnaire (Germossa et al., 2019). Patient data was collected by administering the Strategic and Clinical Quality Indicators in Postoperative Pain Management Questionnaire to the patients, which contained items related to pain management, nursing intervention, and the environment with items rated on a five-point Likert scale (Tamer & Dag, 2020). Patients serving as the participants were interviewed over the course of four days, reporting intervention effectiveness, ease of use, and ability to actively participate in postoperative care (Tracy, 2010).

Ideally, nurses' pain management behaviors should be measured by direct observation (Youngchareon et al., 2016). Demographics were used to determine participant information, and the Pain Management Questionnaire and the Pain Assessment Questionnaire was used to measure the eight theoretical planned behavior constructs (Youngcharoen et al., 2016). The eight Theoretical Planned Behavior framework constructs were nurses' behavioral, normative, control beliefs, attitudes, perceived norms, perceived behavioral control, intentions, and behaviors (Youngchareon et al., 2016). Descriptive statistics were used to describe study variables, and path analyses conducted using generalized structural equation modeling to determine the effect of nurses' behavioral, normative, and control beliefs on attitudes, perceived norms, and perceived behavioral control (Youngchareon et al., 2016). Furthermore, case study vignettes were used to measure nurses' pain management behaviors because it was an inexpensive

approach and has previously been utilized to define health care behaviors (Youngcharoen et al., 2016).

Results

Fitzgerald et al. (2017) determined nurses need to improve their communication and interactions with older patients and their knowledge of pain assessment and management principles. Moon et al. (2021) concluded NPI effectively decreased pain during the immediate postoperative period, specifically among TKA and THA patients. Findings revealed patients showed tolerance of discomfort when using NPI and were highly likely to use NPI again (Moore et al., 2019). The NPI were delivered at no cost to the patient, sustained in practice for ten months following implementation, and are being implemented in other units (Moore et al., 2019).

Nursing documentation increased on pain assessment, patient satisfaction improved regarding pain management, and increased documentation of NPI were noted following the intervention (Drake & Williams, 2017). Overall, these positive effects correlated to nurses feeling autonomous; therefore, providing nurses with NPI education allows for autonomy in managing pain (Drake & Williams, 2017). Results indicated a statistically significant increase in nursing knowledge after education implementation (Keen et al., 2017). Findings suggest that a brief and targeted educational program can effectively improve nursing knowledge and attitudes regarding pain management in complex patients (Keen et al., 2017).

The highest KASRP scores were in long-term care nurses, average score of 88% and surgical nurses averaged the lowest at 67% (Brant et al., 2017). Higher KASRP scores were predicted from nurses who had more than five years of nursing experience, were certified, and received pain education in the last year (Brant et al., 2017). Mean unit KASRP scores were

highly correlated with unit-based Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores (Brant et al., 2017). Findings suggest that having more knowledge and better attitudes about pain may improve patient satisfaction with pain (Brant et al., 2017). A review of pain management nursing education programs found that technology-based training using realistic simulated scenarios engaged nurses, demonstrated the effects of interventions, and provided pain management education. Using realistic case studies increased nursing knowledge and the ability to change current practice into evidence-based practice. Additionally, methods of technology can promote learning about evidence-based practices, are cost-effective, sustainable, and can be expanded into different units across large organizations (Chatchumni et al., 2020).

The educational program improved nursing knowledge and attitude toward pain and was a cornerstone for the change in pain management practice resulting in a statistically significant reduction in pain intensity and functional interference following the intervention (Germossa et al., 2019). All the NPI were significantly more common in the experimental group, and opioid consumption was significantly less in the experimental group (Gonzales et al., 2020). Nursing adherence to SPAP resulted in lower pain levels in post-operative orthopedic patients within the first twenty-four hours. (Gonzales et al., 2020). Almost all of the patients surveyed (99.3%) had no training for managing pain during their hospital stay (Tamer & Dag, 2020). Overall, 65% of the nurses had not received pain education within the last six months (Youngcharoen et al., 2016). Results demonstrated low scores for pain assessment, education regarding postoperative pain relief, pain management, and nursing care quality (Tamer & Dag, 2020). Results from the theoretical planned behavior framework highlight the need to provide education to nurses, which emphasizes the benefits of pain management and improving their confidence and ability to manage pain (Youngcharoen et al., 2016).

Nurses over the age of 40 had significantly higher utilization of NPI compared to those aged 20-24 and 25-29 years (Kidanemariam et al., 2020). Associate-level degree nurses also had substantially less NPI utilization compared to those with a diploma or bachelor's degree in nursing (Kidanemariam et al., 2020). Results demonstrated the utilization of NPI is proportionate to the increase in age, experience, and educational level of the nursing staff. (Kidanemariam et al., 2020). Nursing practice scores improved from pre to post on patient education and pain assessment and opioid conversions, revealing nursing staff were more knowledgeable about managing postoperative pain following the intervention (Bonkowski et al., 2018). In addition to evidence-based materials and clinical practice guidelines, support for this quality improvement project was sustained through a "Pain Corner" available on the hospital intranet (Bonkowski et al., 2018). The "Pain Corner" includes online modules, a voiceover PowerPoint of the live educational session, operational guidelines, and the hospital pain policy (Bonkowski et al., 2018).

Patients who underwent TJA surgery and participated in a tailored teaching intervention were overall satisfied with pain management, suggesting interventions are effective when tailored to the patient population (Tracy, 2010). When pain management education is provided to nurses, patients report greater usage of NPI and increased participation in the pain management process (Cui et al., 2017; Dijk et al., 2017; Mazilu et al., 2018). NPI use is more frequent in the postoperative orthopedic setting when a SPAP is in place (Gonzalez et al., 2020; Hsu et al., 2019; Poulsen & Coto, 2018). In TJA surgery, each added NPI has a positive effect on reducing opioid administration and their related side effects, with two or more interventions showing the highest benefits (Kelleher et al., 2020). Pain management education decreases pain, postoperative complications, reduces the length of stay for OA, and increases patient satisfaction

(Bruckenthal & Simpson, 2016; Youngcharoen et al., 2016). Komann et al. (2019) found elderly patients have significantly higher pain relief with the use of NPI and a positive effect on patients who had undergone TKA.

Although nurses support the use of NPI, only a small number of nurses report using NPI with their patients (Balouchi et al., 2018; Brewer et al., 2019; Kidanemariam et al., 2020). Lack of education was identified as the primary reason for the absence of NPI integration into nursing practice (Balouchi et al., 2018; Bouri et al., 2018; Brewer et al., 2019; Coll & Jones, 2020; Cui et al., 2017; Hall et al., 2017; Kidanemariam et al., 2020; Mazilu et al., 2018; Tick et al., 2018). Nursing educational programs specifically tailored to patient populations are recommended to improve pain management practices (Bouri et al., 2018; Brant et al., 2017; Bonkowski et al., 2018; Chatchumni et al., 2020; Cornelius et al., 2017; Fitzgerald et al., 2017; Germossa et al., 2019; Keen et al., 2017; Garcia-Monasterio et al., 2019; Schroeder et al., 2016; Tamer & Dag, 2020; Xuelian et al., 2021; Youngcharoen et al., 2016). Nurse-led NPI is recommended for pain management in the postoperative orthopedic setting in multiple studies (Bakker et al., 2020; Buyukyilmaz, 2014; Fan & Chen, 2020; Fitzgerald et al., 2017; Gallagher et al., 2018; Garcia-Monasterio et al., 2019; Gonzalez et al., 2020; Komann et al., 2019; Laframboise-Otto et al., 2021; Lakhan et al., 2016; Monson et al., 2019; Moon et al., 2021; Pellino et al., 2005; Rahmani et al., 2020; Rice et al., 2019; Szeverenyi et al., 2018).

Increased educational hours on the use of pain assessment tools and NPI positively impact nursing approaches to pain assessment and management (Drake & Williams, 2017; Heikkila et al., 2016; Tomaszek & Debska, 2018; Youngcharoen et al., 2016). Nurses caring for OA need to be offered education about NPI for pain management (Pehlivan & Karadakovan, 2018). Education for healthcare providers about evidence-based NPI is also recommended and

essential for the delivery of effective, patient-centered pain management (Balouchi et al., 2018; Bonkowski et al., 2018; Brewer et al., 2019; Drake & Williams, 2017; Fitzgerald et al., 2017; Hall et al., 2017; Hsu et al., 2019; Kemper & Hill, 2017; Kidanemariam et al., 2020; Tick et al., 2018; Xuelian et al., 2021).

CHAPTER 3: FRAMEWORK

Theoretical Framework

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Healthcare (2015) served as the framework for this DNP (Doctor of Nursing Practice) project. The model supported the DNP project by using a systematic approach to guide the identification of clinical issues and practice decisions, implementation of knowledge, and integration of evidence-based research into clinical practice. The framework was chosen due to the organized structure, which addresses the multifaceted process of translating nursing research into clinical practice with successful implementation.

Figure 1.

IOWA Model
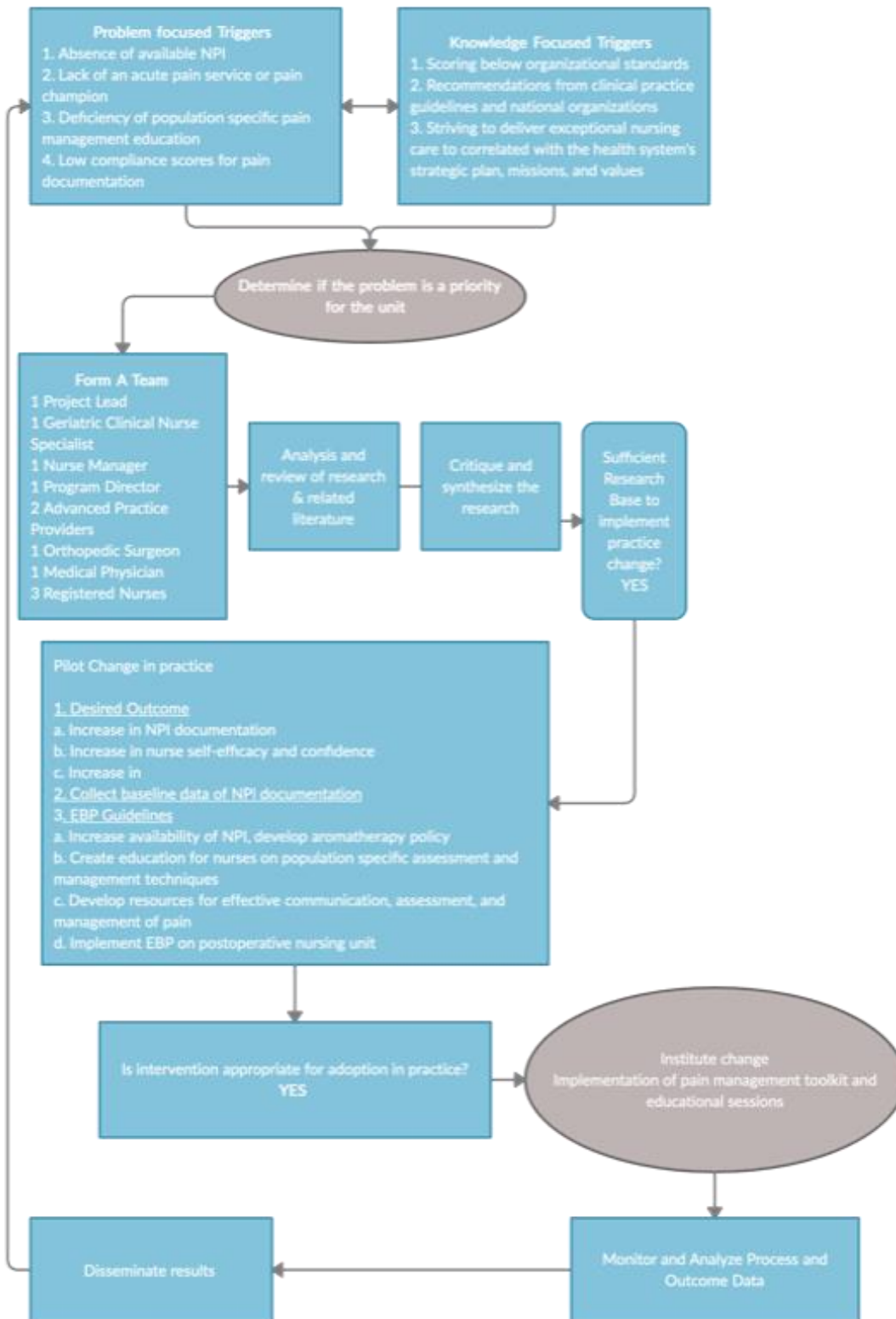
In the first phase of the IOWA model, several triggers were identified. Problem-focused triggers identified include the absence of available non-pharmacological interventions (NPI), the lack of an acute pain service and pain champion, deficiency of population-specific pain management education, and low compliance scores for pain documentation. Currently, there is no acute pain service or a pain clinical nurse specialist at a university-based medical center in the southeastern portion of the United States. Furthermore, there are no identified pain champions and the only available form of NPI was cold therapy. Lack of an acute pain service team, absence of NPI, and a deficiency of pain management nursing education contribute to unmanaged postoperative pain, complications, and increased length of stay for older adults (OA) in the postoperative orthopedic setting (Powrie et al., 2014).

