IMPLEMENTATION OF A FALL PREVENTION PROGRAM

TO DECREASE FALLS IN A SKILLED NURSING UNIT

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I have abided by the UNCG Academic Integrity Policy on this Assignment

Lorena Wagner, April 20, 2023

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Dedication and Acknowledgements

I dedicate this project to my darling husband, Dr. Shaun R. Wagner, who made this endeavor full of love beyond my imagination. I never thought to achieve this degree if not for you. I love you.

I acknowledge my wonderful family and friends for their unwavering support.

Thank you very much to Dr. Rebecca Kalinoski and my professors at the University of North Carolina Greensboro for their positive encouragement and guidance these three years.

Abstract

Background: Falls among older adults continue to climb in concerning numbers. **Purpose:** Utilizing the Fall TIPS Poster Toolkit as a communication tool and implementing hourly rounds are two fall prevention interventions designed to decrease the number of falls in a retirement community. **Methods:** Quality improvement project with Plan Do Study Act (PDSA) Cycle, quantitative statistics using Chi-square test for non-paired variables, average percentages, and 2D column bar charts. **Results:** Aggregate data resulted in a 13% decline in falls. **Recommendations:** The safety of older adults in long-term care facilities warrants support in continuing education and staff empowerment to implement fall prevention. **Conclusion:** The application of the Fall TIPS Poster Toolkit and the implementation of hourly rounds were demonstrated to mitigate the number of falls in a skilled nursing unit.

Key Words: "falls," "frailty," "falls in the elderly," "interventions for fall prevention," "fall prevention," "impact of falls"

Background and Significance

The World Health Organization (WHO) (2021) defines a fall as the intentional or accidental lowering to the ground or a lower level. Globally, the WHO (2021) rates a fall as a secondary cause of injury in older adults. Falls and fall-related injuries are detrimental to the health of older adult individuals, society, and healthcare (Jackson, 2016; Vlaeyen et al., 2017). Older adults aged 65 and over are the fastest-growing segment. By 2050, one in six people will be over age 65 (United Nations [UN], 2021). American older adults are anticipated to be 98 million by 2060, or one in four persons (United States Census Bureau, 2017). In the United States, 28% of the population aged 65 and older reported a fall. The fall may or may not cause a fatal injury; however, many falls equate to severe and devastating consequences. The negative impact of falls can manifest itself through delayed injury symptoms, costly medical treatments, reduced level of independence, loss of quality of life, and death (Bergen et al., 2016). The elderly can experience moderate injuries such as hematomas, bruises, scratches, lacerations, and sprains which can cause pain and altered functioning. More severe injuries include bone/hip fractures, head trauma, concussions, traumatic brain injury, and death (WHO, 2021). Those who fall without traumatic consequences develop a fear of falling that fosters limitations in their daily life (Agency for Healthcare Research and Quality [AHRQ], 2017).

Men tend to suffer more injuries resulting in mortality, while women suffer more non-fatal injuries, resulting in morbidities. In addition to physical injuries and insults, a fall can induce a downward psychological spiral that instigates fear of falling, therefore perpetuating decreased self-efficacy (Hallford et al., 2017; Payette et al., 2016). A fear of falling is a harbinger of decreased functional mobility, decreased capacity to perform activities of daily living, and influences poor social networking capacity (Kalinowski et al., 2019).

The Joint Commission (2022a; 2022b) defines a sentinel event as a compromise in patient safety that causes temporary or permanent disabilities, traumas, and deaths. Hence, the organization works with healthcare facilities to enhance patient safety, eliminate patient injuries, and avoid preventable disabilities and deaths. Part of the organization's policy is to prevent falls and fall-related injuries in older adults because a fall is considered a sentinel event. Approximately 37.3 million individuals fall and sustain injuries that necessitate acute and chronic medical care, yet one-third of patient falls are preventable (AHRQ, 2019; WHO, 2021). The Centers for Medicare and Medicaid Services (2021) has instituted in the Deficit Reduction Act of 2005 that payment provisions for complications or consequences from preventable injuries/deaths will not be reimbursed. Falls and associated trauma are among the ten categories included in this Act. Another organization, Healthy People 2030, aimed to reduce fall-related deaths and decrease emergency department visits due to falls in older adults (Office of Disease Prevention and Health Promotion [ODPHP], n.d.). There is a 1.9 increase in deaths from 64.4 deaths per 100,000 population in 2018 to 66.3 deaths per 100,000 population in 2019. This baseline data demonstrates negative progress (ODPHP, n.d.).

The Centers for Disease Control and Prevention ([CDC], 2021) reported that in the years 2007-2016, there was a 30% increase in fall death rates across the United States. In North Carolina, the second leading cause of unintentional injury and death in older adults is a fall, with a reported 27.6% increase in fall death rates. Fall-related hospitalizations and emergency department visits increased by 226.7% and 25.8% in older adults from 2010-2019 (Moreland et al., 2020, North Carolina Public Health, 2022). Projections for 2030 predict that seven fall deaths will occur every hour (CDC, 2021). The AHRQ (2017) found that in nursing facilities with 1.6

million older adults nationwide, 2 in 3 older adults who fall are more susceptible to a fall two or more times a year.

According to Florence et al. (2018), the financial toll of fatal falls in 2015 cost Medicare $29 billion, Medicaid $9 billion, and private payers $12 billion, for a total of $50 billion. In addition, the cost of non-fatal fall injuries amounted to $28.9 billion. These expenses do not include other compounding disabilities, caregiver assistance, and exacerbation of comorbidities from the fall and fall-related injuries (Bohl et al., 2010; Haddad et al., 2019). Furthermore, there is additional paperwork with skyrocketing insurance premiums, unfavorable survey results, and lawsuits (AHRQ, 2017).

In this DNP Project, a retirement community in northwestern North Carolina was identified with an average of 7.4 % (long-term stay), and 3.2 % (short-term stay) more falls with significant injury in this skilled nursing facility, as compared to the said state's average of 3.7% and a national average of 3.4% (U.S. Centers for Medicare and Medicaid, n.d). Based on these facts and statistics, fall prevention strategies for older adults are justified.

