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Implementing an Evidence Based Fall Prevention Program in a Long-Term Care Facility

Submitted in partial fulfillment of the requirements for the degree of Doctor of Nursing
Practice at Eastern Kentucky University

By

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Palm Harbor, FL

2018

Abstract

Falls among the elderly are a significant problem with severe consequences. Residents of long-term facilities account for twenty percent of fatal falls. It is imperative that evidence-based practices be implemented at this level of care to address this problem. A multifaceted evidence-based fall prevention program was implemented at a 70 bed, skilled nursing, long-term care facility located in Florida, whose fall rate of 7.14 is above than the national average (2.74-5.48). The fall prevention program included staff education, implementation of a checklist for universal fall precautions, post fall huddles, and the appointment of a falls champion. One-month post intervention results included a statistically significant increase in pre-test post-test knowledge (two-tailed p-value .004) and 100% compliance in conducting post-fall huddles. As the evidence demonstrates, fall rates should decrease as a result of implementing targeted multifactorial programs. On-going surveillance will be needed to evaluate the impact of these interventions on the long-term fall rate within the facility.

Keywords: patient falls, fall-prevention program, evidence-based intervention, post-fall huddles, long-term care

Implementing an Evidence Based Fall Prevention Program in a Long-Term Care Facility

By

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Background and Significance

Problem Identification

In one single year, 29 million falls were reported to the Centers for Disease Control (CDC), 7 million of those were injury sustaining. Twenty percent of fatal falls happen at long-term care facilities (CDC, 2013). The frequency of falls is so high that it is the number one cause of injury and deaths from injury for the entire older adult population (CDC, 2016).

Problem Description

Long-term care facilities care for patients who are unable to live independently due to chronic illness, injury or advanced age. This population is already at great risk for falls due to multiple medical diagnoses, generalized weakness and forgetfulness of their physical limitations. The National Council on Aging (2015) estimates that the national average fall rate for long-term care facilities is 2.74-5.48 falls per 1000 patient days. Approximately 30-50 percent of inpatient falls result in injury that requires treatment (The Joint Commission, 2015). An injury-sustaining fall can be detrimental to a patient's outcome. Injuries sustained from falls include lacerations, abrasions, fractures or intracranial bleeding (Smulders, Enkelaar, Weerdesteyn, Geurts, & Schrojenstein Lantman-de Valk, 2013). Costs associated with the treatment of injuries from falls add up to a staggering \$31 billion dollars a year. The average cost of a hospitalization to treat an injury sustained from a fall is \$30,000 (CDC, 2016). Mortality rates following an injury-sustaining fall are as high as 20-30% as documented by The Joint Commission (2015). The CDC (2013) reports that 20% of fatal falls happen at long-term care facilities. It is

imperative that evidence-based practices be implemented at this level of care to address this problem.

Purpose of Proposed Project

The purpose of this project was to improve the quality of care at a long-term care facility through the implementation of an evidenced-based fall prevention program.

Evidence-Based Intervention

The agency is a 70 bed, skilled nursing, long-term care facility located in Florida, whose fall rate of 7.14 is well above than the national average (2.74-5.48). There is no national benchmark indicated by the Centers for Medicare and Medicaid Services (CMS) or the Agency for Healthcare Research and Quality (AHRQ), however falls are considered to be preventable and the expected target should be zero. An evidenced-based fall prevention program was implemented between August 2017 to October 2017 that included: (a) education to increase in the clinical staff's knowledge of fall prevention strategies; (b) implementation of a daily safety checklist; (c) implementation of post-fall huddles (PFH) for all inpatient falls; and (d) the designation a fall prevention champion within the agency to sustain the project long-term.

Theoretical Framework

A theoretical framework guides the implementation of evidence-based interventions. This ensures that the change is needed and that the proposed project remains within predictable boundaries that are shown by the literature to be effective. Lewin's Theory of Change was used to guide this project (Lewin, 1935). The Change Theory approaches change using a three-step process: unfreeze, move and refreeze.

