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Quality Initiative to Reduce Falls in an Acute Care Setting

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Abstract

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MS, Walden University, 2012

BS, Herbert H. Lehman College, 1996

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Falls are the most frequently reported incidents among hospitalized patients in the United States with at least 4 falls per 1,000 patient days occurring annually. Falls are related to high rates of mortality and morbidity and high hospital costs. The purpose of this project was to evaluate a fall prevention quality initiative to reduce falls in an acute care facility by educating staff on an evidence-based fall prevention protocol. The project sought to explore whether implementation of an evidence-based fall prevention initiative in educating nurses would affect the nurses' professional knowledge and the number of patient fall incidences in the cardiac care unit. The theoretical framework supporting this project was Neuman's systems theory. The Iowa model was used to guide this evidence-based project. An educational session was implemented to increase nurses' awareness of fall prevention practices. Two sets of data were collected: the pretest and posttest results, and the number of falls on the unit. A total of 21 unit nurses participated in the pretest; 18 (86.0%) completed the posttest. The mean score on the pretest was 81.62%; the mean score was 85.89% for the posttest with a mean difference of 4.27%. A paired sample *t*-test revealed no statistically significant differences in scores after education. This project has implications for social change by supporting patient safety, decreased hospital stays, and reduced health care expenses to patients and health care organizations.

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Dedication

I thank God for guiding me through this journey. Thank you to my family who have listened and offer encouragement when I most needed it. Thank you to my friend Hyacinth for words of encouragement. Special thanks to my husband Linval, and son DJ without whose help, support and encouragement, I would not have been able to complete this journey. Linval, thank you for your patience and understanding. DJ, thank you for your inspiration and for being my technical advisor.

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Section 1: Nature of the Project

Introduction

Patients who fall during hospitalization are frequent, yet preventable adverse events (Campbell, 2016; Hawkes, 2014; Shojania & Marang-van de Mheen, 2015). The overall fall rate, in hospitals, is between 1.3 to 11.5 times per 1,000 patient days (Watson, Salmoni, & Zecevic, 2015). The Centers for Disease Control and Prevention (CDC, 2013), stated that one in every three patients aged 65 years and older fall. Inpatient falls commonly cause traumatic brain injuries and is responsible for more than 10% of mortalities experienced by adults aged 65 years and older (Yang et al., 2016). Researchers have estimated that treatment with fall-related injuries likely exceeds $105.6 million per year (Mant, Dunning, & Hutchinson, 2012). Despite the continued effort to decrease falls, there continues to be an increased incidence of inpatient falls in the hospital setting. With continued education on fall prevention methods, it is anticipated that there should be a significant reduction in the prevalence of falls in the acute care environment (Campbell, 2016).

Falls in health care environments continue to be a significant problem that nursing staff experience in their routine activities. Inpatient falls are responsible for increased morbidity, increased hospital costs, and long-term hospital stays (Weil, 2015). As of October 2008, Medicare no longer reimburses health care facilities for inpatient falls and fall-related injuries (Tzeng, 2011). The Joint Commission (TJC, 2015 asserted that falls are preventable, and costs associated with it can be minimized. TJC developed a national safety goal to minimize risks associated with patient falls (Neiman, Rannie, Thrasher,

Terry, & Kahn, 2011). TJC recommends four essential practices to help health care organizations deal with fall-related injuries. First, hospitals need to increase awareness about the injuries caused by falls. Second, each hospital needs to establish an interdisciplinary fall injury team to engage in surveillance and quality improvement activities specific to falls. Third, standardized clinical practice tools to identify patients at risk for falls need to be implemented. Finally, hospitals need to develop individualized clinical programs to prevent and decrease the incidents of falls.

Problem Statement

Although many facilities have fall prevention programs, falls and the related injuries continue to increase in the health care settings. Falls happens regularly, often resulting in severe psychological and physical effects (Schaffer et al., 2012; Visschedijk, Van Balen, Hertogh, & Achterberg, 2013). Approximately 30% to 50% of all the inpatient falls result in injuries (Moe, Brockopp, McCowan, Merritt, & Hall, 2015). Also, falls in acute care are one of the major factors that threaten patient safety, as they are common events that adversely result in physical injury (Miake-Lye at al., 2013). A gap in practice occurs when researchers either attempt or neglect to disseminate their findings among policy makers, health practitioners, and the community in hopes that widespread adoption will occur (Hanson, Finch, Allegrante, & Sleet, 2012). Gaps have been identified as separating research, policymakers, and the health care community. Many believe, not only in the health care industry, that a major barrier to effective dissemination is the inadequate translation of research into practice (De Florio-Hansen, 2016; Teater, 2017; Underwood & Waterson, 2013). A monologue will not overcome the

gap in practice from researchers to practitioners and policymakers; instead, dialogue needs to occur in which there is a mutual exchange of evidence that leads to a new understanding of falls and the related injuries, and the gap in practice will be best addressed in the clinical environment.

Pain, distress, disability, and death are all adverse events associated with falls (Nazarko, 2015). Fall-related injuries are the second leading cause of deaths in the United States and one of the most reported safety events in acute care environments (Cangany, Back, Hamilton-Kelly, Altman, & Lacey, 2015). The cardiac progressive care unit is a 24-bed unit in a major urban hospital in Georgia. The unit receives patients with various diagnosis including complicated cardiovascular and vascular surgeries requiring high doses of narcotics for pain management, congestive heart failure, sepsis, and respiratory failure. Also, many patients admitted to the unit also have a secondary diagnosis such as alcohol withdrawal and debility. These different diagnoses lead to an increased risk for patient safety and potential for falls. Preventing falls emerged as one of the patient safety concerns that needed to be addressed in the unit. Contributing factors to the high rate of falls were lack of staff awareness and ownership, staff inexperience, and absence of a dedicated fall resource team.

Given all the above-listed facts, there is a need to develop a fall prevention quality initiative to educate nursing professionals and create awareness of the existing fall prevention program, and then introduce an improved fall prevention quality improvement program. Fall prevention quality initiative is relevant to nursing practice because it aids in creating awareness among the nursing professionals for fall prevention practices, adverse

effects of falls, and fall-related injuries in the health care environment (Campbell, 2016). Fall prevention is related to the quality of nursing care in the acute care environment and beginning a new fall prevention program will not only minimize patient falls but result in the provision of better health care outcomes. Improving patient outcomes by reducing fall rates with the use of increased education and adequate use of fall prevention strategies is a major priority for health care facilities and hospitals (Jennings et al., 2015; Kuwaiti & Subbarayalu, 2017).

Nurses play a significant role in ensuring patient safety by performing fall risk assessment each time patients are admitted to the health care environment. Nurses are the coordinators of care who can identify patients who are at risk of falling (Cangany, Back, Hamilton-Kelly, Altman, & Lacey, 2015; Wilson et al., 2016). Nurses are best positioned to influence the health care system process by performing fall risk and developing an individualized specific fall prevention intervention and education to reduce falls and fall-related injuries (Tzeng, 2011). Bechdel, Bowman, and Haley (2014), indicates that a major safety concern is that it is difficult to achieve consistency in fall prevention. Therefore, this doctoral project was focused on educating the nurses and health professionals in the cardiac unit on the importance of being consistent in implementing the evidence-based program and protocol.

Purpose Statement

The project's purpose was to ensure that nurses are well-informed and properly educated on fall prevention initiatives and programs, as well as introduce a more efficient fall prevention program for utilization in health care environments. Reductions in fall-

related injuries and patient falls were the expected results of this program. This project supported the augmentation of reimbursable care by abating the fall prevalence in health care settings.

Translating research into practice or closing the gap between knowledge and practice continues to elude health care clinicians. Falls are among the most common hospital accidents with an incidence between 4 and 12 per 1000 bed days, and 15% of patients who fall suffer a serious injury (Baker, Kamar, Morton, & Berlowitz, 2008). Evidence supports the need for implementation of fall prevention programs in hospitals (Harrison, 2017; Hu, Vance, & Strak, 2016; Lovarini, Clemson, & Dean, 2013). The need to practice in an evidenced-based environment is paramount, primarily due to the availability of new knowledge from clinical research. Health care professionals have the moral obligation to ensure that patients receive appropriate and evidenced-based care (White & Dudley-Brown, 2012). The use of standardized fall prevention practice helps to ensure that all nursing professionals carry out similar nursing interventions to prevent falls and fall-related injuries (Title et al., 2016). The utilization of evidence-based practice will contribute to patient safety by focusing on minimizing the risks of falls in the acute care environment.

Given the rising and significant costs and injuries associated with falls of patients in the acute care environment, the practice-focused question for this project was: How does the implementation of an evidence-based fall prevention program and protocol impact the number of patient fall incidences and fall-related injuries at the cardiac care unit in an urban hospital in Georgia, at three months post-implementation?.

Response to the Gap in Practice

The evidence-based quality initiative for this doctoral project was a fall prevention program focused on reducing patient falls and fall-related injuries by creating a connection between risk factors for falls and nurse's education based on the best evidence to decrease the rate of falls in the acute care environment (Sutton, 2014). The goal of this quality initiative was to increase nursing knowledge on fall prevention, with a goal to reduce falls and fall-related injuries subsequently. Despite the sizable amount of money spent on clinical research, little consideration has been made to ensure that research findings are implemented in routine clinical practice (Hanson et al., 2012).

This project was carried out to close the gap between empirical studies and real-life activities resulting in improved patient safety. To close this gap, the knowledge gained from reviewed literature and improved knowledge of evidence-based recommendations was applied in the day-to-day operations. Specifically, this project utilized evidence-based initiatives to educate nurses about falls and the related effects as a means for quality improvement in patient outcomes.

Nature of the Doctoral Project

The goal of this project was to determine if improved education on current fall policy and introduction of a new evidence-based fall prevention program would reduce the number of falls and fall-related injuries, therefore improving patient safety in the acute care environment. According to Majkusova and Jarosov (2014), it is not possible to prevent falls from occurring in health care environments, but evidence-based practices can be implemented to help minimize the incidences and severity of falls.