The Joint Commission (TJC) supports organizational effects to develop patient-centered strategies that effectively treat patients' pain and improve healthcare provider education, pain assessment, and pain management practices (TJC, 2018). Providing NPI is required by TJC, recommended in several clinical practice guidelines, and falls within the nursing scope of practice (ANA, 2018; Cornelius et al., 2017; TJC, 2018; Tick et al., 2018; Tracy, 2010). Additionally, TJC has established program-specific standards for hospitals to provide non-pharmacological pain treatment modalities, provide healthcare staff with educational programs and resources to improve pain management, population-specific pain assessments, and involve the patient in the pain management process (TJC, 2018). Improvement of pain management should be an important quality improvement goal for every health institution. The organization needs to ascertain a culture that promotes pain relief and prioritizes it. The achievement of optimal pain management must be the goal for every healthcare professional rather than a specific team (Al-Mahrezi, 2017). It is imperative to address this problem because a thorough

pain assessment and effective pain management in the OA population are critical aspects of delivering quality care.

Knowledge-focused triggers include scoring below organizational standards, recommendations from clinical practice guidelines, and striving to deliver exceptional nursing care in order to correlate with the health system's strategic plan, missions, and values. A survey conducted by the university health system in 2021 revealed nursing desires related to NPI. Nurses in the role of pain champions within the healthcare system identified aromatherapy, acupressure, and music therapy as NPI in which they desired training and interest in gaining further knowledge. Furthermore, acupressure, aromatherapy, and music therapy were the top three choices to implement out of all the NPI modalities.

The clinical practice guidelines of the project's clinical site, The American Pain Society's Guidelines on the Management of Post-Operative Pain (2016), recommend that nurse-led NPI be provided to post-operative patients in combination with routine pharmacologic interventions (Chou et al., 2016). Managing pain with NPI is also recommended by the National Institutes of Health, Food and Drug Administration, the American College of Physicians, Centers for Disease Control and Prevention (CDC), and TJC (Tick et al., 2018). Correspondingly, TJC requires hospital clinical staff and leadership to actively participate in strategies for improving pain assessment, management, ways to decrease opioid use, and minimize risks related to opioid use (Lindgren et al., 2019). The National Academy of Medicine and the CDC published reports outlining the priorities for transforming patient care and education regarding pain relief, highlighting the importance of NPIs as front-line strategies (George & Greenspan, 2018). These reports align with the health system's action plan, which calls for improvements in pain management, decreasing hospital length of stay, and minimizing opioid-related adverse events.

The health system's strategic plan strives to promote high-reliability care through the application of evidence-based care and engagement of every patient and family member to achieve an optimal and consistent caring experience. Patients desire to be informed and included in the decision-making process for pain management (Dijk et al., 2017; Tracy, 2010). The total joint replacement program's mission statement is "To restore patient mobility, reduce pain, and help patients get back to their normal lifestyle". The hip fracture program's mission statement is "To reduce patient complications and restore early function to assist the patient back to their baseline". This DNP project fits in line with the health system's strategic plan and the project site's mission statements.

The next decision point in the Iowa Model indicated the topic was a priority, representing national initiatives and the health system organization's strategic plan, magnifying the need to implement this DNP project. The project lead became a "pain champion" within the healthcare system and began forming a multidisciplinary team. Following project team formation, a literature review was performed and functioned as the body of evidence for supporting the necessity of this DNP project.

The literature revealed that pain management educational interventions positively affected nurses' pain knowledge and behavior and identified evidence-based, population-specific NPI. The American Holistic Nurses Association (2017) released the "Pain Relief Tools for Patients & Self-Care" which contained evidence-based, nurse-driven NPI. This toolkit included all the evidence-based interventions identified in the literature review, supported a patient-centered approach, underlined the importance of holistic nursing, and served as the foundation for this DNP project. Currently, there is a lack of specialized knowledge for managing pain in OA and a lack of nurse proficiencies to manage a patient's pain without medications. Education

serves as the foundation for any successful strategy to remove the barriers to optimizing postoperative pain management. Additionally, learning opportunities are necessary to narrow the gap in pain management knowledge and aid in translating evidence into clinical practice. Given their unique and complex needs, nursing staff education is equally important to increase competency and confidence in caring for the OA population.

The final decision point, appropriateness for change adoption, was supported by the measurable outcomes with recommendations for the organization to examine prospective outcomes represented by future population-specific pain management programs.

Transformational Leadership Model

Leadership has been described as the link between the individual and the organization. Integrating holistic management is necessary and using appropriate leadership styles according to the situation and needs of the patient is imperative to providing high quality patient care (Radha et al., 2019). Nurses must be flexible in order to adapt to different situations, and effective leadership is instrumental in achieving successful outcomes (Radha et al., 2019). Effective communication and leadership have been shown to reduce the length of stay for patients admitted to the hospital (Radha et al., 2019). Transformational leaders drive and foster organizational culture (Barden et al., 2020).

The transformational leadership model requires individuals to communicate and motivate others to reach a shared goal or vision, which is relevant to their core principle of patient-centeredness (Fletcher et al., 2019). Additionally, the healthcare organization's passion for innovation and research supports transformational leadership behaviors and enhances the overall culture (Farahnak et al., 2020). The literature demonstrated a link between positive leadership and lower levels of burnout, with better well-being and safety culture linked to better workplace

culture, clinical outcomes, and operational outcomes (Sexton et al., 2021). Before

implementation, the project lead acknowledged how influential the transformational leadership

model could be during a pandemic and for this quality improvement project. Therefore, a

transformational leadership model functioned to guide implementation. The project lead and

project champions exhibited a transformational leadership approach to support positive

outcomes.

CHAPTER 4: METHOLODOLGY

Design

Quality improvement can be defined as the collective efforts of healthcare professionals, patients, their families, educators, and administrators, to produce changes leading to improved patient outcomes, increased performance measures, and enhanced professional development (Ogrinc et al., 2013). This DNP (Doctor of Nursing Practice) project, organized as a quality improvement project, aimed to improve patient care by increasing knowledge and awareness of evidence-based non-pharmacological pain management practices for nurses through educational sessions and resources available in the form of a toolkit. Following implementation completion, participants were retrospectively surveyed, and nursing documentation data was collected post-implementation for comparison to baseline.

The review of literature exposed key aspects to include in pain management education, as well as resourceful patient and health care professional toolkits for pain management. The population-specific pain management resource toolkit and educational sessions for this DNP project were referred to as PAMPER. PAMPER is an acronym which connotes: "Promoting Alternative Methods for Postoperative Empowering Recovery". This DNP project aimed to increase nursing knowledge, self-efficacy, documentation, and utilization of non-pharmacological interventions (NPI) within the older adult (OA) post-operative orthopedic setting.

Data was collected through electronic surveys and nursing documentation following the educational sessions and competency training. This quantitative data was used to evaluate the effectiveness of this DNP by capturing and reviewing nursing confidence, observed behaviors, and future intentions following the completion of this DNP project. Quantitative designs are useful in data collection for projects which involve implementing and evaluating changes in clinical practice.

At the project site on a secure password protected platform, a data extraction tool was used to obtain de-identified information from the electronic medical record for patients over the age of 65 in order to approximate the project site's NPI use before implementation. After project implementation, the second set of de-identified data was collected and analyzed to determine the measurable outcome. Scores from the nursing quality dashboard were used to determine the average completed pain reassessments and compared pre and post-implementation. After the educational sessions and competency training, voluntary participants were asked to complete an anonymous electronic survey to evaluate self-reported confidence and self-efficacy levels.

Setting

This DNP project took place within one Magnet recognized community hospital in the southeastern United States affiliated with a large academic health system. The particular nursing unit chosen for this DNP project site was a 36-bed inpatient unit which provides patient care during the postoperative period. At the site, service lines include both orthopedic and neurosurgical patient populations following elective and traumatic surgeries. There is an average of 25-30 patients admitted following total joint arthroplasty (TJA) each week to this unit, with an estimated half over the age of 65.

At the start of project implementation, twenty-eight nurses were employed who were either associate or baccalaureate-prepared. Of the twenty-eight nurses, seventeen were full-time equivalent (FTE) nurses, three were per diem (PRN) nurses, six were travel (TRN) nurses, and two nurses were on maternity leave. A large portion (42.9%) of the nursing staff were considered new graduates, signifying they are within their first year of employment following nursing licensure. Inclusion criteria for participation in this DNP project were nurses employed on the unit during the time of project implementation, regardless of their employment status. Inclusion criteria for NPI documentation were patients who had undergone surgery over the age of 65. The project lead, who was employed on the unit, was excluded from the surveys and nursing documentation data collection. For completed pain reassessments, the average was derived with no exclusion criteria; thus, any nurse who worked on the unit and entered pain assessments for any patient admitted to the unit was included in the average. The project site unit had a nurse manager, TJA program director, and clinical nurse educator who assisted with the facilitation of this DNP project.

Intervention Educational Resources

The educational information provided throughout this DNP project was uniquely tailored toward the knowledge deficits recognized from existing literature and interests identified by pain champions within the healthcare system. Based on the literature review, content themes included in this DNP project were the pathophysiology of pain, the definition of NPI, evidence-based NPI specific to the project site's primary patient population, and applicable pain assessment tools. These themes were divided into two different sessions in addition to competency training. The educational material was further developed based on recent clinical practice guidelines and recommendations from the following agencies: American Pain Society, the Institute of Medicine:

National Pain Strategy, Pain Management Best Practices Inter-Agency Task Force, Minnesota Managed Care Organizations, National Association of Orthopedic Nurses, the American Academy of Pain Medicine, and the American Academy of Orthopaedic Surgeons. Resources for PAMPER were developed for nursing staff by generating tangible materials. This occurred through the creation of a toolkit, bulletin board, and badge reference cards. The PAMPER resources were readily accessible to nursing staff throughout the entire implementation. Every nurse at the project site received a badge reference card and had unlimited access to the toolkit and visibility of the bulletin boards.

The toolkit contained information found to be effective from the literature review, which was then translated into an interactive bulletin board located at the project site's employee breakroom (Appendix A). The Assess, Believe, Choose, Document, and Empower (ABCDE) standardized approach for managing pain served as a fundamental basis for the toolkit. This toolkit embodied "tools" within each of the five folders. Each folder contained laminated handouts attached to a ring binder which were categorized as they pertained to ABCDE standardized approach. In addition to the folders, the bulletin board demonstrated a visual depiction of pain pathophysiology, areas where NPI and medication effects occur along the pain transmission pathway, basic principles of pain management, and the project site's specific pain policies.

The "Assess" folder contained a variety of pain assessment tools specific for the OA population, including an assessment tool for patients with advanced dementia. Descriptions of the various types of pain were housed in the "Believe" folder, which also included the diverse physiological effects pain exerts on the body and common types of pain which occur during the postoperative period. Within the "Choose" folder, there were step-by-step instructions and

patient education points for NPI, as well as the mechanism of action and side effects of commonly used medications for pain. Required nursing documentation for the various assessment tools, time intervals for intervention reassessment, and options for patient responses were located in the "Document" folder. Inside the "Empower" folder, there were conversation starters and sample dialogues for initiating a shared-decision making discussion using a patient-centered approach and methods for encouraging the patient's self-management of pain.

A second bulletin board in the main hallway was composed, revealing evidence-based NPI found in the literature (Appendix B). The heading at the top of the bulletin board displayed the following message: "Let's PAMPER our patients! Promoting Alternative Methods for Postoperative Empowering Recovery". The center of the bulletin board contained material about the importance of a holistic approach and how it can positively affect postoperative pain management and the patient's recovery. Material regarding acupressure, aromatherapy, massage, and music was presented on the right and left sides of the bulletin board. Evidence obtained from the literature review for managing postoperative pain following TJA using these specific forms of NPI was summarized, allowing for straightforward interpretation by patients, family members, and nursing staff. For example, under acupressure, pictures representing the various acupressure points, including landmarks for locating the points and the potential benefits were depicted. References from the literature and the International Association for the Study of Pain's revised definition of pain were located at the bottom of the bulletin board.

The badge reference cards contained the ABCDE standardized approach, a concise chart for pain assessment and reassessment documentation requirements and times based on the different interventions, and the following message: "Let's PAMPER our patients! Promoting Alternative Methods for Postoperative Empowering Recovery" (Appendix C). The badge

reference cards were distributed to nursing staff throughout project implementation and during the annual skills day.

Project Team/Stakeholders/Project Champions

The project team consisted of the project lead, the project site's nurse manager, total joint program director, clinical nurse educator, three registered nurses, one physician assistant, a geriatric clinical nurse specialist, an orthopedic surgeon, and a medical physician. Project champions were identified before project implementation. Two new graduate registered nurses and one TRN functioned as the project champions. These nurses were chosen as they showed an interest in learning more about pain and managing the complex needs of the OA population. Every week the project lead and project champions met virtually to reflect on implementation, determine any necessary changes, and discuss the next steps.

Every project team member had some relation to patient care at the project site and were deemed valuable stakeholders. Within the project team, there was a broad range of project-associated duties. Some of the project team members provided feedback for educational sessions, while others assisted in the creation of the toolkit, construction of the bulletin boards, and others assembled the badge reference cards and badge charms before implementation. Other project team members agreed to advocate for the use of NPI during routine care. A preliminary education session took place prior to implementation with the nurse manager, clinical nurse educator, and the TJA program director, who provided feedback on areas for improvement. All team members agreed to educate patients, act as a resource for all healthcare team members, and promote NPI use in the future.

