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A Quality Improvement Project: Streamlining the Post-Surgical Process in Total Knee and Hip Replacements with an Evidence-Based Guidance and Practice Protocol

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A QUALITY IMPROVEMENT PROJECT: STREAMLINING THE POST-SURGICAL PROCESS IN TOTAL KNEE AND HIP REPLACEMENTS WITH AN EVIDENCE-BASED GUIDANCE AND PRACTICE PROTOCOL

by

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ABSTRACT

The rates of total joint replacements, such as total knee arthroplasty (TKA) and total hip arthroplasty (THA), are on the rise in the United States and are expected to rise further in the next 20 years (Singh et al., 2019). Implementing an ERAS protocol coupled with current orthopedic practices will decrease a vast number of postoperative issues such as length of hospital stays, the financial burden on the facility, and overall patient satisfaction. The DNP project proposed a multidisciplinary protocol to standardize the care of patients undergoing THA or TKA and identified if this surgical process would be adopted at a Veterans Administration Medical Center. A retrospective evaluation was used to assess the causes of prolonged hospital stays greater than three days of 15 consecutive patients undergoing THA or TKA and evaluated by staff involved in the surgical process. The survey results identified 15 patients with an extended length of stay due to the lack of orthopedic surgical knowledge and ERAS protocol among staff; additionally, after a thorough PowerPoint presentation, 97% of staff were in favor of the ERAS protocol being implemented. A standardized protocol was supported by leaders and the medical team and will aid in the implementation of the ERAS protocol to remedy the pitfalls in the surgical process of THA and TKA. This protocol will not only provide an effective postoperative solution to elderly veterans aged 55-85 years who have undergone TKA or THA, but it will potentially aid as a purposive reinforcement that would alleviate the financial burden on the medical facility.

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DEDICATION

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LIST OF ABBREVIATIONS

APA	American Psychological Association
APRN	Advanced Practice Registered Nurse
BMI	Body Mass Index
DJD	Degenerative Joint Disease
DNP	Doctor of Nursing Practice
ERAS	Early Recovery After Surgery
IRB	Institutional Review Board
IS	Incentive Spirometer
IV	Intravenous
IVF	Intravenous Fluid
NP	Nurse Practitioner
OA	Osteoarthritis
PONV	Postoperative Nausea and Vomiting
SWOT	Strengths, Weaknesses, Opportunities, Threats
THA	Total Hip Replacement
TJA	Total Joint Arthroplasty
VHA	Veteran Hospital Administration
USM	The University of Southern Mississippi

CHAPTER I - INTRODUCTION

Patients with end-stage osteoarthritis often undergo total knee arthroplasty (TKA) and total hip arthroplasty (THA), which are considered elective surgical treatments for the condition. The success rates of TKA and THA are usually high, especially when the physicians and staff adhere to evidence-based treatment guidelines to provide standardize care. However, not all patients who undergo TKA or THA have always experienced positive health outcomes. Many patients usually express dissatisfaction with the type of care that they receive following total knee and hip replacements. TKA and THA patients often complain of persistent pain, functional challenges, and poor quality of life postoperatively (Kaye et al., 2019). Enhanced recovery after surgery (ERAS) is a structured perioperative healthcare program that incorporates evidence-based protocols and guidelines to minimize postoperative complications and facilitate recovery (Gramlich et al., 2017; Gillis et al., 2017). As a part of the patient-centered quality initiative, ERAS programs aim to maintain high standards for patient safety while reducing cost. Patient centered care requires an engagement of multidisciplinary task force consisting of Advance Practice Nurses (APRNs), anesthesiologist, hospital administrators, inpatient staff, and acute pain specialist to enhance recovery, improve pain control and reduce readmission rates. Recent research studies have shown that ERAS programs significantly reduce morbidities, save medical costs, decrease readmission rates, promote faster recovery, and achieve improved clinical outcomes in orthopedic surgeries (Kaye et al., 2019; Lam et al., 2020). Given that veteran patients with osteoarthritis of the hip and knee often exhibit associated comorbidities than other populations; evidence-based guideline for this population are warranted to improve patient outcomes.

Background and Significance

According to the American College of Surgeons National Surgery Quality Improvement Program (NSQIP), the percentage of people who suffer serious complications within 30 days post-surgery in the United States is 4.2% and 5.55% for THA and TKA, respectively (Heo et al., 2020). The complications that are suffered by these patients normally require serious medical interventions. Poor patient outcomes post-operation is attributed to failure by the clinicians to adhere to clinical practice guidelines aimed at enhancing recovery (Heo et al., 2020). Kaye et al. (2019) have pointed out that the Enhanced Recovery After Surgery (ERAS) protocol allows for coordinated clinical care that helps to reduce postoperative complications and improve patient satisfaction. In the current quality improvement (QI) project, proposes that the implementation of Enhanced Recovery After Recovery (ERAS) can improve quality of life and shorten the length of stay for veterans who undergo knee and hip replacements.

Currently no organizational policies exist that link the effectiveness of ERAS protocol in improving quality outcomes of patients who undergo total hip and knee replacements. Therefore, the proposed project was significant in that it provided evidence that the organization could utilize to improve quality outcomes for postoperative veterans. The evidence advised policy changes in the organization in order to enhance recovery for these patients considering that ERAS protocols play an essential role in maintaining normal physiology in the perioperative period. The goal was to help nurse practitioners (NP) improve the perioperative and postoperative management of patients undergoing joint replacement surgery in the orthopedic clinical setting.

Problem Statement

Perioperative management of TKA and THA patients entails the implementation of multiple care protocols, which can best be performed by multidisciplinary teams in a coordinated environment. The patient care problem that has been observed in the organization was the lack of knowledge in the hospital's blood transfusion policy obtained during preoperative evaluation prior to the veteran's hospital admission. Due to this problem, veterans do not receive blood transfusions in a timely manner. In addition, a lack of timely removal of indwelling urinary catheters. Orders are routinely written for indwelling urinary catheters to be removed post-op day one. However, urinary catheter are still present post-day two upon rounds the next morning. Another problematic issue is dressing changes. Once the orthopedic surgeon changes the initial dressing, orders are written to give staff instructions on subsequent dressings changes. Instead of changing the dressing when soaked or on the next day routinely, the attending or orthopedic clinical staff are typically called to change the dressing, or it does not get changed. With hip replacements, often, the abduction pillow is not placed post-operatively while the patients are lying in bed. The abduction pillow prevents the leg from rotating internally as it can cause misalignment.

Additionally, staff do not help with placement of the postop knee brace at night or assist with placing patients in the continuous passive motion (CPM) machine and advancing as ordered. Veterans' mobility progress is hindered due to staff not being knowledgeable of the importance and role the devices play in the recovery. Veterans are scheduled for inpatient therapy twice daily. Outside of the scheduled therapy, veterans are not assisted with ambulation within the hallway. Because of the previous mention,

length of stay is greatly lengthened, placing a financial burden on the facility and contributing to veteran dissatisfaction.

Clinical Questions/PICOT

In elderly veterans aged 55-85 years who have undergone total knee arthroplasty (TKA) and total hip arthroplasty (THA) (P), does the incorporation of an ERAS protocol (I), compared to traditional care (C) improve postoperative outcomes (O) over a period of three weeks (T)? The current surgical protocol does not fully support the patient adequately during their recovery process. Implementing an ERAS protocol will be beneficial in shortening the length of stay for the veteran, and will ultimately alleviate the financial burden for the facility and veteran's families. Many veterans reside more than two or three hours away from the VAMC.

Available Knowledge

The rates of total joint replacements are on the rise in the United States and are expected to rise further in the next 20 years. According to Singh et al. (2019), the United States is expected to record high rates of TKA and THA by the year 2040 with the problem affecting both males and females. Veterans are among those populations who experience high incidences of total joint replacements in the county. Nicholas et al. (2020) conducted a study to compare the variations in incidences and quality outcomes between veterans and non-veterans who undergo total knee and hip arthroplasty. The researchers found that veterans are more likely to undergo TKA and THA when compared with other members of the population, with values of 93% and 41%, respectively. Researchers also found that among veterans, the male gender had increased rates of comorbidities postoperatively when compared to females. Additionally, the rates

of complications post-surgery were higher among veterans when compared with other populations, thereby contributing to poor quality outcomes in this cohort. For instance, the poor-quality outcomes that were recorded among veterans include high rates of within 30-day readmission and prolonged length of stay (Nicholas et al., 2020).