This project encompasses the identification of the problem and literature review with evidence assessment. The sources of evidence include the following databases: CINAHL, Cochrane Library, EBSCO, MEDLINE, and PubMed through Walden University Library, as well as Google Scholar. Peer-reviewed articles older than five years were discarded, except for those that form the landmark for basic words such as falls, fall prevention, fall education, and theoretical frameworks and models.

Project Pathway

The project identification evolved through an initial leadership meeting to discuss if fall prevention was a priority for the institution. Monthly fall meetings were held to decide on specific projects, and another leadership meeting was held to review and refine the model for this project. The final decision was to focus this project on increasing nursing knowledge of existing fall prevention protocol while adding new evidence-based fall prevention initiatives to minimize the incidences of falls in the cardiac progressive care unit. At the beginning of this project in the clinical setting, after IRB approval, nurses and other health care professionals in the acute care cardiac unit were assessed to identify their level of knowledge of the fall prevention program, as well as the barriers to fall reduction in the facility from their perspectives. Then, the evidence-based fall prevention program was implemented to educate them in series, until all those working in the unit were covered. Their understanding of the new fall prevention program was assessed. An algorithm was developed to help them integrate what they learned into practice. De-identified data on falls in the cardiac unit was collected for three months pre-implementation, and three-months post-intervention, and analyzed to compare with

previous fall rates in the unit. The expected outcome was that the application of this knowledge by nurses would help decrease the gap in practice and prevent inpatient falls, thus improving health care outcomes including patient satisfaction and low health care costs.

Significance

In the United States, one of most of the frequently reported safety incidents is hospitalized patient falls, most notably among elderly patients (Bouldin et al., 2013; Mion et al., 2012). Falls lead to prolonged hospital stays and are life-threatening (Campbell, 2016; Hawkes, 2014; Shojania & Marang-van de Mheen, 2015). Trepanier and Hilsenbeck (2014) argued that patient falls are the primary cause of injuries in health care facilities and are regarded as the costliest adverse incidents in hospitals. TJC (2007) asserted that falls happen because of the organization's safety culture, which stresses the need that all stakeholders must be knowledgeable about fall prevention measures to minimize occurrences and associated unwanted costs.

Regarding this project, the stakeholders in the practice setting included the chief nursing officer, nurse managers, assistant managers, staff nurses, and nursing assistants. Health care organizations have a vested interest in reducing falls in the acute care environment. A review of the literature showed that many studies had been conducted to decrease falls in the acute care setting, yet the incidences of falls continue to increase (Gallardo et al., 2012; Lovarini et al., 2013; Miake-Lye et al., 2013). CMS (2008) labeled falls as a never event that should not occur, and health care organizations will not be

reimbursed for care associated with falls. TJC (2007) has made policies that health care facilities must implement policies to prevent inpatient falls.

The relevance of this project to nursing practice is that it will play a key role in improving quality of care and patient safety because nurses will be aware of current evidence-based fall prevention techniques. This project was carried out to close the gap between research and current practice and improved patient safety; this was conducted with the aid of evidence-based recommendations that will be later applied in day-to-day operations. The quality improvement will help to improve reimbursable care by reducing the incidence of falls in the acute care environment. Literature suggests educating nurses as the best practice to determine risk factors for falls, reducing falls, and reducing fall-related injuries in acute care environments (Dempsey, 2009; Uymaz & Nahcivan, 2016; van Harten-Krouwel, Schuurmans, Emmelot-Vonk, & Pel-Little, 2011).

The project has potential transferability into nursing practice in that educating nursing staff on fall prevention measure will enhance their knowledge and skills regarding fall prevention; this will help them to provide safe and effective care. Also, the success of this project will lead to replication of the project in other units of the organization to improve overall patient safety regarding falls throughout the organization.

Implication of Positive Social Change:

This project has implications for social change, in that nurses have a significant role in the way patients and families perceive the care received. This project should positively affect patient safety, minimize hospital stays, and reduce health care expenses to patients and health care organizations.

This fall prevention project examined the knowledge of nurses, regarding fall prevention, and the association with falls in the acute care environment. Results can be used to assess fall prevention strategies, benchmark against similar units in the organization and compare with local and national findings. The increased use of collaborative efforts, implementing change and utilizing evidenced-based interventions to decrease falls can improve patient safety. Nurses have a significant role in upholding patient safety and ensuring the delivery of safe and quality care to patients and their families. In addition, society recognizes nurses for upholding high ethical standards therefore, nurses have a responsibility to promote patient safety by maintaining a safe work environment.

Summary

The problem identified in this project was that current fall prevention practices do not adequately prevent falls and fall-related injuries among patients in the acute care environment (Campbell, 2016; Hanson et al., 2012; Schaffer et al., 2012; Visschedijk et al., 2013). Increasing falls resulted in increased hospital costs; lengthy hospital stay fall-related injuries, and deaths (Cangany et al., 2015; Moe et al., 2015; Watson et al., 2015). Therefore, the development of an evidenced-based fall prevention program and education of nursing staff on the existing fall prevention protocol is necessary to increase their knowledge of fall and fall-related injuries. Such evidence-based prevention quality initiatives will have positive economic consequences for health care organizations while providing a safe health care environment for patients and their families. The next section

addressed the concepts, theories, models, guiding this project, the relevance to nursing practice, the local context, and the role of the DNP student and the project team.

Section 2: Background and Context

Introduction

There has been heightened awareness surrounding the ramifications of patient falls in health care settings. Prior studies were conducted with the intention of increasing awareness about the risk of patient falls yet falls continue to occur. The increased fall rates have significantly impacted both the costs of health care and overall patient satisfaction. As a result, health care organizations are forced to educate nursing staff on updated fall prevention strategies, and develop new interventions to decrease patient falls, decrease health care costs, and improve overall patient safety outcomes. In this section, I provided the rationale for concepts, models, and theories that were used to guide this evidence-based project; the relevance of this project to the nursing practice; and the local background and context, coupled with the role as a Doctor of Nursing Practice student.

Concepts, Models, and Theories

Utilizing a theoretical framework in evidence-based practice is instrumental in guiding the research process, explaining the research findings, and translating the research into practice. According to McEwen and Wills (2011), a theoretical framework serves as the foundation for a project by enhancing the contextual understanding while guiding the process of project evaluation. The theoretical framework that underpins this project was Neuman's Systems Theory, which explained the significance of educating nurses about fall prevention for elderly patients.

Neuman's Systems Theory

Neuman's Systems Theory is based on the notion that relationship exists between all living organisms and their interactions with the surrounding environment (Ahmadi & Sadeghi, 2017; Bademli & Duman, 2017; Turner & Kaylor, 2015). In the setting of this project, this theory was used to understand how persons interact with their environment and how the environment is applied to fall-related incidences (Neuman, 1996). According to Neuman's theory, individuals are collectively defined by their physical, mental, sociocultural, spiritual, and learning characteristics, and how these characteristics influence them to interact with their surroundings (Ahmadi & Sadeghi, 2017; Turner & Kaylor, 2015). Due to the presence of these characteristics, the patient is perceived as dynamic, as they are understood to exist in a state of constant interaction with these elements. The interactions are further explained as follows: the physical refers to a patient's body, somatic makeup, and health; the mental refers to emotional and psychological systems; the sociocultural refers to interactions with social and cultural factors; the spiritual refers to attitude and beliefs; and the learning process refers to age-related behaviors, hobbies, and actions (Ahmadi & Sadeghi, 2017; Turner & Kaylor, 2015).

According to Neuman's, an individual's environment is defined by both the intrinsic and extrinsic influences that may affect the individual, and stressors are recognized as anything that may disrupt the homeostasis of the individual, whether it is internal, external, created, or a combination of the three (Ahmadi & Sadeghi, 2017; Bademli & Duman, 2017; Turner & Kaylor, 2015). For this reason, examining the

relationship between the patient and his environment, the stressors that oppose the physical body's line of defense are considered (Wolf, 2012). The goal of nursing, according to Neuman's theory, is a trifecta of detection, aspirations, and results (Ahmadi & Sadeghi, 2017; Turner & Kaylor, 2015). To meet these objectives, there are three tiers of interference. The first tier is established to prevent an individual (or, in this context, the patient) from reacting to the presence of a stressor, for example, preventing the patient from experiencing a fall. The second tier occurs after a patient interacts with the stressor. This may be in the form of modifications to existing policies to prevent the patient's interaction with the stressor or the presence of physical boundaries designed to reduce the risk of fall. The third tier is expected to change the existing system while aiming for improved patient care experience this may be in the form of implementing a new fall prevention program (Ahmadi & Sadeghi, 2017; Turner & Kaylor, 2015).

The way that stressors interact with the patient and vice versa can potentially risk the health of the patient. In examining the relationship between a patient and his environment, the stressors that oppose the physical body’s line of defense are considered (Wolf, 2012). This notion implies that intrinsic and extrinsic factors such as medications, poor lighting, disease progression, and age can create an imbalance that leads to falls. To lower the risk for falls, there must be a reduction in the number of stressors, including lines of defense and maintaining a balance between these factors (Wolf, 2012). For elderly patients, who may be suffering from a variety of health ailments and restrictions, a physically unstable living environment may increase the potential for a fall to occur (Titler, Shever, Kanak, Picone, & Qin, 2011). Compensating for unstable environmental

conditions may not only improve a patient's health, but it may lead to the improvement of overall health programs.

The primary focus as mentioned is preventing falls in acute care settings. Nurses should collaborate in providing nursing interventions to reduce the incidence of patient falls, educating nursing staff will highlight the significance of fall prevention methods and ensure the safety of older adults (Capestany, 2015). Fall prevention through educational programs is more effective in preventing falls among the elderly population on a short-term basis, but not a long-term basis educating nurses, on the other hand, can reduce patient falls over an extended period (Dykes et al., 2010). Neuman's theory is essentially a proactive method to ensure that potential hazards are acknowledged, tackled, and eliminated before an incident take place. The application of this theory allowed the researcher to examine the patient care scenario by looking at all avenues of influence, as well as the patient's reaction to a stressor, to develop a more successful and safe means of care (Ahamadi & Sadeghi, 2017).