Data Collection/Instruments

To analyze whether the intervention affected participants' use of NPI, participant responses from the post-implementation survey, documentation of NPI for patients over the age of 65, and averages from the nursing care quality dashboard for pain reassessments were collected and analyzed.

As the available tools did not reflect nursing confidence or self-efficacy in delivering NPI, a post-implementation survey was formulated based on the educational session objectives, items identified from the literature review, existing educational program evaluation surveys, and the NPI specific to this DNP project. Furthermore, the post-implementation survey (PAMPER survey) was field-tested on eight nursing peers who were not employed at the project site and had no involvement with the DNP project. The PAMPER survey was delivered electronically via Qualtrics to nursing staff to determine confidence and self-efficacy levels for providing NPI and pain management for the OA postoperative patient population.

The PAMPER survey included nine subjective statements and one multiple choice question (Appendix D). These statements revealed satisfaction with the educational material, intention to use the toolkit and NPI in future practice, nursing confidence in assessment and management of pain in the OA population, and awareness of site protocols and policies for pain management. The subjective statements were rated using the slider rating scale. Five of the subjective statements had two slider rating scales, one for before the educational session and one for after the educational session.

The project site Nursing Informatics representative collaborated with the project lead to obtain proper training and access to the "flowsheet universe" (Appendix E). Following a six-hour online training course, gaining permission from the flowsheet universe owner and nurse

manager, the project lead was able to access the flowsheet universe. The project lead was then able to use this access to conduct a retrospective chart review at the project site for NPI documentation.

Through the flowsheet universe, the project lead was able to filter information from the electronic health record via a query. The filters applied for this query were "admission date prompt", "patient age in years greater than or equal to 65", "department name in list DRH 71 SURGERY ORTHO/NEURO", and "flowsheet row Epic ID in list 3040455320". The result objects were "department name", "patient age in years", "flowsheet row display name", "flowsheet value", "recorded date and time", "recorded month number", and "recorded year". The data retrieved contained de-identified patient documentation specific to the flowsheet response row for "Non-Pharmacological Interventions". This query was performed for two different time periods, one forty-five days before the project start date and one forty-five days following the project start date.

Pain reassessment, one of the quality indicators on the nursing quality care dashboard, has historically had low numbers at the project site. The pain reassessment dashboard is available for all nurses to view in real-time and updated at the end of each twelve-hour shift. This dashboard yields scores from nursing documentation via the electronic health record, based upon requirements from the revised pain policy and for each type of intervention. The numbers displayed on the dashboard appear as a fraction. The top number represents the number of fully complete pain reassessments over the bottom number, which represents the total number of pain assessments linked to an intervention. A pain reassessment is only considered fully complete if done within the appropriate time interval for the specific intervention provided and contains a

pain scale, pain score, intervention response, and a score from the Richmond Agitation Sedation Scale.

The nurse manager of the DNP project site has access to a related nursing quality indicator dashboard for pain reassessments. However, this dashboard view displays the overall average percentage of fully complete pain reassessments documented by nurses on the unit each month. This particular dashboard has a pre-determined goal of 90% for the fully completed pain reassessment average each month. It is important to note that any nurse who floats to this unit and delivers any type of intervention associated with a pain score is also included within these metrics. The monthly average pain reassessment percentages were obtained for December, January, February, and March. From December 16, 2021 through January 29, 2022, served as the forty-five days representing the pre-implementation average completed pain reassessments. The average pain reassessment percentage was also obtained for January 30, 2022 through the 15th of March, 2022 representing post-implementation completed pain reassessments for forty-five days.

Practice Change/Intervention

Population-specific pain management education and evidence-based NPI content were provided to the nursing staff at the project site over six weeks. Based on a review of the literature, evidence-based NPI for pain management was identified, and interactive educational sessions were developed. With leadership endorsement, the target was for every nurse employed on the unit to complete the educational sessions and demonstrate skill competency. Nursing leadership supported nursing staff participation by allowing the educational sessions to take place during scheduled work hours in an effort to increase participant attendance. Educational sessions focused on ensuring all participants received consistent, current, and evidence-based information on pain management, assessment, and NPI specific to the OA population.

Population-specific non-pharmacological pain management educational sessions were provided to the nursing staff at the project site by the project lead. Given the time constraints of nursing staff, short, targeted educational sessions were an effective way to meet learning needs. Each educational session lasted ten to fifteen minutes and was conducted at times convenient for nursing staff to attend. Each educational session began with a case study, followed by dissemination of evidence-based practices, and concluded with an open-ended discussion allowing participants the opportunity to ask questions or reflect on presentation content. These methods were applied to increase participant attention and promote interaction during the educational sessions.

The content for the first session was delivered to participants in the form of a PowerPoint presentation. The presentation was displayed on the television in the employee break room, located next to the toolkit bulletin board. First, the nursing staff were educated on the health system's nursing caring theory, and participants were asked why they decided to become a nurse. This opening was an attempt to bring participants together so everyone could work together towards the shared common goal of providing patients with high-quality nursing care. Next, a meme of Florence Nightingale appeared depicting a patient whose pain was 20/10 while eating chips and talking on their cell phone. Nurses were asked how they would respond to this patient, leading to a discussion that signified the importance of realistic expectations and patient education during the postoperative period. Following this, the pathophysiology of pain, different types of pain, applicable pain assessment tools, and the standardized approach (ABCDE) for managing pain were presented to the nursing staff. An interactive case study was presented, showing nurses how to choose the most appropriate pain assessment tool, including a demonstration of the Pain in Advanced Dementia assessment tool. At the conclusion, the pain

toolkit was introduced, and participants were encouraged to utilize the assortment of tools in future clinical practice. The first educational session was offered a minimum of ten times a week during the first three weeks of project implementation and were conducted in all shifts, so all eligible participants were given equal opportunity to attend.

The second educational session occurred during the annual nursing skills day. The annual nursing skills day occurred on four different dates during the last three weeks of project implementation. During skills day, nursing staff were educated on NPI specific to the OA postoperative orthopedic population, site-specific changes to the 2020 pain policy, and required pain documentation. Visual information was available to participants in the arrangement of three poster boards (Appendix F). The poster boards included revisions to the pain policy, the ABCDE standardized approach, human body responses to pain, effective NPI found within the literature, and recommendations to use NPI from organizations and regulatory bodies. After the last skills day, the poster boards were placed on display in the employee breakroom for participants who were unable or exempt from attending the annual nursing skills day.

Training during skills day included communication skills, skill proficiency check-offs, and the use of the teach-back method to ensure effective comprehension. Participants were provided with a case study where the project lead acted as the patient. During this time, nurses were encouraged to use information acquired from the first session. This case involved an OA who was postoperative day two following a TJA. The patient received oxycodone for a pain level of 7/10 one hour ago. The patient then called the nursing station reporting their pain was now 10/10. Participants were then asked what the next step should be. The correct answer would be to ask or assess the patient about their pain. When the project lead, acting as the patient, was further asked about the pain from the participants, the patient reported the location of the pain was in

their head. This pain was described as a headache, expressing headaches occur every time they take oxycodone. Again, participants were asked what the next step should be. The correct answer would be to believe what the patient reports their pain as and choose the right intervention based upon a shared decision-making conversation. The patient reported a preference for tramadol, stating tramadol had worked well in the past but is in such agonizing pain the patient was willing to do anything to alleviate the headache. During this time, there was dialogue considering the importance of patient communication in order to choose an appropriate intervention and prior to contacting the patient's provider. The specific acupressure point for alleviating headaches was demonstrated to participants, and participants were encouraged to voice any other NPI they might offer to the patient in order to relieve this type of pain. Required documentation for this pain assessment, response, the intervention provided, as well as a proper format for contacting the provider were demonstrated to participants. The project lead exhibited how quickly NPI can be demonstrated and the ability to alleviate discomfort during the waiting time for a provider to respond to the medication change request.

The project lead, acting as the patient, reported it was the following day, and the patient was able to participate in therapy now that their headache had resolved and the pain was managed appropriately. Participants were told it was now the patient's day of discharge, and the patient expressed appreciation for the education on acupressure and feels capable of managing their pain at home and any future headaches they may encounter. The end of this particular case study illustrated the significance of the standardized approach to managing pain, and ultimately the positive effects of empowering patients. Participants were told that a critical factor in pain management is actively engaging patients to be involved in their care which improves the patient's perception and satisfaction with pain control and promotes autonomy. Helping the

patient understand alternative options provides patient empowerment and self-control over pain management. The discussion ended with the takeaway point of how advantageous it is to educate the patient on all available options and let the patient decide which interventions they would benefit from.

Skill competency was demonstrated after attending both educational sessions, utilizing a teach-back method to ensure proficiency. Participants were asked to discuss or demonstrate NPI as if the project lead was the patient. Following demonstrated capability, a badge charm representing the type of NPI (acupressure, aromatherapy, massage, music) was provided to the participants (Appendix G). These charms acknowledged the nurses' investment to learn about NPI, served as a reminder for promoting NPI when managing pain, and as a conversation starter between nurses and patients. Following educational session completion and competency training, The PAMPER survey was administered to the participants at the end of the annual skills day. Participants were informed that participation would be voluntary and responses would remain anonymous.

Ethics and Human Subjects Permissions

Permission to perform this DNP project was requested from the Chief Nursing Officer, Clinical Operations Director, and the Nursing Research Director at the project site. An organizational feasibility form was obtained with approval from the health system's Nurse Scientist, Chief Nursing Officer, Associate Chief Nursing Officer, the project site unit's Nursing Manager, and the Clinical Operations Director (Appendix H).

The Institutional Review Boards (IRB) at the University of North Carolina at Chapel Hill (UNC-CH) and the project site reviewed the project proposal, and both entities determined this QI project was not human subjects research and exempt from further IRB review (Appendix I

and Appendix J). An exemption was obtained from both entities prior to project implementation. Collaborative Institutional Training Initiative training, required by UNC-CH as well as the project site, was completed by the project investigator and on-site project committee member. Consent was obtained via participatory agreement and disclosed to the participants (Appendix K). Completion of the electronic survey served as confirmation of agreement to voluntarily participate. Participation or non-participation was not reported to leadership, and no repercussions on their employment regarding participation or non-participation occurred. Survey responses were kept anonymous and confidential.

The NPI documentation data excluded all patient identifiers during data collection. Responses to the post-implementation survey and NPI documentation were uploaded to a project site-approved platform for data management. This data was kept in the secure, approved private platform and shared only with the project team. No responses or data were transmitted externally.

Evaluation

To determine if the intervention was effective, analysis of the nursing documentation and PAMPER surveys served as evaluation measures. Paired t-tests were used to analyze the PAMPER survey responses. This test was deemed appropriate because the before and after slider ratings had the same number of participants and responses correlated to the same participant, allowing for the pairing of responses. Responses to the survey were analyzed and compared to assess if the objectives of the project were achieved.

A retrospective chart review was performed at the project site for NPI documentation forty-five days prior to the project start date and forty-five days following the project start date. The averages for completed pain reassessments were obtained from the nurse manager via the

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nursing quality dashboard for the same time intervals noted above. The rates of NPI

documentation and averages for completed nursing pain reassessment served as measures of

comparison after implementation and the baseline prior to implementation.

CHAPTER 5: RESULTS

Non-Pharmacological Documentation

Baseline data for non-pharmacological intervention (NPI) documentation was acquired for forty-five days prior to implementation and compared to data forty-five days following the implementation start date. From December 16, 2021 through January 29, 2022 there were 624 counts of NPI documented by nurses for patients over the age of 65. From January 30, 2022 through March 15, 2022 there were 1,068 counts of NPI documented by nurses for patients over the age of 65.

In order to determine the percent increase in NPI documentation the pre-intervention grand total count (624) was subtracted from the post-implementation grand total count (1,068) to find the total count difference which was necessary to determine the percent increase. This number (444) was divided by the pre-intervention grand total count (624), and afterward multiplied by 100 to conclude the percent increase. Based upon this, there was a 71% increase in NPI documentation following the project implementation when compared to the baseline NPI documentation.

PAMPER Survey Responses

For the Qualtrics post-implementation PAMPER survey there were 21 participant responses. Opportunely, participant responses before and after the educational sessions could be paired, as every participant responded to all the statements/questions on the survey, thus allowing for paired sample statistics. An online t-test calculator for two dependent means was

used through the Social Science Statistics website as recommended by the ODUM Institute at University of North Carolina at Chapel Hill. The significance level was set to 0.05 and a two-tailed hypothesis was selected.

Figure 2.

