IMPROVING NURSING RECOGNITION AND MANAGEMENT OF POSTOPERATIVE DELIRIUM IN THE ACUTE CARE SETTING

by

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ABSTRACT

LATASIA BELIN . Improving Nursing Recognition and Management of Postoperative Delirium in the Acute Care Setting. (Under the direction of DR. ALLISON BURFIELD)

Introduction: Postoperative delirium is a common cognitive complication characterized by an abrupt disturbance in brain function after surgery. It occurs in 15 to 25% of patients undergoing major elective surgeries and up to 50% of patients who have had high-risk procedures such as cardiac surgery or hip fracture repair. Postoperative delirium can result in negative outcomes such as increased healthcare costs, increased length of stay, and lasting cognitive impairment. Although nurses play a critical role in recognizing delirium, the complication remains under-recognized and poorly managed. This finding emphasizes the need for improved delirium recognition and management strategies; therefore, educational initiatives designed to improve delirium care are necessary for nurses caring for patients with this complication. **Objectives:** This project evaluated the effect of structured delirium education on nursing knowledge, recognition, and management of delirium. **Methods:** This quality-improvement project utilized the Nurses' Delirium Knowledge Assessment (NDKA) tool, a 36-item scale divided into three subscales, to evaluate medical-surgical nurses' knowledge before and immediately following the implementation of an on-demand web-based delirium education module. It was available to nurses from October 2020 through December 2020. Participation in this project was voluntary and consisted of nurses working on two surgical units. Assessment scores were evaluated pre-and post-education and the Wilcoxon signed-rank test was used to detect significant changes. **Results:** Sixteen nurses participated in the project. Overall mean scores improved from 67.99% on the pre-assessment to 81.84% on the post-assessment. Subscale mean scores also improved and were as follows: knowledge of assessment tools and scales

71.84% pre and 87.5% post, general knowledge of delirium 75.89% pre and 85.71% post, and risk factors for delirium 56.25% pre and 72.32% post. **Conclusion:** The educational intervention provided in this project increased nurses' knowledge and recognition of delirium, validating similar findings in the literature. An educational intervention delivered via electronic format is an effective method to provide delirium education to nurses. Improving nursing knowledge of delirium is essential in improving patient outcomes.

DEDICATION

To my mother, who has shown me the true meaning of strength. To my late father, although no longer with us, you have taught me so much. I feel your presence every day. To John, who has motivated me to be my best self. To my family and friends, who have supported and offered me words of encouragement while obtaining my Doctor of Nursing Practice. I also dedicate this to the nurses at the project site for their willingness to learn and improve patient care. You continue to inspire me.

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LIST OF ABBREVIATIONS

APP	Advanced Practice Providers
CAM	Confusion Assessment Method
DNP	Doctor of Nursing Practice
IRB	Institutional Review Board
LOS	Length of stay
NDKA	Nurses' Delirium Knowledge Assessment

CHAPTER 1: INTRODUCTION

Postoperative delirium is characterized by an abrupt disturbance in brain function that may include inattention, impaired memory, and fluctuations in cognition after surgery (Choi et al., 2019). This common complication occurs in 15 to 25% of major elective surgeries, and up to 50% of patients who have had high-risk procedures such as cardiac surgery or hip fracture repair (Chaiwat et al., 2019). Incidence rates of postoperative delirium may vary and depend on several factors such as the sensitivity of screening instruments, the assessment of specific populations, and the timing of when assessments are performed (Saller et al., 2019). Although the incidence of postoperative delirium is high, 30 to 40% of cases are preventable (Inouye et al., 2014).

The risk of developing postoperative delirium is multifactorial. Risk factors include, but are not limited to, increased age, electrolyte imbalances, Alzheimer's disease, dementia, preoperative hospitalization, anesthesia, and surgical blood loss (Chung et al., 2015; Wang et al., 2016). Surgical patients are more likely to develop delirium within the first three days after surgery, after which it could take up to four weeks to recover (Whitlock et al., 2011). Furthermore, individuals who develop postoperative delirium experience longer hospitalizations, increased healthcare costs, and lasting cognitive impairment (Partridge et al., 2019). Additionally, postoperative delirium can lead to decreased cognitive and physical functioning, admission into a long-term care facility, and increased risk for morbidity and mortality (Korevaar et al., 2005).

Regarding costs, the economic effect of postoperative delirium is substantial. Not only does it impose a financial burden on patients, but this complication also costs the healthcare system $164 billion annually (Inouye et al., 2014). Costs can be attributed to factors such as the reallocation of resources to care for patients with delirium, such as nursing time and equipment

(Leslie & Inouye, 2011). Literature suggests that on average, patients with delirium require an additional 240 minutes of documented care and/or treatment by the nursing staff (Weinrebe et al., 2016). In addition, patients with delirium have a length of stay that is on average 4.3 days longer than patients without it (Weinrebe et al., 2016). Unfortunately, these adverse effects demonstrate the negative consequences of delirium in hospitalized patients and their potential impact on the health care system.

To further exacerbate this problem, the onset of delirium is not recognized in 80% of cases despite the availability of evidence-based screening tools that can be used to assess patients in the acute care setting (Di Santo, 2019). This indicates the need for improved identification and management of this complication to avoid increased health care costs associated with caring for this population. Utilization of evidence-based assessment tools, along with the implementation of best practice guidelines regarding delirium care, such as those that come from the National Institutes for Clinical Excellence (NICE), is essential in improving the care and outcomes of patients who present with this complication (Martinez et al., 2015). In addition to guideline implementation, staff education is an effective strategy that can be utilized to address gaps in delirium recognition and management.

1.1 Background and Significance

The pathophysiology of delirium is often misunderstood and is sometimes confused with dementia, an irreversible disorder characterized by the slow progression of memory loss (Huang, 2018). Conversely, delirium is defined as “an acute, transient, usually reversible, fluctuating disturbance in attention, cognition, and consciousness level” (Huang, 2018). Although both disorders cause neurological impairment, dementia is known to be a predisposing factor for the development of delirium. According to Huang (2018), delirium may involve a reversible

impairment of cerebral oxidative metabolism, neurotransmitter abnormalities, and/or the generation of inflammatory markers such as C-reactive protein, interleukin-1 beta and 6, and tumor necrosis factor-alpha. As a result, recognition and treatment can be challenging and, if delayed, can lead to long-term effects.

Several precipitating factors contribute to the development of delirium; however, one of the most common is surgery. Occurrence can depend on the type of surgery performed and the form of anesthesia administered (Rengel et al., 2018). Other risk factors associated with postoperative delirium include, but are not limited to, age, previous cognitive impairment, electrolyte imbalances, and substance abuse (Wang et al., 2018). Early identification of these factors during the preoperative, intraoperative, and postoperative periods is essential in the prevention and management of postoperative delirium.

Aside from physical effects, delirium can lead to psychological implications, patients and families who have experienced it recall the experience to be distressing. According to Partridge et al. (2019), patients who underwent either elective or emergent surgeries and developed postoperative delirium continued to suffer from elevated levels of distress up to 12 months postoperatively. Understanding that delirium may result in long term negative outcomes for patients and the healthcare system, it is imperative that nurses, along with other members of the interdisciplinary team, are equipped with the knowledge and tools necessary to care for patients who present with this complication.

Nurses are at the frontline of care and therefore must understand contributing factors for postoperative delirium. Additionally, they must feel comfortable with screening patients and implementing preventative best practice interventions. The lack of nursing knowledge regarding delirium and risk factors is complicated by the presentation of symptoms such as periods of

hyperactivity, hypoactivity, or both (Rengel et al., 2018). This often leads to an underdiagnosis of delirium, therefore highlighting the need for purposeful screening of patients throughout their hospitalization, when these periods are more likely to occur.

Although screening is the first step in detecting delirium, many nurses are reluctant to utilize screening tools, such as the Confusion Assessment Method (CAM) and the 4AT screening instrument, to identify delirium during the early stages of onset (Di Santo, 2019). Furthermore, if utilized and a patient is screened positive for delirium, nurses do not implement nonpharmacological interventions, nor do they communicate the results of the screening to the physician or Advanced Practice Provider (APP). Improving nursing knowledge and skill in the recognition and management of delirium is important for improving delirium care. Increased nursing knowledge and confidence could result in positive patient outcomes and prevent the occurrence of adverse outcomes associated with this complication.

1.2 Problem Statement

Postoperative delirium can be an adverse outcome following surgery. The need for early recognition and management is essential in preventing long-term effects. A study conducted by Powell et al. (2019) indicated that nurses lack the knowledge needed to care for patients with delirium. Nurses at the project implementation site report only receiving a small amount of delirium education. Currently, there is no required mandatory initial or ongoing training on delirium at the site, emphasizing the need for education to support nurses as they care for patients with this complication. In addition, less than 3% of delirium screenings are scored appropriately at the project facility. Marino et al. (2015) found that structured educational programs designed to improve nursing knowledge on the recognition and management of delirium are an effective method used to improve care.

1.3 Purpose of the Project

The purpose of this Doctor of Nursing Practice (DNP) scholarly project was to evaluate the effect of delirium education on medical-surgical nurses to improve the recognition and management of postoperative delirium in adult surgical patients in the acute care setting. A secondary aim was to determine if there was an increase in the implementation of nonpharmacological interventions by the nurses after education was provided.

1.4 Clinical Question

Understanding the prevalence and importance of delirium recognition and management, the clinical question to be addressed was: Among inpatient medical-surgical nurses, does a structured delirium education program improve nursing knowledge on the care and management of patients with postoperative delirium?

1.5 Project Objectives

Middle and Miklancie (2015) explained that effective education is one of the best methods to ensure that bedside nurses have the proper knowledge to care for patients with delirium. Therefore, there were several objectives for this DNP scholarly project. The objectives were to: (1) improve nurses' recognition and management of delirium in postoperative adults on the surgical units, (2) develop and implement a structured delirium education program for medical-surgical nurses, (3) evaluate the effectiveness of the nursing education program on delirium recognition and management through a post-intervention knowledge assessment, and (4) assess for increased utilization of non-pharmacological delirium prevention interventions.