Models

The Iowa Model of EBP is a logical representation that will be used to guide this evidence-based project. The objective is for the conclusions drawn from this project to assist nurses in using research findings to improve the quality of patient care (White &Dudley-Brown, 2012). The Iowa Model focuses on evidence-based practice while incorporating collaboration and research (Titler et al., 2001). This model encourages nurses to question existing practices to decide if the research can be used to improve the quality of health care outcomes (Titler, 2006). In this case, the Iowa Model helped

nursing professionals to offer quality care to patients in various settings, including hospital and homes (McEwen & Wills, 2014).

The Iowa Model was first developed in 1990 and was used to analyze research problems by referring to prior scholarship for ways to address current issues, reduce their recurrence and achieve desired outcomes (Titler, Kleiber, Steelman, Rakel, Budreau, Everett, & Goode, 2001). In the context of this project, this model helped to decrease the complexity of the challenges involved in implementing research findings into clinical practice. As stated, the objective of this project is to ultimately minimize the risk of patient falls and related injuries to promote quality care to patients. Using an evidence-based model, such as the Iowa Model, offers the opportunity to connect scholarship to ongoing problems to justify the rationale behind specific nursing interventions.

By applying the Iowa Model of evidence-based practice, nurses can proactively work to bring about change in patient care. Of the list of responsibilities that nurses carry, they are heavily responsible for ensuring that the best evidence is used to facilitate optimal patient health and satisfaction. Theoretical frameworks and nationally recognized guidelines exist to ensure that the latest evidence is constantly being integrated into new protocols that promote the best practice outcome for any patient population, including elderly patients (Kowal, 2010). For this reason, the Iowa Model of evidence-based practice is beneficial for implementing practice changes at the organizational level. The model directs change based on the current and past evidence used in practice, the current and past views of clinicians, the associated health care teams and the organization in question (Titler et al., 2001). The Iowa Model consists of several stages, which include

the following: (a) identifying the problem; (b) forming a team that is focused on improving or eliminating the problem; (c) critiquing current and past scholarship about the problem; (d) implementing practice change, using current and past research as reference points; and (e) disseminating the findings (Titler et al., 2001, p. 503-504). By applying the Iowa model and current research findings to the incidence of falls in the cardiac progressive care-unit, the organization can determine how to reduce, remove, or change the potential risk of fall from occurring.

Relevance to Nursing Practice

Nurses are accountable for providing patients with safe care. This responsibility includes working toward improving the process of care to ensure the best outcome for the patient. When it comes to elderly patients and the risk of fall, specifically, this includes risk assessment and the development of an individualized plan of care to reduce the incidence of falls. The prevention of falls in health care settings is indicative of the quality of care provided by an organization. It is also a focus of regulatory organizations, patients, and their families.

According to Campbell (2016), falls and fall-related injuries increase health care expenses and cost billions of dollars each year. It is estimated that in 2012 fall-related injuries cost approximately 19 billion dollars. The same data reflects that fall-related deaths in hospital settings cost about $170 million in the same year (Clayburn & Heydemann, 2011). Patient falls are linked with increased length of stay and a higher rate of discharge from hospitals to long-term care facilities (Miake-lye et al., 2013). The Centers for Medicare and Medicaid Services (CMMS) estimated that by 2020, the annual

costs of injuries that are directly and indirectly related to falls and its related injuries are projected to reach $54.9 billion, in addition, CMMS will not reimburse for additional costs associated with falls (CMMS, 2012).

Fall remains a predominant cause of injury in health care settings, namely hospitals, which is the reason for ongoing efforts to reduce their incidence. The CMMS rejects payments to hospitals for additional costs associated with the treatment of inpatient falls (CMMS, 2008). Falls are considered as a never event, which is an event that should never occur after a patient has been admitted into a hospital (Inouye, Brown, & Tenetti, 2009). NDNQI (2015) indicated that health care organizations that have implemented fall safety bundles to improve patient safety and prevent patient falls have reported a significant reduction of falls and fall-related injuries and that multiple interventions may be more effective than single interventions in preventing falls. The present doctoral project serves to advance nursing practice or decrease the gap-in-practice revealed in the literature by identifying the significance of educating nurses about patient fall prevention measures to develop more rigid prevention measures.

The outcome of patient care is directly related to the care received by health care professionals (Kolin, Minner, Hale, & Thompson, 2010). The National Database of Nursing Quality Indicators identifies falls as an important nursing-sensitive indicator of patient safety (NDNQI, 2015). Nurses are the vanguard of care and should be able to identify when and which elderly patients are considered high risk for falls. Nurses must ensure that each patient is properly assessed for fall-related risks upon their visit to the hospital and on a regular basis, as needed. It is imperative that a comprehensive care plan

is developed to aid in the safety of hospitalized elderly patients. Improving patient outcome by reducing fall rates using fall prevention strategies and programs are of the utmost importance for hospitals and health care facilities.

Local Background and Context

Fall is atop the list of TJC sentinel events in the United States (TJC, 2015). Approximately 7,000 people experience falls in the hospital each year, with 30% to 50% of these falls resulting in injury (TJC, 2015). Falls resulting in injury increased the length of the patient's hospital stay by an average of 3 to 6 days, with costs more than those of $14,000. The TJC indicates that effective communication is among the list of national safety goals, indicating that a lack of or inadequate communication results in a medical error or patient harm (TJC, 2015).

The site for this evidence-based project was an acute care hospital in Georgia. The goal of fall prevention quality initiative that was conducted at this institution was to improve the quality of patient care outcomes by reducing falls and fall-related injuries. This includes execution of fall risk assessment which entails using current fall assessment tools, analyzing the current fall prevention protocol, and number falls of the institution and educating staff. The organization recognized the effects that fall has on the patient and their families and positions safety coaches to monitor health care employees regarding the recommended safety behaviors to prevent falls. Currently**,** this acute care hospital utilizes a Hester Davis Fall Scale to access patients at risk for falling.

Role of the DNP Student

As the DNP student, I was responsible for implementing practice change to ensure the outcomes of the patient the health care provided by the organizations are improved. DNP students are prepared to reduce the research-to-practice gap and increase the quality of care by engaging in translational research, fortified with knowledge and experiences required when applying scientific research concepts. In the process of developing the fall prevention quality initiative, I was able to critically analyze evidence, design, implement and evaluate the effectiveness of evidence-based practice interventions.

In this evidence-based project, I was responsible for collecting and analyzing evidence and help the project team to ascertain the effectiveness of the program. I assisted the team in determining whether the implementation of fall quality initiative was effective in creating nurse awareness, enhancing staff's knowledge and skills, and reducing falls and fall-related injuries. Before the implementation of the project, the hospital-wide committee provided education to the project team and other members. As the project leader, I was instrumental in developing the educational materials, training the project team on how to implement the project into fruition and work collaboratively with all those involved. I also conducted a literature review to gather and analyze the evidence-based practices available for adoption and use.

As a student, the DNP project was important in my educational experience and played a key role in developing my experience as a DNP nursing professional. During the fall prevention program, I acquired skills and competencies that yielded professional

improvements beyond my expectations. The DNP research project requires a person with a profound ability to search for evidence and develop an implementation plan to meet its purpose effectively. Before the project, I lacked the confidence required to conduct research and develop a project, but the project brought about increased confidence and motivation.

Role of the Project Team

The project team consisted of unit staff members who provide direct patient care, conduct a daily fall risk assessment, planning care for fall prevention, and documenting in the patients' medical records. The project team included members on the unit, such as registered nurse, and patient care partner who volunteered and were responsible for executing the project in question. A unit fall champion was also used as a member of the project team. The role of the unit champion was to function as a liaison between the implementation team. I was responsible for training the team and executed the necessary actions intended to achieve the purpose of this project**.** The project team members were presented with background information, evidence supporting the need for the quality improvement, and other forms of information necessary to increase their awareness of the importance of the evidence-based fall program through regularly scheduled meetings. The Hester Davis Fall Prevention Scale was used in this research, and the project team was adequately briefed about the evidence supporting this tool in the project team meetings. The project team worked in tangent with the DNP student and collaborated for the implementation of the project.

Summary

This section presented Neuman's System Theory as the theoretical framework that guided this project. This theory proposes that a human being is influenced by a variety of characteristics that affect its relationship with the surrounding environment. The relevance of the nursing practice, the local background, and context, as well as my role as the DNP student and the roles of project team members were discussed. The following section is focused on the practice-focused question, the sources of evidence, and the methods for data collection and analysis.

Section 3: Collection and Analysis of Evidence

Introduction

Despite the continued fall prevention initiatives, falls continue to increase in the health care settings. Fall happens on a regular basis, often resulting in serious psychological and physical effects (Schaffer et al., 2012; Visschedijk et al., 2013). In addition, fall in acute care is one of the major factors that threaten patient safety as well as common events that adversely result in physical injury (Miake-Lye et al., 2013). Inadequate translation of research into practice has been identified thereby separating research, policy makers, and the health care community for effective dissemination of important findings and information (De Florio-Hansen, 2016; Teater, 2017; Underwood & Waterson, 2013). Given all these facts, a need exists to develop a fall prevention quality initiative to educate nursing professionals and create awareness of the existing fall prevention program and then introduce an improved fall prevention program. The project goal is to ensure that nurses are well informed and properly educated about fall prevention initiatives and programs as well as introduce a more efficient fall preventive program for use in the health care environment. Reductions in fall-related injuries and patient fall are the expected results of this program. I supported the augmentation of reimbursable care by abating the fall prevalence in the health care setting.

This section contains details about data collection procedures and data analysis plan. Specifically, I will present the practice-focused questions and sources of evidence. I will outline the plan for data analysis. A summary of the key details about the data collection and data analysis plan concluded the section.