Mean Participant Self-Reported Responses to PAMPER Survey by Question
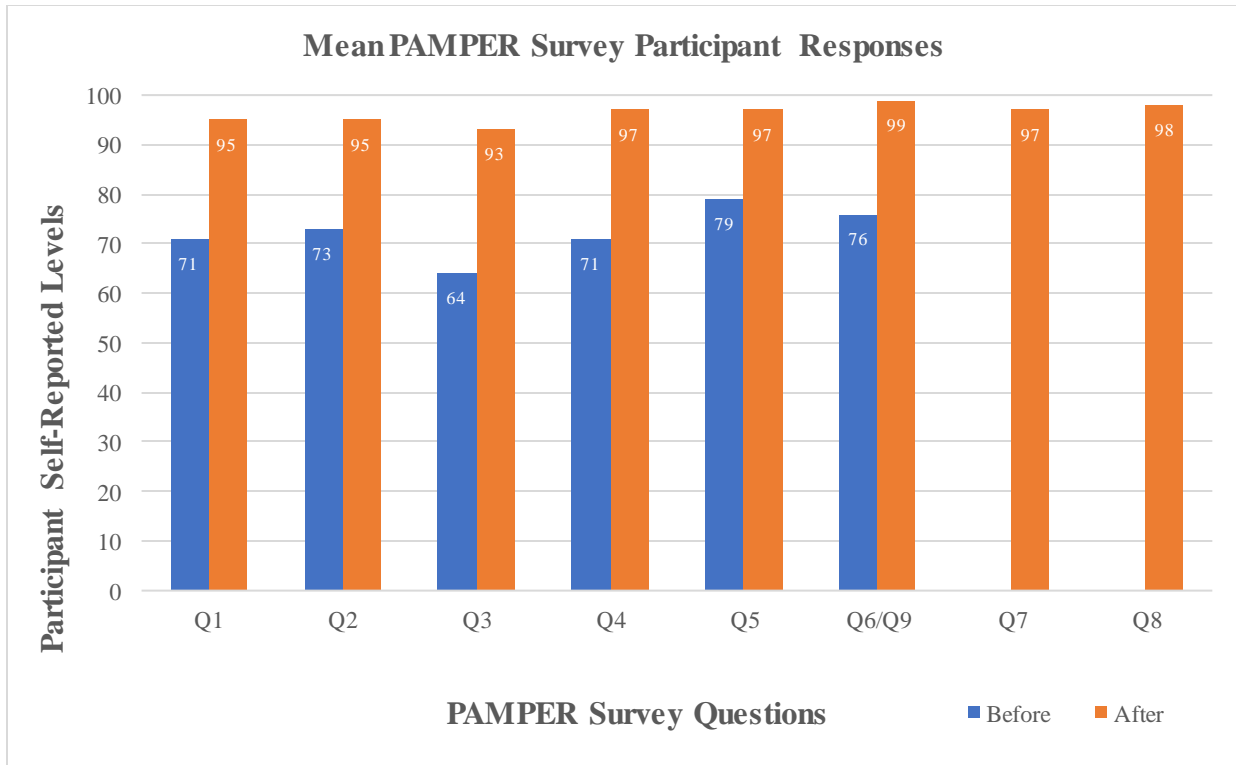
The first subjective statement on the PAMPER survey evaluated nursing confidence in pain assessment before and after the educational sessions. The difference in participants self-reported levels before the education session (Mean = 71; SD = 21) and after the educational session (M = 95; SD = 6) was significant. The Pain Assessment Confidence (Q1) had a t score of 5.89 with a p value less than .00001. The result was considered statistically significant at $p < .05$.

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Table 3.

Q1: Participants Self-Reported Pain Assessment Confidence Statistical Analysis

BEFORE	AFTER	DIFF (AFTER MINUS BEFORE)	DEV (DIFF MINUS MEAN)	SQ. DEV
80	100	20	-3.86	14.88
89	100	11	-12.86	165.31
13	87	74	50.14	2514.31
90	100	10	-13.86	192.02
84	100	16	-7.86	61.73
79	94	15	-8.86	78.45
51	100	49	25.14	632.16
64	91	27	3.14	9.88
82	94	12	-11.86	140.59
100	100	0	-23.86	569.16
52	94	42	18.14	329.16
95	99	4	-19.86	394.31
67	92	25	1.14	1.31
59	85	26	2.14	4.59
70	90	20	-3.86	14.88
80	100	20	-3.86	14.88
100	100	0	-23.86	569.16
50	100	50	26.14	683.45
80	90	10	-13.86	192.02
70	100	30	6.14	37.73
42	82	40	16.14	260.59
S= 6880.57				

M (Mean)	μ	$S^2 = SS/df$	$S^2M = S^2/N$	$SM=\sqrt{S^2M}$	T-Value Calculation
23.86	0	6880.57/(21-1) = 344.03	344.03/21 = 16.38	$\sqrt{16.38} = 4.05$	(23.86-0)/4.05 = 5.894281

Figure 3.

Participant Self-Reported Responses for levels of Confidence in Pain Assessment of Older Adults

The second subjective statement on the PAMPER survey evaluated nursing confidence in pain management for OA before and after the educational sessions. The difference in participants self-reported levels before the education session (Mean = 73; SD = 17) and after the educational session (M = 95; SD = 6) was significant. The Pain Management Confidence (Q2) had a t score of 6.72 with a p value less than .00001. The result was considered statistically significant at p < .05.
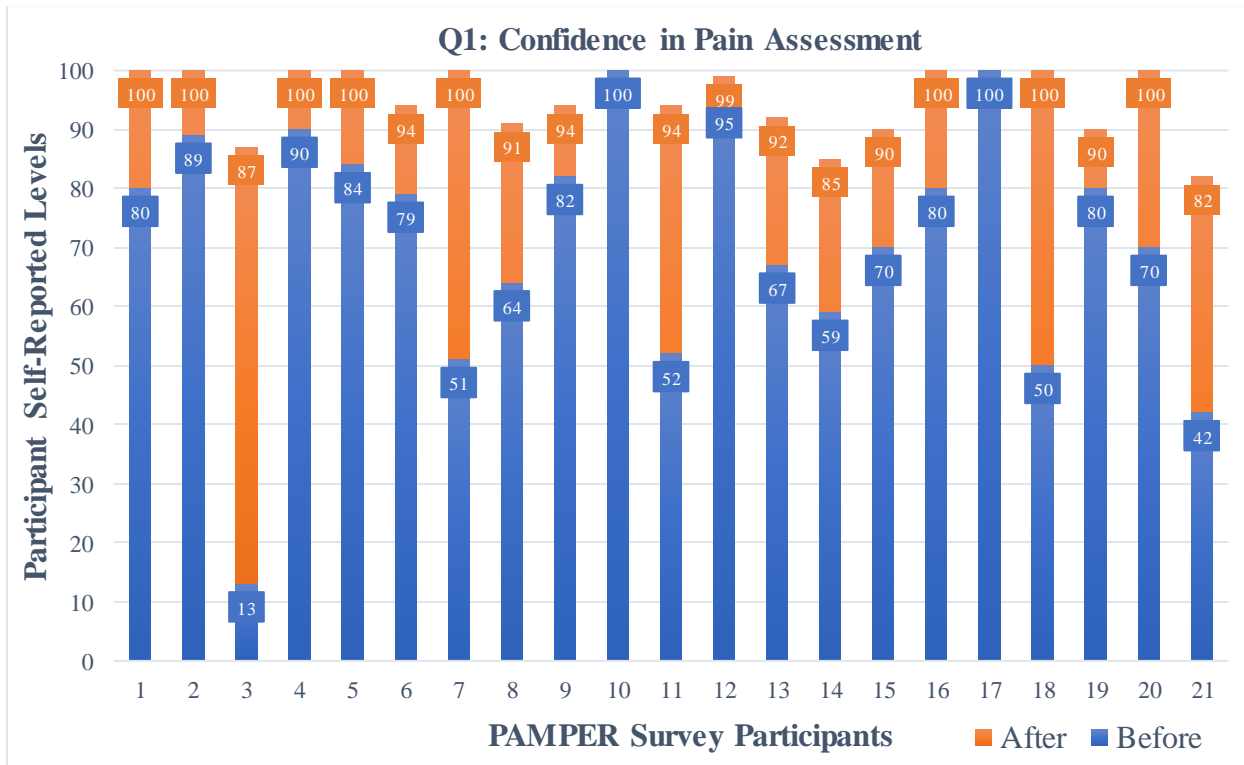
Table 4.

Q2: Participants Self-Reported Pain Management Confidence Statistical Analysis

BEFORE	AFTER	DIFF (AFTER MINUS BEFORE)	DEV (DIFF MINUS MEAN)	SQ. DEV
70	96	26	3.43	11.76
89	100	11	-11.57	133.9
51	96	45	22.43	503.04
80	100	20	-2.57	6.61
80	100	20	-2.57	6.61
90	100	10	-12.57	158.04
64	100	36	13.43	180.33
64	91	27	4.43	19.61
82	94	12	-10.57	111.76
100	100	0	-22.57	509.47
43	92	49	26.43	698.47
99	100	1	-21.57	465.33
51	82	31	8.43	71.04
70	91	21	-1.57	2.47
70	85	15	-7.57	57.33
80	100	20	-2.57	6.61
100	100	0	-22.57	509.47
50	100	50	27.43	752.33
80	90	10	-12.57	158.04
71	100	29	6.43	41.33
45	86	41	18.43	339.61
		S = 4743.14		

M (Mean)	μ	S^2 = SS/df	S^2M = S^2/N	SM=√S^2M	T-Value Calculation
22.57	0	4743.14/(21-1) = 237.16	237.16/21 = 11.29	√11.29 = 3.36	(22.57-0)/3.36 = 6.716617

Figure 4.

Pain Management Confidence Participant Responses

The third subjective statement on the PAMPER survey evaluated nursing confidence in assessing pain in patients who are unable to self-report pain. The difference in participants self-reported levels before the education session (Mean = 64; SD = 23) and after the educational session (M = 93; SD = 9) was significant. The Unable to Self-Report Pain Assessment Confidence (Q3) had a t score of 6.91 with a p value < .00001. The result was considered statistically significant at $p < .05$.
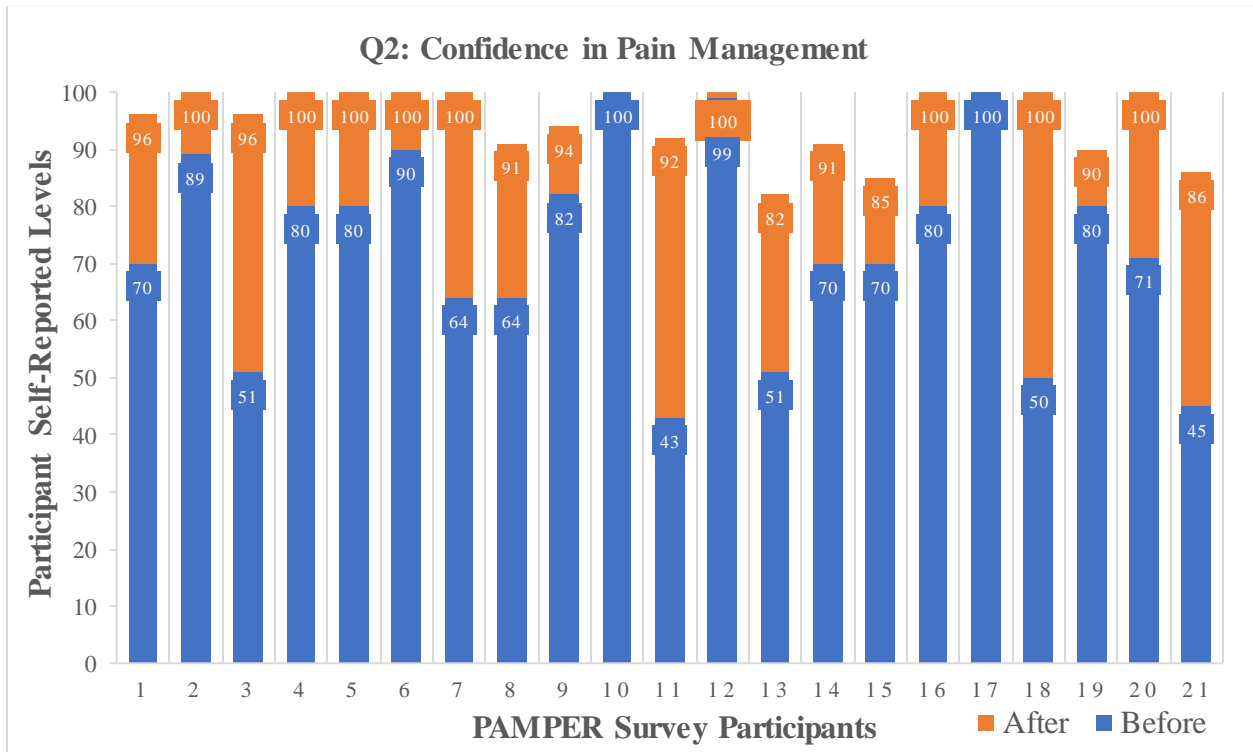
Table 5.

Q3: Participants Self-Reported Confidence in Patients who are Unable to Self-Report Pain Statistical Analysis

BEFORE	AFTER	DIFF (AFTER MINUS BEFORE)	DEV (DIFF MINUS MEAN)	SQ. DEV
60	86	26	-2.38	5.67
83	100	17	-11.38	129.53
12	85	73	44.62	1990.86
80	100	20	-8.38	70.24
87	100	13	-15.38	236.57
79	100	21	-7.38	54.48
62	100	38	9.62	92.53
63	96	33	4.62	21.34
78	92	14	-14.38	206.81
100	100	0	-28.38	805.48
68	97	29	0.62	0.38
95	100	5	-23.38	546.67
27	90	63	34.62	1198.48
40	70	30	1.62	2.62
60	75	15	-13.38	179.05
80	100	20	-8.38	70.24
73	100	27	-1.38	1.91
45	95	50	21.62	467.38
80	90	10	-18.38	337.86
40	91	51	22.62	511.62
39	80	41	12.62	159.24
S=7088.95				

M (Mean)	μ	S^2 = SS/df	S^2M = S^2/N	SM=√S^2M	T-Value Calculation
28.38	0	7088.95/(21-1) = 354.45	354.45/21 = 16.88	√16.88 = 4.11	(28.38-0)/4.11 = 6.908131

Figure 5.