CHAPTER 2: LITERATURE REVIEW

2.1 Search Terms

A literature review was conducted using the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, Medline, and APA PsychInfo databases. The literature review focused on articles examining educational initiatives to improve nursing knowledge and skills on the recognition and management of delirium. Articles that reviewed delirium risk factors and non-pharmacological management were also reviewed. The primary keywords used were *delirium* followed by the secondary terms *postoperative, risk factors, nursing, adult, management, knowledge, and/or education*. The reference lists of the retrieved articles were examined to identify if any additional articles contained the inclusion criteria.

In CINAHL, the keywords were combined with the suggested headings using the Boolean operator "AND." Narrowing the search reduced the number of articles from over 8,000 to 164 results. The same search was performed in PubMed. Articles were limited to clinical trials, controlled clinical trials, journal article, meta-analysis, review, and systematic reviews. This produced 1,739 results. Articles were then restricted to the years of 2010 to present, which returned 191 results. In Medline, the same keywords were combined using the Boolean operator "AND," which returned 521 results. Restricting the date range from 2010 to the present returned 230 articles. Lastly, in APA PsychInfo, 313 articles were returned when using the aforementioned keywords. After restricting the date range from 2010 to the present, 52 articles were returned. As a result of this literature review, a total of 630 articles were available after a review of the inclusion and exclusion criteria. However, 29 articles were utilized for this literature review.

The inclusion criteria for the literature review included scholarly, peer-reviewed articles, publication years of 2010 to 2020, with a focus on adult inpatient acute and critical care units, and educational interventions to improve delirium recognition and knowledge. Articles were excluded if primary management of delirium consisted of pharmacological interventions, conducted in the non-acute care setting (e.g., skilled nursing facility), non-English language, or focused primarily on physician management. An overview of the review process can be found in Figure 1.

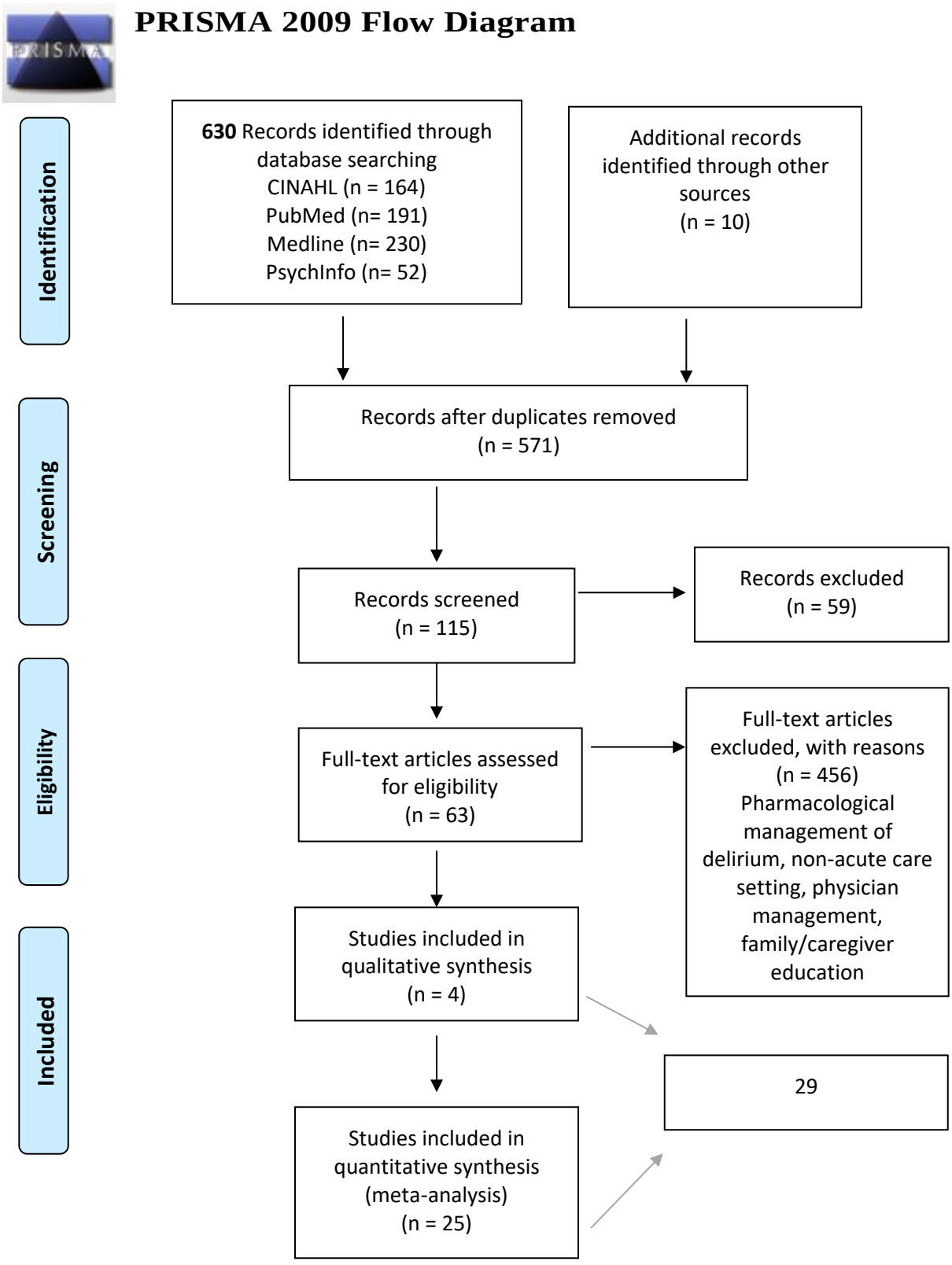

Figure 1. PRISMA 2009 Flow Diagram

2.2 Literature Evaluation

The hierarchy of evidence was utilized to assess the quality of the studies used in this literature review. See Table 1. The hierarchy consists of evidence rated from one (highest) to seven (lowest) (Melnyk & Fineout-Overholt, 2015). Articles used for this review included systematic reviews, meta-analysis, controlled clinical trials, randomized control trials, quasi-experimental, cohort studies, grounded theories, mixed methods, quality improvement, and evidence-based practice.

Table 1. Literature Review Level of Evidence

Level of Evidence	**Number of Articles**	**Core Content/Central Idea**
I	3	■ Review of strategies for delirium prevention in medical-surgical and critical care units ■ Review of strategies for delirium recognition
II	1	■ Evaluation of the impact of nurse education to improve knowledge and recognition of delirium
III	4	■ Comparison of outcomes between patients with and without delirium ■ Evaluation of outcomes from an educational program to improve delirium recognition
IV	6	■ Evaluation of outcomes from the implementation of delirium prevention bundles and nursing education
V	0	NA
VI	11	■ Educational studies to improve delirium knowledge and screening among nurses in medical-surgical and critical care units
VII	4	■ Review of recommended delirium recognition and management ■ Review of delirium screening tools

2.3 Impact of Delirium

Delirium is an acute yet reversible change in brain function that results in confusion (Huang, 2018). It is a common adverse event in hospitalized patients, but even more common in patients after surgery (Chaiwat et al., 2019; Choi et al., 2019; Chuan et al., 2019; Chung et al., 2015; Rengel et al., 2018). Underlying and precipitating factors such as increased age, infections, medications, pain, and sensory impairment are risk factors for this complication (Chung, et al., 2015; Di Santo, 2019; Wang et al., 2016; Wang et al., 2018). Additionally, preexisting cognitive impairment such as dementia, an irreversible cognitive disorder, is a risk factor with an 18% prevalence rate and a 56% incidence rate in persons with delirium (Harris, 2017; Huang, 2018).

Delayed recognition and treatment of delirium may lead to adverse outcomes such as a longer length of stay, increased healthcare costs, and lasting cognitive impairment; therefore, nurses, physicians, and APPs must understand its importance and know how to assess for it (Partridge et al., 2019; Rengel et al., 2018). Delirium can be characterized as hypoactive, hyperactive, or mixed, which is the fluctuation of both hyperactive and hypoactive subtypes (Baker et al., 2015; Guo & Fan, 2016; Harris, 2017). Patients with hyperactive delirium may experience symptoms of agitation and are more likely to be diagnosed sooner whereas patients with hypoactive delirium experience somnolence and may be underdiagnosed, if diagnosed at all (Baker et al., 2015; Guo & Fan, 2016; Harris, 2017).

In a study conducted by Weinrebe et al. (2016), it was estimated that delirium patients (n = 760) accounted for a total of 182,400 min/year in hospital care. The greatest time requirement for patients with delirium was spent on observation and monitoring, providing guidance and reassurance, and implementation of safety measures (Weinrebe et al., 2016). In another study conducted by Lee and Kim (2016), hospitalization costs were reported at $26,181 for the group

receiving delirium prevention interventions and $31,759 in the group receiving routine care, resulting in savings of $5,539 following the implementation of a $38 delirium prevention bundle. The results of this study revealed that 60% of nursing personnel costs, 30% of medical services, and 10% of additional medication were resources that were utilized for delirium management (Weinrebe et al., 2016). Findings from the literature emphasize the increased costs associated with the care of patients with delirium (Leslie & Inouye, 2011; Schubert et al., 2018; Weinrebe et al., 2016).

2.4 Nursing Knowledge of Delirium

Literature supports the use of multimodal strategies, such as web-based or didactic instruction, to provide delirium education. Studies that assessed nursing knowledge and confidence saw a 4 to 25% increase in assessment scores following an educational intervention (Marino et al., 2015; Powell et al., 2019; Yanamadala et al., 2013). In addition, a study conducted by McCrow et al. (2014) found that the intervention group scored 10% higher on delirium knowledge than the control group immediately following the intervention and 7% higher two months later when compared to the control group. A study conducted by van de Steeg et al. (2015) found that web-based education resulted in final knowledge test scores (mean 87.4, 95% CI 86.7 to 88.2) being substantially higher than baseline scores (mean 79.3, 95% CI 78.5 to 80.1). In another study, an increase in the frequency and accuracy of delirium screening was observed following didactic sessions with videos, interactive discussions, and posters (van Velthuijsen et al., 2018). Gesin et al. (2012) found that educational strategies that combine both in-person instruction and bedside teaching techniques, as well as live and web-based approaches to improve the knowledge and perception of delirium among nurses, could supplement delirium screening efforts. Additionally, Baker et al. (2015) suggested that education should include

assessment and prevention strategies for the treatment of patients with delirium or those at elevated risk for the development of delirium. Findings from these studies illustrate the effectiveness of education on improving nurses' knowledge of delirium.