Purpose

This Doctor of Nursing Practice Project aimed to decrease the incidence of falls in a long-term care facility, especially during the night and weekend shifts, by implementing a fall prevention program. Per the Director of Nursing, most falls occurred during night and weekend shifts due to decreased personnel. Given the staffing challenges, the aim was to empower the staff to increase vigilance in fall prevention and initiate a process change to increase surveillance rounds during their shift. The utilization of purposeful hourly rounds and the incorporation of the Fall TIPS Toolkit poster were the evidence-based interventions utilized to achieve this goal. A fall prevention program was implemented in the retirement community for three weeks.

Review of Current Evidence

An electronic literature search included the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and Clinical Key databases. The advanced search in each database filtered only the English language, peer-reviewed scholarly/ academic journals, and articles dating from 2016 to the present. Search terms included "frailty," "falls in the elderly," "interventions for fall prevention," "fall prevention," and "impact of falls." Inclusion criteria included retirement communities, long-term care facilities, skilled nursing, and the older adult/elderly population. Exclusion criteria included studies with children or pediatric populations and specialty units. Forty peer-reviewed articles were selected for evidence after applying inclusion and exclusion criteria.

Contributing Factors of Falls

The pathophysiological changes in older adults impact their risk profile for falls and fall-related injuries. These pathophysiological changes include the tenets of geriatric syndromes and frailty. Geriatric syndromes encompass conditions that involve impairments in cognition, function, and mobility (Ward & Reuben, 2022). According to the Department of Ageing and Life Course by the WHO, frailty is the decreased resilience of the older adult's capacity to adapt and maintain homeostasis in the advent of stress, trauma, or injuries such as a near fall or a complete fall. Unsteady gait and balance also increased the risk of falls (Niederer et al., 2021).

Comorbidities in the older population make them even more susceptible to sustaining injuries (Cox, 2018; Padrón-Monedero et al., 2017; Winstead et al., 2021). Some common comorbidities include hypertension, diabetes mellitus, arthritis, musculoskeletal diseases, and osteoporosis (Ghorbani & Gharaei, 2019; Macri Gaspar et al., 2018). These and other comorbidities in older adults require a multitude of therapies. While these prominent features precipitate the susceptibility to falls, physiological and psychological factors also exist.

Polypharmacy, defined as the usage of four or more medications (Anderson et al., 2020; Bell et al., 2017; Fujisawa et al., 2021) and decline in cognition (Lokhande & Iyer, 2020, Maidan et al., 2020) are other detrimental factors in the increased risk profile for falls.

The older adult's vulnerability to stressors increases susceptibility to pathologies and escalates the risk of disabilities that can impact their social framework. These stressors can also contribute to burgeoning healthcare costs (Cesari et al., 2017; Lekan et al., 2021; Ribeiro de Sousa et al., 2022). After a pelvic, hip, or leg fracture, muscle atrophy can result (Magaziner et al., 2019; Sherrington et al., 2020). Wounds can develop due to immobility. Activities of daily living are severely impacted and contribute to an inevitable downward spiral. Acute and chronic pain, contusions, lacerations, sprains, strains, bruising, and hematomas can result from a fall and may have a prolonged course of healing or potentially no recovery (WHO, 2021).

The psychological impact of "ptophobia," or fear of falling, affects feelings of safety, impairs functional activities of daily living with self and others, and diminishes the quality of life (Gazibara et al., 2017; Pena et al., 2019; Pin & Spini, 2016). Sedentary lifestyles equate to poor self-efficacy, which predisposes this fear of falling (Akosile et al., 2021; Araya & Iriarte, 2021; Lee et al., 2018). Fear of falling tends to develop with the following factors: advanced age, female, widow, those who live alone, reside in a rural area, low educational attainment, retired, and low or inadequate income (Ivanović & Trgovčević, 2018; Macri Gaspar, 2018). However, ptophobia can still develop despite adequate functional capacity and no history of falls as age increases (de Andrade Nadu et al., 2021; Savas et al., 2019; Teixeira et al., 2019). Therefore, it should be imperative that evidence-based fall prevention interventions are established in facilities where older adults reside.

The Fall Tailoring Interventions for Patient Safety (TIPS) Toolkit poster

The Fall Tailoring Interventions for Patient Safety (TIPS) Toolkit poster is an evidence-based fall prevention tool created by nurse scientist Patricia Dykes and her research team in 2007 (See Appendix A). This poster has been disseminated and utilized for over a decade (Dykes et al., 2017; Katsulis et al., 2016), with a randomized control trial in 2010 reducing falls by 25% across major metropolitan hospitals (Dykes et al., 2010). The icons on the poster needed to be easy to understand for adult patients with varying levels of education, experiences, age, ethnicity, and spectrum of diseases. A diverse group of patients and nurses contributed to the refinement process of the icons undergoing methodological testing via the Determination and Quantification of Content Validity Index, which has been validated to develop instruments from survey items (Katsulis et al., 2021; Lynn, 1986). The Fall TIPS Toolkit poster was utilized in one long-term care facility in Canada that successfully decreased the number of falls (Huey-Ming et al., 2021). The Fall TIPS Toolkit poster has been primarily instrumental in acute care hospitals but has yet to be widely disseminated in long-term care facilities. Therefore, this DNP Project addressed this gap and utilized the Fall TIPS poster in the previously identified long-term care facility.

Hourly Rounds and Nursing Staff

In addition to the Fall TIPS Toolkit poster, hourly rounds and the involvement of the bedside nursing staff are also necessary components for fall prevention. Purposeful hourly rounds improved patient satisfaction with nursing care (Shin & Park, 2018). Hourly rounds have decreased the incidence of falls based on evidence (Morgan et al., 2017; Roberts et al., 2020; Zubkoff et al., 2019) and can also minimize financial costs (Nuckols et al., 2017). Bedside nursing staff are the individuals who mainly perform these hourly rounds. Nursing assistants constitute the bedrock of skilled nursing facilities (Abrahamson et al., 2018). Based on a study by Jenko et al. (2019), there was a 44% decrease in the number of falls in a long-term care

facility when nursing assistants are engaged and empowered in implementing a fall prevention program. Healthcare staff directly involved at the bedside are vital in assessing fall risk and collaboratively facilitating interventions since fall prevention strategies are a multifactorial process (Colón-Emeric et al., 2017). Therefore, involving nursing assistants through education can be part of a successful fall prevention program initiation (Fehlberg et al., 2017; Zubkoff et al., 2019).