Several factors increase patients' risks of developing complications after total joint replacements. One of these factors is increased body mass index (BMI). In a study conducted by Heo et al. (2020), the researchers found that most patients who developed complications following TKA had a mean BMI of 33.2 kg/m^2 and, after THA, had a mean BMI of 30.4 kg/m^2. Additional findings from the study indicate that the female gender and a history of TKA were protective factors against post-operative complications. As reported by Gemayel and Varacallo (2021), obese and overweight patients with a BMI greater than 30 are at higher risks of developing medical complications and infections after TKA and THA when compared with their non-obese counterparts. According to Fang et al. (2016), complications post TKA and THA increase with an increase in age. These findings are supported by a study by Kuperman et al. (2016) that revealed that geriatric patients aged 65 years and above who undergo TKA have more prolonged length of hospital stay and mortality rates when compared with younger patients. As a results, ERAS pathways are increasingly important part of elective surgical procedures to improve patient outcomes. In recent years, the concept of ERAS pathways has become a significant evidence-based medical intervention in orthopedic surgery to improve surgical safety, reduce postoperative complications and achieve faster recovery (Hu et al., 2019).

Needs Assessment

The number of veterans who develop medical complications and mortality after total hip and knee replacements has been on the rise in the organization in the past two months. These patients often experience severe pains, prolonged anemia, pressure ulcers, and deep vein thrombosis. Over the past two months alone, six THA and TKA veterans have had their stay extended due to a lack of knowledge of the hospital's blood transfusion policy and incurred a deep vein thrombosis at the facility. Furthermore, the facility has recorded increased rates of catheter-associated urinary tract infections and a total of 3% cases for other nosocomial infections. Most of these patients have prolonged lengths of hospital stay, high rates within 30-days readmission rates, and high economic burdens caused by the need to manage multiple health problems at a time. The facility provides health care to male and female veterans aged 21 years and older. TKA and THA surgeries are performed on patients with a BMI less than 35 kg/m^2, an A1c less than 7.5 primarily, ages 55-85, and medically optimized. Veterans are required to have home support arranged post-discharge; however, the VA will assist if possible and needed. The parameters set in place are to assist veterans in achieving the best surgical outcome. To achieve the best surgical outcome, the problems identified calls for the need to implement an evidence-based intervention that will help to improve quality outcomes for TKA and THA veterans postoperatively.

Synthesis of Evidence

Search Words and Process

Evidence-based practice theoretical postulations enhance the quality of clinical research. Total hip arthroplasty (THA) and total knee arthroplasty (TKA) interventions require the routine application of research-based clinical protocols. Evidence-based practice methodologies not only improve patient outcomes but also enhance the quality of care. To retrieve evidence that supports the effectiveness of ERAS protocol among older adults who have undergone THA and TKA procedures, research for published literature was conducted in PubMed, MEDLINE, and Cochran libraries. For PubMed, the investigator used the Medical Subject Headings (MeSH) to locate articles depicting ERAS protocol and its associated efficacy among elderly patients who have undergone THA and TKA surgeries (Bramer et al., 2017). For the Cochrane library, the investigator searched quality outcomes and benefits of incorporating ERAS protocols when handling elderly patients. The search engine unveiled articles describing how ERAS methodology enhances postoperative recovery and associated treatment outcomes. Similarly, for MEDLINE, the investigator used the words ERAS protocol and quality outcomes for TKA and THA procedures to locate articles (Bramer et al., 2017). Consequently, the investigator selected research publications depicting the efficiency of ERAS protocol among older adults who have undergone TKA and THA procedures.

Focused Topics and Evidence-Based Findings

Postoperative Complications in THA and TKA Patients: Cause and Consequences

While surgical procedures improve patient symptoms, postoperative complications are inevitable among TKA and THA patients. Hospital surgical and

ambulatory procedures address orthopedic challenges. In the United States, about four million individuals have undergone knee replacement surgery (Ditton et al., 2020). Knee replacement operations are common among the aging population. According to Kuperman et al. (2016), post-discharge complications affect 8% of TKA and 7% of THA patients, respectively. Although deep vein thrombosis (DVT) and fractures are the common complications among THA patients, cardiac events and DVT are the typical adverse surgical effects reported among TKA patients. However, both TKA and THA patients encounter post-discharge difficulties due to wound infection, wound necrosis, and bleeding (Ditton et al., 2020). Unlike the elderly, younger patients report improved functional outcomes following immediate discharge after undergoing TKA or THA procedures. Despite receiving routine care in hospitals, nurses' knowledge and successful incorporation of ERAS protocols influence treatment outcomes among admitted patients.

Surgical site infections (SSIs) derail the recovery process among TKA and THA patients. Heo et al. (2020) pinpointed that 4.2% of TKA and THA patients receiving intravenous or oral antibiotics exhibit surgical site infection symptoms. Besides compromising wound recovery, SSIs stimulate prosthetic joint infections, thus, leading to revision surgery (Ditton et al., 2020). Patients incur additional financial expenditures to meet secondary surgery costs resulting from SSIs. Likewise, postoperative complications increase readmission rates. While the 30-day readmission rate for TKA is 0.21%, THA patients report a readmission rate of 0.33% (Kuperman et al., 2016). The empirical research findings confirm that THA readmission rates exceed TKA due to post-operative complications such as dislocation and periprosthetic fracture. Increasing mortality rate is another post-operative consequence associated with TKA and THA. Heo et al. (2020),

revealed that both procedures resulted in a mortality rate of 0.2% six months after surgery. Patients succumb to post-surgical clinical complications—postoperative interventions including nutrition, occupational therapy, and physical rehabilitation increase TKA and THA healthcare costs. By increasing the length of hospital stay, THA and TKA procedures burden the healthcare system.

Post-operative complications trigger psychological impacts among patients. Depression is common among individuals diagnosed with osteoarthritis. According to Kaye et al. (2019), 19.9% of THA and TKA patients exhibit depressive symptoms characterized by attention deficit, cognitive malfunctioning, and feeling of worthlessness. However, orthopedic surgery further affects recovery outcomes in patients having preoperative depressive symptoms. Depression derails functional recovery progress, thus, leading to increased length of stay. Maladaptive uncertainties among THA and TKA patients also attract anxiety. Heo et al. (2020), reported that 14.5% of THA and TKA patients experience postoperative anxiety six months after surgery. The dominant causes of anxiety include lower functioning and chronic pain. Nevertheless, interpersonal therapy, acceptance commitment, and cognitive-behavioral therapies are effective for addressing depressive symptoms.

Benefits of an ERAS Protocol for Total Knee and Hip Replacement (THA and TKA)

Although postoperative complications are inevitable for total hip and knee replacement surgery, the application of ERAS protocol in the treatment strategy attracts positive outcomes. According to Kaye et al. (2019), ERAS programs decrease post-surgery readmission rates. The protocol limits treatment costs while improving patient outcomes. Healthcare institutions using ERAS protocol report decreased medical costs,

decreased complications, and reduced length of stay among THA and TKA patients. For this reason, the application of ERAS protocol reduced the length of stay to one to three days from four to12 days following surgery (Kaye et al., 2019). Therefore, ERAS methodology enhances patient and hospital outcomes. Since wound infections compromise the recovery process, hospital readmission is a significant factor affecting healthcare costs. Cram et al. (2021), revealed that the application of the ERAS protocol reduced the 30-day readmission rate for TKA patients from 8.9% to 6.1%. Wound infection is the main cause of hospital readmission. ERAS protocols are effective in addressing postoperative morbidity and length-of-stay challenges.

According to Bertelsen et al. (2020), ERAS protocols reduce postoperative morbidity and length-of-stay among arthroplasty patients. The methodology reduces postoperative management practices, including prolonged administration of anticoagulant, antimicrobial, and vasoactive prescriptions among THA and TKA patients. Besides reducing hospital stay costs, ERAS protocol eliminates operation costs linked to labor-intensive activities. As a result, ERAS protocol counters wound infection through routine wound management.

Postoperative outcomes determine treatment approach efficiency when handling patients. Ditton et al. (2020), highlighted how the fear-avoidance model is appropriate for controlling postoperative results and anxiety. The model illustrated how pain compromises a patient's reactions, thus, stimulating avoidance behaviors. While adaptive responses enhance recovery, maladaptive reactions affect coping patterns among THA and TKA patients. For example, after the surgery, a TKA patient may refuse therapeutic interventions such as musculoskeletal physiotherapy due to fear of re-injury or pain

(Ditton et al., 2020). As a result, such responses cause long-term treatment outcomes inconsistencies, including enduring chronic pain, comorbidities, and physical deconditioning. Soffin and YaDeau (2016), described the economic and clinical benefits of ERAS protocols when incorporated during surgical operations. As an evolved technique, ERAS protocols standardize perioperative and postoperative care among arthroplasty patients (Soffin & YaDeau, 2016). The approach reduces the length of stay; therefore, it reduces unnecessary financial expenditures. Besides, ERAS eradicates surgical site infections, thus, leading to improved patient outcomes.