Participants Self-Reported Confidence in Assessment of Patients who are Unable to Self-Report Pain

The fourth subjective statement on the PAMPER survey evaluated nursing awareness of departmental pain scales and protocols before and after educational sessions. The difference in participants self-reported levels before the education session (Mean = 71; SD = 21) and after the educational session (M = 97; SD = 4) was significant. The Awareness of Departmental Pain Scales and Protocols (Q4) had a t score of 5.89 with a p value < .00001. The result was considered statistically significant at p < .05.
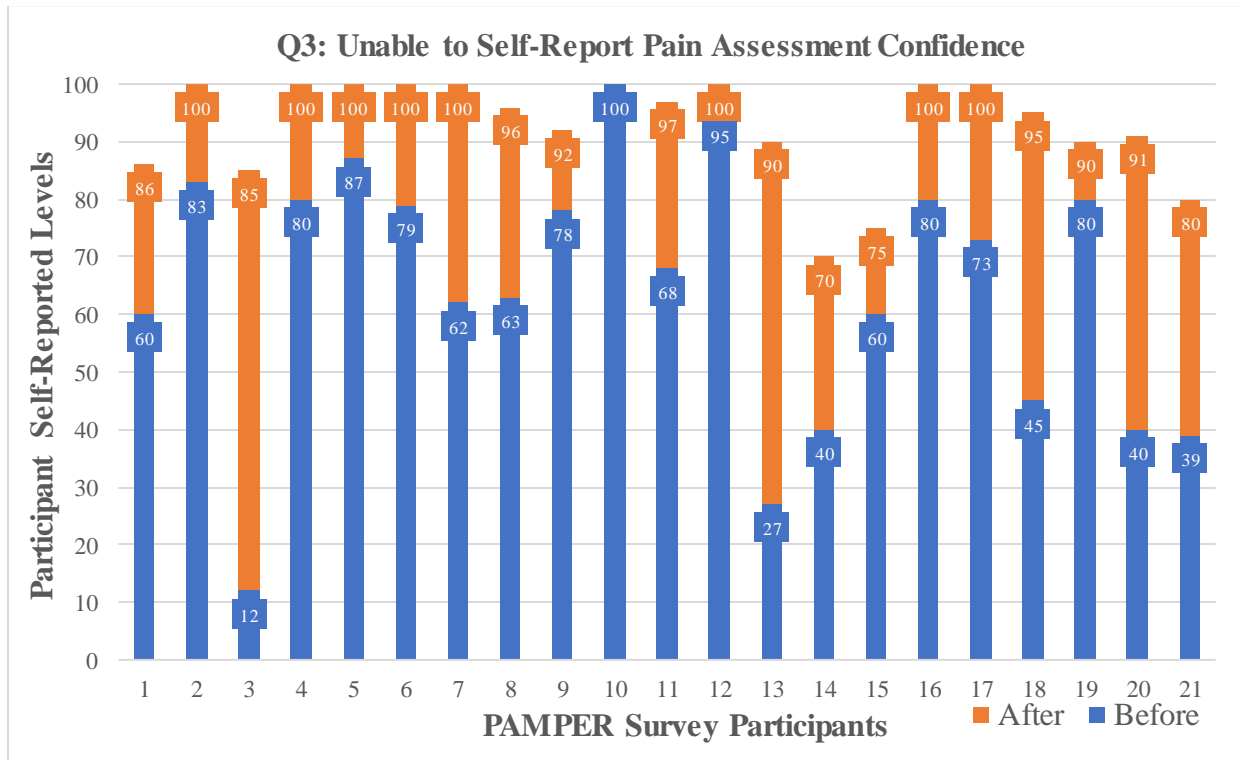
Table 6.

Q4: Participants Self-Reported Awareness of Departmental Pain Scales and Protocols Statistical Analysis

BEFORE	AFTER	DIFF (AFTER MINUS BEFORE)	DEV (DIFF MINUS MEAN)	SQ. DEV
70	96	26	0.05	0
85	100	15	-10.95	119.95
73	100	27	1.05	1.1
90	100	10	-15.95	254.48
89	100	11	-14.95	223.57
88	100	12	-13.95	194.67
55	100	45	19.05	362.81
46	93	47	21.05	443
92	100	8	-17.95	322.29
100	100	0	-25.95	673.53
82	100	18	-7.95	63.24
98	100	2	-23.95	573.72
46	90	44	18.05	325.72
80	100	20	-5.95	35.43
70	90	20	-5.95	35.43
80	100	20	-5.95	35.43
85	100	15	-10.95	119.95
46	100	54	28.05	786.67
70	90	20	-5.95	35.43
20	100	80	54.05	2921.15
35	86	51	25.05	627.38
S= 8154.95				

M (Mean)	μ	S^2 = SS/df	$S^2M = S^2/N$	SM=√S^2M	T-Value Calculation
25.95	0	8154.95/(21-1) = 407.75	407.75/21 = 19.42	√19.42 = 4.41	(25.95-0)/4.41 = 5.889672

Figure 6.

Participants Self-Reported Awareness of Departmental Pain Scales and Protocols

The fifth subjective statement on the PAMPER survey evaluated nursing belief NPI can decrease the perception of pain before and after educational sessions. The difference in participants self-reported levels before the education session (Mean = 79; SD = 19) and after the educational session (M = 97; SD = 4) was significant. The belief NPI can decrease the perception of pain (Q5) had a t score of 4.94 with a p value of .00008. The result was considered statistically significant at $p < .05$.

Table 7.

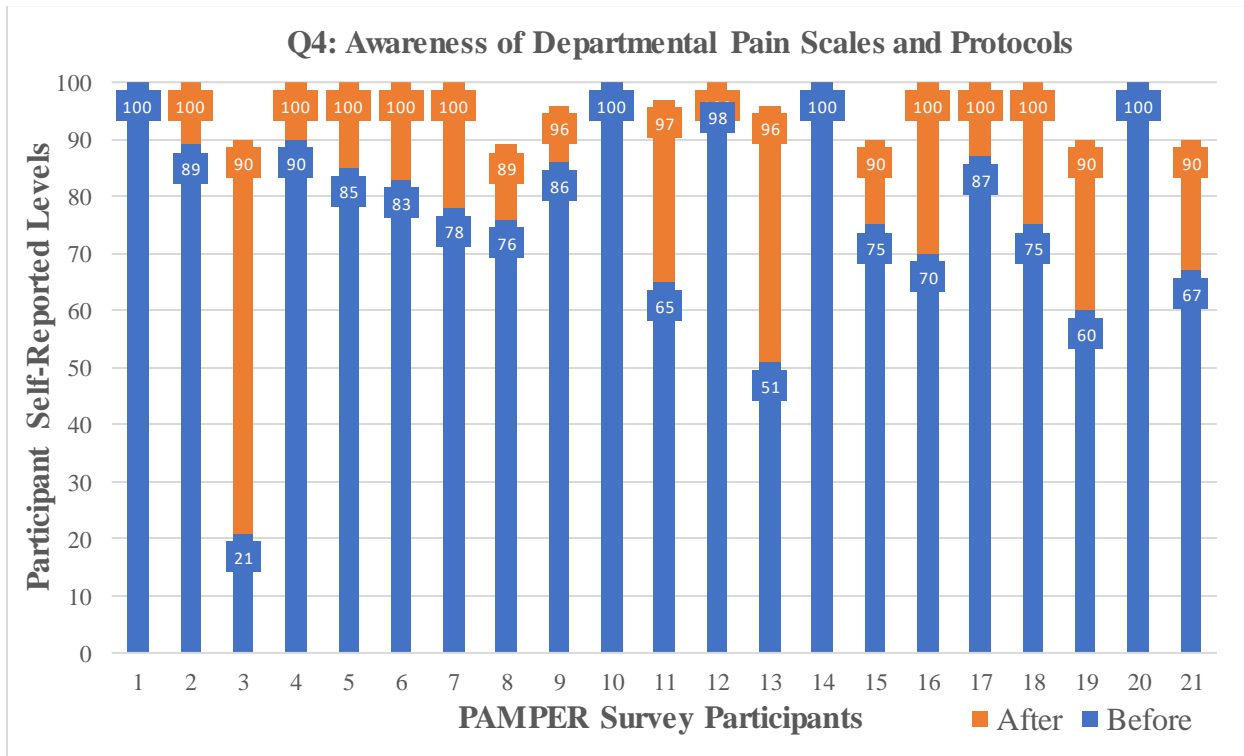*Q5: Participants Self-Reported Belief Non-Pharmacological Interventions Decrease Perception of Pain Statistical Analysis*

BEFORE	AFTER	DIFF (AFTER MINUS BEFORE)	DEV (DIFF MINUS MEAN)	SQ. DEV
100	100	0	-18.19	330.89
89	100	11	-7.19	51.7
21	90	69	50.81	2581.61
90	100	10	-8.19	67.08
85	100	15	-3.19	10.18
83	100	17	-1.19	1.42
78	100	22	3.81	14.51
76	89	13	-5.19	26.94
86	96	10	-8.19	67.08
100	100	0	-18.19	330.89
65	97	32	13.81	190.7
98	100	2	-16.19	262.13
51	96	45	26.81	718.75
100	100	0	-18.19	330.89
75	90	15	-3.19	10.18
70	100	30	11.81	139.46
87	100	13	-5.19	26.94
75	100	25	6.81	46.37
60	90	30	11.81	139.46
100	100	0	-18.19	330.89
67	90	23	4.81	23.13
				S =5701.24

M (Mean)	μ	S^2 = SS/df	S^2M = S^2/N	SM=$\sqrt{S^2M}$	T-Value Calculation
18.19	0	5701.24/(21-1) = 285.06	285.06/21 = 13.57	$\sqrt{13.57}$ = 3.68	(18.19-0)/3.68 = 4.937239

Figure 7.

Participants Self-Reported Belief Non-Pharmacological Interventions Decrease Perception of Pain
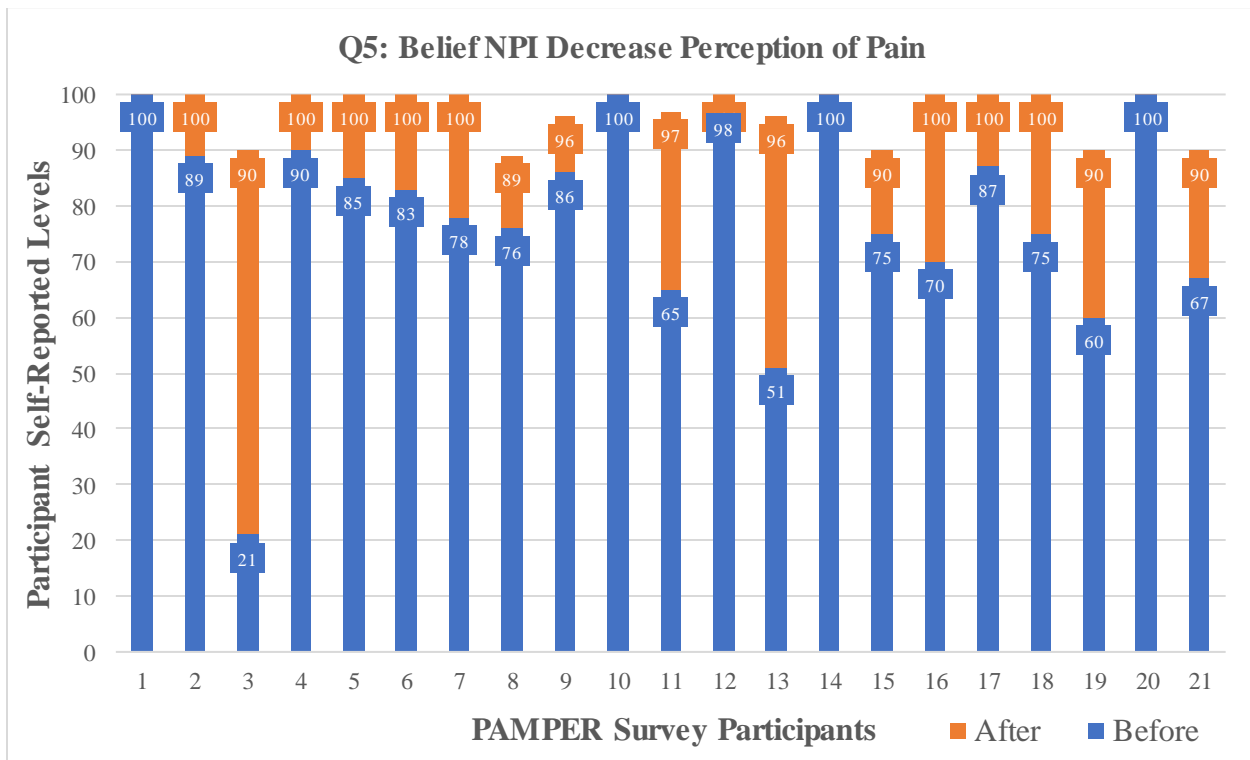
Two of the questions, Q6 and Q9, were combined for analysis following post-implementation. The sixth subjective statement evaluated nursing current use of NPI when managing pain (Q6). While the ninth subjective statement evaluated nursing intention to use NPI in the future (Q9). These were linked as they portrayed current NPI use and intent to use NPI in the future. The difference in participants self-reported levels for including NPI when managing pain before the education session (Mean = 76; SD = 17) and intention to include NPI when managing pain after the educational session (M = 99; SD = 2) was significant. The t value was calculated as 6.51 with a p value < .00001. The result was considered statistically significant at p < .05.