<div align="center">**Conceptual Framework/Theoretical Model**</div>

The Adult Learning Theory guided the education of implementing a fall prevention program in a skilled nursing unit at a long-term care facility. Adult learners are self-directed, life-centered learners whose past and present experiences and desire to improve their current situation heavily influence their motivation to learn (Knowles et al., 2005). Adults are at a different developmental stage where current life situations and experiences dictate non-authoritarian teaching and informal learning that cultivates mental inquiry. (Knowles et al., 2005; Merriam & Bierema, 2014). Education sessions were provided on August 19-21, 2022, with a PowerPoint presentation throughout the shift (See Appendix E). After the nurses were settled for their shift, education sessions were provided. The education sessions needed to cater to the busy schedules of the staff. The nurses were given tailored education sessions according to their needs and availabilities, including presenting the material in the break room, during their walk in the unit, while tidying the patient's rooms, or during their turn to watch patients in the main hall. They were given as much or as succinct information as they requested. The PowerPoint slides were presented using simplified medical language, concise knowledge points in bulleted format, and could be read through within a minute (See Appendix E). Following The Adult Learning Theory, the PowerPoint slides were succinct, easy, and not complicated.

Methods

Falls and fall-related injuries are detrimental to the overall health of the older adult population. This DNP Project aims to decrease the number of falls in a long-term care facility in three weeks. Internal Review Board (IRB) approval was acquired on April 22, 2022, and the facility's quality improvement committee approval was acquired on July 25, 2022. After their appraisal, education was disseminated to the nursing staff on August 19-21, 2022. Methods included the fall prevention knowledge test before and after the education delivery. This questionnaire contained the same questions for both before and after education. The purpose of the pre-questionnaire was to assess the nursing staff's knowledge level in recognizing and preventing falls in older adults before the provision of education. The post-questionnaire aimed to assess the effectiveness of the education provided. The education piece emphasized the susceptibility of the older adult to falls, the causes of falls as described in the review of the evidence, and the evidence behind the interventions of the Fall TIPS Poster Toolkit and hourly rounds. Emphasis was given to nursing roles as critical bedside staff to ensure the success of this fall prevention program. Check-ins were performed throughout the process for guidance, support, analysis of any drawbacks, and modifying and adapting the interventions.

The Director of Nursing was sent an e-mail on August 1, 2022, requesting that the staff be informed of the education sessions. Reminders regarding the education sessions were sent again on August 10, 15, and 18, 2022. Before the start of the education sessions for each staff member, it was emphasized that participation was voluntary and that no staff or patient identification was needed for the project. A few of the staff were agency nurses who refused to participate. Some staff members were open to the education session when they were pursued as they performed their duties. Some of them preferred that the pre/post-test questions and the

PowerPoint presentation be read to them so they could be timely with their duties and responsibilities.

During the implementation, the staff decided that sign-in sheets for hourly rounds were unnecessary. This was due to personnel shortages and additional paperwork. Hourly rounds became a verbal arrangement and agreement among the staff.

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Design

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The design is a quality improvement project that compared the number of falls before and after implementing evidence-based fall prevention interventions for three weeks. This design determined if the evidence-based interventions improved patient safety by decreasing the number of falls. The staff determined the feasibility of the project's long-term sustainability in this facility.

Translational Framework

The Plan Do Study Act (PDSA) Cycle helped apply and guide the DNP Project of implementing a fall prevention program at a retirement community. The PDSA Cycle is a continuous and systematic way of creating small organizational change with the most impact (Moen, 2009; The W. Edwards Deming Institute, 2021). The "Plan" stage involves identifying the problem, establishing evidence-based interventions, and creating measurable goals. The "Do" stage is where the implementation actions occur. The "Study" stage consists of observations and critical analysis of the successes, failures, and unexpected barriers. The "Act" stage integrates all the information collected from the beginning, then modifies and adapts a suitable action plan to meet the goal. The PDSA cycle can be utilized continuously and repetitively to reflect the ever-changing learning environment (The W. Edwards Deming Institute, 2021). Permission to

reproduce the Plan Do Study Act cycle in this DNP Project was given on February 9, 2022 (See

Appendix E).

Figure 1

Plan Do Study Act Cycle
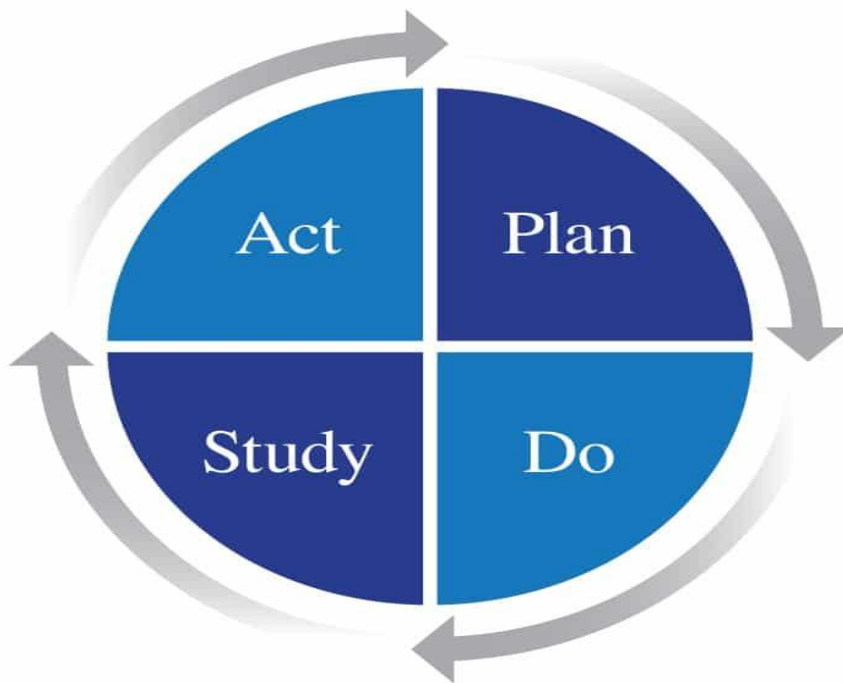
Note. Reprinted courtesy of The MIT Press and The Deming Institute W. Edwards Deming, *The New Economics for Industry, Government, Education, third edition*.