Positive Patient Outcomes When Nurses are Educated on the Implementation of a New Protocol

Nursing education is a fundamental aspect of improving patient outcomes. Florence Nightingale's evidence-based practice determines the quality of healthcare services (Noviyanti et al., 2018). Consequently, nursing education is the appropriate tool for the successful implementation of a new protocol. Healthcare institutions strive to actualize positive outcomes despite having limited resources. Since nurses are stakeholders in the industry, nursing training promotes the effective introduction of healthcare system service delivery protocols (Mthiyane & Habedi, 2018). By addressing perioperative and postoperative clinical and psychological challenges associated with knee or hip replacement, nursing education improves the quality of healthcare outcomes. Soffin and YaDeau (2016), reported that preoperative education empowers and enlightens patients, thus, promoting early recovery and better patient confidence. Likewise, preoperative education improves patients' adherence to the treatment plan as it emphasizes the benefits of physical therapy and oral prescriptions. Nursing education

stimulates the dissemination of new medical protocols for handling patients (Mthiyane & Habedi, 2018). As a result, the strategy reduces mortality and hospital readmission rates as it improves chances for recovery. Improved patient outcomes reduce financial expenditures incurred by healthcare organizations. Healthcare institutions shun outdated practices and replace them with proactive techniques addressing patients' preferences and values.

Barriers to Providing Nurse Education

While nurse education enhances the efficiency of healthcare services, training barriers limit the transmission of evidence-based practice protocols to nurses. Fawaz et al. (2018), argued that limited resources affect nursing education. The growing global population stimulates increased demand for healthcare resources. For example, as the United States population grows, the demand for knee or hip replacement surgeries goes up, especially among the elderly (Shadadi et al., 2018). With limited resources, the healthcare system hardly avails adequate resources to facilitate nurse and staff training.

Curriculum enhancement also derails nursing education. Nursing pedagogy adjustments are inevitable as stakeholders strive to improve the quality of nursing education. However, curriculum changes consume time, thus, posing several challenges to nurse educators (Fawaz et al., 2018). Trained nurses provide high-quality care and safe delivery of healthcare services. Technological problem is another barrier affecting nurse education (Shadadi et al., 2018). Nurse educators focus on outcome-oriented training as opposed to process-based learning. While outcome-oriented module enhances the actualization of nurse education objective, technological challenges affect the

development of learning tools. Therefore, the evolving learning technologies affect nurse education processes.

Resistance to change when Implementing a New Protocol

The healthcare system and nursing profession practice evolve to fulfill the ever-changing patient needs. Limited resources and cost-cutting strategies propel the revision of evidence-based practice protocols. Just like other professions, change resistance is inevitable in the healthcare industry, especially when implementing a new protocol (Johnson, 2014). Change agents should be proficient communicators as poor communication derail change efforts in health care. Nurses and other healthcare professionals should be informed about the change, including its benefits and risks. Likewise, unrealistic targets can also cause change resistance. As a transition process, change initiatives require adequate time for the actualization of the intended goals (Nilsen et al., 2020). Employees may refute protocol adjustments if they are unrealistic and associated with undue pressure. Successful implementation of a new protocol may also be thwarted as a result of employees fearing to lose their jobs (Johnson, 2014). Since workers have responsibilities to fulfill, they are sensitive to issues touching job security. Consequently, they may opt to resist the change as a strategy for safeguarding their workplace position.

Incompetent management style stimulates change resistance. Nurses may resist change due to anxiety linked to roles and responsibilities (Nilsen et al., 2020). Healthcare administrators should ensure employees understand their roles appropriately in line with the new protocol objectives. Likewise, a lack of confidence in the change promoter may render such efforts futile (Johnson, 2014). Mistrust may fail the transition process since

the employees lack confidence either in the protocol or its promoter. As a result, change agents should be trusted employees to influence their colleagues positively at the workplace. Adjusting evidence-based practice may also be difficult due to emotional responses (Johnson, 2014). As humans, healthcare professionals have emotional issues that must be addressed when implementing change. Emotional reactions are natural and negative energy stimulates change resistance. However, providing a consultative podium is appropriate for handling negative emotions among employees, hindering the successful implementation of a new protocol.

Tools of Measurement

A structured questionnaire will be used as the tool of measurement in the proposed quality improvement project. The questionnaire was administered to the participants before ERAS education was provided. The participants were allowed to answer the same questionnaire after ERAS education was provided. The responses were compared, and any variations identified. The educated staff piloted the ERAS protocol on TKA and THA veterans for a period of three weeks with changes in quality outcomes recorded. The questionnaire is shown in Appendix C.

Rationale

Framework Theory

The proposed theory is anchored on the principles and assumptions of social cognitive theory. In his social cognitive theory, Bandura proposed that a person's behavior was influenced by three categories of expectancies. The three categories, include situation-outcome expectancies, outcome expectancies, and self-efficacy expectancies (Klusmann et al., 2016). The theory assumes that there is always an

interaction between the existing situation and the primary results that lead to the overall outcome. The interaction is thought to influence a person to engage in behaviors that will help to change the situation and generate positive results. The observable positive results eventually resulted in the achievement of the overall outcomes. However, a person's ability to engage in the desired behavior is largely influenced by his or her beliefs about self-efficacy. Essentially, people develop the confidence to engage in a particular behavior when they believe they possess the required knowledge, skills, and abilities (Zhao et al., 2021). Therefore, modifying personal and social factors to facilitate the realization of the overall outcome is of great importance.

The social cognitive theory was applied in the proposed quality improvement project to ensure the successful implementation of an ERAS protocol into the current practice. In the proposed project, THA and TKA veterans experience poor quality outcomes due to failure to implement evidence-based interventions that can enhance recovery. The project aim was to highlight the issues identifed (Klusmann et al., 2016). Based on the assumptions of social cognitive theory, the situation should influence the staff to utilize evidence-based interventions such as ERAS protocol to prevent the patients from experiencing severe pains, pressure ulcers, and neglect. Additionally, such practices should be adopted to reduce mortality rates, reduce rates of nosocomial infections, decrease length of stay, reduced within 30-day readmission rates, and decrease financial burden for the veterans and the organization. The expected outcomes should result in enhanced recovery, patient satisfaction, and positive quality outcomes.

Notably, APRNs will need to enhance self-efficacy to utilize evidence-based interventions by increasing their skills, knowledge, and capabilities through education.

Self-efficacy determines whether staff will be involved and engaged in the proposed practices to bring about the desired change (Klusmann et al., 2016). Owing to the changing demographics, implementing evidenced-based pathways is significant in educating APRNs on effective ways to decrease postoperative pain, reduce readmission rates, and increase veteran satisfaction. Education will prepare the professionals to integrate useful knowledge and skills related to ERAS protocol to address the patient care problem currently observed in the facility (Zhao et al., 2021). Social cognitive theory is an appropriate theoretical framework for the proposed quality improvement project. The reason is that it will enable the primary investigator to combine situation-outcome, outcome, and self-efficacy expectancies with supporting the successful incorporation of the ERAS protocol into current practice as a strategy to improve quality outcomes for elderly veterans who undergo total knee and hip replacements in the facility.

Specific Aims

Purpose of the Project

The purpose of the proposed quality improvement project is to examine whether the incorporation of an ERAS protocol in the orthopedic specialty will prove effective. The project aims to evaluate the levels of knowledge of APRNs and staff working involved in the preoperative, intraoperative, postoperative process about the ERAS protocols. The TKA and THA identifiers have been noted utilizing data from the Veterans Administration Medical Center (VAMC) and are supported with comparison from current protocol and the proposed implementation of a new ERAS protocol. The multidisciplinary approach will help APRNs identify the factors that delay postoperative recovery and adopt evidence-based interventions to achieve improved functional

outcomes and rapid recovery. Each measure is identified to support the purpose or the project, and will further explain the key points within the project.

Measures

- To find out whether the proposed implementation of an ERAS protocol coupled with current practice will decrease the length of hospital stay over a period of three weeks in elderly veterans aged 55-85 years who have undergone total knee arthroplasty (TKA) and total hip arthroplasty (THA).
- To investigate whether the incorporation of an ERAS protocol into current practice will improve patient satisfaction over a period of three weeks in elderly veterans aged 55-85 years who have undergone total knee arthroplasty (TKA) and total hip arthroplasty (THA).
- To assess whether using an ERAS protocol will decrease financial loss for the hospital over a period of three weeks.