Practice-Focused Question

The problem that I identified for this project was that there is a current fall prevention program in place, but falls, and related injuries continue to increase in the acute care setting. The quality improvement program was to make sure that nurses are educated about the initiative to increase their knowledge of existing fall prevention program as well as introduce a more efficient program for use in the health care environment. In this project, I sought to answer the following question:

How will the implementation of an evidence-based fall prevention initiatives in educating nurses, affect the nurse's professional knowledge, and the number of patients fall incidences in the cardiac care unit in an urban hospital in Georgia, at 3 months postimplementation compared to the previous rates?

My purpose in this doctoral capstone project was to evaluate a fall prevention quality initiative to reduce falls in this acute care by educating staff on evidence-based fall prevention protocol. The current fall prevention program does not effectively reduce fall and fall-related injuries; thus, there was a need to use an evidence-based program to develop a fool-proof protocol for fall prevention.

Sources of Evidence

The main sources of evidence include literature review as well as fall data from the cardiac care unit during the quality improvement project. Evidence from literature relevant to the subject matter that I obtained by searching the following databases: CINAHL, Cochrane Library ECSCO, MEDLINE, and PubMed, through Walden University Library, as well as Google Scholar. Peer-reviewed journals and articles that

were published more than 10 years ago I discarded unless they provided a landmark for key terms, which were previously defined. Keywords used for identifying relevant scholarship included *falls, fall prevention quality initiative, fall risk assessment, fall prevention education, fall prevention tools, acute care setting, inpatient falls, Hendric11 fall scale, Morse fall scale, fall prevention tools,* and *fall prevention evaluation fall prevention education*. Inclusion and exclusion criteria were used to conduct a review of the literature. Documents that met requirements of the inclusion criteria were related to the topics of fall and fall-related injuries, studies where most of the targeted population was older adult, and the study was written in the English language and the focus was based in an acute hospital setting. Documents that failed to meet these criteria were excluded. The existing scholarship on the topic of falls in health care was obtained from papers published between the years of 2009 and 2017.

Patient falls and fall-related injury in the health care setting is a major concern. Although elderly patients are particularly susceptible to fall, all patients that enter a health care facility are at risk (TJC, 2015). Patient falls occur frequently and is considered the most common hospital incidents, affecting 2% of hospital stays (Bouldin, Andresen, Dunton, Simon, Waters, Liu, & Shorr, 2013). The number of falls translates to 3.3 to 11.5 falls occurring per 1,000 patient days in the United States and of the falls that occur, 25% cause injury to the patient and 2% result in factures, thereby increasing the length of stay and, consequently, increased medical cost (Bouldin et al., 2013).

In the study conducted by Bouldin et al. (2013), 6,100 health care settings were assessed to record the incidence of falls. These settings included 1,949 medical settings,

1,530 surgical settings and 2,621 medical-surgical settings, which represented 1,263 individual hospitals. During the 27-month time period of July 1, 2006, through September 30, 2008, a total of 345,800 falls took place. Of the 345,800 falls, 82,332 (26.1%) resulted in injury, and of this number, one in 10 caused moderate injury (9.8%), less than 1 in 20 were considered major (4.3%), and two in 1,000 caused death (0.2%). Although this is only representative of a single study, the incidence of patient falls is a reoccurring, omnipresent issue in the health care environment.

The older adult population is the most prone to falling (World Health Organization, 2007). Of the worldwide older adults, some 28% to 35% of people age 65 and older experience a fall each year, whereas 32% to 42% of people ages 70 years and older experience a fall. The relationship between age and fall risk is correlational, because as age increases, so does the risk for fall (World Health Organization, 2007). According to the World Health Organization (2007), the highest risk of fall exists for older adults are age 85 years and older. Of older adults who reside in residential health care setting, approximately 30% to 50% experience a fall, whereas 40% experience several falls in addition, women are more likely to experience falls than men, but men are more likely to experience serious injury because of falls. Due to the severity of how falls affect the older adult population, this project serves to particularly investigate the significance of developing prevention methods to reduce the risk of fall for these patients in health care settings.

Characteristics Influencing Falls

Because nurses are responsible for the care and safety of their patients, they are responsible for identifying the patients that are most likely to fall (Rednak, 2015). This early identification is essential to ensure fall prevention. Research indicates that several intervention methods are effective in preventing falls. These methods include patient education, targeted risk factor educational plans and a multifactorial, and multidisciplinary education plan (Stephenson, McArthur, Giles, Lockwood, Aromataris & Pearson, 2016). These prevention methods collectively contribute to fall assessment and prevention methods, which are particularly significant when looking after older adults.

In the health care setting, various strategies are in place to prevent patient falls. For example, prevention tools include bed alarms, nonskid socks, color-coded arm bands, hourly rounding call light within reach, unobstructed environments, exercise and balance training (Clayburn & Heydemann, 2011). Intrinsic factors, on the other hand, are related to the expected psychological characteristics, such as lingering effects from primary illness, polypharmacy and confusion. Strategies for successful fall prevention aid in identifying patients with a high risk for fall and implementing the necessary methods to prevent falls. Hospitalized patients may experience falls that result in injuries, longer hospital stays and more prolonged periods of treatment that could have been avoided through fall prevention-programs (Rednak, 2015). Additional fall prevention methods include sitters, moving patients closer to the nursing station, hourly rounding, post-fall review and staff education (Stephenson et al., 2015).

Risk Factors for Falls

Various risk factors that contribute to the fall of an elderly patient; hospitalized patients in acute care settings have shared characteristics requiring focused assessments (Gallardo et al., 2012). Preventing falls and fall-related injuries require a multidisciplinary approach towards increasing awareness of the risk factors (CDC, 2013). Individuals with two or more risk factors have a higher likelihood of falling, therefore reducing the number of risk factors and implementing the appropriate interventions can significantly decrease the number of falls (CDC, 2016). A major goal of this project was to educate nurses about the current fall prevention program, and in so doing bring awareness to the fall risk factors.

According to the CDC (2013), patient falls are influenced by both intrinsic and extrinsic factors which directly relates to Neuman's Systems theory, as outlined previously, which explains that internal and external facets affecting human beings and form interactions with the environment (Ahamadi & Sadeghi, 2017). External factors are related to the physical environment, which may include poor lighting, obstacles, and tripping hazards, intravenous (IV) pole and tubing, restraints and Foley catheter, psychoactive medications, the improper use of assistance devices, slippery surface footwear, supportive and assistive-equipment in bathrooms and medications, like opioids, neuroleptic agents, and antidepressants (Graham, 2012). Internal factors are patient-related and may include comorbidities and functional status, like age (men are more likely to experience fatal falls, while women are more likely to experience fractures), history of prior falls, gait, muscle weakness, poor vision, chronic illness (stroke, diabetes

and arthritis), problems related to gait and balance and postural dizziness and fear of falling (CDC, 2013).

Falls certainly increase expenses in health care organizations, but they also harm the patients. Falls can trigger fall-related injuries and cause trauma, which is responsible for mortality and morbidity, specifically for elderly patients. As a result, falls and fall-related injuries increase health care costs, not only for facilities but for the patients as well. In addition to physical injuries caused by falls, falls result in fear, anxiety, and depression, pervasive fear of falling resulting in the patient failing to ambulate as frequently, which leads to weakness, and reduced balance resulting in increased risk factors for falls (Campbell, 2016).

Falls and fall-related injuries are preventable, hence the need to develop a fall prevention quality initiative to help reduce falls and their impact (Campbell, 2016). Risk factors for falls, such as hypertension, side effects of medications, confusion, mental status, and age usually exist and will regularly lead to falls (Stephenson et al., 2015). This requires nurses to develop a practice that targets patients' risk factors by utilizing a multicomponent fall prevention strategy, which includes a validated fall risk assessment tool, as well as staff and patient education. Methods designed to reduce the incidence of falls include bedside signs and scheduling of supervised toileting and medication review.

Fall Risk Assessment Tools

Fall risk assessments offer an objective format to evaluate and identify factors that may increase the patient risk for falling (Callis, 2016). The use of fall risk assessment tools is to determine the possibility of a patient falling while in the health care

environment (Gallion, 2015). Fall assessment tools are used to predict the possibility of a fall to occur, as defined previously. Establishing a process of predicting the risk of falling in the acute care environment is a key determinant in preventing fall. Fall risk assessment tools were therefore developed as a measurement to guide health care providers in determining a patient at risk for falling (Gallardo, 2012). Among the most commonly used fall risk assessment are the Hester Davis Fall Assessment (Dupins, 2014) and the Morse Fall Scale (MFS); (Morse, Morse, & Tylko, 1989).

The Hester Davis Scale Fall Risk Assessment.

The Hester Davis Model (HDS) was developed by Amy Hester and Dees Davis, the founders of Hester Davis Fall Prevention Scale, in 2010 to reduce the incidence of falls and associated health care costs (Dupins, 2014). The HDS fall tool was instrumental in recognizing a patient's fall risk factors and established a plan of action to prevent the fall from taking place. The assessment tool is geared towards prevention, as the researchers indicated by exploring all avenues to prevent the fall from occurring eliminates both physical and financial suffering from occurring (Dupins, 2014).

To develop the scale, the researchers studied the qualities of patients that fell using the inpatient services at the University of Arkansas for Medical Sciences. By gathering this information, coupled with the records of patients, the researchers developed a scale, which was strengthened by using suggestions from the nursing staff. The scale includes information that is specific to the patient, including age, date of last fall, mobility, mental and behavioral status, medications, and toileting needs, volume and electrolyte status and communication and sensory abilities. All this information was

collectively tallied to determine the Hester Davis Fall Risk. This not only enables nursing staff to understand better how the patient's preexisting characteristics may contribute to the incidence of a fall but to develop personalized care plans designed to avoid a fall from taking place, which include fall intervention methods (Dupins, 2014). When University of Arkansas for Medical Sciences employed the Hester-Davis model, they found an overall 11% fall reduction, with the incidence of fall-related injuries occurring 60% less often, saving the hospital a total of $1.27 million annually, as well as $330,000 for the elimination of personnel required to oversee fall-prone patients (Dupins, 2014).