For the fall prevention program, the "Plan" stage identified an increased number of falls within the skilled nursing unit of a retirement community, especially during the night and weekend shifts. Some of these falls caused significant injuries to patients. Two weeks before the start of the project, the number of falls was collected to establish a baseline. The Director of Nursing of this long-term care facility gave this fall metric measurement. The solutions proposed were a) a process change in educating the staff to incorporate hourly rounds and b) the utilization of the Fall TIPS poster as a communication tool during shift change. The "Do" stage was the performance of the risk assessments utilizing the laminated Fall TIPS poster for each resident and the actual appointment of schedules for hourly rounds via staff rotation. The "Study" stage determined the success and barriers encountered by the staff and whether the process change was a feasible or non-feasible long-term intervention. There was a re-evaluation of the number of falls two weeks post-intervention. The "Act" stage adapted and modified the interventions depending on staff feedback to reduce falls. The "Act" stage was the basis of a procedure change and policy adaptation within the long-term care facility. The PDSA cycle can impact this small organizational change through continuous assessment, implementation, and re-evaluation (Moen, 2009; The W. Edwards Deming Institute, 2021).

Population

The population for this DNP Project was a convenience sampling from two units in the long-term care facility. Patients in the rehabilitation unit typically recovered from hip/knee/ankle surgeries and required intensive physical/occupational therapy. Patients in the long-term care unit typically have chronic diseases, primarily dementia and Alzheimer's. The patients' ages in the two units were above 50 years old. The Fall TIPS poster and hourly rounds were explained to

each resident and family as they wished by voluntary nursing staff as the patient's cognitive abilities allowed. Anonymity and safety were emphasized.

Setting

A long-term care facility in northwestern North Carolina was identified as a place to implement a fall prevention intervention. The facility is a not-for-profit organization with a 70-year history of providing independent living, assisted living, memory care, short-term rehabilitation, and skilled nursing care. There are two units within the long-term care facility where the DNP Project was conducted. The first was a 14-bed rehabilitation unit for short-term residents with one licensed practical nurse and two certified nursing assistants. The second unit was a 24-bed locked-down unit for long-term residents staffed with a licensed practical nurse or a "med aide" (staff responsible for administering medications) and three certified nursing assistants. This locked-down unit had the highest number of falls in the facility. One registered nurse supervised the entire facility.

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Project Implementation

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Stakeholders included the director of nursing, shift supervisors, licensed practical nurses, med aides, and certified nursing assistants. A DNP-prepared graduate professor assisted in the oversight of the project. The project began after IRB approval. The fall prevention program was presented to the facility's Quality Assurance Project Implementation (QAPI) committee. After their approval, the staff were provided education sessions to capture every employee who wished to participate in the night and weekend shifts. The three-week timeline began on August 19, 2022. The fall prevention knowledge test was utilized to assess the knowledge regarding fall risk, assessment, and prevention. Hourly rounds were appointed to the staff on odd/even hours so that

the responsibility was equally distributed. The shift changes within patient rooms served as the first set of hourly rounds.

The Fall TIPS Poster Toolkits were hung inside patients' rooms. They were visible and accessible to the staff, patients, and families. During shift change, the certified nursing assistants, LPNs, or med aides updated the poster using dry-erase markers. They circled the icon that best reflected the patient's needs regarding transfers, toileting, ambulation, and additional safety interventions during their shift. Thus, the Fall TIPS Poster Toolkit served as a communication tool for the staff and patients (See Appendix A).

Measurement Methods/Tools/Instruments

Dr. Patricia Dykes created the Fall TIPS poster toolkit and the fall prevention knowledge test (See Appendix A and B). She granted permission to use the Fall TIPS poster toolkit on October 31, 2021. The permission included a change of an icon of a bed alarm to a pummels cushion to reflect the practices of this particular facility best. Dr. Dykes granted permission to use the fall prevention knowledge test without alterations on February 13, 2022 (See Appendix C).

The fall prevention knowledge test has a tetrachoric reliability coefficient of 0.73 and a validity result of paired t-test=12.4, p <0.001 (Dykes et al., 2019). The fall prevention knowledge results were evaluated using the Chi-Square test for pre/post-design. The test was given to the staff who were present voluntarily before the education session, and the test was repeated right after for re-assessment. This quick re-assessment was to capture the already available staff due to staff turnover, callouts, and staffing coverage provided by agency nurses.

Timeline and critical milestones

After approval from the IRB in April 2022, a quality improvement committee meeting commenced at the long-term care facility for their appraisal. Based on their approval, a baseline

number of falls was collected on Monday, August 8, 2022, via e-mail. Fall metrics were collected three weeks post-project implementation on Monday, September 26, 2022, via e-mail. These fall metrics were collected from the director of nursing.

The pre/post-test scores of the fall prevention knowledge test were collected before and after the education sessions on Friday to Sunday, August 19-21, 2022, to capture the voluntary staff who participated. Data were de-identified, aggregated, and did not involve patient/staff health information. There were no recorded sessions. Implementation of the Fall TIPS posters and hourly rounds started on Monday, August 22, 2022, and ended on Sunday, September 11, 2022.

IRB approval

Data privacy was essential for this DNP Project; only aggregate data were collected. The director of nursing provided the fall metrics as measurement outcomes. The fall prevention knowledge test given pre-and post-education sessions were true or false questions, with a Likert scale to self-measure confidence and ability to prevent falls. The provider indicated their comfort level in preventing falls using a numeric scale and their role in the facility. The fall prevention knowledge test did not require staff identities. No patient health information or staff identifiers were necessary to implement this project successfully.

Steps Implemented

The doctoral-prepared faculty mentor critically examined this doctorate project. IRB approval was granted on April 22, 2022. The stakeholders of this DNP Project included the doctorate-prepared graduate professor, the director and assistant director of nursing of the facility, the staff of the long-term care facility who voluntarily participated, and the doctoral candidate.