DNP Essentials

Eight essentials of the Doctor of Nursing Practice (DNP) were applicable to the project. Each essential will emphasize the importance of using science-based concepts to evaluated and enhance the surgical care process and improve THA and TKA patient outcomes. The proposed project is aligned with the DNP Essentials I, II, III, IV, VI, and VIII. Entailed below are the DNP Essentials as follows:

Essential I: Scientific Underpinnings for Practice

The primary investigator (PI) demonstrated the ability to utilize scientific theories to describe the nature of healthcare delivery within the practice environment. Additionally, the DNP student showed the ability to utilize theories and concepts to

devise actions and strategies aimed at improving patient outcomes (American Association of Colleges of Nursing [AACN], 2006). The DNP student achieved Essential I through the application of social cognitive theory as the theoretical framework for the project to describe the patient care problem and the proposed intervention.

Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking

The proposed project will prepare the DNP student to apply organizational and systems leadership principles to improve quality outcomes and enhance systems thinking. The facility where the proposed project was conducted is viewed as a system whose success depends on effective leadership provided by the DNP-prepared nurse (AACN, 2006). Essential II was achieved by evaluating and selecting evidence-based healthcare delivery approaches such as the ERAS protocol that meets the current and future needs of TKA and THA veterans.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

By developing this project proposal, the DNP student demonstrated clinical scholarship and the ability to apply analytical approaches which as aligned with evidence-based practice. For instance, the learner applied analytical skills and methods to critically appraise existing literature in order to gather evidence to address the clinical question (AACN, 2006). Besides, the DNP student addressed Essential III by demonstrating the ability to evaluate the effectiveness of quality improvement approaches in improving quality outcomes for post-operative patients.

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

Rapid technological advancements in today's healthcare systems call for the need for DNP-prepared nurses to be able to utilize information technology systems to transform healthcare delivery processes and improve patient outcomes. The DNP student addressed Essential IV by demonstrating the ability to apply technical skills to evaluate health information systems for appropriateness and accuracy (AACN, 2006). Moreover, the student utilized information technology systems to clearly communicate critical elements of the project.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

Interprofessional collaboration contributes greatly to the success of healthcare practice. By developing the project proposal, the DNP student intended to achieve Essential VI through collaboration with interprofessional teams to identify evidence-based interventions that can be implemented to improve the outcomes of postoperative patients (AACN, 2006). Likewise, Essential VI was achieved through collaborative consultation when developing clinical practice guidelines to guide healthcare delivery for postoperative patients.

Essential VIII: Advanced Nursing Practice

DNP-prepared nurses are expected to effectively perform advanced nursing practice roles that are aligned with their respective specialty areas. The student achieved Essential VIII by applying culturally sensitive approaches to conduct a comprehensive assessment of the healthcare environment and identify health and illness parameters that were addressed to improve patient outcomes (AACN, 2006). Furthermore, the student designed and supported the implementation of evidence-based therapeutic interventions

to help improve quality outcomes of post-operative veterans. The student also formed partnerships and collaborations with healthcare professionals to facilitate optimal care and positive patient outcomes.

Summary

Adherence to evidence-based clinical practice guidelines can promote effective management and enhance quality outcomes in THA and TKA patients. Blood transfusion, timely removal of indwelling catheters, proper wound dressing, and mobilization of patients are important post-operative components of an ERAS protocol. Published literature indicated that the implementation of an ERAS protocol with postoperative patients enhances recovery, thereby reducing a patient's duration of stay in the hospital (Cram et al., 2021; Kaye et al., 2019). Veterans aged between 55 and 85 years were at increased risk of developing complications after undergoing total knee and hip replacements (Fang et al., 2016; Nicholas et al., 2020). APRNs and staff in the facility did not utilize a standardized evidence-based ERAS protocol with veterans postoperatively due to their limited knowledge of the procedures involved. Therefore, a need to investigate whether incorporating an ERAS protocol into the current clinical care procedures followed by nursing and staff education will help to improve the quality outcomes for sick veterans.

CHAPTER II - METHODS

The purpose of the proposed quality improvement project was to examine how effective the implementation of an ERAS protocol will improve quality outcomes over a period of three weeks in elderly veterans aged 55-85 years who have undergone total knee arthroplasty (TKA) and total hip arthroplasty (THA). The primary methodology for this qualitative project is a literature review and a conceptual modeling to assess the necessity of implementing ERAS protocols for joint replacement surgery. The data contributed to further research and insight on the development of future initiatives within the Veterans Administration Medical Center and other veteran-based facilities. The methods will also assist future projects for DNP students who show interest in utilizing ERAS protocol in other facets of the medical field.

Context

A literature review of published peer-reviewed articles was reviewed to gather evidence related to the efficacy of ERAS protocol in improving the health outcomes of post-operative patients. Data related to the effectiveness of an ERAS protocol in improving quality outcomes in THA and TKA veterans were collected from inpatient orthopedic and staff including orthopedic surgeon, anesthesiologist, APRNs, bedside nurses and education staff at the VAMC. The investigator analyzed the data to obtain information that was used to make a conclusion. Observations were made as to whether a knowledge gap among the inpatient nurses regarding ERAS protocol implementation existed and, whether providing nurse education would address the knowledge deficit, and whether there are any variations in patient outcomes before and after providing ERAS protocol education. The lack of knowledge with the organization’s blood transfusion

policy, importance of timely removal of indwelling catheters, not adhering to proper wound healing procedures, and early mobilization of patients often hindered the success of on time discharge. After successfully piloting the pathways, the DNP student identified effective interventions based on a comprehensive review of the current clinical practices and best available evidence. The project established understanding the components of an ERAS protocol and adhering to it can improve the quality outcomes of veterans who undergo total knee and hip replacements.

Intervention

The proposed intervention for this project was to pilot the ERAS protocol in orthopedic surgery to improve postoperative recovery. Adequate integration of the ERAS protocol would require a significant shift in clinical routines to implement the proposed changes. Compared to routine care in the elective surgeries, piloting the Fast-Track pathways involved educating all staff involved about the importance of postoperative care. The protocol was piloted together with staff education. An in-service to the day and night shift will be conducted for over a period of three days to get everyone. A pre-test will be conducted by administering the questionnaire to determine the prior knowledge of nurses about an ERAS protocol. The staff was then be educated on how to use an ERAS protocol with THA and TKA patients. A PowerPoint presentation was used during training. A post-test was conducted by administering the questionnaire to assess changes in the staff's knowledge. The investigator then evaluated the impact of the intervention on patient outcomes.

Study of the Intervention

The proposed intervention was the inclusion of the ERAS protocol into the current postoperative protocol. Assessing the impact of the health care intervention is crucial to improve services and inform future policy. The ERAS protocol was implemented together with staff education. An in-service to the day and night shift was conducted for over a period of three days to include all staff. A pre-test was conducted by administering the questionnaire to determine the prior knowledge of staff participating regarding an ERAS protocol. The inpatient nursing staff was then be educated on how to use an ERAS protocol with THA and TKA patients. A PowerPoint presentation was used during training. A post-test was conducted by administering the questionnaire to assess changes in the nurses' knowledge. The investigator will then evaluate the impact of the intervention on patient outcomes. Overall, the interdisciplinary team will elaborate and establish appropriate protocols needed to achieve a sustainable improvement in the quality of patient care. Feedback from the evaluation provides adequate information for the clinical researcher to suggest implementation of the ERAS protocol in an orthopedic surgical specialty.

The Population of Interest and Setting

The setting for the quality improvement project was the VAMC. The VAMC is a 138-bed tertiary care teaching facility in the Southeast U.S. that serves a diverse population of African American, Caucasian, Latino, and Native American veterans. The target population for training was the VAMC staff involved in the surgical process of caring for veterans undergoing or have undergone THA or TKA. The target population for testing the effect of the piloted policy was veterans aged between 55 and 85 years old.

The setting was chosen for the project due to the recent rise in the rates of THA and TKA veterans who have experienced poor quality outcomes as defined by the increased length of stay due to inadequate knowledge by staff and lack of caring out orders. The inclusion criteria for recruiting patients into the project included; must be a veteran hospitalized at the VHA, must be aged between 55-85 years old, and must have undergone total knee or hip replacement surgery within the past two weeks. Anything that is contrary to these features was used as the exclusion criteria.

Measures

Developing and designing a research study requires selecting measures to evaluate the reliability and validity of research findings. Anticipation included the incorporation of an ERAS protocol, coupled with nursing and staff education, into the current protocol should improve quality outcomes of THA and TKA veterans and decrease the length of stay. The three measures that were used as the basis for evaluating the implementation of ERAS protocol into the current policy included; reduced rates of postoperative complications, decreased length of hospital stay, improved patient outcomes, and decreased financial loss for the hospital. Positive changes in these areas depicted an overall improvement in quality outcomes.