The first step is to ‘unfreeze’ which refers to the process of letting go of an old way of thinking or completing a task. During this phase, the goal is for the team to recognize the presence of a problem and the need for a solution (Lewin, 1935). Lewin (1935) suggests that there are ‘driving forces’ which push a person to think in a certain way. He suggests that by providing education, leaders can help the team understand the bigger picture and need for a change. In this way, education can be a driving force towards unfreezing a current group thought process. Lewin (1935) proposes that a successful ‘unfreezing’ stage will allow for a more successful transition phase because the team will be more accepting of the upcoming change. Thus, the most important strategy to ensure successful implementation of the next phase is to successfully implement an impactful unfreezing phase.

The next step in Lewin’s Change Theory is to ‘move’ or ‘transition’. During this phase, the action plan is implemented (Lewin, 1935). This time is often marked with some amount of resistance to change. Lewin (1935) states that support, coaching and patience from the leadership team are crucial to a successful transition phase. This stage can be lengthy as the team learns to adapt to the new changes. The leadership team should provide encouragement and positive reinforcement during this transitional time (Lewin, 1935).

Once the transitional phase is complete, the ‘refreezing’ phase began. This phase is the final stage in the model. During this phase, the change becomes permanent. Lewin (1935) describes this as the time wherein the team accepts the change as the ‘new normal’ and applies it to practice. New policies and procedures should be created and

reinforced to ensure that the changes will not fade away with time (Lewin, 1935).

Lewin's Model of Change was integral in guiding the implementation of this project.

Literature Review

A systematic review of the literature was performed on the topic of evidence-based fall prevention programs, specifically for long-term care facilities. Search keywords included inpatient falls, inpatient fall prevention, long-term care fall prevention, nursing home fall prevention, post-fall huddles, fall risk scale and Morse Fall Scale. Four databases were accessed through the Eastern Kentucky University Library to search for relevant studies. These databases include the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medline, and the Cochrane Collaboration. The search phrase 'inpatient falls' produced 306 articles on CINAHL.

Fall Prevention Programs in Long-Term Care

A systematic review and meta-analysis of randomized controlled trials on the subject on fall prevention programs within nursing homes was conducted by a large group of academics from the Department of Public Health and Primary Care (Vlaeyen et al., 2015). Thirteen studies met their inclusion criteria, which included implementation of a fall prevention program within a long-term care facility. The researchers separated the studies based on the number of interventions each fall prevention program involved. They found studies that implemented multifactorial interventions (more than two interventions), the risk for falls were reduced (4 studies, RR = 0.67, 95% CI = 0.55–0.82), including the number of recurrent fallers (4 studies, RR = 0.79, CI = 0.65–0.97); whereas single interventions did not.

A 2012 study assessed the efficacy of a fall prevention program within nine Australian nursing homes (Nitz et al., 2012). Each nursing home designated a fall prevention nurse to champion the program within their respective facility. Environmental hazards were identified and corrected, new fall prevention guidelines were provided to the staff and hip protectors were purchased for high-risk patients. A significant reduction of falls were observed per facility in the proportion of fallers ($P = .044$) and single fallers ($P = .04$).

Tailored interventions specific to each patient have been shown to be more effective than single, non-modifiable interventions. Hoffman et al. (2003) successfully implemented a three-part fall prevention program in a long-term care setting. Staff education, an exercise program and environmental modifications were effective in reducing the inpatient fall rate by 50%. Jensen, Lundin-Olsson, and Nyberg (2002) implemented a fall risk assessment and a tailored intervention program in a long-term care facility. Over a 34-week period, they found a 51% reduction in falls. The authors did not report any level of significance.

Fall Risk Assessment

Fall risk assessments are done on patients to determine their individualized fall risk, therefore allowing clinicians to tailor fall prevention interventions to patients who are the highest risk. The assessment is the first step of a successful fall prevention program (Curry, 2008). The Joint Commission (2015) recommends that all patients in a long-term care setting should be screened for individualized fall risk using a reliable and validated tool. Perell et al., (2001) conducted a large literature review that found 20 validated tools for geriatric fall risk assessments in the long-term care setting. The tools ranged in

sensitivity from 43% to 100% (median = 80%), and specificity from 38% to 96% (median = 75%). Although some tools were found to be more reliable than others, the study concluded that valid fall risk tools are readily available for facilities to use as part of their fall prevention programs and the need for additional creation of tools is unsupported.