Data Collection

The doctoral candidate performed data collection. Data was collected after IRB approval and the appraisal of the long-term care facility's quality improvement committee. Fall metrics, as aggregate data, were collected on Monday, August 8, 2022, and Monday, September 26, 2022, from the director of nursing via electronic mail.

Education sessions for the nursing staff occurred on Friday, August 19, 2022, through Sunday, August 21, 2022. Light refreshments were provided. It was emphasized that staff participation was entirely voluntary. Data was collected from the staff during their shift in the two units identified with the highest risk of falls. The fall prevention knowledge test was provided on paper. No staff identifiers were on the test, and this was always kept with the doctoral student. Staff was approached during their shift, and permission was granted or denied for the fall prevention knowledge test to be answered and for the education session to commence. Copies of the PowerPoint presentation were left with the staff as they wished.

Data Analysis

The fall metrics and fall prevention knowledge test employed the Chi-square test for non-paired variables. The staff rated their confidence and ability to prevent falls using a Likert scale. It was presented in 2D column bar charts with percentages. These data analysis calculations were done on Microsoft Excel under the supervision of the university statistician.

Results

Evaluate Outcomes

Ten voluntary staff participated in the fall prevention program project. The fall prevention knowledge test evaluated two outcome results. The Chi square distribution for non-paired values was used to calculate the results to exhibit statistical significance before and after project implementation. An alpha of 0.05 was set as the significance level. The fall prevention

knowledge test was used to assess the staff's baseline knowledge and comfort in fall prevention and equip them with tools to increase vigilance and surveillance of patient care.

Table 1

Demographics of Voluntary Participants

Certified Nursing Assistants	Licensed Practical Nurses
7	3

The null hypothesis for the first evaluation stated that there was no association in the proportion of true/false responses between pre/post-fall prevention knowledge tests. The alternate hypothesis stated that there was an association. This result measured the effect of the education sessions on fall prevention. The chi-square distribution and p-value were 0.117688506, that was greater than the alpha of 0.05. A result greater than alpha of 0.05 meant that the null hypothesis could not be rejected; therefore, there was no association in the proportion of true/false responses between pre/post-test.

The null hypothesis for the second evaluation stated that there was no knowledge change with the education session. The alternate hypothesis stated a knowledge change before and after the education session. The chi-square distribution and p-value were 0.345211137 that was greater than the alpha of 0.05. This result impacted the project's goal to decrease the number of falls. A result greater than an alpha of 0.05 meant that the null hypothesis could not be rejected; therefore, there was no knowledge change with the education session, and did not support statistical significance.

The nursing staff rated their overall confidence with their ability to prevent residents from falling using a point scale (0 = not at all, 10 = very much so). This test assessed the need to

empower staff to increase vigilance with patient rounds to decrease falls. A 2D bar chart with percentages examining overall confidence in fall prevention is shown in Figure 2.

Figure 2

Pre/Post-Test Response Rate of Overall Confidence
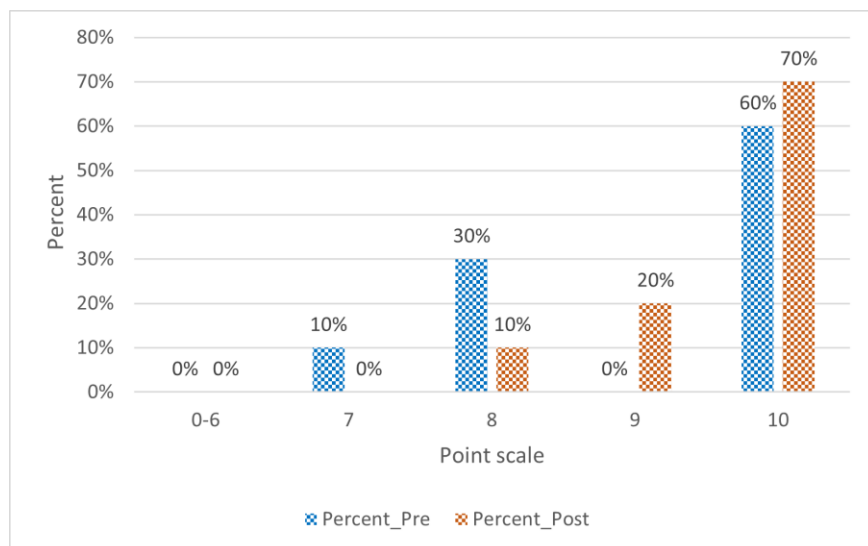
This test examined the need to initiate a process change to increase surveillance in patient care to decrease the number of falls. In addition, the staff rated their ability to prevent patients from falling using a Likert scale of above average, average, and below average. Results examining the ratings for staff's ability to prevent falls are shown in Figure 3.

The fall prevention knowledge test, with its corresponding hypothesis outcomes, exhibited the neutral impact of the education sessions. Knowledge of fall prevention stayed the same. However, the staff who voluntarily participated showed increased confidence and comfort in recognizing and preventing falls after the education sessions.

Figure 3

Pre/Post Ratings for Overall Ability to Prevent Falls
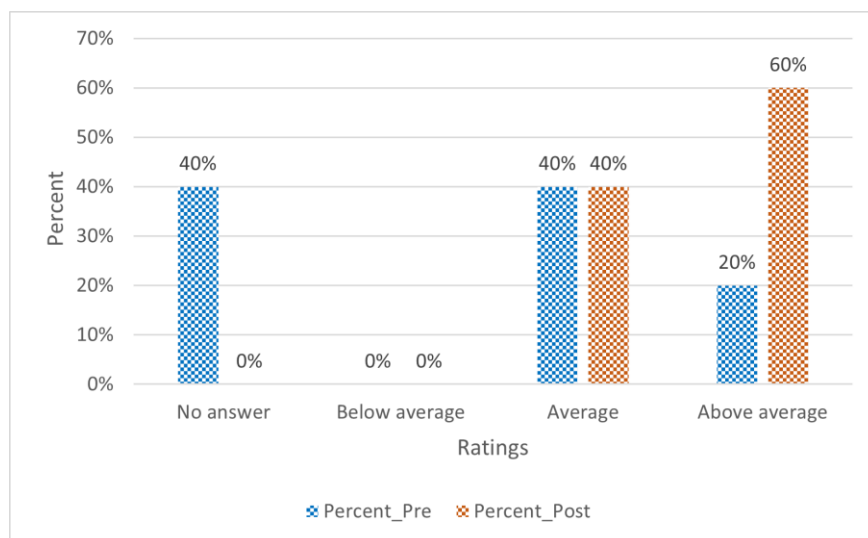
Table 2