This project followed the evidence-based approaches provided by Hester and Davis (2013) in their report entitled "Fall and Injury Prevention: Evidence-Based Approaches for Success." First and foremost, hospitals make use of two metrics for measuring fall prevention performance, and these are fall rates and injurious fall rates. Hester and Davis (2013) suggested that these two rates must be normalized to patient days so that they can be benchmarked. In collecting data for fall rates and injurious fall rates, the following are the types of falls that must be considered: (a) anticipated physiologic, (b) unanticipated physiologic, (c) accidental, (d) behavioral, and (e) developmental.

Hester and Davis (2013) recommended four components of an evidence-based fall management program. These components are risk assessment, care planning (including material resources), event reporting, and benchmarking. Fall risk assessment tools are considered as the anchor of any fall management program. Risk assessment tool should be designed to predict anticipated physiologic falls and where the setting is

specific. The HDS is a nine-factor scale with scores ranging from 0-77. The nine factors include age, date of last known fall, mobility, medications, mental status, toileting needs, volume/ electrolyte status, communication/sensory, and behavior (Hester& Davis, 2013). Each factor is a scale item with response categories consisting of an increased risk of falls.

The second source of evidence includes fall data from 3 months pre-implementation (August 2018, September 2018, and October 2018) baseline data and evaluated against the current fall rate data (November 2018, December 2018, and January 2019) for evaluation. This information was obtained from the organizational fall incident report. This information was provided by the unit manager. Without reporting of fall incidents, problems and issues cannot be solved. There are two types of reporting: internal and external. Internal reporting is useful for keeping staff aware of hazards and is important for monitoring one's progress in efforts to reduce fall events. External reporting allows sharing of event knowledge so that others can avoid the same issues in care. Both internal and external fall incident reporting must be done as they add to clinicians' knowledge of previous falls and therefore are of great relevance for both assessing fall risk and care planning.

After each fall the nurse assigned to care for the patient is required to complete a fall incident report. This report consists of a detailed account of information gathered from the staff who witnessed the fall, and the patients and family account of what occurred or what precipitated the fall. A thorough review of the fall incident report provided the evidence needed for the development of a fall prevention program. Another

source of evidence on which the author relied on to address the practice focused question is the result of the pretest-posttest following the educational secession. A summative evaluation was performed three months following IRB approval.

Institutional Review Board

The project was conducted in compliance with Walden University Ethical guidelines and project site requirement. Before the Project was initiated, approval from Walden University Institutional Review Board (IRB) was required (IRB approval number is 08-24-18-0132883) to ensure that the project complied with the university's ethical standard (Appendix B). Letter of approval was received from the facility. Upon approval from Walden University IRB, the unit staff was alerted during units' daily huddle of the upcoming educational secession scheduled for two weeks before the commence of educational secession. No data collection or participant recruitment occurred before IRB approval. Participation in this project was voluntary and without coercion. Participants were assured of confidentiality. Once the study was completed test were secured in a locked box. Telephone and email address were provided if staff had questions regarding the project. The unit manager had access to the telephone number and email address for prompt access and questions.

Population and Sample

The target population consisted of registered nurses who worked on the cardiac progressive unit of an acute care 770-bed hospital in a major southeastern city. Nurses working on the unit regardless of shifts, were invited to participate in the project. Verbal and written instructions were presented by the facilitator. All participation was voluntary,

and responses were confidential and anonymous (see Appendix B). No identifying questions were asked, and all data were reported in aggregate data. The aggregate data used for this project includes internal fall data from falls occurring in the cardiac progressive care unit.

Participants

It was necessary to select the number of people that contributed evidence to address the primary focused question. The hospital shared governance outline includes unit-based committees affording clinical nurses the ability to make decisions that improved patient care. To assist in the effort to reduce the unit's falls it was necessary to select a group of participants. The unit fall safety team consisted of three certified care partners, two registered nurses, unit nurse manager and assistant nurse manager who volunteered. Flyers were strategically located on the unit's communication board asking for volunteers to assist with the project. Unit champion was selected and educated on fall prevention, responsible for verifying that post fall documentations were completed in the electronic medical records and assisted during staff education secessions. Meetings were held the first Tuesday of the month following shared governance meeting to review and discuss evidence gathered. Nurses on the unit who have direct patient care were invited to participate in the educational secession and complete the test. The unit comprises of 35 nurses, but due to high turnover the group began with 21 nurses and finished with 18 nurses that participated in the pre and posttest educational secession. There was no control group for this project. All nursing staff had access to the educational material presented at the educational secession in the form of PowerPoint presentation and email.

All the nurses on the unit were bachelors-prepared registered nurses. Nurses were educated on fall risk assessment, utilization of appropriate prevention methods, and proper documentation. Participation in the educational secession was voluntary, and no identifying information was required.

Procedure

The unit director and unit manager were contacted and presented with written information about the project including the importance of reducing falls on the unit and the benefit of ensuring patient safety on the nursing unit and the organization.

Adult Learning

Before beginning the educational secession, it was important to ascertain the participants' knowledge of fall prevention and identify any gap in knowledge. This was accomplished by discussing the fall prevention strategies already in place on the unit. Enlisting learner's opinions is important when developing an educational agenda; this creates an environment in which every voice can be heard. Incorporating leaners thoughts and suggestion into the learning secession gives learners a sense of ownership. Adults learn best through methods that build on their own experiences (Decelle & Sherrod, 2011). During the educational secession, staff was encouraged to report falls and to participate in problem-solving secessions to develop strategies that could be incorporated into daily nursing practice. Varied education methods were used to incorporate varied learning styles. A case study was incorporated to engage learners and to ascertain their knowledge of the Hester Davis fall tool.

Staff Education

While staff members are cognizant of fall prevention safety measures, further education on fall prevention was needed. Individualized fall assessments were important in patients who are a risk for injury (Campbell & Robertson, 2010). Choosing trained health care professionals to train all providers ensured everyone was properly trained. Training secession was offered at various times. This ensured that health care providers who worked nights and weekend were included. To make fall prevention a priority staff education and reinforcement occurred at multiple time (Heck, Gebhart, & Gaehle, 2015). All staff members had equal access to e-learning and the ability to learn at a comfortable pace that best meet their individual needs (Mitchell & Lawes, 2007).

Educational Secession

The educational secession occurred following the scheduled monthly staff meeting which normally occurred on three different days at varying times to provide the opportunity for all staff to attend. The educational secession was held at the same location as the staff meeting to ensure that staff attending did not have difficulty locating the conference room. The conference room had ample seating as well as a warm, comfortable environment for all attendees. The conference room was equipped with PowerPoint capability and ample space for case demonstration to occur. Contents of the educational secessions were printed out for staff who were not able to attend educational secession (see Appendix A). The training included risk factors for falls, fall risk assessment, individualized care planning and review of the Hester Davis fall scale. An inpatient fall simulation scenario in which participant conducted a bedside huddle,

identify fall risk factors and update whiteboard. The simulation consisted of one of the most common events leading to a fall was either the patient being on a commode or ambulating to the bathroom. The simulation emphasized staying with the patient while he or she was in the bathroom and performed hourly rounding. A case study was also presented to enable learners to apply strategies discussed and demonstrate their knowledge of the Hester Davis fall scale. Snacks and drinks were offered, and a 30 minutes break was built into the agenda as well as extra time for questions at the end of the educational secession before administration of the posttest. The correct answers for the test were discussed after all test were collected.

Instrument

The Agency for Health care Research and Quality (AHRQ) Fall Knowledge Test (see Appendix C) was the tool used as the pretest/posttest during the educational secession to assess general knowledge of the nursing staff on fall prevention (AHRQ, 2013). Participant attending the educational secession were given an initial measurement a pretest before the educational secession which was supervised. The pretest assessed the nurse's knowledge and became a baseline for comparison for the posttest result immediately after the educational secession took place. The pretest and posttest were the same; they were simply administered at a different time (Kettner, Moroney, & Martin, 2008). Participants were not aware that the questions were the same for both tests. After completion, both tests were collected and removed from the area.

Nursing staff agreeing to partake in the project were assured that their test results would remain confidential. Participant was instructed to select and place an identifying

number on the pre and posttest to allow for comparison. The numbers were logged in a journal to ensure that the numbers were not duplicated.

Implementation

The project was discussed with the unit manager, and a pilot date was agreed upon. Staff education and reinforcement of the new fall prevention occurred in multiple venues. This occurred during the staff meeting, daily unit shift huddles, staff e-mail, and unit shared governance meeting. Numerous points of contact were used to ensure the prospect of the proposed change into practice. Members of the project team met with unit staff on all shifts to create an ongoing monitoring process, gather feedback and track changes in fall rates and interventions. Barriers to implementation were addressed as well as barriers to adherence. The result was shared with the staff.

During initial rollout staff was reminded of reasons fall prevention was needed, the nursing staff was instrumental in identifying problems and offering solutions. Staff was kept informed of the project progress. A zero tolerance fall policy was adopted for the patient at risk for falls. The project focused on interventions of identifying the patient at risk for falls, providing yellow armband and yellow socks on the patient, walking patients to and from the bathroom, never leave the patient alone in the bathroom, activating bed alarms when the patient is in bed and placing fall risk signage outside patients' room.

After the implementation of the quality improvement program, the de-identified data for three months before and three months after the program, that were collected by the fall committee in the acute care unit was analyzed. All data were collated into one

file. All numerical data were subjected to descriptive statistics to determine trends and patterns whereas qualitative data were subjected to content analysis.

Human Protections

No patient was directly involved in participating in this project. It is also important to note that patients and the author were not involved in actual interaction with each other. All the fall incident reports were requested from the unit manager and analyzed by the author. Fall incident reports are recorded after each fall as a usual part of the internal fall incidents reports collected by the health care facility for use by the organization. As a secondary purpose, to ensure ethical protection those data that were used for this project were de-identified, for the protection of all patients on whom the fall incident reports were written. Data was reviewed for the three months before IRB approval and three months post-approval. Hard copies of the data and other related files were kept in a locked filing cabinet by the researcher while electronic files were saved in a password-protected flash drive. All files will be kept in storage until five years after the completion of the project. After this five years' time frame all files will be disposed of, hard copies will be shredded, and electronic files erased.