2.5 Delirium Recognition and Nonpharmacological Management

Studies have evaluated compliance with delirium screening and implementation of delirium bundles/protocols (Blevins & DeGennaro, 2018; Brown et al., 2018; Chuan et al., 2019; Guo & Fan, 2016; Marino et al., 2015; Martinez et al., 2015; Powell et al., 2019; Zhang et al., 2013). Delirium outcomes associated with those studies varied. Guo and Fan (2016) found fewer severe delirious patients in the intervention cohort compared with the usual care group following the implementation of multidisciplinary interventions. A systematic review found that the incidence of delirium was significantly reduced following the implementation of multicomponent interventions (relative risk [RR] 0.73, 95% confidence interval [CI] 0.63–0.85, $P < 0.001$) (Martinez et al., 2015). A study performed by Brown et al (2018) found that following the implementation of a delirium care pathway, length of stay decreased by more than two days among delirious patients. Although results were mostly favorable, low participation was a limitation of some studies (Powell et al., 2019; Marino et al., 2015).

Regarding delirium screening, Guo and Fan (2016) suggested that if not screened, delirium can be missed 60-80% of the time. Though delirium is a common diagnosis after surgery, many bedside nurses do not know how to appropriately assess for it, nor do they understand interventions they could implement to manage it (Di Santo, 2019). When done accurately, delirium screening can be an effective way of minimizing the incidence and duration of delirium episodes, potentially reducing its consequences and costs to the health care system (Hargrave et al., 2017).

2.6 Theoretical Framework

Kurt Lewin's Theory of Planned Change was the theoretical framework selected to support this scholarly project (Lewin, 1947). Lewin's framework was developed from the concept that "behavior is a function of the group environment or field" (Shirey, 2013). There are three stages within this framework (Shirey, 2013). The three stages of the theory are unfreezing, or accepting the need for change; recognizing, or transitioning to the new change; and refreezing, or integrating newly acquired knowledge into practice. To develop and sustain a new culture of change among nurses, an educational approach was utilized to emphasize the role of nurses in the recognition and management of delirium.

The first stage is unfreezing or preparing for change. This consists of demonstrating issues or problems that exist while challenging others to let go of old habits and ways of thinking. In the case of postoperative delirium, nurses are not appropriately screening patients, and, once delirium has been identified, there is a lack of knowledge on how to manage patients. During this stage, it was important to provide nurses with evidence-based literature that highlights the data supporting the need for appropriate screening and prevention. Additionally, a pre-intervention assessment survey that evaluates nursing knowledge provided further insight into the need for change.

The second stage is changing or transitioning into a new way of thinking or performing. It was important during this stage to demonstrate the benefits of change and identify barriers to the change's effectiveness. This was done through role modeling, coaching, and transparency. Structured education on the prevention and management of postoperative delirium was implemented during this stage. A post-intervention assessment survey was also conducted. This

identified an improvement in nursing knowledge and assessed the readiness to move forward with the change. Barriers that were identified during this stage were acknowledged and removed.

Lastly, the third stage is refreezing, which is the integration of the new change. This stage was important because it determined sustainability; therefore, daily auditing and real-time feedback were essential. Supporting nurses during the initial period of refreezing helped nurses to become more receptive to the new way of thinking and prevented them from reverting to old practices. In the healthcare field, change is inevitable; medical professionals can employ these three stages as they adapt to advances in research and practice.

CHAPTER 3: METHODOLOGY

3.1 Project Design

This project used a pre-test and post-test design to evaluate the effect of structured delirium prevention education on medical-surgical nurses to improve the recognition and management of postoperative delirium in adult surgical patients in the acute care setting. The success of this project was measured by an increase in nursing knowledge and increased utilization of delirium prevention interventions. To do that successfully, an implementation plan was developed. A well-designed plan is important for the implementation of complex interventions that impact several components of care (Ross et al., 2018).

3.2 Participants

A convenience sample of full-time and part-time nurses working on the identified medical-surgical units was recruited for participation. Approximately 59 bedside nurses were invited to participate. Participants were screened to ensure they met inclusion criteria, and participation was voluntary. Participants included in the project were required to be a registered nurse (RN) or licensed practical nurse (LPN), work on one of the identified surgical units, and be employed full- or part-time on the selected units. The number of years of nursing experience was not selected as part of the inclusion criteria. Participants were excluded from the project if they were not a RN or LPN, not permanent staff of either selected unit (e.g., travel or float pool nurses) or did not work full-time or part-time (e.g., work on an as-needed basis).

3.3 Population

Patients admitted to the selected units have had either an elective or emergent surgery that includes orthopedic (e.g., joint replacements, fracture repair, or spinal fusions), bariatric or general surgical procedures. The age range of patients typically admitted to these units are from

18 to 90 years of age, with the majority of patients ages 65 years and older being admitted to the orthopedic unit. The average length of stay for patients ranges from 1 to 4 days postoperatively. However, there are patients admitted to these units for observation and discharged the same day. Patients with a history of cognitive dysfunction were not excluded from this project.

3.4 Setting

This DNP scholarly project was conducted on two adult post-surgical units in a 196-bed full-service community hospital located in the southeastern United States (U.S.). One unit has 26-beds, and the other unit has 48. Patients admitted to these units receive preoperative and postoperative care for general, bariatric, and orthopedic surgeries. The hospital facility in which these units are located has achieved dual Gold Certifications from the Joint Commission for its total hip and knee joint replacement services and is considered to perform the largest number of orthopedic surgeries in the state. Additionally, the facility has earned the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program designation by the American College of Surgeons.

3.5 Intervention

A SWOT analysis is a strategic tool used to evaluate the strengths, weaknesses, opportunities, and threats within an organization or project (Gürel, 2017). A SWOT analysis regarding current delirium care practices on the proposed surgical units was conducted and is displayed in Table 2.

Table 2. Project SWOT Analysis

STRENGTHS	**WEAKNESSES**
▪ Selected units utilize the evidence-based assessment tool, the Confusion Assessment Method (CAM). This prevents the need to implement a delirium screening tool to identify patients with or at risk for delirium on these units. ▪ Some of the evidence-based prevention strategies for delirium were already being performed on the units.	▪ Although staff perform some prevention strategies, they were not aware of the importance of the interventions and their effect on delirium. This could lead to increased cases of delirium. ▪ Unit turnover impacts the sustainability of the project. The turnover of nurses has made it difficult to ensure continued education regarding delirium (e.g., orientation to unit and sustainability in everyday practice).
OPPORTUNITIES	**THREATS**
▪ The project could expand to other units or facilities within the organization. ▪ Spreading this work could lead to improvements in nursing knowledge, reduction in delirium cases and cost savings regarding length of stay.	▪ Competing patient safety initiatives during this quality improvement project could make it difficult to meet project goals. ▪ COVID-19 and its impact on staffing and organizational priorities.

In addition to a SWOT analysis, a detailed marketing plan was developed to ensure the success of the project. This project required collaboration with bedside nurses and nurse leaders. A strategic plan that defined goals and strategies was provided to these stakeholders so that they understood project details. Additionally, information regarding this project was provided to senior leadership, departmental leadership, and potential participants. This information included timelines, roles, and expectations of those involved and was disseminated both verbally and via email. Additionally, the identification of unit champions was essential in marketing the project. Recognizing the need to improve delirium care, this quality improvement project highlighted potential impacts on facility goals such as length of stay, falls reduction, and readmissions. Identifying facility goals that this project was likely to impact helped to facilitate buy-in.

Upon identifying units, department leadership was approached and asked for their willingness to participate in this delirium initiative. Once participation was secured, planning for project implementation begun. Developing an implementation plan is essential to ensure goals and targets are identified and that evidence-based strategies are selected, tested, and evaluated appropriately (Ross et al., 2018).

The first step in the implementation plan was to assess the readiness and barriers of the units where the project was being conducted. This informal assessment provided an opportunity to highlight and alleviate any potential barriers that could have affected the success of the project. This was done by obtaining input from the nurse managers of the units as well as the staff. After assessments were completed, the next step was to identify specific areas where improvement in delirium care was needed.

After identifying areas of improvement, an education plan was developed. The education plan outlined the method of education delivery (e.g., web-based learning module) and method for evaluating changes in nursing knowledge. Next, notification of the project and request for participation was delivered via email invitation and verbal announcements during morning staff huddles and unit-based council meetings approximately one month before the start of the intervention (Appendix A). Participant email addresses were sent via blind carbon copy to ensure confidentiality. Unit champions were identified to assist with facilitation and questions regarding the project.

A web-based learning module was provided to each participant and was delivered via email (Appendix B). Links to a pre-assessment survey and a post-assessment survey were provided within the module. This was done to prevent the nurses from having to navigate to different areas to complete the educational intervention. Once the participant started the module,

they were directed to complete a pre-assessment survey. After completing this, they were instructed to return to the educational module as outlined by the instructions contained in the module. After completing the learning, a post-assessment survey was administered to determine if any changes occurred in knowledge. Results of the pre-assessment survey and the post-assessment survey were compared to determine if the learning module was effective at improving nursing knowledge. Additionally, delirium prevention interventions were tracked to identify an increase in the utilization of these interventions.

3.6 Measurement Tool

For this scholarly project, a measurement tool was used to evaluate the effectiveness of delirium education. Many studies have evaluated the effect of structured delirium education on nursing knowledge. However, a careful review of the literature found only one delirium knowledge assessment tool that would be appropriate for this project (Hare, et al., 2008). The measurement tool selected for use was adapted from the Nurses' Delirium Knowledge Assessment (NDKA), a 36-item assessment (Appendix C) developed by a group of academic professionals at Fremantle Hospital in Fremantle WA, Australia (Hare et al., 2008). Written permission to use and modify the tool for this scholarly project was obtained from the authors (Appendix D). The assessment tool evaluates general knowledge of delirium, screening tools used to detect delirium, and delirium risk factors (Blevins & DeGennaro, 2018). The assessment tool was modified to include more accurate demographic details such as education level, clinical ladder level, and years of experience to reflect the scope of this DNP scholarly project (Appendix E). The goal was to modify the tool to reflect demographic information pertinent to the project implementation site. To meet the components of the tool, education developed for this scholarly

project concentrated on general knowledge of delirium, risk factors for delirium, and nonpharmacological interventions that the nurse can implement if risk factors were identified.