Analysis

The collected data were analyzed both quantitatively and qualitatively. Data related to the measures named in the section above were analyzed statistically. Statistical analysis of data was performed using the SPSS software. Qualitative data were analyzed thematically based on the perceptions of the panel regarding the proposed policy.

Ethical Considerations

Appropriate ethical considerations were made during the project. Attention to ethical consideration was significant in adopting complex quality improvements, such as ERAS pathways. A potential ethical concern that could arise with ERAS program is nonmalefience. As many surgical procedures involve some degree of harm, staff should educate patients on postoperative care during discharge to promote healing and complications. The project commenced only after obtaining approval from the Institutional Review Board (IRB, protocol number 21-246). Again, the privacy and confidentiality concerns of participants were observed by keeping their information private and confidential. Participants were asked not to place identifying information on questionnaires when completing.

Project Timeline

The PI developed an approved PICOT question. After approval, a literature review of peer-reviewed articles was researched specific to ERAS orthopedic surgery protocol and effectiveness. Once sufficient evidence was collected and supported the PICOT question, the PI obtained approval from the organization and supervising official where the piloted project would be executed. The PI then gained IRB (protocol number 21-246) approval from the school to proceed. The piloted project's timeline was performed over a 3-week period.

Summary

Clear steps were followed to investigate whether the incorporation of an ERAS protocol into the current protocol would improve quality outcomes over a period of three weeks in elderly veterans aged 55-85 years who have undergone total knee arthroplasty

(TKA) and total hip arthroplasty (THA). This chapter has provided a detailed description of the methodology that will be used to collect data. The primary investigator demonstrated ethics during the project by addressing all the ethical concerns that might arise.

CHAPTER III - RESULTS

The Doctor of Nursing Practice (DNP) quality improvement project sought to identify if implementing a sustainable ERAS protocol would increase preoperative education in candidate veterans, decrease postoperative complications, improve veteran satisfaction and decrease financial burden to both the organization and the veteran. The results utilized the current ERAS protocol and a mix of quantitative and qualitative research strategies. The results of the data reinforced if ERAS protocol was adopted into policy, staff would support and there would be potential for improvement in the quality of life of veterans and possibly decrease the length of stay.

According to Rozell et al. (2016), the demand for total hip (THA) and knee arthroplasty (TKA) is expected to increase over the next 20 years. With an increase in joint replacements in mind, the goal to propose an effective evidence-based ERAS program that would increase the trajectory of the hospital-driven complications and improve more short-term functional outcomes that satisfy the patient and reduce the high risk of postoperative complications. A quality improvement project best practice guideline like an ERAS platform, along with the support of professional staff and organizations, would aid in applying supportive results and implementing policy changes to enhance overall patient recovery.

Analysis of Data

Descriptive Statistics

Data analysis is an essential technique that enables clinical researchers to draw meaningful evidence from the research findings. Qualitative and quantitative methods were used to understand the impact of ERAS programs and assess participants'

knowledge. In the case of qualitative data, thematic analysis was utilized to explore the opinions of participants. For quantitative data, statistical analysis using SPSS assessed the efficacy of the piloted quality improvement initiative in surgical practices. Thirty-six staff members participated of the Veterans Administration Medical Center in Southeast U.S. participated in the ERAS program. Out of the thirty-six participants, 85% (N=29) were female, and 14.2% (n=6) were male. Twenty-five participants had no prior knowledge of ERAS training, and ten participants had prior training on ERAS protocols. Over 65% of the participants were 36 years old and older.

Staff Demographics and Clinical Characteristics

	Pretest and Posttest education (N=36) n(%)
Age	
25-35	15.9%
36-45	43.1%
46-55	33.4%
55 and above	6.3%
Prefer not to answer	1.3%
Gender	
Female	85.8%
Male	14.2%
Work experience	
0-1year	15.9%
2-5years	34.1%
6-10years	41.4%
Over 10years	8.6%
ERAS Education	
Yes	28.6%
No	71.4%

Steps of Intervention

A pre-test and post-test ten-question questionnaire was conducted and consisted of information gathered from participants on the knowledge level of preoperative and

postoperative aspects of ERAS protocols. The questionnaire sought to acknowledge the participants' experience and evaluate their knowledge of ERAS pathways. With a 15–20-minute window, each participant answered a series of questions that involved education on ERAS guidelines. Participants were afforded a verbal introduction and an informed consent form request before being issued a questionnaire. Results from the questionnaire were analyzed both quantitatively and qualitatively.

The survey was titled *Pre and Post Educational Survey* and consisted of thirteen Yes, No, and True or False questions. The questionnaire was only provided to staff who worked with orthopedic surgical veterans at the VHA. Out of the thirty-six participants, most of the participants had not participated in the ERAS training in their field; 71.4% stated that they lack knowledge about the current ERAS protocols due to their previous healthcare facilities and the lack of training or implementation of those evidence-based practices; about 97.1% of participants were willing to support the implementation of ERAS protocols in the orthopedic surgical unit. However, out of those participants, 2.9% expressed they did not know whether the guidelines were beneficial. The results obtained from each participant can be seen in (Table 2).

The low adherence to ERAS protocols may to owe administration support, poor documentation, and resistance to change in daily practice. Root cause and SWOT analysis were designed to assess the potential causes of the low success rate of the interventions in some ERAS program. A survey root cause analysis was used to gather comprehensive information about the evidence-based pathways. In the survey, nurse practitioners shared their thoughts about the quality improvement guidelines in clinical

practice. This analysis reported a high level of contentment with the ERAS program with the exception for a few gaps in the current healthcare system.

Table 1

Knowledge of the ERAS Guidelines

		N	**%**
What does the acronym ERAS stand for?	I do not know Other	25 10	71.4% 28.6%
Have you received any type of training on the ERAS pathways?	Yes No	10 25	28.6% 71.4%
Are ERAS guidelines implemented in your facility?	Yes No	6 29	17.1% 82.9%
Are you willing to support the implementation of an orthopedic ERAS protocol?	Yes No	34 1	97.1% 2.9%
ERAS guidelines recommend preadmission education and counseling as important intervention postoperative outcomes	Yes No	33 2	94.2% 5.8%
Do you believe ERAS protocols can be beneficial to patient outcomes?	Yes No	34 1	97.1% 2.9%
Timely removal of urinary catheters can reduce hospital-acquired, decrease the length of hospital stay and hasten recovery.	True False	29 5	82.8% 17.2%
Patient education and counseling are essential before surgical procedures?	True False	31 4	87.3% 12.7%
Reduction of risk factors is important in reducing postoperative complications?	True False	27 8	75.9% 24.1%
Adequate pain management can facilitate recovery and reduce health complications?	True False	33 2	98.3% 5.7%

Discussion

The results of the quality improvement project indicated that while many of the participants lacked adequate knowledge about ERAS protocols, they were willing to support the implementation of ERAS protocols in the orthopedic surgical unit at the VHA. Based on the ERAS protocols' preoperative, perioperative, and postoperative stages, about 87.3% of the surgical NPs stated that patient education and counseling

regarding surgery significantly affects patient outcomes. Studies show that preoperative education contributes to higher patient confidence, greater patient satisfaction, and early recovery and discharge (Bondy et al., 2015).

For the perioperative stage assessment, 75% of participants stated that reducing risk factors were necessary to reduce postoperative complications. In addition, 82.8% of participants stated that timely removal of urinary catheters has the most significant impact on decreasing hospital-acquired infections. Adequate pain management in the postoperative stage was the correct answer by 98.3% of the participants. Questions 7-10 of the questionnaire allowed True or False to aid in identifying particpants beliefs related to current protocols and the benefits offered throughout the facility. These questions also acknowledged if the current process could be facilitated through additional assistance or if the current protocol was feasible enough for the targeted audience. Question 10 of the questionnaire related to pain management and if the current ERAS protocol provided a reasonable recovery rate and reduced health complications. Understanding the answer to the question would provide further research to support the three measures and improve quality outcomes if the ERAS protocol was implemented.

A histogram graph (Figure 1) was used to display the variations in all participants' pre-test and post-test scores for the ten-question questionnaire. The study findings showed that the post-test scores were higher than the pre-test scores, suggesting that implementing ERAS protocols can help improve nurse practitioners' knowledge levels. However, some participants demonstrated minor improvement— the participants who had minimal knowledge of integrated care pathways dramatically improved after participating in the training. In addition, there was a significant increase in the number of

participants who strongly agreed to incorporate the evidence-based pathways in engaging the patients in postoperative safety discharge in this study.