Analysis and Synthesis

Evidence of the project provided as part of the operational data by the health care organization was in the form of printed data. This data consisted of previous fall occurrence recorded in the electronic post-fall incident reports. Post-fall data included date and time of fall, cause of falls, falls with injury, fall prevention measures in place, and assisted and unassisted falls. The data was gathered by the organization to serve as a

benchmark for comparison to other health care organization. The data was relevant to the purpose of the project. The evaluation of data was to determine if nurse's knowledge on fall prevention measures have a significant impact on the number of inpatient falls.

Data were also collected and examined to determine whether the educational secession improved nurses' knowledge. An initial measurement (pretest) took place before the supervised educational secession. The pretest measured the nurse's knowledge and became the reference point that was compared to the posttest result. The pretest and posttest were the same and was administered at a different time; however; nurses were not aware that both tests were the same (Kettner et al., 2008). After the educational secession, an identical supervised posttest was administered to each participant. Each participant was given an identified number which was logged to ensure that the number was not duplicated. The identified number was placed on the pre and posttest for comparison while guaranteeing anonymity. At the end of the educational secession and completion of the posttest, all completed test were collated and removed from the area.

Data Analysis

Excel spreadsheets were utilized to record, and organize the data collected. Data collected were the result of the pre and post-test scores for each participant after the educational secession. All test questions were equally weighed in point value. Descriptive statistics utilizing the paired *t-test* were used to analyze to see if there were a difference in knowledge enhancement using the pre and posttest scores. A paired *t*-test for related samples is the best statics to use for this analysis. The scores utilized were from the same staff nurses but under different circumstances in that nurses took the test before the

education secession and then after. Any difference in the number of correct answers on the test questions indicated where the greatest knowledge enrichment occurred. All data collected from the pretest and posttest scores were input from the paper test to Excel format and then transferred and analyzed using SPSS format. Data tables and graph were produced to report values and visually demonstrate the results. The number of inpatient falls for three months and the units census three months before IRB approval and three months after implementation was also collected and input into SPSS.

The software used for statistical analysis was SPSS while the software used for content analysis was NVivo. Numerical data was imported first to Microsoft Excel and was imported to SPSS worksheet for data analysis. Data collected on the causes of the falls, where available, was transcribed first and imported to NVivo. The integrity of the evidence was maintained during the analysis by making sure that only fully completed Fall incident reports were included for data analysis. Collected data was utilized only for the Fall prevention program comparative analysis. The outcomes of the project were provided to the project stakeholders and other key members in the organization. Results from both statistical and content analysis were synthesized to address the practice-focused question for this doctoral project. Also, general suggestions or recommendations based on the findings were provided on how to continue to improve the fall prevention program in the acute care unit.

Summary

This section discussed the practice-focused question and the literature search strategy utilized in the collection of evidence related to the topic, as well as the

procedures for collecting the evidence generated for the Doctoral Project. Both statistical analysis and content analysis were conducted to analyze the evidence collected using SPSS and NVivo software, respectively. Section 4 provides a discussion about the findings of the statistical and content analysis conducted, as well as the implications and recommendations.

Section 4: Findings and Recommendations

Introduction

Preventing falls is a major focus for health care organizations, payers, and regulatory institutions in the United States as this is indicative of quality care. The increased rate of falls in the cardiac care unit of an acute care hospital incited hospital leaders to review and revise their fall prevention program. The Hester Davis fall prevention protocol was implemented hospital-wide; however, there continued to be an increased incidence of falls.

The quality improvement program was to ensure that nurses were educated on the existing fall prevention program, as well as to introduce a more efficient program for utilization in the health care environment. The current fall prevention program did not effectively reduce falls and fall-related injuries; thus, there was a need to use an evidence-based program to develop a fall prevention program.

Sources of evidence included pretest and posttest data collected after the evidence-based educational program for the nurses on fall prevention, together with operational data on falls within the cardiac unit. I reviewed the institutional fall incident report to ascertain the number of falls 3 months before project approval and 3 months after approval. I collected the data in paper format, and results were entered into Excel database and then transferred into SPSS for analysis. Verbal data on the cause of falls were transcribed and analyzed through NVivo.

Findings and Implications

I designed this fall prevention educational training project for nursing staff working in the cardiac progressive care unit at an urban hospital in the U.S. state of Georgia. Two sets of data were collected, the pretest and the posttest. A total of 21 nurses participated in the pretest, whereas 18 (86.0%) completed the posttest. I educated nurses about the initiative to increase their knowledge of existing fall prevention program as well as introduce a more efficient program for utilization in the health care environment. The nurses were educated on fall risk factors, environmental assessment, training in ambulation, gait transfer and appropriate use of bed and chair alarms. The pretest and posttests consisted of multiple-choice questions, including questions on risk factors for fall, cause of falls in the hospital, how to mobilize patients with impaired mobility and management of the confused patient. A second set of data consisted of the unit census or the number of patients on the unit. The census was 442 (48.0%) from the 3-month pre intervention and 461 (52.0%) from the 3-month post-intervention for a total census of 903.

Knowledge of Fall Prevention

The AHRQ Fall Knowledge Test was the instrument used for data collection. The results showed the number of participants involved in the one group pretest results and one group posttest results. The first analysis is nurse's knowledge of the existing fall prevention program. The sample was paired and the mean score on the pretest was 81.62%, while it was 85.89% for the post-test, showing an increase of 4.27% (see Table 1). However, the mean difference of 4.27% was not found to be statistically significant at

p >.05, as shown in Table 1, with t (17) = -1.011, p = .326. The result indicates that the intervention did not significantly raise knowledge scores (see Figure 1).

Table 1

Paired Samples Test on Fall Prevention Knowledge

	Paired differences							
				95% CI of the difference				*p value (2-*
	m	*SD*	*SE* Mean	Lower	Upper	*t*	*Df*	*tailed)*
Knowledge	4.27	17.937	4.22	-13.19	4.64	1.011	17	.326

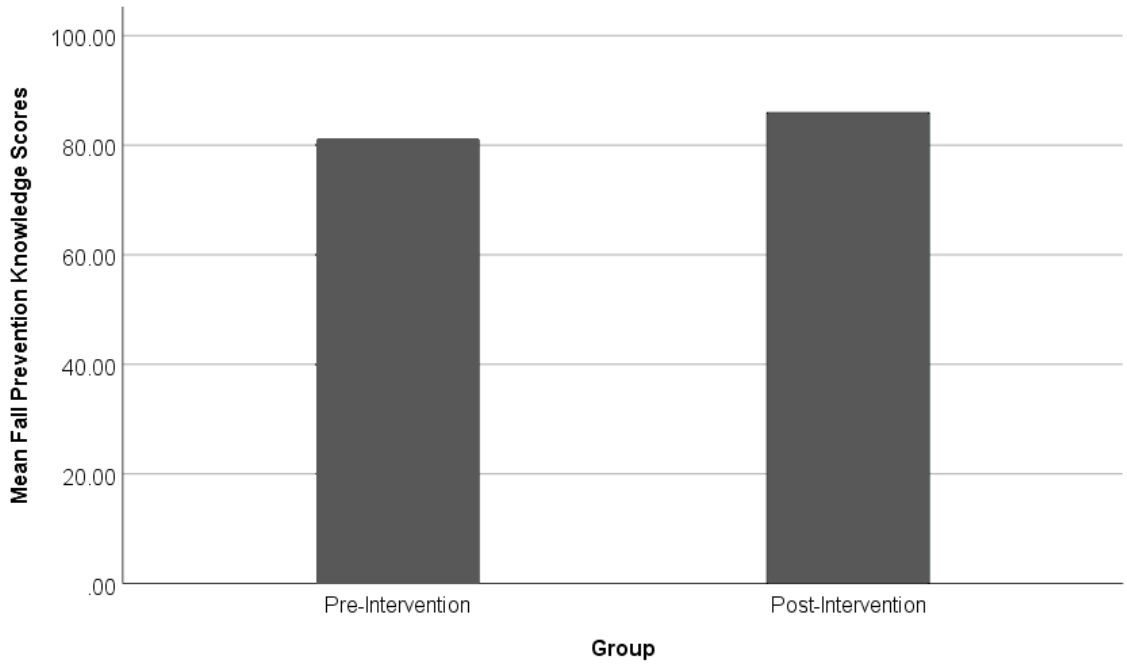

Figure 1. Bar graph illustrating the mean fall prevention knowledge preintervention and post intervention scores.

The pre-intervention questions ranged from 44.6% of participants answering incorrectly (Q12) to 100% answering correctly (Q2, Q6, & Q9), (Table 2). On the posttest, some questions had an increase in correct answers while some stayed the same. This may explain why there was no statistically significant difference between the pre and post-intervention tests of knowledge. However, in terms of the clinical impact of the education program, there were substantial gain in knowledge in a few of the areas on fall prevention, that may affect how the nurses care for those at risk for falls. There was a 39% gain in knowledge on Q12 ("Which of the following statements on education in fall prevention is false?"), as shown in Table 2. During pretest, 44.6% of the nurses got this question wrong, while only 5.6% answered incorrectly during posttest. This shows for instance that at the beginning of the program, many participants did not realize that "Education programs for staff should include the importance of fall prevention, risk factors for falls, strategies to reduce falls, and transfer techniques". Neither did they realize that "Instruction on safe mobility, with emphasis on high-risk patients, should be provided to both patients and families" Another question with obvious gain in knowledge, is Q5 with 38.8% difference. This question focused on care for patients with impaired mobility. The posttest result showed nurse learned that such patients should not be just "Confined to bed" but should be "Encouraged to mobilize with assistance," Assisted with transfers", and "Referred for exercise program or prescription of walking aids as appropriate".