One limitation of the measurement tool is that it has not been formally assessed for content validity (Hare et al., 2008). The tool was developed specifically for the authors' study, and testing the validity was beyond the scope of the study at that time. However, face validity was achieved through piloting and input from subject matter experts (Hare et al., 2008). Additionally, two studies have used a modified version of this tool to assess nursing knowledge before and after an educational intervention (Blevins & DeGennaro, 2018; McCrow, 2014). However, in light of a lack of validation testing, the level of statistical analysis was improved by adding values beyond agree, disagree, and unsure. Despite limitations, the NDKA was the best tool for the project because it evaluated general knowledge of delirium, screening tools, and delirium risk factors.

3.7 Data Collection Procedure

Before collecting data, the assessment survey was built within the REDCap database. REDCap is a secure application that is used for building and managing surveys and databases. This database is often used for projects that require the collection of identifiable data. Access to this database is provided through the site of project implementation.

Data collection occurred via an electronic survey. Participants were provided with a link to this survey before and immediately following the educational intervention. For convenience, survey links were embedded in the educational module. Participants were able to access this survey via their home or workstation computer by accessing their email, which contained information regarding the education. Participants were asked to provide the last five digits of their phone number to assist with matching pre-assessment and post-assessment results. No

personal identifiers were collected. As participants submitted their responses, the information automatically imported into the REDCap database, limiting the need for manual data entry. Pre-assessment and post-assessment data were used to identify a change in knowledge following the educational intervention.

Patient-level data were reviewed utilizing a report developed by report-writing software. The information included in the report was retrieved from a data warehouse that is integrated with the implementation site's electronic medical record (EMR). The report only extracted information from the EMR documentation fields selected by the DNP student. This report included patients with positive delirium scores as well as the patient's age, admission date and time, documentation of acute changes such as confusion, agitation, or inappropriate behavior, and nursing interventions that were implemented at the time a positive score was identified. Pre-data and post-data were collected to determine if increased utilization of prevention interventions occurred following education. No patient identifiers were collected during this process.

3.8 Timeline

Before implementation, participants received instructions on how to complete the educational intervention. Information was disseminated via unit-based council meetings and morning staff huddles. This occurred at least a month before the implementation period. The project was implemented at the end of October 2020 and continued until the end of December 2020 to maximize the number of participants and to allow for an 8-week implementation period. Data were collected concurrently during the implementation period through the end of December 2020.

3.9 Data Analysis

Data was analyzed using data extracted from the REDCap database. Pre-assessment and post-assessment mean scores and p values were evaluated. Descriptive statistics were performed on the demographic data obtained from the NDKA assessment tool. Comparative statistics were used to identify whether there were any differences between demographic groups and assessment mean differences. The Wilcoxon signed-rank test was used to establish whether mean test scores improved after the educational intervention. A significance level of a P value less than .05 was considered statistically significant.

3.10 Confidentiality and Ethical Practices

Maintaining the confidentiality of the data is important to ensure there are restrictions in place for viewing, sharing, and using the information. To ensure all of the appropriate safeguards were in place before project implementation, this DNP project was submitted for IRB approval. Approval was granted from the Institutional Review Boards (IRB) at Atrium Health and the University of North Carolina at Charlotte and it was determined that it did not meet the definition of human subject research (Appendix F). Participant recruitment for this project and data collection began after IRB approval was obtained.

Consent was not required. However, at the beginning of the assessment survey, a statement of implied consent was given, informing participants that completing the survey was considered consent for participation in the project (Appendix E). Ethical practices and confidentiality were maintained throughout the project implementation period. All data reports were prepared so that no individual participant could be identified from the information. Additionally, access to the project data was maintained electronically and restricted to the DNP student and statistician. This was accomplished by keeping the data stored in the secure database

REDCap. The DNP student and statistician had access to this data for statistical analysis. A log of all activities was maintained to ensure data integrity. Logs ensured proper record keeping. Following the conclusion of the project, data will be maintained in the REDCap database for approximately two years after the conclusion of the project.

CHAPTER 4: RESULTS

4.1 Characteristics of Sample

An on-demand educational module was offered to medical-surgical nurses for eight weeks from October 2020 through December 2020. A total of 16 nurses participated in this scholarly project by completing the module and a pre-and post-assessment survey. The module was designed to be self-paced and completed independently. As a result, the last five digits of the participants' phone numbers were collected to match pre- and post-assessment survey results. On average, the module took 20 minutes to complete. Demographic information was collected for age, gender, years of nursing experience, years at the organization, years on the current unit, educational preparation, and clinical ladder level. In addition, participants were asked to self-report the amount of delirium recognition and screening education they received before participating in the project.

Analysis of the results showed that all 16 participants were female. The largest age groups were 20 to 30 years old (37.5%, n=6) and 41 to 50 years old (37.5%, n=6). The smallest age group was greater than 61 years old (6.25%, n=1). The number of years of nursing experience varied among participants. The majority (43.75%), had 1 to 5 years, followed by 6 to 10 years (18.75%) and greater than 21 years (18.75%) of experience as the next largest groups. The educational preparation of participants was also examined. Most participants (56.25%) had a Bachelor of Science in Nursing (BSN) while 6.25% had a Diploma in Nursing. There were no participants with a degree higher than a Master of Science in Nursing (MSN). Lastly, participants self-reported the amount of delirium recognition and screening education received. The majority (68.75%) of participants reported a small level of delirium education. See Table 3 for demographic data.

Table 3. Participant Demographics

CHARACTERISTIC	n=16	%
AGE		
20-30	6	37.50%
31-40	1	6.25%
41-50	6	37.50%
51-60	2	12.50%
61+	1	6.25%
GENDER		
Female	16	100.00%
Male	0	0.00%
Non-binary	0	0.00%
Prefer not to say	0	0.00%
CLINICAL LADDER		
Clinician 1	11	68.75%
Clinician 2	4	25.00%
Clinician 3	1	6.25%
Clinician 4	0	0.00%
YEARS OF NURSING EXPERIENCE		
Less than 1 year	1	6.25%
1-5 years	7	43.75%
6-10 years	3	18.75%
11-15 years	1	6.25%
16-20 years	1	6.25%
21+ years	3	18.75%
YEARS AT ATRIUM HEALTH		
Less than 1 year	1	6.25%
1-5 years	8	50.00%
6-10 years	3	18.75%
11-15 years	2	12.50%
16-20 years	0	0.00%
21+ years	2	12.50%
YEARS ON CURRENT UNIT		
Less than 1 year	3	18.75%
1-5 years	6	37.50%
6-10 years	4	25.00%
11-15 years	1	6.25%
16-20 years	0	0.00%
21+ years	2	12.50%

CHARACTERISTIC	n=16	%
EDUCATIONAL PREPARATION		
DIPLOMA	1	6.25%
ADN	5	31.25%
BSN	9	56.25%
MSN	1	6.25%
Doctorate	0	0.00%
AMOUNT OF DELIRIUM RECOGNITION/SCREENING EDUCATION		
None	1	6.25%
Small amount	11	68.75%
Moderate amount	4	25.00%
Large amount	0	0.00%

*ADN= Associate Degree in Nursing; BSN= Bachelor of Science in Nursing; MSN= Master of Science in Nursing

4.2 Nurses' Delirium Knowledge Assessment Results

The NDKA tool was used for the pre-and post-assessment survey. It consisted of 36 items; however, it was separated into three major subscales to include seven items on knowledge of delirium scales and instruments, 14 on general knowledge of delirium, 14 on risk factors for delirium, and one item to assess participants' knowledge regarding the definition of delirium. Assessment results were evaluated to determine an overall mean score of the assessment as well as a mean score for each subscale. The statistical test performed to analyze the data was a paired comparison of frequency test. However, due to the small sample size obtained in the project(n=16), the sample was considered non-parametric (non-normal). As a result, the comparison of frequency test used in this analysis to determine the presence of a statistically significant difference between the paired samples was the Wilcoxon signed-rank test. Although results were not considered statistically significant, the analysis showed an improvement in the overall mean score of questions answered correctly for the pre-assessment from 67.99% to 81.84% for the post-assessment. On average, the subscale mean scores improved, but also lacked

statistical significance and were as follows: knowledge of assessment tools and scales 71.84% pre and 87.5% post, general knowledge of delirium 75.89% pre and 85.71% post, and risk factors for delirium 56.25% pre and 72.32% post. Regarding the definition of delirium, 87.5% of participants answered the question correctly on the pre-assessment and 100% on the post-assessment. See Table 4 for results of the pre- and post-assessment scores and Table 5 for the definition of delirium results.

Table 4. Pre- and Post- Nurses' Delirium Knowledge Assessment Scores

	Pre-assessment mean score	**Post-assessment mean score**	**p value**
Overall	67.99%	81.84%	0.3738
Knowledge of Delirium Scales and Tools	71.84%	87.50%	0.2681
General Delirium Knowledge Questions	75.89%	85.71%	0.4874
Delirium Risk Factor Questions	56.25%	72.32%	0.3505

Table 5 Definition of Delirium Results

	Pre-assessment	**Post-assessment**
Definition of Delirium	87.50%	100.00%

4.3 Knowledge of Delirium Scales and Tools Results

Participants' knowledge was examined on the following common evidence-based assessment scales and tools: Mini-Mental State Examination (MMSE), Glasgow Coma Scale (GCS), Delirium Rating Scale (DRS), Clinical Institute Withdrawal Assessment for Alcohol (CIWA), Confusion Assessment Method (CAM), Beck's Depression Inventory, and Braden Scale. Overall results for the subscale showed that 71.43% of participants correctly identified the appropriate scale/tools on the pre-assessment, which increased to 87.5% on the post-assessment. To further explore nurses' knowledge, a pre-and post-analysis was performed on each separate scale/tool. Pre-assessment survey results showed that approximately 93.75% of participants identified the Braden score as a scale not associated with delirium; however, this decreased to 81.25% on the post-assessment survey. The scale/tool with the lowest number of correct answers

on the pre-assessment was the CAM at 25%; however, this increased to 75% on the post-assessment. See Table 6 for knowledge of delirium scales and tools scores.