Aggregate Falls Data Pre/Post-Project Implementation

	Number of residents	Average fall	Night/weekend fall average
9-Aug-22	34	6.3	68%
26-Sep-22	38	3.2	55%

Identify Barriers to Success

The implementation of the fall prevention knowledge program encountered several barriers to success. There was a lack of visible leadership during the education sessions despite many e-mail exchanges for appropriate scheduling. There was no appointment of leaders that could oversee the verbal agreements made using the Fall TIPS Poster Toolkit and hourly rounds. Most of the staff were unaware of the education sessions and could not check the e-mails

containing reminders of the education session. There were also no provisions for staff breaks, dedicated time for education, or a room conducive to learning. Instead, the education sessions were given while staff performed their duties.

The fall prevention knowledge test itself was found to be cumbersome by staff due to the length and complexity of the questions. Furthermore, some staff could not be captured due to their fixed schedules and workload. There was also a higher agency versus full-time staff ratio. Most agency nurses approached refused participation. In addition, the cost of the laminated posters, dry-erase markers, and light refreshments was not adjusted to the current inflation. Despite these barriers, the project progressed according to the expected timeline.

Identify Strengths to Overcome the Barriers

The project's strength was based on the resilience of the staff to accommodate the formulation of a fall prevention program to protect the patients they care for. Despite the workload and responsibilities, the staff wanted a communication tool to enhance patient safety. The staff who voluntarily participated accommodated the provision of education during their duties. The staff also proactively voiced that additional paperwork for hourly rounds documentation will only be a burden. This feedback initiated an intervention change to support the staff best and the project's successful implementation.

<div align="center">**Discussion**</div>

Introduction

This Doctor of Nursing project aimed to decrease the incidence of falls in a long-term care facility, especially during the night and weekend shifts. The fall prevention program utilized the Fall TIPS Poster Toolkit and hourly rounds as its interventions. The staff was given three days of education sessions with pre/post-fall prevention knowledge tests.

The rate of falls decreased by 3.1% two weeks post-project implementation. The education provision made an impact despite the small sample size but did not move the marker in affecting the staff's knowledge. However, the overall confidence and ability to prevent falls exhibited a combined 50% increase regarding fall prevention and this result achieved clinical significance.

Conceptual and Translational Frameworks

The Adult Learning Theory guided the creation and provision of the PowerPoint Presentation. Adult learners are receptive when new learning is relevant to their workflow. The impact of a patient fall on a provider includes negative feelings such as guilt, fear, frustration, stress, shame, and trauma (King et al., 2018). A fall that occurs is detrimental to staff morale. The staff were genuinely concerned for their patients and did not want harm to befall them. Therefore, the project's purpose was relevant to their work and enabled adult learners to be more receptive to learning.

Moreover, adult learners are independent and more likely to feel empowered when education is tailored to their needs. The education sessions were flexible and catered to a suitable time of their choosing. The fall prevention knowledge test did not have a time frame, and they were given time and space for completion at their convenience. Hence, The Adult Learning Theory was helpful in its guidance of the education sessions.

The original "Plan" of the PDSA Cycle included sign-in sheets for hourly rounds as part of the intervention process. When it was time for the "Do" part, the feasibility of its completion was ineffective due to the nature of staff responsibilities. The "Study" part evaluated if the sign-in sheets were necessary to accomplish hourly rounds as gathered from staff's opinions. From the participant's consensus, the sign-in sheets were more burdensome than helpful. Therefore, they

were removed. The "Act" stage re-implemented the revised intervention without the sign-in sheet. This change was doable and acceptable, as reviewed by the staff. The PDSA Cycle identified that hourly rounds were beneficial for fall prevention. However, staff deemed the sign-in sheets requiring a signature every hour tedious and non-contributory. This step was removed, and the implementation plan was restarted.

Interpretation

The aggregate data showed a 3.1% decrease in average falls despite the addition of four residents in the two units where the project was implemented. The night and weekend shifts were also the project's main focus, resulting in a 13% decline in the number of falls. This result was unanticipated due to the barriers encountered during project implementation. Despite the lack of statistical significance, the stakeholders of this project benefited from the decreased number of falls by clinical significance. The average decrease in falls within the two units signified that the Fall TIPS Poster Toolkit and hourly rounds were interventions that could enhance patient safety, can be efficiently utilized by staff, and can improve public quality measures. Fall prevention strategies are multifactorial and multi-dimensional, thus requiring a multidisciplinary team since older adults are in a heightened state of vulnerability (Cox, 2018; Padrón-Monedero et al., 2017; Winstead et al., 2021). Despite using the Fall TIPS Poster Toolkit in metropolitan areas, this project has proven that the poster can also be utilized in long-term care facilities. Only one other long-term care facility utilized the poster as evidenced in the study by Huey-Ming et al. (2021), with a similar goal of decreasing falls. Furthermore, the study by Huey-Ming et al. (2021) in a long-term care facility was conducted in Canada, and no published study was found in the United States. The project poster had to undergo icon changes to reflect best practices within the respective facilities. However, the icons were universally understood regardless of physical or

mental capacity, as Katsulis et al. (2021) and Lynn (1986) researched. Bedside staff was critical in implementing fall prevention strategies, especially hourly rounds, as evidenced by the studies of Abrahamson et al. (2018) and Jenko et al. (2019). However, the sample size did not reflect the full participation of the entire staff. Only voluntary participants were counted; therefore, the project did not reach statistical significance. The Fall TIPS Poster Toolkit and hourly rounds are just two interventions in fall prevention, among others.

Recommendations for Future Study

Future studies can include leadership presence during education sessions. There can be weekly or daily interdisciplinary team meetings that address safety care plans with staff and weekly or monthly educational offerings that boost knowledge and empower staff about fall prevention practices (Fehlberg et al., 2017; Zubkoff et al., 2019). There should be the option to be a fall prevention leader for each shift and emphasize that fall prevention is everyone's responsibility (Colon-Emeric et al., 2017). Furthermore, the Fall TIPS Poster Toolkit and hourly rounds in the facility can be adopted as part of a systemwide policy and standard protocol.