Q3 also showed a significant increase (16.6%). The focus of this question was risk factors for falls (e.g.," Risk factors for falls in the acute care hospital include all the

following except") the posttest results showed nurses with increased awareness that "dizziness, vertigo, previous fall history and impaired mobility" played a significant role in patients risk for falls. Q10 also showed a gain of 16.7% in posttest. The emphasis of this question was knowledge of patients' risk factors (e.g., "Parkinson's disease, incontinence, previous history of falls, and delirium*"*). This was information that the nurses were not aware of before this educational program.

Table 2

Areas of Knowledge Deficit Among Participants on the Pretests and Posttests

Questions	Pretest % incorrect	Posttest % incorrect	% Difference
Q1	27.8	22.2	5.6
Q2	0	11.1	-11.1
Q3	22.2	5.6	16.6
Q4	38.9	38.9	0
Q5	44.4	5.6	38.8
Q6	0	0	0
Q7	27.8	22.2	5.6
Q8	27.8	33.3	-5.5
Q9	0	16.7	-16.7
Q10	16.7	0	16.7
Q11	22.2	22.2	0
Q13	5.6	0	5.6

Incidence of Falls

The second analysis was to evaluate whether the intervention with the nursing staff had an impact on the number of falls from the 3-month period prior to the intervention compared to the 3-month period after the intervention. The number of falls before and after intervention are both nominal variables and the groups are independent, so a chi-square test of independence was the most appropriate way to see if there is an association between the intervention and number of falls (Sheskin, 2011). There was not a significant association between the intervention and the number of falls, $X^2(1) = 1.138$, $p = 0.286$. The finding does not support that the intervention had an impact on reducing the number of falls. This result was discussed with the unit manager and staff during unit meetings. During the discussion fall prevention policy was emphasized, and procedures and tips on how to access fall prevention resources in the unit were discussed. In addition, discussion was held as to the reasons for the increased number of falls. Staff indicated that there was an increased nurse turnover which resulted in staff that was not familiar with the unit and the need to educate newly hired employee on the units fall prevention policies. Feedback was given on the increased number of falls from the unit staff such as staff lack of knowledge of location of all prevention tools. As a result of staff feedback and best practice methods for fall a fall policy revision included a bundle approach to fall prevention.

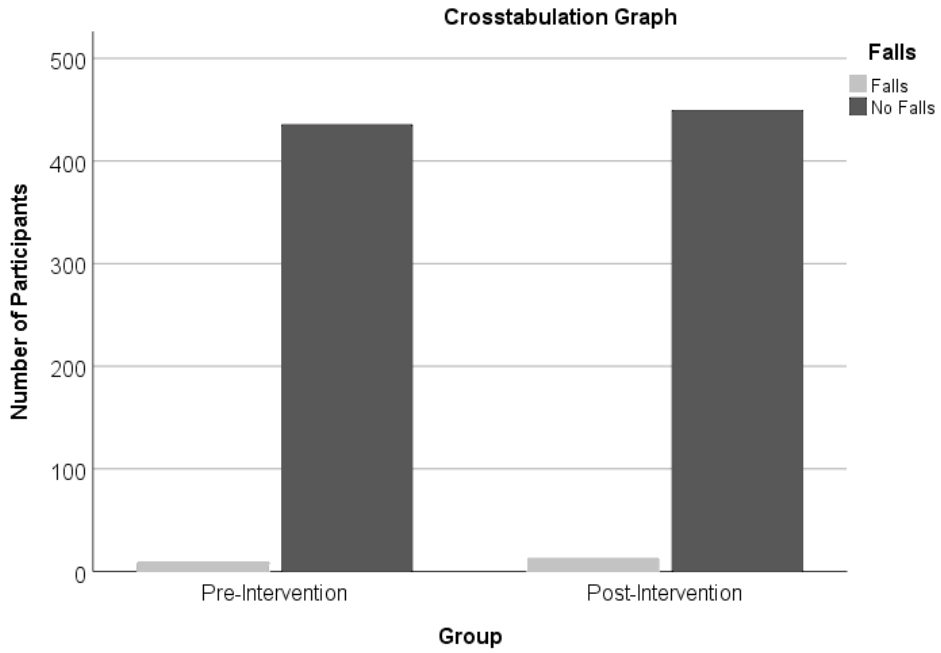

Figure 2. Cross-tabulation numbers of falls and no falls in pre and post intervention.

Verbal Data from Fall Incidence Reports

I collected and reviewed post fall documentation data dated from August 31, 2018, through January 21, 2019. Information related to specific incidences of falls was obtained through the post fall incident report, in which 19 instances of patient falls were recorded during this period. The fall incident report data was transcribed and imported into NVivo to analyze for thematic frequencies and to determine what numerous reasons there were for these falls. The findings identified specific return themes related to how the patient fell. The top five most frequent of these reasons are listed in Table 4.

Table 3 showed how patient falls occurred and whether the care assistant was present and assisted with the fall. An assisted fall occurs when a patient begins to fall and is assisted to the floor with assistance from another person. Fall prevention efforts are to

prevent all falls from occurring.

Table 3

How Patient Falls Occurred

Fall occurrence	Care assistant nearby
Fell while getting out of bed unassisted	No
Fell from the chair with care person assist	Yes
Fell while using the bathroom alone after no assist from bed	No
Fell while using bathroom alone after assist and with caregiver in other room	Yes
Fell from sitting position in chair	Yes

Table 4 shows the common themes associated with fall predictors and precursors. The data highlights the incident frequency based on predictors or precursors for falls that occurred within this cardiac unit during the pre and post implementation period of this project. The data provided suggestions for details as to why a fall potentially happened but more importantly gave information on such behaviors that could have prevented such falls. The most common occurrence shown when a patient was found on the bathroom floor. The data elaborated on such detail that the patient who fell had a care assistant nearby when they fell. The most common theme related to this result is that the care assistant was not only nearby when the fall occurred but had assisted the patient from the bed to the bathroom.

Table 4

Common Themes of Fall Predictors and Precursors

What occurred before fall	Fall	Frequency
Bed alarm went off while the patient got out of bed to go to the bathroom	Found on the bathroom floor	1
Caregiver gave patient assist from bed to bathroom/was still in the patient's room	Found on the bathroom floor	5
No assist when the patient went from bed to bathroom	Found on the bathroom floor	1
Patient agitated with the sitter	Fell from chair	1
Patient had care person assist getting up from chair	Fell to floor	3
Patient had no assist getting up from chair	Found on floor	1

Data on Specific Fall incidents

- October 17, 2018 the participant noted that the patient was assisted to the bathroom and the staff member waited outside the bathroom allowing for patient privacy, then after a moment the staff member heard a thump, rushed into the bathroom and found the patient on the floor.
- October 26, 2018 patient was assisted to the bathroom by the care assistant who instructed the patient to ring the call bell when finished. As the care assistant waited outside, the call bell went off, after which the care assistant entered the bathroom and found the patient on the floor.
- November 11, 2018 the patient was found kneeling on the floor claiming he needed to use the bathroom but could not get up.
- November 23, 2018 the patient sitter was assisting the patient back into their bed, and the patient's legs buckled whereby the sitter had to help the patient to the floor.

- December 15, 2018 a participant claimed a patient was ambulating to the bathroom assisted by a staff member. The patient stumbled, and the staff member assisted the patient to the floor.
- January 8, 2019, the participant explained that the patient bed alarm sounded, but when the staff member entered the room, they found the patient was located on the floor.

Poor judgment of potential fall predictors

It can be discerned from the fall incident report data collected that patients who are known risks for falls should have been considered in a high risk for falls group. The fact that high-risk fall patients necessitate considerable observation would suggest that the staff responsible for the patients need to be reminded through education that the propensity for fall is much higher in those patients considered high risk. What is most disconcerting from the fall incident report, is that during this quality improvement project period, the increased number of falls that occurred with staff members very close nearby suggests that the staff need to be re-educated on certain elements that cause a patient to be high risk for falls.

In several incidences it was noted that the patient was unable to ambulate from one place to another, for example, from the bed to the bathroom. The staff member that assisted in this initial ambulation, then allowed the patient to use the restroom alone. It is likely that the patient who could not ambulate alone would also have balance issues and would need assistance in using the commode. From standing to sitting, and sitting to standing, there is a high potential for falls with those patients who are in the high-risk fall

group. Placing more focus on the fall predictors during every aspect of caring for the patients, is likely to result in more positive social change needed in reducing the fall rates in the acute care settings.

Recommendations

This quality improvement project was meant to examine the nurse's knowledge of fall prevention protocol and practice in the cardiac progressive care unit and its effect on the incidences of falls in the unit. Data showed that increasing nursing knowledge about fall prevention did not have a significant impact on preventing fall in the unit. Perhaps a different strategy for education, a guideline where high risk patients are not left unattended and are closely monitored should be considered. In addition, educating new employees during the orientation process on fall prevention protocol and safe patient transfer techniques would be beneficial in increasing their awareness on the effort to reduce inpatient falls. Future project in fall prevention should consider reassessment at one-year post education intervention evaluation. Frequent in-services and focus groups comprised of nurses, care partners, and interdisciplinary team may enhance staff learning and improve clinical outcomes.

Introduction of a bundle approach to fall prevention should also be considered. A bundled approach to decreasing falls comprises of a multidisciplinary approach consisting of unit champions, nursing staff, physicians and supporting staff (Sutton, 2014). The bundle approach would incorporate procedures that are currently in use at the hospital. This includes ensuring that all patients at risk for fall would be properly identified. Fall risk identification would include items such as yellow armband, yellow socks and bed

alarm. Fall risk signage posted outside the patient's door can notify staff and visitors of the patient's fall risk. In addition, a "Call, Don't Fall sign" can be posted inside of the patient's room at a location that can be easily viewed by patient and family. Having all the above items located at one identifiable location in the unit with ease of access will make it easier for utilization. The fall bundle process will aid in preventing patient harm and increasing nursing awareness of falls (Sutton, 2014). Medication surveillance should be incorporated into the bundle approach. Modifying the administration of medications that can cause dizziness, to be given at bedtime, rather than in the morning, may be helpful in reducing falls.