Table 6. Knowledge of Delirium Scales and Tools Scores

Tool/ Scale	**Pre-Intervention %**	**Post-Intervention %**	**p value**
Mini Mental State Examination (MMSE)	56.25%	87.50%	0.0530
Glasgow Coma Scale (GCS)	56.25%	68.75%	0.4723
Delirium Rating Scale (DRS)	93.75%	100.00%	0.3173
Alcohol Withdrawal Scale (CIWA)	81.25%	100.00%	0.0733
Confusion Assessment Method (CAM)	25.00%	75.00%	0.0054
Beck's Depression Inventory	93.75%	100.00%	0.3173
Braden Scale	93.75%	81.25%	0.2927
Overall:	71.43%	87.50%	0.2681

4.4 Pre and Post Assessment Scores by Demographics

The relationship between demographic variables, overall nurses' delirium knowledge, knowledge of delirium scales and tools, general delirium knowledge, and delirium risk factors were examined. On average, mean scores increased post-assessment for years of nursing experience, years on the current unit, and educational preparation. There was a decrease in mean scores for participants with an MSN from 90.5% pre to 85.3% post. Participants with 1 to 5 years of nursing experience saw an increase in mean scores on the following: overall assessment from 68% pre to 86.8% post, knowledge of delirium scales/tools from 75.5% pre to 93.9% post, general delirium knowledge from 76.5% pre to 90.8% post, and delirium risk factors from 52% pre to 75.6% post. Although an improvement in mean scores was observed for the majority (i.e., the scores of many of the nurses increased on average following the intervention), the small sample size limited the ability to detect a statistically significant difference in the pre-and post-assessment. See Table 7 for comparison of participant demographic to pre- and post-assessment mean scores.

Table 7. Comparison of Demographics to Pre- and Post-Assessment Mean Scores

	Overall			Knowledge of Delirium Scales/Tools			General Delirium Knowledge			Delirium Risk Factors		
	Mean Pre %	Mean Post %	p value	Mean Pre %	Mean Post %	p value	Mean Pre %	Mean Post %	p value	Mean Pre %	Mean Post %	p value
Years of Nurse Exp												
> 1	54.7	66.7	0.902	57.1	85.7	0.752	57.1	64.3	0.941	50.0	50.0	1.000
1-5	68.0	86.8	0.412	75.5	93.9	0.357	76.5	90.8	0.486	52.0	75.6	0.376
6-10	69.1	84.9	0.675	66.7	95.2	0.417	73.8	85.7	0.741	66.7	73.8	0.863
11-15	69.0	71.4	0.979	57.1	57.1	1.000	85.7	85.7	1.000	64.3	71.4	0.939
16-20	61.9	71.4	0.920	57.1	57.1	1.000	71.4	85.7	0.862	57.1	71.4	0.881
21+	72.3	79.4	0.853	81.0	85.7	0.888	81.0	81.0	1.000	54.8	71.4	0.701
Years on Current Unit												
> 1	61.8	80.9	0.637	61.9	90.5	0.453	71.4	85.7	0.700	52.3	66.7	0.743
1-5	71.4	86.9	0.527	81.0	92.9	0.558	78.6	90.5	0.585	54.8	77.3	0.431
6-10	67.2	79.1	0.722	60.7	82.1	0.531	75.0	83.9	0.801	66.1	71.4	0.880
11-15	69.0	71.4	0.979	57.1	57.1	1.000	85.7	85.7	1.000	64.3	71.4	0.939
16-20	--	--		--	--		--	--		--	--	--
21+	66.6	76.2	0.854	85.7	85.7	1.000	71.4	75.0	0.945	42.9	67.9	0.663
Educational Prep												
Diploma	83.3	90.5	0.915	71.4	85.7	0.862	100	92.9	0.845	78.6	92.9	0.840
ADN	63.3	82.8	0.510	77.1	91.4	0.556	70.0	78.6	0.768	42.9	78.6	0.273
BSN	66.1	87.8	0.288	65.1	87.3	0.283	74.6	88.1	0.475	58.7	88.1	0.170
MSN	90.5	85.3	0.937	100	71.4	0.683	92.9	92.9	1.000	78.6	92.9	0.838
Doctorate	--	--		--	--		--	--		--	--	--

4.5 Implementation of Non-Pharmacological Interventions Results

The frequency of non-pharmacological interventions implemented by nurses on delirium-positive patients was examined. The goal was to identify an increase in the number of interventions implemented following the completion of the educational module. Improvements may suggest an increased awareness of interventions that can be implemented on patients with delirium. Data was collected from unrelated groups three months before the education was provided and during the implementation period. Due to the skewed distribution of the results, the median was the preferred measure of central tendency because it was more resistant to outliers found in the dataset. Analysis of the data found the median of interventions that were implemented pre-intervention was 4 and post-intervention was 4. This was considered not

statistically significant and indicated that there was no difference in the number of interventions implemented following the education. See Table 8 for implementation of non-pharmacological interventions pre- and post-assessment median scores.

Table 8. Implementation of Interventions Pre- and Post-Assessment

	n=	Median	Min	Max	p value
Pre-assessment non-pharmacological interventions	26	4	1	10	0.2165
Post-assessment non-pharmacological interventions	27	4	1	9	

CHAPTER 5: DISCUSSION

5.1 Significance

The aim of this quality improvement project was to improve nurses' knowledge, recognition, and management of postoperative delirium. Existing literature suggests that multimodal education is an effective strategy for improving nursing knowledge (Gesin et al., 2012; Marino et al., 2015; McCrow et al., 2014; Powell et al., 2019; van de Steeg et al., 2015; Yanamadala et al., 2013). While delirium is a common complication in hospitalized patients, nurses lack the knowledge to care for this population (Powell et al., 2019). In addition, nurses at the project facility report receiving a limited amount of delirium education. As a result, the education developed for this project focused on the areas of general delirium knowledge, risk factors for delirium, and non-pharmacological interventions for delirium management. Pre- and post-assessment surveys were used to determine the effectiveness of the education. The NDKA was the tool utilized to obtain this information.

Findings from the pre-assessment survey revealed that nurses were not familiar with delirium risk factors nor were they aware of the appropriate assessment tools to identify delirium in hospitalized patients. Results also indicated a significant lack of knowledge of the CAM as a tool to recognize delirium, as demonstrated by a mean score of 25% on the pre-assessment survey. An increase of 50% was observed following the intervention resulting in a mean score of 75% on the post-assessment survey. These results identify an area of opportunity, as the CAM is the standard evidenced-based assessment tool utilized within the project facility; therefore, the findings of this project suggest that there is a need for additional education on delirium assessment tools.

Further evaluation of the findings showed improvements in overall delirium knowledge as demonstrated by an increase in post-assessment survey mean scores. When evaluating results of overall delirium knowledge, the pre-assessment mean score increased from 67.99% to 81.84% on the post-assessment survey. Mean scores also increased on the knowledge of delirium scales and tools, general delirium knowledge, and delirium risk factors subscales. Although there was an overall improvement in mean scores, these were not considered statistically significant due to the small sample size. However, the findings of this project align with prior studies that have evaluated the effects of structured delirium education on nurses.

5.2 Implications on Cost of Care

Delirium is a common complication that remains unrecognized in hospitalized patients (Di Santo, 2019). Negative outcomes such as increased costs of care and lasting cognitive impairment emphasize the need for delirium education within hospitals. Although this complication can result in higher health care expenses, nurses and other members of the interdisciplinary team continue to struggle with diagnosis and management (Di Santo, 2019). Despite interventions that have been proven to be successful in preventing and treating delirium, there is a lack of comprehensive economic incentives to avoid it (Leslie & Inouye, 2011). Programs such as the Hospital Elder Life Program (HELP), a multicomponent strategy to prevent functional and cognitive decline in hospitalized older persons, have demonstrated their ability to save an average of $1,661 to $3,779 per person per hospitalization (Hshieh et al., 2018). Additional studies found that utilization of HELP interventions could prevent delirium, decrease length of stay, and save $67,876 per year (Hshieh et al., 2018). As previously mentioned, the estimated burden of delirium to the U.S. health care system is $164 billion; however, this is high relative to the expense of other conditions, such as $7 billion in hip fractures, $19 billion in falls,

$91.8 billion in diabetes, and $257.6 billion in cardiovascular disease (Inouye et al., 2014; Leslie & Inouye, 2011). This finding illustrates the need for a more structured, cost-effective approach to managing complications, such as delirium, in the acute care setting. As evidenced by the outcomes of this project, structured education can be an effective method for improving delirium recognition and management.

5.3 Implication on Nursing Practice

The education for this scholarly project was delivered via an online self-paced electronic module. This was a valuable strategy since it did not require additional resources or time from staffing. Participants were required to complete the module once they started; therefore, they were not able to save their progress. Currently, delirium education is not required in orientation at the project facility nor is education provided on an annual basis; however, a delirium assessment is required on each patient age 18 years and older. The findings of this project emphasize the need to validate the knowledge and skill of nurses in performing delirium assessments and their ability to recognize delirium in patients. Including delirium education in orientation and as annual learning could improve the knowledge and skills of nurses in recognizing and managing delirium, especially in the postoperative setting. Further implications suggest that the content of the educational intervention could be customized to any setting and include specific instruction on delirium, risk factors, and the implementation of interventions.

5.4 Limitations

There were several limitations noted with this project. One limitation was that the knowledge assessment tool utilized to collect pre- and post-assessment data had not been formally assessed for content validity (Hare et al., 2008). At the time of project implementation, there was not a previously validated, reliable tool to assess delirium knowledge, therefore, the

NDKA was the best option. Although it has been utilized in similar studies, the tool is currently in the process of being validated since its development in 2008 (D. Wynaden, personal communication, April 15, 2020).