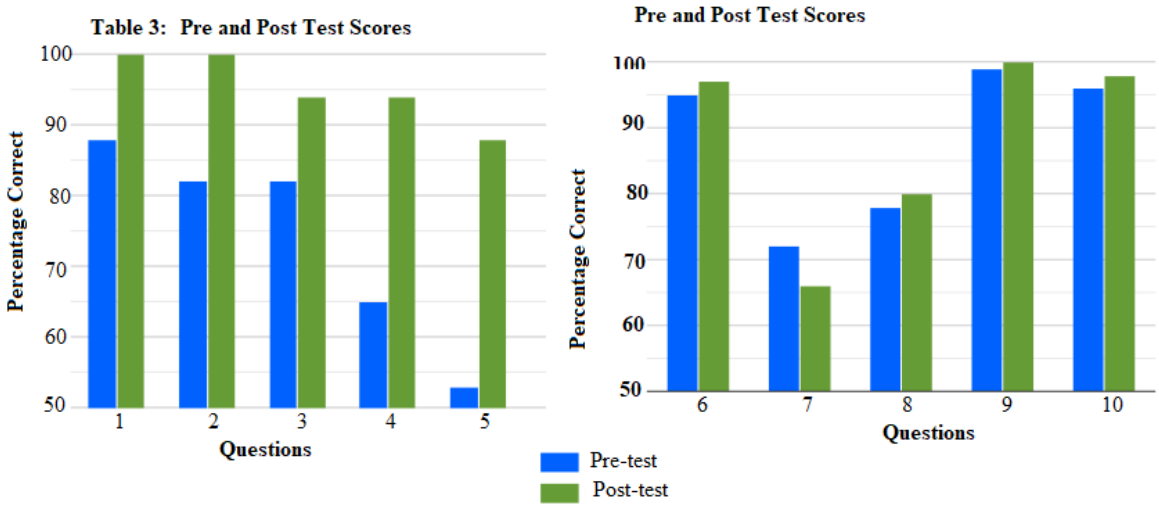


Figure 1. Pre and Post Test Scores

The ERAS program is an evidence-based intervention in postoperative care proven to lower recovery time, reduce hospital length of stay, and decrease surgical complications (Gillis et al., 2017; Gramlich et al., 2017). The key elements of ERAS include preoperative, intraoperative, and postoperative and discharge planning for maximum possible implementation of care. The gap in knowledge and practices regarding ERAS pathways indicated the need to implement a regular training program to improve patient outcomes (Figure 2).

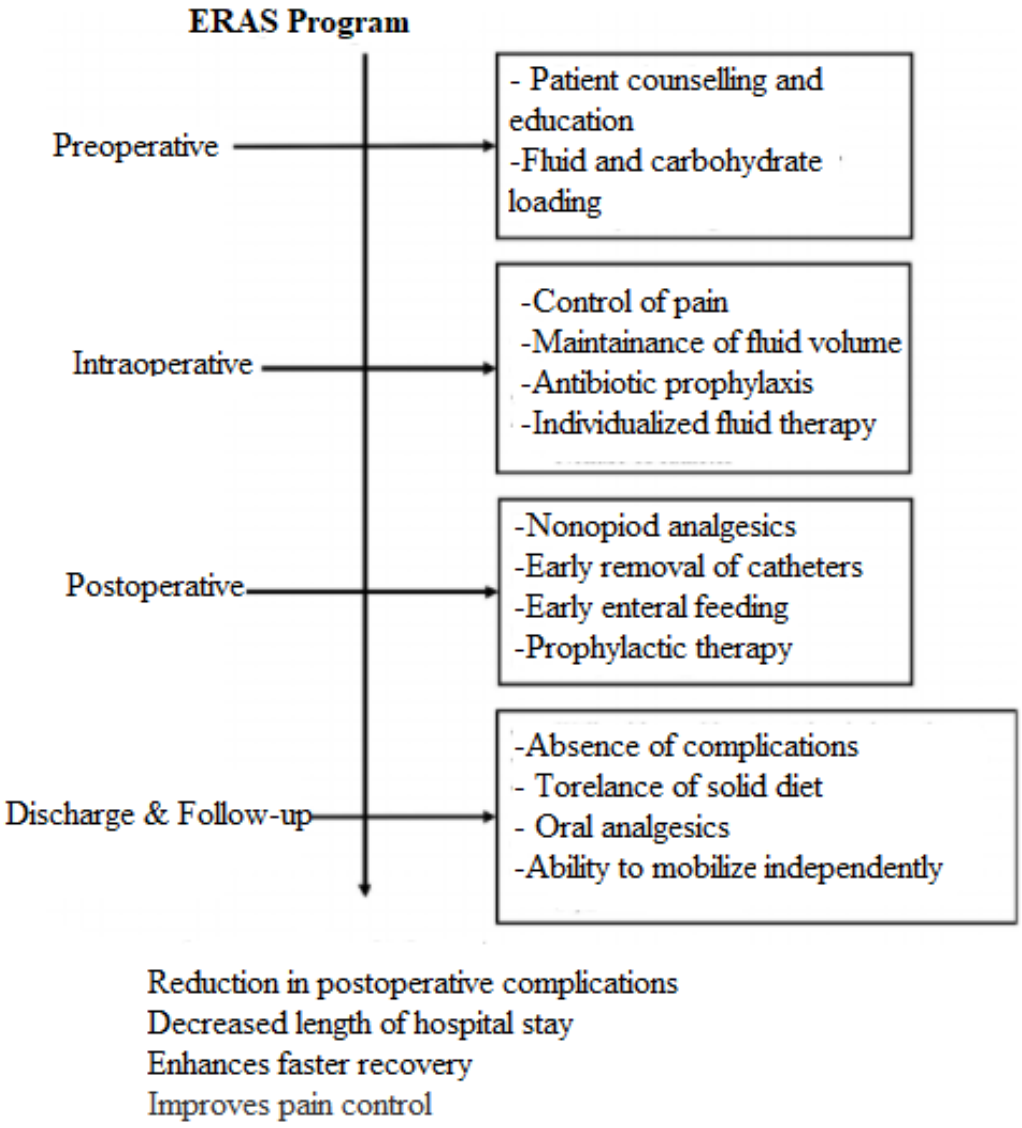


Figure 2. Enhanced Recovery after Surgery Program

Summary

The ERAS guidelines questionnaire allowed data to be collected on the participants' current knowledge and views on the training, development, and current practice(s) of ERAS protocols at the Veterans Health Administration. The data obtained from the questionnaire aligned with the details within the literature review. The collected data also supported fulfilling adequate patient education and compliance to fulfill ERAS

processes. Chapter III presented the initial steps of the quality improvement project and discussed observed associations between the outcomes and additional relevant contextual elements. Finally, Chapter IV will discuss the essential findings and strengths of the project and its limitations.

CHAPTER IV - DISCUSSION

Summary

A best practice recommendation was proposed to examine whether incorporating an ERAS protocol into the current ERAS protocol will improve quality outcomes in elderly veterans who have undergone total knee arthroplasty (TKA) and total hip arthroplasty (THA). Research showed that preoperative education in people undergoing TKA and THA improves postoperative outcomes with respect to pain, function, quality of life, and the incidence of adverse events (McDonald et al., 2015). Despite the widespread success of evidence-based interventions in multiple surgical subspecialties, fast-track remains underutilized in orthopedic surgery (Soffin & YaDeau, 2016). Comparing patients who underwent elective hip and knee arthroplasty, the ERAS protocols reduced hospital stay and improved patient outcomes.

Reports from the participants on these guidelines for orthopedic surgery also established its feasibility and safety and documented its successful implementation. The participants maximized the use of ERAS care elements in orthopedic patients, including preoperative and postoperative components, which significantly reduced hospital length of stay and postoperative complications. Prior to the beginning of the project, greater awareness of the factors hindering the implementation of ERAS guidelines was key to integrating the evidence-based interventions into clinical practice. The present study found that most participants lacked adequate knowledge about the ERAS protocol.

Key Findings

Successful implementation of fast-track interventions requires a multidisciplinary approach to patient management. As surgical patient management becomes increasingly

complex, interdisciplinary teamwork is vital to improving patient outcomes. Smith et al. (2020) stated that ERAS protocol is an evidence-based practice requiring multidisciplinary teams; however, implementing ERAS pathways remains a challenge in clinical practice. Springer et al. (2019) reported that poor communication, lack of nursing support, and patient variability are common barriers to implementing ERAS protocols.