Table 8.

Q6/Q9: Participants Self-Reported Use of Non-Pharmacological Interventions When Managing Pain Statistical Analysis

BEFORE	AFTER	DIFF (AFTER MINUS BEFORE)	DEV (DIFF MINUS MEAN)	SQ. DEV
100	100	0	-23.14	535.59
88	100	12	-11.14	124.16
50	100	50	26.86	721.31
100	100	0	-23.14	535.59
80	100	20	-3.14	9.88
79	100	21	-2.14	4.59
69	100	31	7.86	61.73
68	100	32	8.86	78.45
85	98	13	-10.14	102.88
100	100	0	-23.14	535.59
82	100	18	-5.14	26.45
98	100	2	-21.14	447.02
80	100	20	-3.14	9.88
60	100	40	16.86	284.16
70	100	30	6.86	47.02
70	100	30	6.86	47.02
90	100	10	-13.14	172.73
74	100	26	2.86	8.16
50	90	40	16.86	284.16
43	100	57	33.86	1146.31
61	95	34	10.86	117.88
		S= 5300.57		

M (Mean)	μ	$S^2 = SS/df$	$S^2M = S^2/N$	$SM=\sqrt{S^2M}$	T-Value Calculation
23.14	0	5300.57/(21-1) = 265.03	265.03/21 = 12.62	$\sqrt{12.62} = 3.55$	(23.14-0)/3.55 = 6.514488

Figure 8.

Participants Self-Reported Use of Non-Pharmacological Interventions When Managing Pain
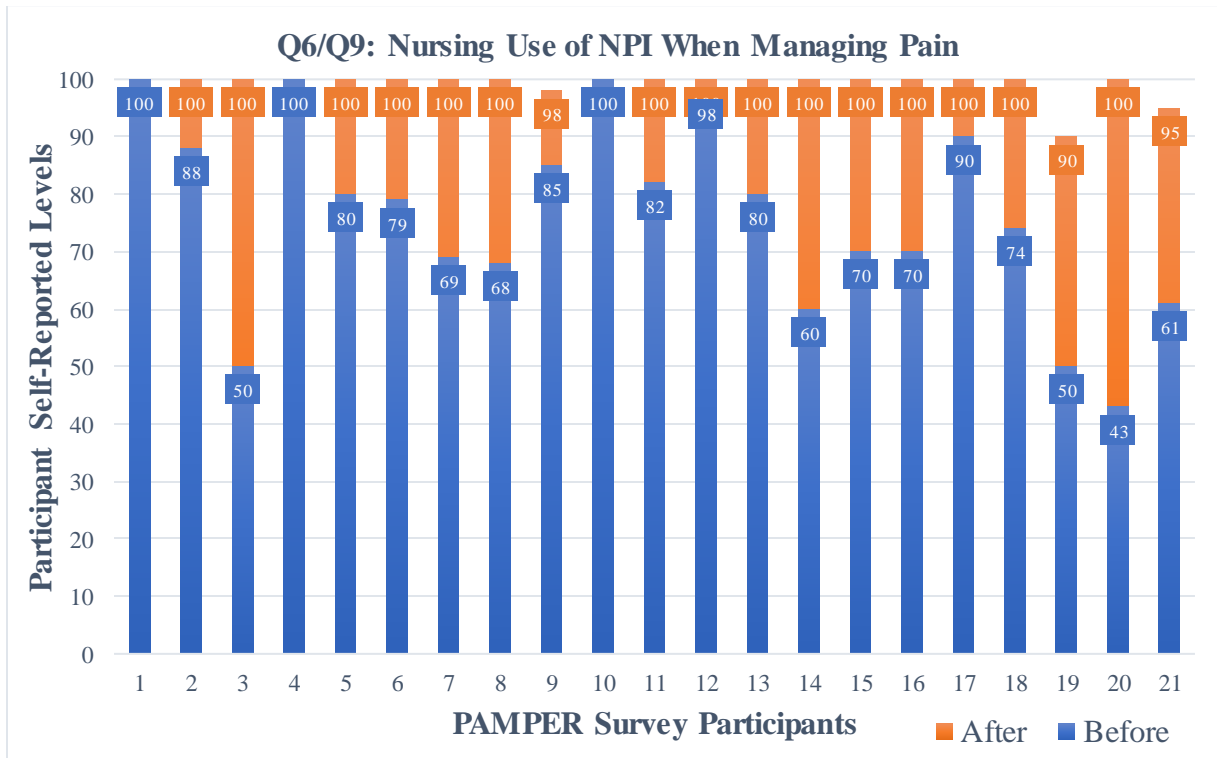
The seventh subjective statement (Q7) on the PAMPER survey evaluated nursing satisfaction with the intervention and information provided during the educational sessions. The responses ranged from 70 to 100, with a mean of 97 and standard deviation of 7.

The eighth subjective statement (Q8) on the PAMPER survey evaluated nursing likelihood to use the pain management toolkit in the future. The responses ranged from 75 to 100, with a mean of 98 and standard deviation of 6.

The tenth question on the PAMPER survey contained four options for participants to select which NPI were perceived as most effective for pain management following the educational sessions. Participants were able to select more than one option, available options were acupressure, aromatherapy, massage, and music. For the final question (Q10) where a

participant could select multiple choices, there were 38 response counts. Music was selected by 12 participants, massage was selected by 11 participants, aromatherapy was selected by eight participants, and acupressure was selected by seven participants.

Figure 9.

Non-Pharmacological Intervention Perceived as Most Effective for Pain Management by PAMPER Survey Participants

Q10: NPI Perceived as Most Effective for Pain Management
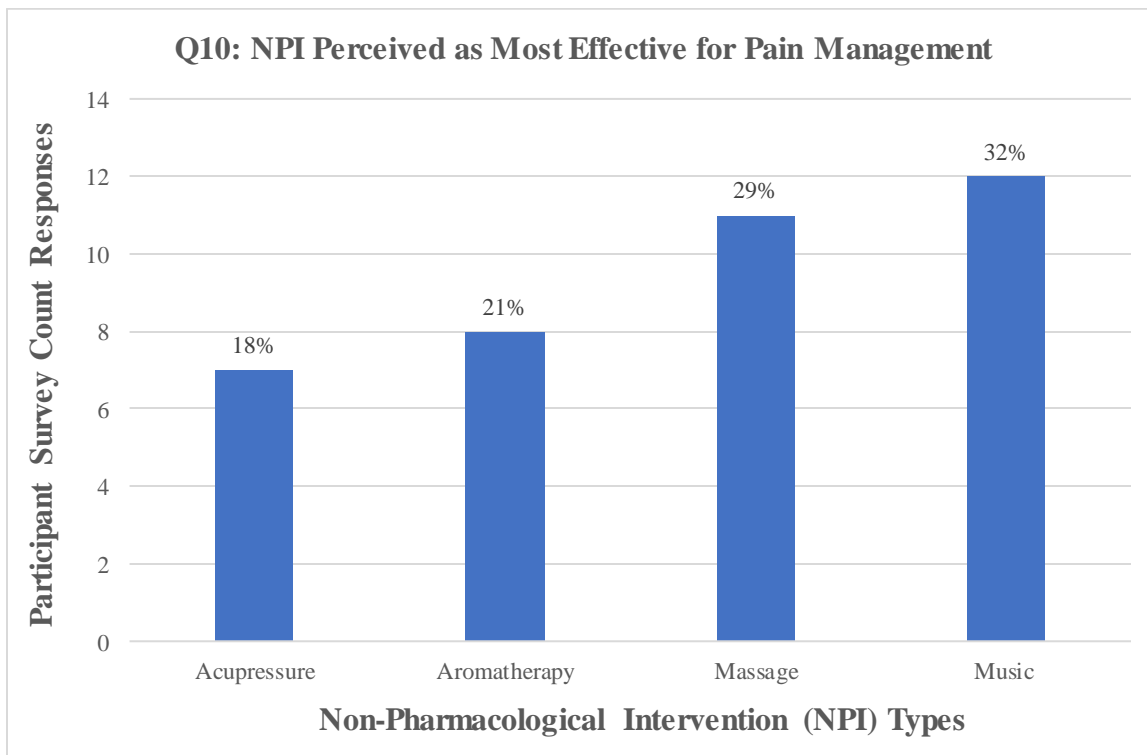
Pain Reassessment Dashboard Progress

Baseline data was obtained from December 16, 2021 to December 31, 2021, January 2022, February 2022, and an average to date on March 15th, 2022 for the month of March. For completed pain reassessment documentation for all nurses in December 2021, there was an average of 40%. In January 2022, there was an average of 51%. In February 2022, there was an average of 59%. As of March 15th, 2022 there was an average of 61%. Although the average number of completed pain reassessments did not meet the goal of 90%, there is an upward trend.

Figure 10.

Median Percentile of Pain Reassessments Completed by Nursing Staff

Monthly Average of Pain Reassessments Completed by Nursing Staff. A line chart titled "Monthly Average of Pain Reassessments Completed by Nursing Staff" with Percentile on the y-axis (0% to 100%) and Month on the x-axis. Data points: Dec-21, 40%; Jan-22, 51%; Feb-22, 59%; Mar-22, 61%.
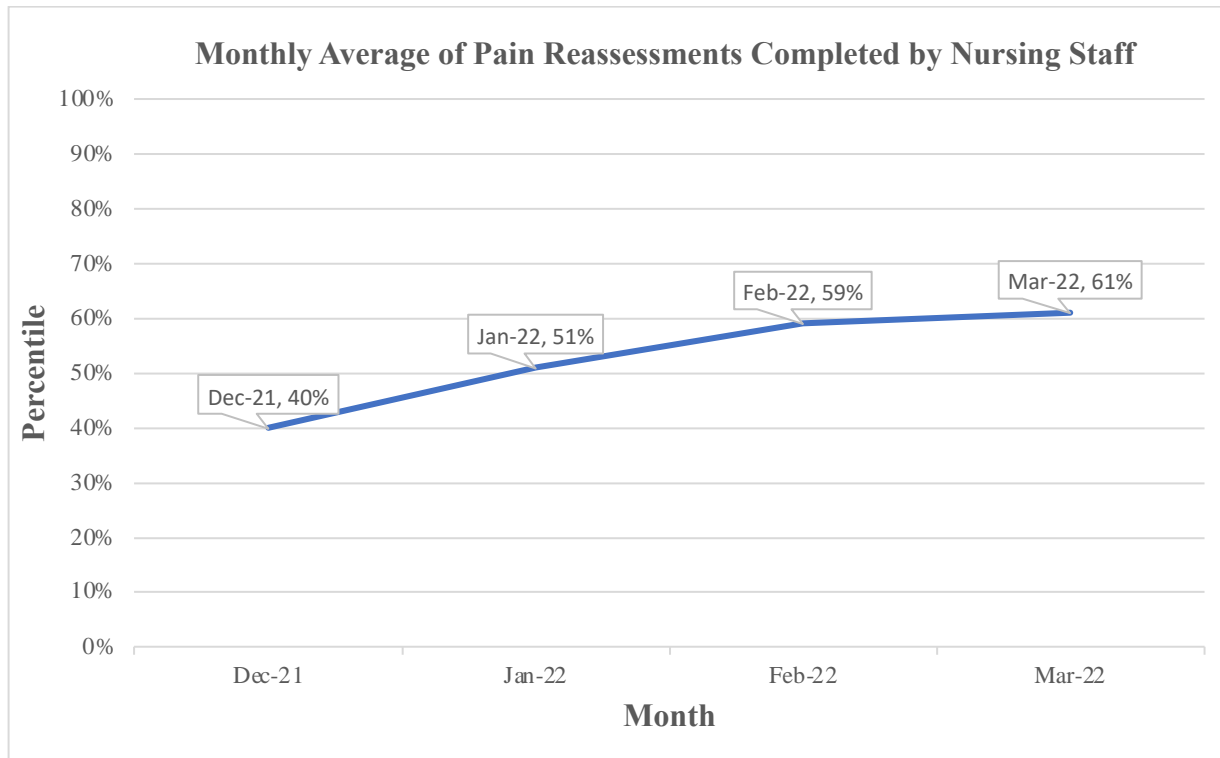
CHAPTER 6: DISCUSSION

Implications for Practice

Based on the data collected through the Promoting Alternative Methods for Postoperative Empowering Recovery (PAMPER) survey, the population-specific toolkit and educational sessions had a clinically significant impact on the nurses' knowledge, self-efficacy, and confidence levels for assessing and managing pain in the older adult (OA) postoperative population. The participant's self-report of intention to include non-pharmacological interventions (NPI) in future pain management practices post-implementation was statistically significant, indicating the intervention had a positive effect on integrating NPI into routine patient care. Furthermore, a 71% increase in the rate of NPI performed and documented post-implementation, signified content from the intervention had successfully translated into clinical practice. When comparing the pre- and post-implementation periods, there was an 21% increase in the average pain reassessments performed on the unit, indicating the intervention had a positive effect on required documentation of pain management.