Limitations

This DNP Project's sample size was small and was implemented in only two units at a single skilled nursing facility. These factors did not contribute to statistical significance. The quantitative results of the fall numbers were not derived from a reliable and valid collection system such as the electronic medical record (EMR). The falls were not differentiated as falls with or without significant injuries. Furthermore, the fall numbers did not distinguish if there were multiple falls on one particular patient or if the falls occurred with several patients. However, the project may be generalizable out of the sample group and setting because fall prevention is a universal need in places where older adults reside. These limitations can be remedied by applying the Fall TIPS Poster Toolkit and hourly rounds as a vested intervention

and policy throughout the facility and at additional facilities. Fall metrics can be posted in the EMR for staff access, so avoidance of falls can be expected to become a shared responsibility.

Relevance and Recommendations for Clinical Practice

The decrease in falls from this DNP Project emphasizes the need for fall prevention strategies. The safety of older residents in long-term care facilities warrants supports in continuing education and staff empowerment in implementing a fall prevention program. Hourly rounds emphasizing fall prevention can be made an expectation during orientation and onboarding of new staff. Continuing education with full-time and agency bedside staff, and leadership visibility and support can make this quality improvement initiative sustainable.

Conclusion

Falls can cause a detrimental downward spiral in the quality of life of older adults. Integrating a fall prevention program is imperative in keeping older adults safe. The application of the Fall TIPS poster toolkit and the implementation of hourly rounds were demonstrated to mitigate the number of falls in a skilled nursing unit, even during the night and weekend shifts.

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Appendix A

The Fall TIPS Poster Toolkit

Appendix B

The fall prevention knowledge test

Please mark whether you believe the statements below to be true (T) or false (F)

1. Bedside nurses know their patients are better than a standardized screening scale at identifying patients likely to fall**. _____
2. The 3-step fall prevention process is comprised of a) screening for fall risks, b) developing a tailored fall prevention plan, c) completing fall prevention documentation _____
3. A 75-year-old male with history of recent falls and osteoporosis is admitted for severe abdominal pain. He is at increased risk for injury if he falls due to his age _____
4. A common reason why hospitalized patients fall is that their fall prevention plan in is not followed _____
5. Falls can be prevented in patients who are susceptible to falling because of physiological problems by providing a safe environment (e.g. clear path to bathroom, room free of clutter, good footwear) _____
6. Patient engagement in fall prevention means that the nurse completes the fall risk assessment and prevention plan, and then teaches the patient about their personal fall risk factors and prevention plan _____
7. All hospitals are different; therefore, they should develop their own fall risk assessment forms _____
8. A fall risk screening scale identifies those patients who are likely to fall because they have one or more physiological problems _____
9. When nurses communicate with patients about their increased risk for injury if they fall, this improves the likelihood that patients will follow their personalized fall prevention plan _____
10. Patients at low risk for falls do not require a fall prevention plan _____
11. Bed and chair alarms should be activated for all patients who screen positive for being at a high risk of falling _____

Overall, how confident are you with your current ability, either in a direct care capacity or teaching others in a leadership/management position, to prevent hospitalized patients from falling? Please use a 10-point scale (0= not at all 10=very much so) _____

How do you rate your ability to prevent patients from falling?

      Above average   Average   Below average

Please write your role: (e.g. RN, LPN, CNA, Med aide)

Appendix C

Permission to use the fall prevention knowledge test

Dykes, Patricia C. <PDYKES@BWH.HARVARD.EDU>
2/13/2022 10:27 PM

To: lorena.tembrevilla@outlook.com; PHS Fall TIPS Cc: Bowen, Mica Rae Curtin

Dear Lorena,
You can use the FPKT but keep question #11 (the answer is no) so is not in conflict with your local practice.
Best

Patricia C. Dykes, PhD, RN, FAAN, FACMI
Program Director Research
Center for Patient Safety, Research, and Practice
Brigham and Women's Hospital
Associate Professor of Medicine
Harvard Medical School

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BRIGHAM HEALTH
BRIGHAM AND WOMEN'S HOSPITAL   HARVARD MEDICAL SCHOOL TEACHING HOSPITAL
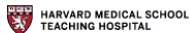
From: lorena.tembrevilla@outlook.com <lorena.tembrevilla@outlook.com>
Sent: Tuesday, February 8, 2022 9:34 AM
To: Dykes, Patricia C. <PDYKES@BWH.HARVARD.EDU>; PHS Fall TIPS <PHSFallTIPS@partners.org>
Cc: Bowen, Mica Rae Curtin <mrbowen@bwh.harvard.edu>
Subject: RE: Permission to change the bed alarm icon on the Fall TIPS poster

External Email - Use Caution

Good afternoon,

May I ask permission to utilize your fall knowledge test for my fall prevention project? I hope I may use this fall knowledge test without question #11 regarding bed alarms since the facility does not utilize this? Thank you very much for all of your assistance and collaboration.

Appendix D

Permission to use the Plan Do Study Act Cycle

From: Janine Stanley
Sent: Wednesday, February 9, 2022 4:36 PM
To: lorena.tembrevilla@outlook.com
Subject: Re: Request for permission for PDSA cycle

Hi Lorena,

I am happy to grant nonexclusive permission to reproduce the PDSA cycle in your forthcoming doctorate project. Please credit the reprinted figure to W. Edwards Deming, *The New Economics for Industry, Government, Education, third edition*, figure 13, page 91, reprinted courtesy of The MIT Press and The Deming Institute.

Best regards,
Janine

Janine Stanley
Senior Administrative Specialist
Janine@deming.org
The Deming Institute
Facebook - Twitter - LinkedIn

From: "lorena.tembrevilla@outlook.com" <lorena.tembrevilla@outlook.com>
Date: Tuesday, February 8, 2022 at 8:32 AM
To: "janine@deming.org" <janine@deming.org>
Subject: Request for permission for PDSA cycle

Dear Ms. Stanley,

My name is Lorena Tembrevilla, a nurse practitioner student at the University of North Carolina Greensboro. I would like to ask permission to use the PDSA cycle chart for my doctorate project. The project will be an implementation of a falls prevention program at a retirement community this coming Fall semester. I hope that you can inform me of any requirements you have.