Another limitation of this project was a small sample size (n=16). As a result of this being a quality improvement project, a power analysis was not performed to determine an acceptable sample size. However, all participants from the project site were offered participation. A convenience sample was used and the number of nurses (n=16) who voluntarily participated in the project represented approximately 27% of the total available staff (n=59) on the implementation units. There may have been several factors that contributed to this. One key factor was the COVID-19 pandemic, which had a significant effect on the project facility. During implementation, COVID-19, a respiratory syndrome caused by the SARS-CoV-2 virus, led to devastating effects globally (Gostin, 2020). Priorities at the project facility shifted, focusing resources on planning for the anticipated surge in COVID-19 cases. This ultimately impacted the availability of staff, as the emphasis was placed on staff training and strategic planning. In addition, there was an increase in staff turnover, sick calls, and patient acuity. Resource nurses from the hospital float pool were utilized to meet the staffing needs on the implementation units. Resource nurses were part of the exclusion criteria for this project and therefore, were not expected to participate. In addition to challenges with staffing, one of the units experienced a change in leadership which further impacted the implementation of this project. As a result of these challenges, the project did not reach many participants. To increase the sample size, the implementation period was extended to maximize participation. However, this was not very effective, and no further nurses participated.

5.5 Recommendations for Future Projects and Studies

Although the mean scores observed from this project increased on average, a small sample size made it challenging to detect statistically significant differences in the majority of the pre-and post-assessment surveys. However, these results show promise that if the project were expanded to more participants, results may demonstrate significance. Administering the post-assessment surveys beyond the implementation period may also benefit this project. This could identify whether knowledge has been retained at a specified timeframe following completion of the education. Findings may then demonstrate whether providing continuing delirium education is an appropriate strategy to ensure nursing competence of this complication.

The educational module provided to the participants in this project can be adapted to meet the needs of the different hospital units. Providing education in an electronic format enables hospital-wide implementation as a practical approach. However, ongoing education may need to be provided to ensure competence. As a result, further research with an extended post-assessment period and a larger sample size is needed to determine if the findings are only temporary or whether the participants have retained any knowledge. Although this project focused on the knowledge of nurses, delirium recognition and management are an interdisciplinary goal; therefore, education should focus on disciplines beyond nursing to include physicians, advanced practice providers, and ancillary team members.

5.6 Conclusion

The need to reduce the incidence of delirium in the acute care setting is evident. Overall, the educational intervention provided in this project demonstrated an increase in nurses' knowledge. This has validated findings in the literature regarding an educational intervention as an effective method to improve nurses' knowledge regarding delirium. Education is necessary to

improve nursing knowledge of delirium and ultimately improve patient outcomes. Although this education was delivered in a convenient electronic format, further research is needed to determine the most effective strategies to improve nursing knowledge of delirium, risk factors, and tools and scales to assess for delirium. Despite challenges experienced during the implementation of this project, the outcomes of this project may indicate sustainability in current and future practice.

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APPENDIX A: INVITATION TO PARTICIPATE

Latasia Belin <lbelin1@uncc.edu>

[EXTERNAL] Fwd: Delirium Study

1 message

Belin, Latasia N <Latasia.Belin@atriumhealth.org> Sat, Mar 6, 2021 at 6:34 PM
To: Latasia Belin <lbelin1@uncc.edu>

[**Caution**: Email from External Sender. Do not click or open links or attachments unless you know this sender.]

Get Outlook for iOS

From: Belin, Latasia N <Latasia.Belin@atriumhealth.org>
Sent: Thursday, October 29, 2020 5:21:31 PM
To: Belin, Latasia N <Latasia.Belin@atriumhealth.org>
Subject: Delirium Study

Greetings RNs and LPNs!

You have been invited to participate in a pilot study on delirium because you care for patients who are at risk for developing delirium after surgery. The purpose of this study is to improve knowledge in caring for these patients. Participation is voluntary.

Attached to this email you will find a presentation (works best on a computer). Inside the presentation, you will find a link to a pre-assessment survey to obtain your baseline knowledge of delirium. This survey can take a minimum of 4 minutes and up to a maximum of 10 minutes. After completing the pre-assessment survey, you will continue to view the educational module. At the end, you will take a post-assessment survey. If you participate in this study, your total time commitment may be between 15 – 30 minutes. **You will receive a small gift for participating.**

Results from the pre and post assessment surveys will be **anonymous**; however, you will be asked to email me when you complete it in order to receive your gift. I will not have any knowledge of your individual results.

Should you have any issues with the module or the survey, please email or call me.

Thank you for your time and I look forward to your participation.

Latasia

Latasia Belin, MSN, RN, AGCNS-BC, ONC

Clinical Nurse Specialist

Orthopedic/Specialty Surgery

Carolinas Medical Center Mercy

Office: 704-304-5595

Atrium Health

APPENDIX B: EDUCATION MODULE

RECOGNITION AND MANAGEMENT OF DELIRIUM

RECOGNITION AND MANAGEMENT OF DELIRIUM

Learner Outcomes

By the end of this course, you should be able to:

- Identify signs and symptoms of delirium
- Describe the impact of delirium
- Recognize underlying and precipitating risk factors of delirium
- Identify appropriate interventions to prevent or manage delirium
- Describe the nurse's role in preventing, identifying, and managing delirium

Please **click on the link below** to complete a pre-survey. Do this before continuing with the education. Allow for 10 minutes to complete the survey. You will be asked to complete another survey at the end of the presentation.

Pre-survey link

https://rces.atriumhealth.org/redcap/surveys/?s=Y7MTEWKJRX

Click here after completing the survey

WHAT IS DELIRIUM?

- An **acute change in mental status** characterized by inattention, disorganized thinking, and fluctuations in cognition
- A common cognitive complication in medically ill and surgical patients
- Occurs in 15-25% of major elective surgeries and up to 50% of patients who have had high-risk procedures such as cardiac surgery or hip fracture repair

(Chaiwat et al., 2019; Choi et al., 2019)

SUBTYPES OF DELIRIUM

Less likely to be diagnosed

Hyperactive	Hypoactive	Mixed
Patient may appear:	Patient may appear:	Patient may have:
Restless	Lethargic	Fluctuations of both hyperactive and hypoactive delirium
Agitated	Withdrawn	
Confused	Confused	
Combative	Calm	

(van Velthuijsen et al., 2018)

IMPACT OF DELIRIUM

- Delayed recognition and treatment results in:
  - Longer length of stay
  - Increased adverse events like falls
  - Increased morbidity and mortality
  - Increased healthcare costs
- Patients who experience delirium may suffer from high levels of distress for up to 12 months

(Korevaar et al., 2005; Partridge et al. 2019)

HOW IS DELIRIUM DIFFERENT FROM DEMENTIA AND DEPRESSION?

	Delirium	Dementia	Depression
Onset	Acute	Gradual	Acute or gradual
Duration	Hours to days, may last months	Months to years	Months to years
Course	Fluctuating, may be worse at night	Steady decline over time	Short or long term
Attention	Inattention, easily distracted	No change	May be decreased
Psychomotor Behavior	Hypoactive, hyperactive, or mixed	No change	May be slowed
Common Assessment Tools	▪ Delirium Rating Scale (DRS) ▪ Alcohol Withdrawal Scale (AWS) ▪ Confusion Assessment Method (CAM)	Mini Mental State Examination (MMSE)	Beck's Depression Inventory

(Dillon et al., 2014; Hargrave et al., 2017; Harris, 2017)

UNDERLYING RISK FACTORS FOR DELIRIUM

Age 70 and older

Gender- males are more at risk

Pre-existing cognitive impairment (i.e. dementia)

Underlying risk factors are those that cannot be changed

(Chung et al., 2015; Wang et al., 2016; Wang et al., 2018

PRECIPITATING RISK FACTORS FOR DELIRIUM

Anesthesia

Dehydration

Infection

Uncontrolled Pain

Poor Sleep

Medications (i.e. benzodiazepines, narcotics, and anticholinergics)

Immobility

Surgery

Sensory Impairment (i.e. hearing and vision)

Tubes and Catheters

Precipitating risk factors are those that contribute to delirium and can be changed

(Di Santo, 2019; Rengel et al., 2018)

INTERVENTIONS FOR DELIRIUM PREVENTION AND MANAGEMENT

- Notify provider
- Review medications
- Promote nutrition and hydration
- Manage pain
- Facilitate sleep and rest
- Maximize mobility
- Utilize visual and hearing aids
- Remove urinary catheters and other tethers

(Di Santo, 2019; Harris, 2017; van Velthuijsen et al., 2018)

OVERVIEW OF THE CONFUSION ASSESSMENT METHOD (CAM)

1a. **Acute onset:** Is there evidence of an acute change in mental status from the patient's baseline?
OR
1b. **Fluctuating course:** Did the (abnormal) behavior fluctuate during the day, that is tend to come and go or increase and decrease in severity?

AND

2. **Inattention:** Did the patient have difficulty focusing attention, for example being easily distractible, or having difficulty keeping track of what was being said?

AND

3. **Disorganised thinking:** Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?

OR

4. **Altered level of consciousness:** Overall, how would you rate this patient's level of consciousness? Any answer other than 'alert' indicates an abnormal level of consciousness.

- Evidence-based tool used to assess delirium
- Nurse should assess patients for each of the four criteria
- A CAM score is considered positive if the patient presents with 1 **plus** 2 and **either** 3 or 4

Figure 1. CAM. Adapted from "Sedation in the Critically Ill Patients. Retrieved from https://www.researchgate.net/figure/Diagnosis-of-delirium-by-CAM-ICU-CAM-ICU-confusion-assessment-method-for-the-intensive_fig2_276338681

WHAT CAN YOU DO TO MANAGE DELIRIUM?

- Prevention is key!
- Assess patients each shift using the Confusion Assessment Method (CAM)
- Notify the provider of any positive CAM scores
- Minimize risk factors
- Educate your patient and family about delirium

SUMMARY

- Delirium is an **acute change** in mental status characterized by inattention, disorganized thinking, and fluctuations in cognition
- Patients may have hypoactive, hyperactive, or mixed delirium
- There are underlying (what we **cannot** change) and precipitating (what we **can** change) factors that could cause delirium
- One way to identify delirium is to complete a Confusion Assessment Method (CAM) on patients each shift
- Prevention of delirium is key

Thank you for your participation. Please **click on the link below** to complete a post-survey. Allow for 10 minutes to complete the survey.