The difference in the average scores indicated that the educational sessions made a significant improvement in nursing knowledge and NPI provision. Overall, these results are encouraging and demonstrate the positive effects of providing population-specific pain assessment and management education. Moreover, positive participant responses indicate the toolkit and educational sessions were effective methods for improving pain management practices among nurses caring for the OA postoperative population. The increased use of NPI

can be linked to an increase in nursing confidence in delivering NPI and managing pain using NPI.

Sustainability

For optimal patient care to be sustained, education is needed to offer nurses the essential knowledge and skills to adapt to the changing requirements of healthcare. Demonstration of skills for a patient-centered approach, shared-decision making discussions, and use of the teach-back method to validate nursing competency in delivering NPI could be incorporated into annual skills day every year. While onboarding new nursing staff in the orientation period, the preceptor should begin by introducing the standardized Assess, Believe, Choose, Document, and Empower (ABCDE) approach to managing pain. Providing the badge reference card could be advantageous to symbolize the nursing unit standards for pain management practices.

In the future, the educational sessions should occur routinely as new staff matriculates in, such as the ones provided by the project lead in this intervention. Distinguishing this as a priority for the organization and acquiring continued endorsement from the nursing manager, program director, clinical operations director, associate chief nursing officer, and chief nursing officer is necessary for sustaining the educational sessions. At the end of implementation, project champions were encouraged to continue to act as an educational resource and provide information to their peers. It would be feasible to train project champions on how to lead the educational sessions and interactive case studies. If limitations to providing the in-person educational session arise, an alternative would be to distribute the sessions in the form of required online learning modules with the opportunity to apply content learned through case studies. The sustainability of this Doctor in Nursing Practice (DNP) project should be considered a priority and of value to the healthcare organization through saving costs by decreasing length

of stay, preventing adverse drug reactions, minimizing complications, and increasing patient satisfaction.

Strengths

Based on the best practices guidelines implementation toolkit, successful educational programs include an interprofessional team of content experts, pre-constructed educational materials, and a standardized approach to delivering these materials (RNAO, p. 49, 2021). This DNP project encompassed all of these components, was tailored to a specific patient population, contained improvements based on feedback from project team members, and was executed to allow nurses to participate during their work shifts. Education plays a significant role in attaining the goals of the organization. Providing opportunities for education produces superior skills and awareness and increases nursing competence.

Early on during the planning phase, the project lead met with team members at the Veterans Health Administration who work together to implement a variety of NPI. During these meetings, this project lead was able to gain insight into potential barriers as well as techniques for translation of the evidence into practice based on their expertise. For example, one provider raised a key point of how providers may be less likely to buy-in as a stakeholder or disincentive to promote NPI use since billing codes for NPI currently do not exist. The project lead sought further insight and gained knowledge to better understand patients' rights. All patients have a right to receive NPI based on recommendations from accreditation and regulatory bodies. Increasing provider awareness of these requirements strategically prevented this obstacle from interfering with stakeholder buy-in. Additionally, the NPI outlined within this DNP project did not require an order from the provider and was considered nurse-driven interventions. The complementary therapy position statement from the North Carolina Board of Nursing reports

methods of NPI such as music, massage, acupressure, and aromatherapy all fall within the nursing scope of practice. Furthermore, the ability to offer NPI without obtaining an order from the healthcare provider can be empowering for nurses.

Implementing a quality improvement (QI) project is challenging, and thorough knowledge of factors that may facilitate or hinder the implementation is essential for success. Identifying barriers early on during the planning process allowed for the ability to overcome these barriers and prevent future issues. The most common barriers to NPI utilization identified in the literature were: heavy workloads, lack of time, limited knowledge of pain assessment tools, lack of pain management policies, and unavailability of NPI (Dijk et al., 2017; Kidanemariam et al., 2020). Additionally, an incomplete understanding of pain can hinder the delivery of optimal pain management. Therefore, the first educational sessions began with the newly revised definition of pain, applicable assessment tools, and ended with a discussion to provide participants with a strong foundation of pain knowledge. Sessions were designed to be short, straight to the point, and offered multiple times during implementation. Resources for pain assessment tools, unit-specific pain management policies, and instructions for specific NPI interventions were incorporated into the toolkit.

This project site was located within a university-affiliated hospital where core values include excellence in education, research, and patient care. In 2021, changes to the university's medical curriculum demonstrated initiation from the healthcare organization to modify the current practice to embrace the patient-centered approach with shared-decision making when providing patient care. Patient satisfaction has been correlated with the perception that caregivers did everything they could to control pain as opposed to their pain actively being controlled. Empowering the patient aids in the transition from being a passive to an active participant, which

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will improve perceptions of pain control while increasing autonomy and independence. Therefore, the use of NPI and a patient-centered standardized approach has the potential to increase patient satisfaction scores.

Limitations

While the literature revealed ample evidence for the NPI chosen for this DNP project, there was a lack of evidence for effectively implementing these interventions into clinical practice. There remains wide variability in the frequency, duration, and type of delivery among the studies within the literature. Weaknesses of this DNP project include voluntary participation, small participant size, results portraying immediate effectiveness post-implementation versus sustained effectiveness, and only a six-week interval for execution. This DNP project measured only the perceived level of confidence, self-efficacy, and intention to use the toolkit in future practice, with no measurement of actual participant knowledge before implementation.

Regrettably, the project failed to delineate if there was enough of the patient population data captured within the documentation. The project lead was only able to obtain estimates for the number of total joint arthroplasties (TJA) performed, which may have been less during the forty-five days prior to the implementation used for comparison. It is possible there were fewer surgical procedures performed during the baseline data, given the winter holidays fell within that time period. Contrarywise, the time period from the beginning of implementation included a COVID outbreak and the cancellation of elective surgeries. When securing the de-identified data for NPI documentation, there was not an opportunity to capture only TJA patients instead, it was filtered to every patient over the age of 65 admitted to the project site, which could also include some non-surgical patients.

Based on previous studies, the project lead initially wanted to evaluate changes in pain assessment scores to determine the effectiveness of incorporating NPI into clinical practice. However, the primary tool used to assess pain only assesses the intensity of pain, which fails to represent the patient's experience of pain. Additionally, multiple members of the interdisciplinary healthcare team can enter actual pain scores throughout the hospital length of stay, including therapists, nursing assistants, and nurses within other areas such as the postoperative recovery unit. Therefore, the pain scores could be misleading as they would fail to represent the effectiveness of the educational session, given the participants were only nurses on one unit.

Another area for evaluating the effectiveness of NPI implementation in the literature was decreased use of pharmacological interventions. Some studies examined the difference in morphine equivalent daily dose (MEDD) for data analysis. The project lead met with several multidisciplinary members, including the medication safety officer, the unit pharmacist, nursing informatics, and the leader of the opioid safety group to inquire how to obtain this information. Unfortunately, this feature was not available in the nursing view of the electronic medical record and was not accessible to the project lead at the time of project implementation.

Previous studies have used surveys such as the Knowledge and Attitudes Survey Regarding Pain (KASRP) (City of Hope, 2014). However, the KASRP was not deemed appropriate for this DNP project, mainly because of the unique patient population the project site serves and questions that did not apply to post-operative pain. The "Pain in the Elderly Questionnaire" was deemed appropriate to the patient population targeted by this intervention; however, the questions do not reflect a change in confidence or self-efficacy from the nurse. This led to the creation of the PAMPER survey, which has no proven reliability or validity.

Initially, the project lead intended to appoint Geriatric Resource Nurses (GRN) as the project champions. A GRN is an individual who has completed additional geriatric education and encourages a patient-centered approach when caring for the OA population. The GRN role holds a prominent level of respect and empathy for the geriatric population and applies evidence-based information to clinical practice. However, due to nursing staff turnover, there has been a recent increase in new graduate nurses hired to the project site and a decrease in the number of nursing staff who served as GRN. At the start of implementation, the project lead was the only remaining GRN at the project site and encouraged anyone interested in geriatrics or pain management to inquire further about becoming a project champion.

Recommendations for the Future

Institutional QI projects that focus on minimizing opioid consumption can effectively reverse current practices, contribute to a safer future, help to shrink the current opioid epidemic, and aid in minimizing opioid-related adverse drug events. Specifically, areas serving OA need more pain management related resources and education. Lack of healthcare provider awareness and absence of evidence-based information negatively affect the opioid epidemic. Therefore, it is recommended efforts be made to implement this intervention on an institutional level. Implementing this DNP project in other areas can raise awareness and equip nursing staff with resources to provide quality care to their patients.

Since this intervention proved to be effective when piloted at the unit level, prospectively, this could be implemented within other areas of the organization. The tangible toolkit and resources can be regenerated with modified contents adapted to the various patient populations. Given the multitude of bulletin boards within the organization, at least one board on every unit could be designated to display the toolkit. In the future, educational sessions could be

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tailored to unit-specific protocols and delivered by clinical nurse educators, clinical team leads, or project champions. Furthermore, these educational sessions could become online learning modules nursing staff are required to complete.

Benefits of healthcare costs savings could be further demonstrated by obtaining data on decreased length of stay, prevention of adverse drug reactions, decreased postoperative complications, reduced opioid use, lower rates of hospital readmissions, and increased patient satisfaction scores. New guidelines support the shift of pharmacological to non-pharmacological approaches for pain management. The National Pain Strategy promotes models of care that provide an integrated, evidence-based, patient-centered approach and incorporate psychological and social aspects of patient care. These models have been shown to decrease pain levels and increase patient function. Patients should be educated about NPI prior to surgery. Given that the trend for inpatient surgeries is moving towards outpatient, it would be ideal for pre-operative staff to educate patients prior to even being admitted to the hospital. Preparation and anticipatory guidance are effective for setting realistic expectations and can decrease the level of anxiety for patients. It would be beneficial for outpatient surgical nurses to have access to the toolkit and receive the same information provided in the educational sessions. Another possibility, would be the creation of a handout containing NPI which could be given to patients during the pre-operative period or when consenting to surgery at the provider's office. This written information is typically preferred by patients and could serve as a valuable tool in their toolkit for postoperative empowering recovery.

Conclusion

Pain management in the OA population requires a unique approach. Optimizing pain management can be challenging due to comorbidities, polypharmacy, age-related changes, and

socioeconomic factors restricting pharmacological options. During the postoperative period, deficient pain management can result in increased length of stay, readmissions, complications, adverse reactions, and impede recovery. These factors highlight the importance of integrating evidence-based pain management practices and NPI into routine care during the postoperative period following TJA.

The revised definition of pain permits a greater emphasis on holistic pain assessment and management, highlighting the importance of NPI for pain management. Conventional methods need to shift from pharmacological to non-pharmacological methods as a first-line treatment. National initiatives, accreditation, and regulatory bodies require or recommend NPI in clinical practice. These same organizations support efforts to increase healthcare provider and patient education regarding pain management.

Education about pain management, especially population-specific pain management, is lacking for all healthcare providers. The need for education on evidence-based pain management practices is essential to provide high-quality patient care. Nurses must first educate themselves to better support their patients. Achieving high-quality patient care requires nursing cognizance of the clinical, educational, emotional, and psychosocial aspects of their patients. A quality improvement project was implemented to convey population-specific pain management education to improve current nursing practices.

A population-specific pain management toolkit and education sessions served as an influential intervention compared to no educational program. The literature revealed that nursing education incorporating clinical stories, interactive discussion, simulation, and demonstrations was more effective than lectures. The project lead used these methods were used to deliver the educational sessions and demonstrate evidence-based practices. Having tangible educational

materials and an expert lead were perceived as valuable resources for this DNP project. This DNP project aimed to increase nursing knowledge, confidence, and self-efficacy regarding pain management in the postoperative orthopedic OA population. Aligning with the aims of this DNP project, the goals of postoperative pain management are to reduce discomfort, prevent complications, and facilitate recovery. Providing population-specific pain management education to nurses and offering patients NPI fall in line with patient-centered care and will help achieve these goals.

Results indicate that implementing a population-specific pain management toolkit and educational sessions was effective as evidence-based pain management practices have integrated into routine patient care. Survey results demonstrated improved nursing self-efficacy and confidence from before to after the educational sessions. There was an increase in nursing documentation and evidence of amplified use of NPI in clinical practice. The use of NPI for pain could potentially empower nurses, subsequently increasing both nurse and patient satisfaction, combating burnout, and leading to improved patient outcomes.