Sincerely,
Lorena

Lorena Tembrevilla, BSN, RN-BC
University of North Carolina Greensboro
School of Nursing, Doctor of Nursing Practice Program
Adult Geriatric Nurse Practitioner Student

Appendix F

The fall prevention knowledge Power Point presentation

FALL PREVENTION PROGRAM

Lorena Tembrevilla RN

What is a fall

The intentional or unintentional lowering to the ground or lower level

Every **20 minutes** an older adult dies from a fall in the United States. Many more are injured.

Take a stand to prevent falls

STEADI Stopping Elderly Accidents, Deaths & Injuries

CDC

Date

World Health Organization [WHO], 2021

shutterstock.com · 1382674910

2

Older adults

7th leading cause of death

Physiological Impact:

- Muscle atrophy due to leg, hip, or pelvic fractures
- Wounds from immobility
- Acute/chronic pain
- Contusions, lacerations, sprains

A prolonged course of healing or potentially **NO recovery**

Fall Death Rates in the U.S.
INCREASED 30%
FROM 2007 TO 2016 FOR OLDER ADULTS

If rates continue to rise we can anticipate

7 FALL DEATHS EVERY HOUR BY 2030

Learn more at www.cdc.gov/HomeandRecreationalSafety.
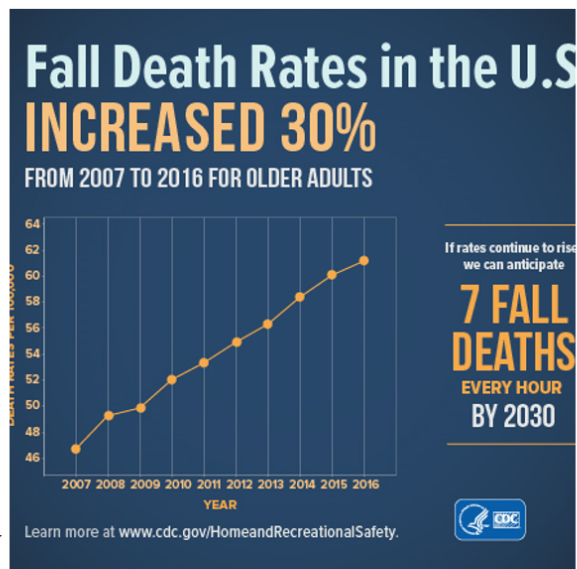
Date

(Magaziner et al., 2019; Sherrington et al., 2020)

3

Psychological Impact

As age increases, fear of falling can be present

Fear of falling =

sedentary lifestyle, poor self-care,
decreased quality of life,
poor socialization

Akosile et al., 2021, de
Andrade Nadu et al.,
2021

Cost of Falls:

Medicare $29 billion
Medicaid $9 billion
Private payers $12 billion

Total of $50 billion

does NOT include

total disability, caregiver
support, loss of income,
exacerbation of comorbidities

Florence et al., 2018

Fall Prevention Program

Goal:

Decrease the number of falls

HOW:

Fall Tailoring Interventions for Patient Safety (TIPS) Poster

Hourly Rounds

BRIGHAM AND WOMEN'S HOSPITAL

Patient Name: **Date:**

Increased Risk of Harm If You Fall ☐

Fall Risks (Check all that apply)

History of Falls ☐

Medication Side Effects ☐

Walking Aid ☐

IV Pole or Equipment ☐

Unsteady Walk ☐

May Forget or Choose Not to Call ☐

Fall Interventions (Circle selection based on color)

Communicate Recent Fall and/or Risk of Harm	Mobility Aids
	Wheelchair Cane Walker

IV Assistance When Walking	Toileting Schedule: Every _____ hours
	Bed Pan Assist to Commode Assist to Bathroom

Pummel Cushion in Wheelchair	Assistance Out of Bed
	Bed Rest 1 person 2 people Use Lift for Transferring

Fall TIPS ©Brigham & Women's Hospital 2016; do not alter without written permission.

Fall Tips Poster

Created by Dr. Patricia Dykes of Brigham and Women's Hospital and Harvard Medical School

Evidence-based fall prevention tool

nonrandomized controlled trial

between November 1, 2015, and October 31, 2018

14 medical units within 3 academic medical centers (Brigham and Women's Hospital in Boston in collaboration with Montefiore Medical Center and New York-Presbyterian in New York)

included 37,231 adult inpatients

statistically significant **15 percent reduction** in overall inpatient falls and a **34 percent reduction** in injurious falls

Date	Dykes et al., 2010; 2017; 2019; 2021	Slide Number

The Fall TIPS poster decreased falls in an older adult nursing home in a subacute care unit located in a western province in Canada.

Average monthly fall:

10

Post Fall TIPS intervention (April- December 2019):

7

Date	Huey- Ming et al., 2021

Hourly Rounds

- Increase patient safety
- Increase patient satisfaction

"laying eyes on the patient"

"My goodness, when's the last time anyone checked on Mr. Klink in room 207?!"

Date

Morgan et al., 2017; Roberts et al., 2020; Shin & Park, 2018

10

The process:

Laminated Fall TIPS poster serves as a communication tool for each patient, family, and staff

Update (using a dry erase marker) for every shift change, change in patient status, or as needed by nurses and families

Project timeline: 3 weeks

Hourly Rounding Documentation Form

Staff can rotate to round on odd/even hours so that it is spaced. The first rounding can start during shift change/handoff.

TIME	INITIALS	TIME	INITIALS
0800-0900		2000-2100	
0900-1000		2100-2200	
1000-1100		2200-2300	
1100-1200		2300- 0000	
1200-1300		0000-0100	
1300-1400		0100-0200	
1400-1500		0200-0300	
1500-1600		0300-0400	
1600-1700		0400-0500	
1700-1800		0500-0600	
1800-1900		0600-0700	
1900-2000		0700-0800	

Date

12

Thank you

Contact:
Lorena Tembrevilla

l_tembre@uncg.edu

516-342-0102

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