Staff Education

In an Australian long-term care setting, Fonda, Cook, and Sandler (2006) implemented a fall prevention program that included staff education and modifying environmental factors. A 19 percent reduction in the number of falls per 1,000 patient days was found, demonstrating a statistically significant reduction ($P = 0.001$). A study by Peterson and Berns (2006) implemented a staff education program as a patient fall reduction intervention. Over a 4-month period, they provided in-person training to 80% of the clinical staff. The year following the education, a 24% decrease in falls was observed. The authors did not report any level of significance.

Fall Checklists

Sources suggest a compilation of fall prevention interventions should be followed for every patient cared for in a health care setting, whether acute care or long-term care (Agency for Healthcare Research and Quality, 2012; The Joint Commission, 2015). These interventions, such as non-skid footwear, call bell within reach and bed in the lowest position, are referred to as 'universal fall precautions'. The literature suggests that the regular use of a checklist to ensure compliance of fall prevention interventions is effective as part of a comprehensive fall prevention program (Scott et al., 2007; Centers for Studies in Aging & Health, 2010). The SAFE (Safe environment, Assist with

mobility, Fall risk reduction and Engage resident and family) checklist, created by the Centers for Studies in Aging & Health (2010), is a user friendly, quick and effective method to ensure compliance of universal fall precautions. In addition to the checklist, identification of high fall risk patients and discussion on appropriate interventions for that patient should happen during every handoff report between clinicians (The Joint Commission, 2015).

Post Fall Huddles

The Joint Commission (2015) states that post fall huddles (PFH) are an essential component of an effective fall prevention program. Huddles should include all who were present for the fall or was involved in the care of the patient. The National Center for Patient Safety (2004), a department of the VA Hospital Administration, states that PFH's should happen as soon as possible after the fall and no later than the end of the shift. These huddles have been shown to identify trends, highlight specific conditions that contributed to the fall, provide an arena for honest reporting and allow for transparency within the care team (Ganz, Huang, Saliba & Shier, 2013). Honest reporting and team transparency is also created by handoff reports that include an assessment of each patient's fall risk and appropriate interventions that are in place (Quigley & White, 2013).

Synthesis of the Literature

Fall prevention programs for long-term care facilities are often multifaceted. Many bundle (multiple evidence based interventions that can be implemented together) programs have been put together by well-known organizations for acute care facilities, but not for long-term care facilities. This may contribute to the high incidence of falls within these facilities. Considerable literature exists on the subject of geriatric falls within

a healthcare facility or a community-based setting, but it can be difficult to find without access to credible databases such as those provided by the ECU library. For many smaller long-term care facilities without resources to provide access to healthcare libraries, it could be difficult to implement an evidence-based fall prevention program.

The evidence shows that a multifaceted fall prevention program is the most effective way to decrease a facility's inpatient fall rate (Vlaeyen et al., 2015; Nitz et al., 2012). Although staff education is a vital part of a sustainable fall prevention program, it must be combined with other facility and patient specific interventions to be most effective (Fonda, Cook & Sandler, 2006; Hoffman et al, 2003). Tailored intervention programs are more effective than single, non-modifiable interventions (Jensen, Lundin-Olsson & Nyberg, 2002; Vlaeyen et al., 2015).

Successful fall prevention programs start with a reliable fall risk assessment to determine high-risk patients (Curry, 2008; The Joint Commission, 2015). There are many fall risk assessments available for the long-term care setting, the use of an in-house assessment is not recommended by the literature (Perell et al, 2001). A safety checklist is recommended to ensure compliance with universal fall precautions. (Scott et al, 2007; Centers for Studies in Aging & Health, 2010). This will help the clinical staff remember the importance of the small but vital components of fall prevention. A culture of safety, transparency and honest reporting is essential for the success of any major changes within healthcare. Identification of high fall risk patients and discussion on appropriate interventions for that patient should happen during every handoff report between clinicians (The Joint Commission, 2015). This allows for the both collaboration and accountability. Similarly, the post fall huddle creates a platform for learning how to

improve practices, identifying trends and collaborating on possible solutions. It is a forum for transparent discussion between all members of the team involved in the care of the patient, regardless of rank or certification. All members of the team work together to learn the events leading up to a fall and create a fall prevention plan specific to that resident. The post-fall huddle is a safe place to discuss concerns, ideas and opinions that can help develop a solution. The evidence shows that this is an effective and recommended fall prevention intervention that will also increase team member accountability (Allen, Kennal & Jones, 2014).