APPENDIX A: PAIN MANAGEMENT TOOLKIT BULLETIN BOARD

APPENDIX C: BADGE REFERENCE CARDS

Assess for pain, ask to describe the type of pain

Believe the patient's description of pain

Choose appropriate intervention(s) for pain control

Document intervention(s) and reassess in a timely manner

Empower patient to control their pain through education

Let's PAMPER our patients!
Promoting Alternative Methods for
Postoperative Empowering Recovery

DUHS Pain Assessment & Monitoring Quick Tip Guide:

	Assess After Administration	Assessment Parameter
Initial assessment		Pain Scale Intensity/Pain score Location Descriptors Sedation Scale (RASS; SBS; NPASS) Patients Pain Goal
Reassessment *(some routes require a broad assessment see below)* ✓ **Intensity/Pain Score** ✓ **Pain Scale** ✓ **Sedation Score (RASS; SBS; NPASS)** ✓ **Patient satisfaction with pain management**		
Oral, via tube, and IM short acting PRNs	Within 1 hour	Reassessment
IV Push Short- Acting	Within 30 minutes	
Scheduled LONG-Acting or Sustained Release	Every 4 hours	
Non-Pharmacological	Within 1 hour	
Palliative care	Per provider order	Per Plan of Care
PCA	Every 2 hours for first 24 hours after initiation or increase in dose of PCA, then every 4 hours thereafter until discontinued	Reassessment-- *PLUS* Quality or respirations Respiratory Rate O2 saturation (* continuous required for peds) Bromage Score (epidural only)
Epidural	Every 2 hours for the first 24 hours after initiation, increase in dose or bolus, change in medication solution, or reportable condition; then if no reportable conditions in 24 hours reassess every 4 hours until therapy is discontinued	

APPENDIX D: PAMPER SURVEY

Post-Intervention PAMPER Survey

Questions 1-9 will utilize the slider rating scale from 0=do not agree to 100=strongly agree. For

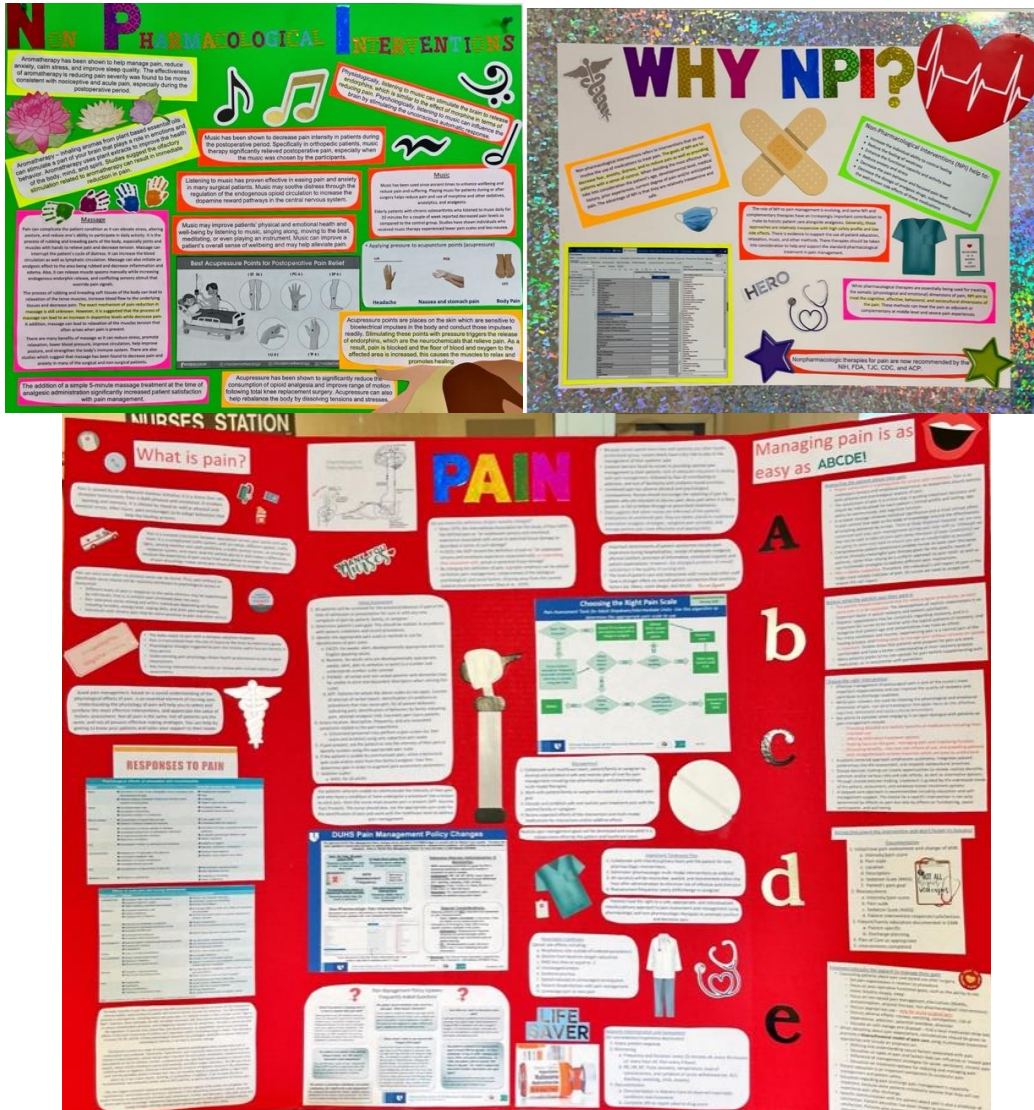*Questions 1-5 rate your level for how you felt before and after education session.*

Question 10 will be a multiple-choice selection.

1. I am confident in assessing pain in the postoperative older adult.

2. I am confident in managing pain in the postoperative older adult.

3. I am confident in assessing pain in patients who are unable to self-report pain.

4. I am aware of pain scales and protocols used in my department for pain management.

5. I believe non-pharmacological interventions can decrease the perception of pain.

6. I include non-pharmacological interventions when managing pain.

7. I was satisfied with the intervention and information provided during the sessions.

8. I am likely to use the pain management toolkit in the future.

9. I am likely to use non-pharmacological interventions in the future.

10. Which non-pharmacological interventions did you perceive to be the most effective for pain management?

    a. Acupressure

    b. Aromatherapy

    c. Massage

    d. Music

APPENDIX E: DNP PROJECT TIMELINE

Event	Date(s)	Parties Involved
TJC surveyor recognition of NPI in practice	October 23, 2020	Project lead
NPI Meeting with VA Team	November 11, 2020 November 23, 2020 February 21, 2021	Project lead
Qualifying Exam-Pass	January 6, 2021	Project lead
Develop Nursing Education, Competency Training	June 2021-September 2021	Project lead
Nursing Education Content Revision	September 2021-December 2021	Project lead, Clinical Nurse Educator, Nurse Manager, Project Team, Project Champions
Change in DNP Chair	November 9, 2021	Project lead, DNP Chair
DNP Proposal Defense	November 30, 2021	Project lead, DNP Committee members
IRB Approval from UNC-CH	December 16, 2021	Project lead, DNP Chair
IRB Approval from Project Site	January 26, 2022	Project lead, Nurse Manager, Nurse Researcher
DNP Project Implementation Start	January 30, 2022	Project lead, project champions
Obtain baseline NPI and pain reassessment data	December 16, 2021-January 29, 2022 (45 days pre-implementation)	Project lead
Construct bulletin board and toolkit bulletin board	January 27, 2022-February 1, 2022	Project lead, Geriatric CNS, Project Champions
Conduct educational sessions	February 1, 2022-February 22, 2022	Project lead
Staff Meeting Presentation	March 10, 2022	Project lead, Nurse Manager, Clinical Nurse Educator
NPI Training and Competency check off (Annual Skills Day)	February 23, 2022 February 24, 2022 March 2, 2022 March 11, 2022	Project lead, Clinical Nurse Educator, Project Champions
PAMPER Survey Data Collection	February 23, 2022-March 15, 2022	Project lead
Obtain post-implementation NPI and pain reassessment data	January 30, 2022-March 16, 2022 (45 days post-implementation)	Project lead
ODUM Institute Stats Consult	March 24, 2022	Project lead
Final DNP Project Defense	April 8, 2022	Project lead, Project Committee Members
Dissemination of Findings	April 14, 2022	Project lead

APPENDIX F: SKILLS DAY POSTER BOARDS

APPENDIX G: BADGE COMPETENCY CHARMS

Core Education Keyring

Massage Badge Charm

Aromatherapy Badge Charm

Music Badge Charm

Acupressure Badge Charm

APPENDIX H: PROJECT SITE FEASIBILITY FORM

Duke University Health System

Nursing Research/Project Organizational Feasibility Form
Signature Approvals

You have been identified as a key leader in the approval process for the development and/or implementation of this project.

Please sign your name and title to indicate that you are in support of this project and that it is feasible to perform.

Deborah H. Allen

Nurse Scientist, Dir Nursing Research & EBP, DUHS

Dec 28, 2021

gloria mcneil
gloria mcneil (Jan 5, 2022 13:47 EST)

Associate Chief Nursing Officer

Jan 5, 2022

Jonnetta Leah Neptune
Jonnetta Leah Neptune (Jan 3, 2022 12:43 EST)

Nurse Manager of Operations

Jan 3, 2022

Victoria K. Orto
Victoria K. Orto (Jan 5, 2022 13:53 EST)

Chief Nursing and Patient care Services Officer Duke Regional Hospital

Jan 5, 2022

Rhonda l. Williams, DNP RN
Rhonda l. Williams, DNP RN (Jan 5, 2022 13:27 EST)

Clinical Operations Director

Jan 5, 2022

Version date: 01/2020

APPENDIX I: IRB EXEMPTION FROM UNC-CH

Subject: IRB Notice - 21-3191

Date: Thursday, December 16, 2021 at 12:20:16 PM Eastern Standard Time

From: IRB

To: Sillaman, Vanessa Ann, Stanek, Joan Marie

To: Vanessa Sillaman and Joan Stanek
Graduate School

From: Office of Human Research Ethics

Date: 12/16/2021
RE: Determination that Research or Research-Like Activity does not require IRB Approval
Study #: 21-3191

Study Title: Toolkit to Improve Postoperative Pain Management Nursing Practice: A Quality Improvement Project

This submission, Reference ID 345572, was reviewed by the Office of Human Research Ethics, which has determined that this submission does not constitute human subjects research as defined under federal regulations [45 CFR 46.102 (e or l) and 21 CFR 56.102(c)(e)(l)] and does not require IRB approval.

Study Description:

Purpose: The purpose of this quality improvement practice change is to enhance pain management nursing practice by increasing the knowledge of evidence-based non-pharmacological interventions specific to the postoperative setting.

Participants: Nursing staff on a post-operative orthopedic unit

Procedures (methods): This project will employ a quality improvement design to increase non-pharmacological interventions to enhance the quality of care in postoperative orthopedic patients through implementation of a toolkit with resources for providing non-pharmacological interventions.

Please be aware that approval may still be required from other relevant authorities or "gatekeepers" (e.g., school principals, facility directors, custodians of records), even though IRB approval is not required.

If your study protocol changes in such a way that this determination will no longer apply, you should contact the above IRB before making the changes.

Lisa Miller , School of Nursing Deans OfficeIRB Informational Message - please do not use email REPLY to this address

APPENDIX J: IRB EXEMPTION FROM PROJECT SITE

DukeHealth
Institutional Review Board

DUHS INSTITUTIONAL REVIEW BOARD DECLARATION OF ACTIVITY NOT MEETING THE DEFINITION OF RESEARCH

The DUHS IRB has determined that the following activity does not meet the definition of research as described in 45 CFR 46.102(d), 21 CFR 50.3(c) and 21 CFR 56.10(c) and satisfies the Privacy Rule as described in 45 CFR 164.514.

Protocol ID: Pro00110133
Reference ID: Pro00110133-INIT-1.0
Protocol Title: PAMPER: Promoting Alternative Methods for Postoperative Empowering Recovery
Improving Postoperative Pain Management for the Older Adult Orthopedic Population: A Quality Improvement Project
Principal Investigator: Deborah Allen

This IRB declaration is in effect from January 26, 2022 and does not expire. However, please be advised that any change to the proposed research will require re-review by the IRB.

DUHS Institutional Review Board
2424 Erwin Rd | Suite 405 | Durham, NC | 919.668.5111
Federalwide Assurance No: FWA 00009025

APPENDIX K: PARTICIPANT CONSENT LETTER

PAMPER: Promoting Alternative Methods for Postoperative Empowering Recovery. Improving Postoperative Pain Management for the Older Adult Orthopedic Population

We are initiating a quality improvement project on non-pharmacological pain management on the unit 7-1 at Duke Regional Hospital. You are receiving this email because you have been identified as a nurse who works on Unit 7-1.

What is involved in this project?

The project involves education sessions specifically for nurses about using non-pharmacological interventions for pain management.

If you decide to participate, you will be asked to complete a short survey after the education session. This survey will be sent out six weeks after the start date of the quality improvement project.

The surveys are housed in Qualtrics, a secure platform at Duke.

Each survey will take less than 20 minutes to complete.

Your participation is voluntary and confidential.

Your responses are anonymous, you will not be identified.

You do not have to answer any question that makes you feel uncomfortable.

You choose if you want to participate or not.

As a Duke employee if you decide not to participate, it will not affect your employment in any way.

Why are we doing this project?

The aim of this quality improvement project is to increase nurses' utilization of non-pharmacological interventions for pain management in the postoperative orthopedic hospital setting. This project also aims to determine if the introduction of a pain management toolbox is effective for increasing nursing confidence in managing pain in the older adult population.

Click on this link (Qualtrics link) if you agree to participate.

Your honest feedback is welcome.

Thank you for your time and consideration.

If you have questions, please contact:
     Vanessa Sillaman, BSN, RN, GERO-BC at 919-770-0653
     Lori Ritter, MSN, RN, CNS, ACCNS-AG, GERO-BC at 919-470-3409
     Vicky Orto, DNP, RN, NEA-BC at 919-470-6261
     Deborah H. Allen, PhD, RN, CNS, FNP-BC, AOCNP at 919-6814719

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