Post-survey link
https://rces.atriumhealth.org/redcap/surveys/?s=TP9PARW7FE

Click here after completing the survey

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THANK YOU!

APPENDIX C: ORIGINAL NURSES' DELIRIUM KNOWLEDGE ASSESSMENT

Fremantle Hospital & Health Service
Nursing Research & Evaluation

Nurses' Knowledge of Delirium

The purpose of this questionnaire is to assess nurses' knowledge regarding delirium. Your answers will remain confidential. **Please complete the questionnaire on your own.**

Please place completed questionnaires in an internal mail envelope addressed to Sunita McGowan, Director Nursing Research and Evaluation.

Instructions: ❖ Please answer all questions. Please respond by filling in the circle using a black pen (eg ● ○)

SECTION 1: Demographic Data

Q 1.1 Your Age (Years) — 1.1 Answer
(A) 20-30; (B) 31-40; (C) 41-50: (D) 51+

Q 1.2 Gender — 1.2 Answer
(M = Male, F = Female)

Q1.3 Designation: — 1.3 Answer
(A) = SRN; (B) = CN; (C) = SDN; (D) = RN; (E) = EN

Q1.4 Length of time in current position: — 1.4 Answer
(A) = less than 6 months; (B) = 6 to 12 months; (C) = more than 12 months

Q 1.5 Working hours per fortnight: — 1.5 Answer
(A) = less than 40; (B) = 40 to 64; (C) = more than 64

Q1.6 Number of years in nursing — 1.6 Answer
(A) = 5 or less; (B) = 6 to 12; (C) = 13 to 20; (D) = more than 20

Q1.7 Qualifications (choose all that apply) — 1.7 Answers

TAFE/Hospital Based (EN)	O
Hospital Based (RN, General)	O
Hospital Based (RN, Mental Health)	O
Bachelor's Degree (General)	O
Bachelor's Degree (Comprehensive)	O
Post graduate Certificate/Diploma (Mental Health)	O
Post graduate Certificate/ Diploma (Other)	O
Masters Degree / Doctorate	O

Q1.8 Your MAIN ward/area (choose only one)

O B7N	O B7S	O B8N	O B8S	O B91	O B9N	O B9S
O CCT	O CCU	O D4	O DOSA	O ED	O ESSU	O F6
O ICU	O NSU	O OPD	O SDU	O Gage	O V5	O SCU
O V6	O W41	O W42	O W43	O W51	O Amity	O Endeavour
					O Other	

If Other, please state _____

SECTION 2: Knowledge of Delirium

Definition of delirium

2.1 Which of the following groups of symptoms best describe or define delirium? (choose the **best** answer):

a) O Amnesic, drowsy, sudden onset of incontinence, uncontrolled salivation, disorganised thinking

b) O Acute confusion, fluctuating mental state, disorganised thinking, altered level of consciousness.

c) O Anxiety, diaphoresis, trembling, muscle weakness, dysphasia, altered arousal level.

d) O Slow onset of confusion, memory loss, disorientation, lack of spontaneity, change in personality.

Identifying Delirium

The following rating scales/tools are commonly used to detect certain conditions. Match the tool to the most appropriate condition(s). Note that "None of these" may be the best answer. **You may choose more than one condition for each tool.**

		Delirium	Dementia	Depression	None of these
2.2	Mini Mental State Examination (MMSE)	O	O	O	O
2.3	Glasgow Coma Scale (GCS)	O	O	O	O
2.4	Delirium Rating Scale (DRS)	O	O	O	O
2.5	Alcohol Withdrawal Scale (AWS)	O	O	O	O
2.6	Confusion Assessment Method (CAM)	O	O	O	O
2.7	Beck's Depression Inventory	O	O	O	O
2.8	Braden Scale	O	O	O	O

Please answer Agree, Disagree or Unsure for the following statements:

2.9	Fluctuation between orientation and disorientation is not typical of delirium.	Agree	O	Disagree	O	Unsure	O
2.10	Symptoms of depression may mimic delirium.	Agree	O	Disagree	O	Unsure	O
2.11	Treatment for delirium always includes sedation.	Agree	O	Disagree	O	Unsure	O
2.12	Patients never remember episodes of delirium.	Agree	O	Disagree	O	Unsure	O
2.13	A Mini Mental Status Examination (MMSE) is the best way to diagnose delirium.	Agree	O	Disagree	O	Unsure	O
2.14	A patient having a repair of a fractured neck of femur has the same risk for delirium as a patient having an elective hip replacement.	Agree	O	Disagree	O	Unsure	O

2.15	Delirium never lasts for more than a few hours.	Agree	O	Disagree	O	Unsure	O
2.16	The risk for delirium increases with age.	Agree	O	Disagree	O	Unsure	O
2.17	A patient with impaired vision is at increased risk of delirium.	Agree	O	Disagree	O	Unsure	O
2.18	The greater the number of medications a patient is taking, the greater their risk of delirium.	Agree	O	Disagree	O	Unsure	O
2.19	A urinary catheter in situ reduces the risk of delirium.	Agree	O	Disagree	O	Unsure	O
2.20	Gender has no effect on the development of delirium	Agree	O	Disagree	O	Unsure	O
2.21	Poor nutrition increases the risk of delirium.	Agree	O	Disagree	O	Unsure	O
2.22	Dementia is the greatest risk factor for delirium.	Agree	O	Disagree	O	Unsure	O
2.23	Males are more at risk for delirium than females.	Agree	O	Disagree	O	Unsure	O
2.24	Diabetes is a high risk factor for delirium.	Agree	O	Disagree	O	Unsure	O
2.25	Dehydration can be a risk factor for delirium.	Agree	O	Disagree	O	Unsure	O
2.26	Hearing impairment increases the risk of delirium.	Agree	O	Disagree	O	Unsure	O
2.27	Obesity is a risk factor for delirium.	Agree	O	Disagree	O	Unsure	O
2.28	A patient who is lethargic and difficult to rouse does not have a delirium.	Agree	O	Disagree	O	Unsure	O
2.29	Patients with delirium are always physically and/or verbally aggressive.	Agree	O	Disagree	O	Unsure	O
2.30	Delirium is generally caused by alcohol withdrawal.	Agree	O	Disagree	O	Unsure	O
2.31	Patients with delirium have a higher mortality rate.	Agree	O	Disagree	O	Unsure	O
2.32	A family history of dementia predisposes a patient to delirium.	Agree	O	Disagree	O	Unsure	O
2.33	Behavioural changes in the course of the day are typical of delirium.	Agree	O	Disagree	O	Unsure	O
2.34	A patient with delirium is likely to be easily distracted and/or have difficulty following a conversation.	Agree	O	Disagree	O	Unsure	O
2.35	Patients with delirium will often experience perceptual disturbances.	Agree	O	Disagree	O	Unsure	O
2.36	Altered sleep/wake cycle may be a symptom of delirium.	Agree	O	Disagree	O	Unsure	O

Thank you for your participation in this questionnaire. Please return the completed form ***via internal mail to Director Nursing Research and Evaluation*** *OR in the envelope provided on your ward/unit by* ***Monday, 12th June 2006.***

APPENDIX D: PERMISSION TO USE SURVEY

Latasia Belin <lbelin1@uncc.edu>

FW: Permission to Use Survey

Dianne Wynaden <D.Wynaden@curtin.edu.au> Wed, Apr 15, 2020 at 11:23 PM
To: "lbelin1@uncc.edu" <lbelin1@uncc.edu>

Hi Latasia,

Thanks for your enquiry. This is what Malcolm usually sends to people asking to use the questionnaire. I do not have any further info but you have our permission to use any of the attached in your study.

I'm very happy for you to use the questionnaire. Please acknowledge the authors in any publications. At the end of your study, I would also like to be advised of how you used the questionnaire and your results please.

I've attached two versions of the questionnaire –one has the correct answers highlighted. The documents are in Word 2003 format. The questionnaire was set up to be optically scanned using Remark Office™ but you may reformat to whatever suits your needs. On the first page, the fields for filling in require a font (OMR Bubbles) which I've also attached –the fields will appear as odd graphics without the font installed. You could just place capital O's there in Arial font.

You will need to adjust the demographics page anyway, but I'm happy for you to modify it however you need.

When the completed questionnaires were scanned into Remark Office (and then exported to SPSS), the answers were coded as "correct" or "incorrect" or "unsure" for questions 2.9 on. I didn't use an overall score for the whole questionnaire, but dealt with question 2.1 (definition of delirium), questions 2.2 through 2.8 (tools for identifying delirium) and questions 2.9 on (delirium presentation and risk factors) as separate sections –you may find that another method works better for you. Question 2.8 may need adapting depending on what Pressure Injury Risk Assessment tool(s) is/are used locally –eg replace Braden with Norton.

In that last group of questions (2.9 on) are a mixture of general statements and risk factor statements, and those I added and scored separately. In the Answers version of the document, the general questions are highlighted in yellow, and the risk factor questions are un-highlighted (there are 14 of each).

Since publication of the article in Contemporary nurse, most of the users of the questionnaire have been postgraduate nursing and medical students. In some cases they have not yet provided results, and in some instances their reporting has been through their academic work and poster presentations at conferences (and hence unpublished).

The questionnaire is in use in various countries around the world (16 at last count including 16 places in the US, and translated into 9 languages other than English) and I have invited some of the users to consider a validation study, but have not heard yet of any progress in that direction. A National Health Service Trust in the United Kingdom has received permission to use the questionnaire in a system-wide education program, and have told me that they will be doing a validation study. They have agreed to provide me with the results, but their work is part of a 5 year program and I don't expect results until probably next year. I expect them to publish some time after that. There has been no further work on the questionnaire, but I have been advised by a researcher in Western Australia "used the Kuder-Richardson Formula (KR-20) to determine internal consistency reliability co-efficients for the two main sub-sections (3a and 3b) of the knowledge questionnaire at Time 1 (T1). After combining incorrect and unsure responses so that the two options were correct versus incorrect, the Kuder-Richardson internal consistency reliability coefficient for Section 3a of the questionnaire was 0.66 (n=26) and for Section 3b it was 0.80 (n=25)" (Prof Christine Toye, personal communication, 2014).