Most surgical staff participating in this study stated that they did not know about the ERAS protocols, indicating that the Fast-Track guidelines have not been widely adopted in clinical settings. Gramlich et al. (2017) highlighted that the low implementation of the pathways is deeply rooted in radical preoperative practices such as fasting after midnight, which seemingly contradicts with carbohydrate loading. Ideally, preoperative patient education on presurgical procedures, potential complications, and postoperative pain management can significantly affect surgery outcomes. With the increasing focus on improving patient outcomes and satisfaction, a need to incorporate preoperative education to prevent postoperative complications is indispensable (Klaiber et al., 2018). In these circumstances, educating nurse practitioners on ERAS pathways in an ambulatory surgery setting seems a promising strategy. In particular, evidence for preoperative patient education in orthopedic surgery is sparse.

Implementing the integrated care program would lead to greater patient empowerment and reduce surgical stress. Zhang and Xiao (2020) found that the clinical pathways specialized for nursing and medical staff provided multidisciplinary approaches which can reduce postoperative complications and length of hospital stay. In this study, the nurses knew that patient education in the preoperative period is fundamental to the

ERAS protocols. The clinical nursing pathway would ensure patients had a comprehensive medical care plan to avoid invalid hospitalization days.

From a health workforce perspective, a substantial percentage of surgical safety guidelines were not specifically tailored to address patient issues and risk factors in orthopedic surgery. For example, less attention was paid to postoperative urinary retention, a common complication after joint replacement surgery in elderly patients leading to delayed hospital discharge (Jackson et al., 2018). Best practice guidelines recommend that early removal of NG tubes and urinary catheters help reduce the incidence of nosocomial infections. Coyle et al. (2015) assert that early urinary catheter removal was a core component of integrated care pathways facilitating early mobilization. In the present study, nurses observed that most were familiar with the early removal of catheters as a routine practice performed in clinical practice. In addition, early oral feeding after elective procedures increased the risk of vomiting, nausea, and loss of appetite. According to Rattray et al. (2017), enteral feeding in the postoperative period facilitated faster recovery and reduced complications and hospital stays. Although nurses had limited knowledge regarding early oral feeding practice, evidence proved that the evidence-based postoperative care guidelines for orthopedic surgery were in line with the ERAS protocol.

The study showed that postoperative nausea and vomiting (PONV) are everyday adverse events after surgery; however, identifying the patient at risk remains challenging. In particular, vomiting can restrict the oral feeding of patients and increase incidences of postsurgical complications. Therefore, preventing postoperative nausea and vomiting was necessary to reduce baseline risk factors in

ambulatory settings. In high-risk patients, administration of two or more antiemetics as part of multimodal therapy was strongly recommended (Chen & Chang, 2020). In the study, APRN's knowledge level regarding antiemetic drug administration was compatible with the ERAS pathways. The APRN's knowledge level indicated that nurse practitioners are knowledgeable about PONV risk reduction preventive strategies. Thus, the standard ERAS program might improve the knowledge level of nurses in PONV management. In addition, the current study revealed that most nurses had limited knowledge of the use of short-acting drugs in modern clinical anesthesia practice. Current recommendations suggested using short-acting anesthetic agents improve recovery profile and minimize complications (Mahmoud & Mason, 2018). Consequently, the ERAS protocols would need to integrate the recent drug developments contributing to continued improvement in anesthesia.

Advanced Practice Registered Nurses (APRNs) could help build the workforce necessary to meet the country's primary care needs and contribute their skills to patient-centered healthcare delivery if practices to their full extent (Committee for Assessing Progress [CAP], 2016). With ERAS guidelines in place, the ERAS protocol would enhance cultural practice by allowing patients to recover quickly through maintaining normal physiology and avoiding the typical health complications associated with THA and TKA procedures. From a financial standpoint, the advantages for an implemented ERAS protocol would also be beneficial to the organization and provide potential savings necessary to meet budgets, allow additional or continuing education for the professionals within the organization, and develop detailed strategies that coordinate with the patient and

their needs. Ultimately, the ERAS protocol should be tailored to each patient as necessary.

Interpretation

The questionnaire results noted that implementing the ERAS protocol could significantly increase the quality of life for elderly veterans after undergoing THA and TKA procedures. With the implemented ERAS protocol, standard care practices would be required by multidisciplinary teams equipped to represent the entirety of the surgical encounter. Therefore, healthcare providers should focus on the safety and feasibility of the fast-track pathways to avoid adverse clinical outcomes as the primary standard care practice. The present study found that incorporating the fast-track programs in elective total hip and knee replacement surgery would reduce surgical and psychological stress and accelerate recovery. To anticipate the future expense of TKR and THR surgery, adopting fast-track pathways is critical in reducing surgical complications, hastening recovery, and improving mobility by optimizing a series of perioperative measures.

After much analysis, postoperative components of ERAS, including management of pain and removal of urinary catheters, were essential care elements introduced to the orthopedic nurse practitioner and participants. The goals of these components were to improve adherence to discharge guidelines, promote safety and decrease complication and readmission rates. A significant improvement was proposed in inpatient care and the healthcare delivery systems for the three weeks following successful implementation the piloted ERAS pathways across orthopedic care. In addition, a substantial percentage of patients labeled for the ERAS program showed more rapid surgical recovery than

traditional approaches. These benefits were replicated across the spectrum of orthopedic surgeries, particularly elective hip and knee arthroplasty. Implementing the ERAS pathways required collaboration from multidisciplinary surgical teams across the range of orthopedic care.

Limitations

The study was limited to Veterans Administration Medical Center in the Southeast U.S., limiting these findings' generalizability to a larger population. The sample selected for this study was explicitly participants involved with working in the orthopedic surgical process of THA or TKA veterans. While the pretest-posttest design was considered appropriate for assessing participants knowledge levels, it may not be suited for evaluating ERAS programs based on selection bias. The results obtained in this study may not apply to NPs or other participants in real-world clinical settings. Additionally, one would find difficult in generalizing the research findings to the more considerable nurse practitioner population with a small sample size. While the clinical study encourages the implementation of fast-track pathways in orthopedic settings, future sustainability should focus on patient education to improve clinical outcomes. For a quality improvement project to succeed, solid clinical input and a multidisciplinary approach are required.

Conclusion

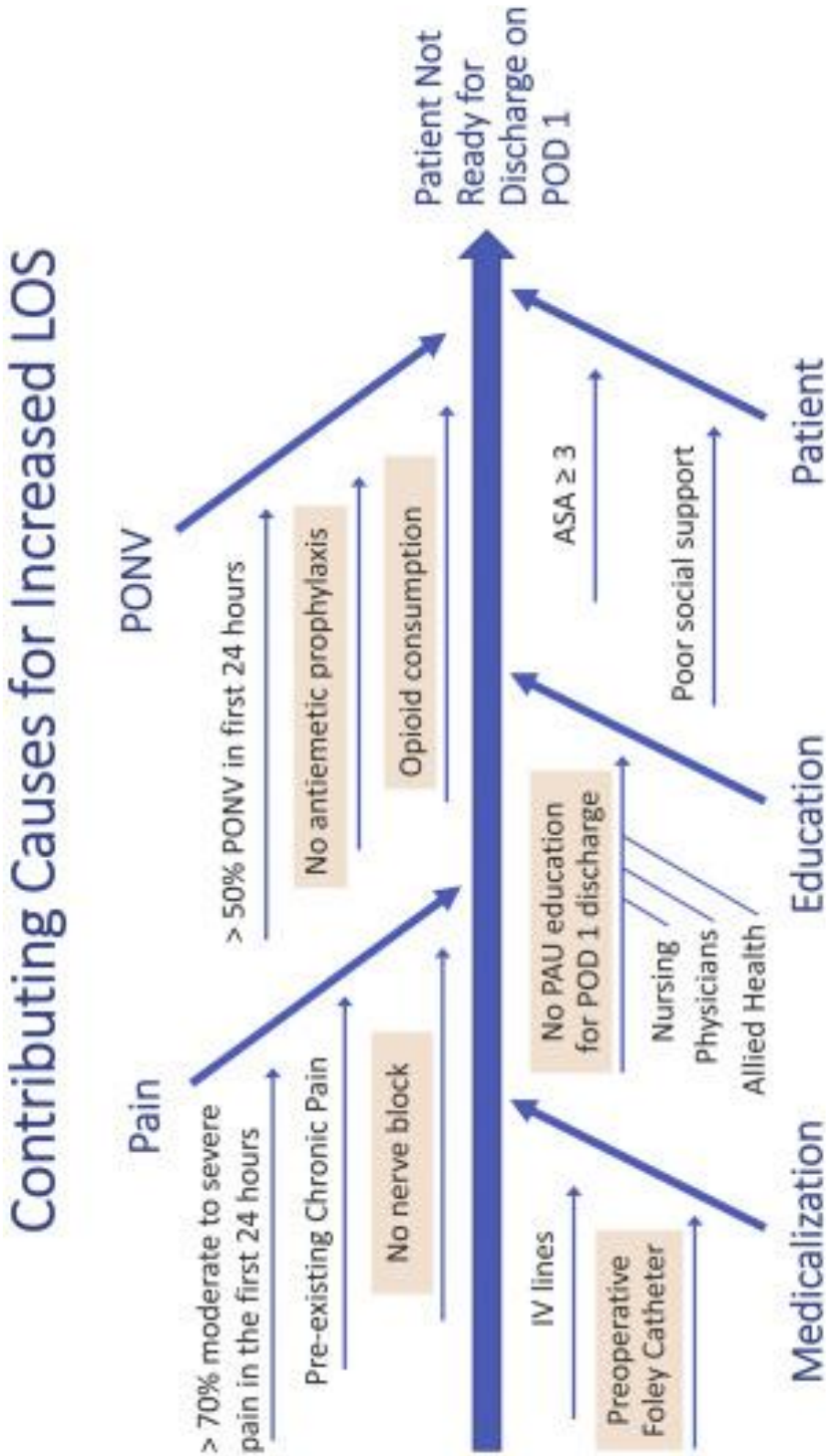
Most surgical nurse practitioners and participants had inadequate knowledge of ERAS pathways in this study since the evidence-based practices were not included in clinical procedures. It was evident that participants had limited knowledge on short-acting anesthetic agents, nutrition, and fluid balance in the early postoperative period.