Contribution of the Doctoral Project Team

The unit manager assisted in providing unit fall data for analysis and discussing patients at risk for fall during the unit huddle. The unit fall champion was identified, educated on fall prevention strategies, and assisted the researcher during the education secessions. At least one member of the bedside nursing staff was available for each shift to assist in post fall documentation and education. The roster was provided using a current work schedule to ensure that a fall champion was scheduled for each shift to collect data after a patient fall. When a patient fell, the fall champion assisted in completing the post-fall checklist, facilitated a post-fall huddle with the nursing staff and ensured that the nursing supervisor was alerted. During the safety huddle, nursing staff were alerted to evidenced-based interventions and encouraged to check the safety of patients on the unit. Project team members served as proctors during the educational secessions. Project team members also assisted as unit expert on fall prevention, and a

resource for peers, patients, and families. They also had expert knowledge on the use of related equipment and help to conduct environmental surveillance.

Strengths and Limitations of the Project

A strength of the project resulted from working in collaboration with nursing staff and other interdisciplinary team members to develop evidenced based practices for this project. Collaborating on the project created an enthusiasm for learning. Being able to share discoveries with the team fosters both individual and team knowledge.

There were several limitations to this project. First, the educational strategy utilized for this project was ineffective and another learning methodology should be considered. Nurses who were not on duty were unable to participate; therefore, limiting the number of participants. Also, there was a significant nurse turnover rate during this process which resulted in increased inpatient fall rates and the need to educate newly hired staff. Lastly, the project was limited to one-unit and inclusion of a secondary unit might have a different outcome.

Summary

The analysis of data was carried out using the SPSS for quantitative data and Nvivo software for the qualitative data. Results of the project data were analyzed and presented. Recommendations were provided for future studies, limitations encountered during the project were addressed. The collaboration of the researcher and the nursing staff of the cardiac progressive care unit signified the shared benefit of the partnership. The fall prevention plans discussed in the educational secession and their effectiveness in fall reduction in the future is unknown. For future studies would benefit from a longer

evaluation period. Regularly scheduled in-service education, also use of focus groups comprised of the multidisciplinary team may improve staff learning and improved

Section 5: Dissemination Plan

Falls are one of the most common and expensive health conditions in the health care system. Educating nursing staff on fall prevention policies is significant in decreasing falls in the acute care setting and keeping patient safe. Project findings were presented to organizational leaders and participants. A summary of the project results was submitted to leaders within the organization who will be able to use the results to improve patient care. Registered nurses on the unit, nurse managers, and those who will influence policies will be invited to a PowerPoint presentation followed by a discussion of project findings and its implications. It is important for nurses to use evidence to support research activities and translate EBP into daily nursing practice (Windey, 2017). All parties will be presented with a summary of the project with highlights of the results. The presentation will take place during a scheduled staff meeting. Project results will be shared with all unit members. Presenting the findings regarding nurses' knowledge of fall prevention protocol is vital to encourage discussion and educate staff and other stakeholders about issues relating to fall prevention that is crucial to health care and patient safety.

Analysis of Self

This project enabled me to increase my awareness of the importance of fall prevention in the acute care environment. My goal was to ensure that nurses realize how important it is to stay updated on fall prevention information and enhance their knowledge.

As a project manager, I have learned the importance of effective communication among members of the project team and organizational leadership in ensuring successful implementation of this project. I have learned that a clearly stated objective and outcome is essential for planning, implementing and project evaluation. I learned that effective time management skills are essential to ensure deadlines are met. In addition, having participants and supporters involved in the project is important to ensure project goals and objectives are achieved.

My resolution in earning a Doctor of Nursing practice degree was to obtain the qualification and skills needed to improve my leadership skills, develop expertise and become an agent of change in the health care environment. Completing this project made me reflect on the role of a health care professional, project manager and scholar. This process was very thought provoking; I had discussions with fellow doctoral students who shared comparable experience, their challenges and success. These conversations enabled me to be resilient, be patient, remain motivated and steadfast while accomplishing my goals. This experience had both positive and negative impact. I was driven and enthusiastic in the beginning; however, my desire and stride slowed significantly, and it became difficult to stay on course. In retrospect, I am thankful to have had this opportunity to advance my educational experience. This experience has reminded me of the work involved in achieving one's goals regardless of many challenges and obstacles. In summary, this journey served as both a personal exercise in professional growth and the opportunity to create positive social change in the health care environment.

Summary

Review of the literature indicates that fall is among the list of The Joint Commission's (TJC) sentinel events in the United States. Approximately 7,000 people experience a fall in the hospital each year, with 30% to 50% of these falls resulting in injury (TJC, 2015). Health care professionals are trained to provide care for a diverse patient population. The nursing staff is trained to utilize a proactive approach to ensure patient safety. Safe patient care amplifies the patient experience in an atmosphere that may otherwise appear confusing for patients and their families. Nursing staff receives regular updates on policy and procedure related to fall prevention which is closely associated with the organizations' mission. Fall prevention improvement methods comprise of review of current literature based on best practice and the hospital mission and vision. It is imperative that stakeholders continue to stress that reducing falls is an ongoing process requiring consistent effort and focus. Further study is needed to determine whether similar programs evaluated for a longer period can have a significant effect on fall reduction.

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Appendix A: Participant Agreement

Dear participant,

This evidence-based practice project is being conducted in partial fulfillment of the Doctor of Nursing Practice degree. The aim of the project is to assess the effect of nurses' knowledge on all prevention program on the incidences of falls in the progressive care unit at this facility. Because of your position as a registered nurse, your involvement is very important. Participation is voluntary and your decision to accept or decline this invitation will in no way affect your job. The test takes about 10 minutes to complete. No compensation is available for participating.

The study is completely confidential and anonymous. No identifying questions will be asked. Results will be analyzed and reported only in the collective. A box will be provided in which you can leave your completed test. All test will be kept in a locked cabinet.

Please feel free to direct any questions or concerns by email (Janet.Belcher@ waldenu.edu).

Thank you for your participation.

Janet Belcher, RN
Doctor of Nursing Practice Candidate
Walden University

Appendix B: Fall Prevention Knowledge Test

Instructions: *Each question may have more than one option as the correct answer. Please circle the letters that correspond to the correct answers.*

1. **Which of the following statements is *correct*?**

a. Falls have multifactorial etiology, so fall prevention programs should comprise multifaceted interventions.
b. Regular review of medication can help to prevent patient falls.
c. The risk of falling will be lessened when a patient's toileting needs are met.
d. The use of antipsychotic medications is associated with an increased risk of falls in older adults.

2. **A multifaceted intervention program should include:**

a. Individually tailored fall prevention strategies.
b. Education to patient/family and health care workers.
c. Environmental safety.
d. Safe patient handling.

3. **Risk factors for falls in the acute hospital include all the following *except*:**

a. Dizziness/vertigo.
b. Previous fall history.
c. Antibiotic usage.
d. Impaired mobility from stroke disease.

4. **Which of the following statements is *true*?**

a. The cause of a fall is often an interaction between patient's risk, the environment, and patient risk behavior.
b. Increase in hazardous environments increases the risk of falls.
c. The use of a patient identifier (e.g., identification bracelet) helps to highlight to staff those patients at risk for falls.
d. A fall risk assessment should include review of history of falls, mobility problems, medications, mental status, continence, and other patient risks.

5. **Patients with impaired mobility should be:**

a. Confined to bed.
b. Encouraged to mobilize with assistance.
c. Assisted with transfers.
d. Referred for exercise program or prescription of walking aids as appropriate.

6. **The management of the acutely confused patient should include all the following *except*:**
a. Moving patients away from the nursing station.
b. Involving family members to sit with the patient.
c. Orienting patients to the hospital environment.
d. Reinforcing activity limits to patients and their families.

7. **Which of the following statements is *false*?**
a. Fall prevention efforts are solely the nurses' responsibility.
b. A patient who is taking four or more oral medications is at risk for falling.
c. A patient who is taking psychotropic medication is at higher risk for falling.
d. Testing or treatment for osteoporosis should be considered in patients who are at high risk for falls and fractures.

8. **In hospital settings, intervention programs should include:**
a. Staff education on fall precautions.
b. Provision and maintenance of mobility aids.
c. Post fall analysis and problem-solving strategy.
d. Bed alarms for all patients, regardless of risk.

9. **When assessing patients, which of the following statements is *false*?**
a. All patients should be assessed for fall risk factors at admission, at a change in status, after a fall, and at regular intervals.
b. Medication review should be included in the assessment.
c. All patients should have their activities of daily living and mobility assessed.
d. Environmental assessment is not important in the hospital as it is all standardized.

10. **Risk factors for falls include:**
a. Parkinson's disease.
b. Incontinence.
c. Previous history of falls.
d. Delirium.

11. **Exercise programs for ambulatory older adults should:**
a. Be very aggressive.
b. Be unsupervised.
c. Be ongoing.
d. Include individualized strength and balance training.

12. **Which of the following statements on education in fall prevention is *false*?**

a. Education programs should target primarily health care providers, patients, and caregivers.
b. Education programs for staff should include the importance of fall prevention, risk factors for falls, strategies to reduce falls, and transfer techniques.
c. Instruction on safe mobility, with emphasis on high-risk patients, should be provided to both patients and families.
d. Education should only be given at the start of the fall prevention program.

13. **Which of the following is recommended to improve patient safety?**

a. Locking wheeled furniture when it is stationary.
b. Having nonslip flooring.
c. Placing frequently used items (including call bell, telephone, and remote control) within reach of the patient.
d. Rounding hourly to address patient needs.

Answer Key:

1. A, B, C, D.
2. A, B, C, D.
3. C.
4. A, B, C, D.
5. B, C, D.
6. A.
7. A.
8. A, B, C.
9. D.
10. A, B, C, D.
11. C, D.
12. D.
13. A, B, C, D