If you have any further questions or need for clarification please feel free to email me again. Best wishes for your study.

APPENDIX E: MODIFIED NURSES' DELIRIUM KNOWLEDGE ASSESSMENT

Confidential

Nursing Delirium Knowledge Assessment

Please complete the survey below. By completing this survey, you are consenting to participate in this study.

Thank you!

1)	Please enter ONLY the last 5 digits of your cell phone number. **Providing this will help match your responses to the post-survey assessment.	_____
2)	Your Age (Years):	◯ 20-30 ◯ 31-40 ◯ 41-50 ◯ 51-60 ◯ 61+
3)	Gender	◯ Female ◯ Male ◯ Non-Binary ◯ Prefer not to say
4)	Clinical Ladder Level	◯ Clinician 1 ◯ Clinician 2 ◯ Clinician 3 ◯ Clinician 4
5)	Years of Nursing Experience	◯ Less than 1 year ◯ 1-5 years ◯ 6-10 years ◯ 11-15 years ◯ 16-20 years ◯ 21+
6)	Years at Atrium Health	◯ Less than 1 year ◯ 1-5 years ◯ 6-10 years ◯ 11-15 years ◯ 16-20 years ◯ 21+
7)	Years on Current Unit	◯ Less than 1 year ◯ 1-5 years ◯ 6-10 years ◯ 11-15 years ◯ 16-20 years ◯ 21+
8)	Educational Preparation	◯ Diploma ◯ ADN ◯ BSN ◯ MSN ◯ Doctorate
9)	Amount of Delirium Reconition/Screening Education	◯ None ◯ Small Amount ◯ Moderate Amount ◯ Large Amount

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10) Which of the following groups of symptoms best describe or define delirium?

- ◯ Amnesic, drowsy, sudden onset of incontinence, uncontrolled salivation, disorganized thinking
- ◯ Acute confusion, fluctuating mental state, disorganized thinking, altered level of consciousness.
- ◯ Anxiety, diaphoresis, trembling, muscle weakness, dysphasia, altered arousal level.
- ◯ Slow onset of confusion, memory loss, disorientation, lack of spontaneity, and change in personality.

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The following rating scales/tools are commonly used to detect certain conditions. Match the tool to the most appropriate condition(s). Note that "None of these" may be the best answer. You may choose more than one condition for each tool.

		Delirium	Dementia	Depression	None of these
11)	Mini Mental State Examination (MMSE)	☐	☐	☐	☐
12)	Glascow Coma Scale (GCS)	☐	☐	☐	☐
13)	Delirium Rating Scale	☐	☐	☐	☐
14)	Alcohol Withdrawal Scale (CIWA)	☐	☐	☐	☐
15)	Confusion Assessment Method (CAM)	☐	☐	☐	☐
16)	Beck's Depression Inventory	☐	☐	☐	☐
17)	Braden Scale	☐	☐	☐	☐

Please fill in the circle to indicate the correct answer for each of the following questions

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Unsure
18)	Fluctuation between orientation and disorientation is not typical of delirium.	○	○	○	○	○	○
19)	Symptoms of depression may mimic delirium	○	○	○	○	○	○
20)	Treatment for delirium always includes sedation	○	○	○	○	○	○
21)	Patients never remember episodes of delirium.	○	○	○	○	○	○
22)	A Mini Mental Status Examination (MMSE) is the best way to diagnose delirium.	○	○	○	○	○	○
23)	A patient having a repair of a femoral neck fracture has the same risk for delirium as a patient having an elective hip replacement.	○	○	○	○	○	○
24)	Delirium never lasts for more than a few hours	○	○	○	○	○	○
25)	The risk for delirium increases with age.	○	○	○	○	○	○
26)	A patient with impaired vision is at increased risk of delirium	○	○	○	○	○	○
27)	The greater the number of medications a patient is taking, the greater their risk of delirium.	○	○	○	○	○	○
28)	A urinary catheter in place reduces the risk of delirium.	○	○	○	○	○	○
29)	Gender has no effect on the development of delirium	○	○	○	○	○	○
30)	Poor nutrition increases the risk of delirium.	○	○	○	○	○	○
31)	Dementia is the greatest risk factor for delirium.	○	○	○	○	○	○
32)	Males are more at risk for delirium than females.	○	○	○	○	○	○
33)	Diabetes is a high risk factor for delirium.	○	○	○	○	○	○
34)	Dehydration can be a risk factor for delirium.	○	○	○	○	○	○
35)							

	Hearing impairment increases the risk of delirium.	○	○	○	○	○	○
36)	Obesity is a risk factor for delirium.	○	○	○	○	○	○
37)	A patient who is lethargic and difficult to arouse does not have a delirium.	○	○	○	○	○	○
38)	Patients with delirium are always physically and/or verbally aggressive.	○	○	○	○	○	○
39)	Delirium is generally caused by alcohol withdrawal.	○	○	○	○	○	○
40)	Patients with delirium have a higher mortality rate.	○	○	○	○	○	○
41)	A family history of dementia predisposes a patient to delirium.	○	○	○	○	○	○
42)	Behavioral changes in the course of the day are typical of delirium.	○	○	○	○	○	○
43)	A patient with delirium is likely to be easily distracted and/or have difficulty following a conversation.	○	○	○	○	○	○
44)	Patients with delirium will often experience perceptual disturbances.	○	○	○	○	○	○
45)	Altered sleep/wake cycle may be a symptom of delirium.	○	○	○	○	○	○

APPENDIX F: IRB APPROVALS

OFFICE OF RESEARCH COMPLIANCE
9201 University City Boulevard
319 Cameron Hall
Charlotte NC 28223-0001
(704)-687-1871
Web site: http://research.uncc.edu/
Federalwide Assurance (FWA) #00000649

To: Latasia Belin

From: Office of Research Compliance

Date: 5/21/2020
RE: Determination that Research or Research-Like Activity does not require IRB Approval
Study #: 19-0786

Study Title: Improving Nursing Recognition and Management of Postoperative Delirium in the Acute Care Setting

This submission was reviewed by the Office of Research Compliance, 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:

Postoperative delirium can be an adverse outcome following surgery. The need for early recognition and management is essential in preventing long-term effects. Marino, Bucher, Beach, Yegneswaran, and Cooper (2015) found that structured educational programs designed to improve nursing knowledge on the recognition and management of delirium are an effective method used to improve care. Understanding the prevalence and importance of delirium recognition and management, the goal of this project is to evaluate whether a structured delirium education program improves nursing knowledge on the care and management of patients with postoperative delirium.

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.

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QI vs Research Form

* All fields on this form are required to be completed before submitting *

* Do not submit this form for projects already completed. Contact the IRB at IRBInfo@atriumhealth.org *

Response was added on 05/05/2020 1:01pm.

ATRIUM HEALTH
Institutional Review Board / Patient Privacy Board

IRB Review & Determination of QI vs. Research Projects

Submission Date:	05-05-2020
Project Lead:	Latasia Belin (Full Name)
Department:	Nursing Administration
Phone:	(704) 304-5595
E-mail:	latasia.belin@atriumhealth.org
Project Title:	Improving Nursing Recognition and Management of Postoperative Delirium in the Acute Care Setting

Is the project supported by funding?

⊗ No

Purpose of the project:
(Provide a 2-3 sentence description.)

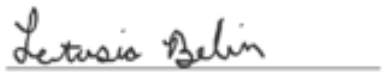
Postoperative delirium can be an adverse outcome following surgery. The need for early recognition and management is essential in preventing long-term effects. The purpose of this quality improvement project is to evaluate the effect of delirium prevention education on medical-surgical nurses to improve the recognition and management of postoperative delirium in adult surgical patients in the acute care setting.

Briefly describe project details, including how patients and/or providers will be involved:
(Provide a 2-3 sentence description.)

A pre-intervention assessment will be administered to nurses to assess nursing knowledge of delirium as well as non-pharmacological interventions that can be utilized to prevent delirium following surgery
Next, a structured nursing education program for medical-surgical nurses on a protocol to include evidence-based delirium prevention interventions for use on patients with postoperative delirium will be implemented. Interventions will be selected from best practice guidelines and clinical experts and will be considered for feasibility on a medical-surgical unit. Following the education, a post-intervention assessment will be conducted to evaluate the effectiveness of the nursing education program. Following the completion of the educational intervention and post-intervention assessment, patient-level data will be reviewed to assess for increased utilization of delirium prevention interventions.

QI Summary Template & Instructions (Please download, complete, and upload back to this form.)

[Attachment: "QI Project Summary Template.doc"]



Date:

05-05-2020 12:57:25

Are you a resident or student?

⊗ Yes

What category?

⊗ DNP/PhD Nursing

CERTIFICATION OF DEPARTMENT CHAIR (If a resident or student):

I certify that I have read the attached IRB Review of QI and Research Projects screening form and the project has been reviewed.

Please note: If the AH IRB determines your project DOES meet the definition of Human Subjects Research, you will be required to submit the Expedited/Exempt Protocol Application, prior to beginning any research activities.

The application can be found, HERE.

DNP Use Only

Reviewed completed?	⊗ Yes
DNP Signature:	
Date:	05-07-2020 11:28:44 ((click "Now" if signing now.))

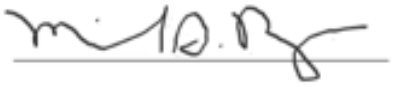
IRB Use Only

Staff Section

Please be sure that the DNP section above is completed.

Reviewed by:	⊗ Jomani Cheeseman
Forward to which chair?	⊗ Michael Runyon
Date:	05-07-2020 11:54:25 ((click "Now" if signing now.))

Chair Section

Require edits or changes?	⊗ No
The IRB has determined this project is:	⊗ Quality Improvement
Completed By:	Michael Runyon ((Please Print Full Name))
IRB Chair Signature	
Date:	05-08-2020 10:16:12 ((click "Now" if signing now.))