Hence, participants, specifically nurse practitioners should get regular training ERAS guidelines and participate in professional development programs to increase their knowledge levels in this regard. Implementing the ERAS protocol through nurse practitioners' training and patient empowerment would significantly benefit clinical and economic. The sustainability of the quality improvement project depends on healthcare professionals' adherence to the safety guidelines. Despite the effective implementation of the piloted ERAS protocols in elective surgical procedures, the widespread use in hip and knee replacement was limited. Therefore, future research should implement evidence-based, multidisciplinary postoperative management pathways associated with safe discharge and rapid recovery without compromising clinical outcomes.

APPENDIX A – DNP Essentials

Essential I: Scientific Underpinnings for Practice	Aid in demonstrating how to effectively utilize scientific theories to describe the nature of healthcare delivery within the practice environment, and aim toward conceptualizing and improving patient outcomes.
Essential II: Organizational and Systems Leadership for Quality Improvement	Used in the project to apply organizational and systems leadership principles to evaluate evidence-based healthcare delivery such as the ERAS protocol and revision of the needs for TKA and THA veterans.
Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice	The clinical scholarship was used to present the current evidence that addressed the effectiveness of quality improvement approaches for postoperative patients.
Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care	Understanding technological advances were important to ensure DNP-prepared nurses could transform healthcare delivery processes to improve the patients' outcomes. Technology also aided in effectively communicating data and the important elements throughout the project.
Essential VI: Inter-Professional Collaboration for Improving Patient and Population Health Outcomes	Interprofessional collaboration contributed to the success of identifying evidence-based interventions that later improved the outcomes of postoperative patients and effectively executed guidelines to guide healthcare delivery.
Essential VIII: Advanced Nursing Practice	The project applied culturally sensitive approaches to effectively conduct assessments and identify health and illness parameters to improve patient outcomes.

APPENDIX B – Logic Model



APPENDIX C – Professional Questionnaire

Pre- and Post- Educational Survey

What role best describes your position? ❍ RN ❍ LPN ❍ CNA ❍ Tech

How long have you been in your current role?

Gender ❍Male ❍Female

What is your age range in years? ❍18-29 ❍30-39 ❍40 -49 ❍50-64 ❍65 and older

Race and ethnicity

- ❍ American Indian
- ❍ Black or African American
- ❍ Hispanic or Latino
- ❍ Non-Hispanic White

Have you received prior education on ERAS protocols? ❍True ❍False

Do you believe ERAS protocols can be beneficial to patient outcomes?

❍True ❍False

Are you willing to support the implementation of an orthopedic ERAS protocol?

❍True ❍False

1. **What does the acronym ERAS stand for?**
    a. Early recovery after surgery
    b. Enhanced recovery after surgery
    c. Emergent recovery after surgery
2. **Does this institution have ERAS protocols?** ❍ True ❍ False
3. **Goals of an ERAS protocol?**
    a) reduce metabolic and endocrine stress response to surgery,

b) decrease the length of hospital stay,

c) decrease postoperative pain

d) decrease complications

e) all of the above

4. ERAS protocols involve only anesthesia providers? ❍True ❍False

5. The components of an orthopedic ERAS protocol include?

a.) NPO 8 hours before surgery

b.) mobilization post-op day 2

c). multimodal analgesia

d.) opioid-sparing anesthesia techniques

e.) both c and d

6. Orthopedic patients should wait to get out of bed until the second day postoperatively

❍True ❍False

7. Medications included in multimodal analgesia often include

a. Gabapentinoids

b. Steroids

c. NSAIDs

d. Tylenol

e. all of the above

8. Regarding post-surgical orthopedic patients, when should the foley catheter be removed?

a. Post-op day 1

b. post-op day 2

c. day of discharge

d. Post-op day zero, after a patient makes it to the floor

9. For a planned total joint surgery, where is the inpatient blood consent found? _____

10. If the blood consent for an elective planned orthopedic surgery was obtained during an outpatient pre-op visit, Is the blood consent valid after surgery and once the patient makes it to the floor an inpatient? ❍ Yes ❍ No

11. Who is responsible for changing the subsequent surgical wound dressing after the surgeon has changed the initial dressing? _____

12. Who is responsible for assisting the patient in placing the post-op brace at night? _____

13. What does CPM stand for? _____

APPENDIX D –IRB Approval Letters

Office *of*
Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5116 • HATTIESBURG, MS | 601.266.6756 | WWW.USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER:	21-246
PROJECT TITLE:	A QUALITY IMPROVEMENT PROJECT: STREAMLINING THE POST-SURGICAL PROCESS IN TOTAL KNEE AND HIP REPLACEMENTS WITH AN EVIDENCE-BASED GUIDANCE AND PRACTICE PROTOCOL
SCHOOL/PROGRAM	Leadership & Advanced Nursing
RESEARCHERS:	PI: Bianca Bullie Investigators: Bullie, Bianca~Coleman, Carolyn~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	24-Jan-2022 to 23-Jan-2023

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

Department of Veterans Affairs

Memorandum

Date: August 23, 2021

From: Chair, Institutional Review Board (IRB)

Subj: A Quality Improvement Project: Streamlining the Post-Surgical Process in Total Knee and Hip Replacements with an Evidence-Based Guidance and Practice Protocol

To: Bianca Bullie-Thompson, Principal Investigator

Thank you for submitting your protocol "A Quality Improvement Project: Streamlining the Post-Surgical Process in Total Knee and Hip Replacements with an Evidence-Based Guidance and Practice Protocol" for IRB review. After review it has been determined that this is not research.

VHA handbook 1200.05 defines research as a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

This project does not meet the definition of human subjects research according to the Common Rule. It is determined that activities designed and implemented for internal VA purposes, or not designed to produce information that expands the knowledge base of a scientific discipline, are not considered to be research.

For assistance in developing your Quality Improvement Project, contact the Office of Quality Management.

If you would like additional information, please contact Merchell Pittman, Administrative Officer, at extention 51401.

Angela M. Jones, RPh 8/25/2021

Angela M. Jones, RPh
IRB Member

Nita A. Magee 199749
Digitally signed by Nita A. Magee 199749
Date: 2021.09.07 14:17:06 -05'00'

Nita Magee, PhD, RN, MHNP-BC
IRB Chair

G. V. (SONNY) MONTGOMERY
DEPARTMENT OF VETERANS AFFAIRS
Medical Center
1500 E. Woodrow Wilson Drive
Jackson, MS 39216

In Reply Refer To: 586/112

Date: July 30, 2021

The University of Southern Mississippi
College of Nursing & Health Professions
DNP Program

RE: Bianca Bullie-Thompson, DNP Student

To Whom It May Concern:

This letter is to confirm I am the direct supervisor for Mrs. Bianca Bullie-Thompson.

Mrs. Bianca Bullie-Thompson has an exceptional respect for knowledge and I fully support her education and advancement. She is approved to complete her proposal for her DNP project in the Orthopedic Surgery Clinic here at the Jackson VAMC.

If you need any additional information, please feel free to contact me at 601-362-4471 Ext. 56177 or Brenda.smoot@va.gov.

Sincerely,

Brenda Smoot

Brenda Smoot, ND, MPA, RN, FNP-BC
NP Supervisor
Surgical Service

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