Agency Description

Setting

The agency is a 70 bed, skilled nursing, long-term care facility located in Tampa, Florida. These patients are assisted with all aspects of ADL's such a grooming, nutrition, medication administration and elimination assistance. Pre-intervention, the facility had limited fall prevention measures in place. The agency uses an internal fall risk assessment that was developed by their administration team in 1992. This scale has been effective at identifying high fall risk patients. Internal evidence showed that the assessment tool had properly identified patients who experienced a fall. This suggested that assessment was not the problem. The assessment is done by the registered nurse on each patient quarterly, upon condition changes and after a fall. The Agency for Healthcare Research and Quality (2014) supports this as a reliable interval for fall assessment within the long-term care setting. At the request of the director of nurses at the agency, this study did not change the use of this tool nor the interval in which it is completed. The clinical staff was expected to follow universal fall precautions, but there was no fall prevention policy.

Post-fall procedures were to complete an assessment, an incident report and notify family and physician. There was no post-fall huddle.

Target Population

The target population of the intervention is the clinical staff, which is comprised of registered nurses, licensed practical nurses and certified nursing assistants employed at the agency. The staff development in-services provided education to the clinical staff regarding the scope of the problem and prevention strategies. Although the main focus of the program is staff education, the ultimate goal is for the interventions to positively impact the long-term care patients within the facility.

Congruence of Capstone Project to Selected Organization's Mission

This facility is known for delivering quality healthcare to every patient who walks through the door. Their mission is to provide the highest quality of life possible to every resident. The goal of this capstone project was to decrease patient falls, therefore increasing the quality of life for every patient within the facility. It is anticipated that this program will help keep patients within the facility safe from a potentially detrimental fall.

Description of Stakeholders

The most important stakeholders for this project are the patients and families who entrust the facility with their health care needs. This fall prevention program provides additional safety measures for these patients. Secondly, the Director of Nursing (DON) was also a major stakeholder for the project. Lastly, the agency itself is a stakeholder. The facility was greatly benefitted from this project. The fall prevention program will remain a permanent and sustainable program that provides an additional safety measure for every patient within its care.

Project Methods

The purpose of this project was to increase patient quality and safety by building upon existing fall precautions within the facility, through the reinforcement of current standards and by adding new evidence-based interventions, with the expected impact of decreasing patient falls and injury over time. The new interventions added included the implementation of a daily safety checklist (SAFE checklist), the use of post-fall huddles (PFH) and the identification of a fall prevention champion.

Data Collection/Outcome Measures Plan. Measureable outcomes include:

1. Staff knowledge of fall prevention procedures
2. Implementation of post-fall huddles
3. Fall rate

Fall rate was assessed at baseline, then again one month post intervention to assess efficacy of the fall prevention program. Agency's risk management staff provided fall rate data for this study. This ensured patient confidentiality because chart audits were not required to gather data. The project leader collected the pre/post-test data via anonymous questionnaire at the staff development training. The falls champion gathered post-fall huddle compliance rates and will continue monitoring on-going monthly fall rates to evaluate the long-term impact of the program.

IRB Submission process. Internal Review Board (IRB) jurisdiction was deferred by the facility DON to the Eastern Kentucky University IRB. The study qualified for expedited review because the risk is minimal to and the potential for benefit is great. The residents do not have to consent because implementation of evidence-based interventions

is considered a quality improvement effort, not an investigational research study. EKU IRB approval was granted on August, 29, 2017.

Measures and Instruments. The SAFE checklist, created by the Centers for Studies in Aging & Health (2010), in Ontario, Canada, was published online with no copyright restrictions attached (accessed at: https://sagelink.ca/sites/default/files/clinical-resources/preventing_falls_injuries_ltc_resource_manual.pdf). However, permission for use was requested and granted via email on 7/11/17. The SAFE checklist was implemented at the facility to ensure compliance to universal fall precautions. Each member of the clinical staff will complete the checklist on every patient every shift. See appendix A for a copy of the SAFE checklist.

The U.S. Department of Veteran Affairs (2004) published the post-fall huddle document online, with no copyright restrictions attached (accessed at: <https://www.patientsafety.va.gov/professionals/onthejob/falls.asp>). These instruments are available for download online and indicated as public tools that may be used without the need for permission. Post-fall huddles (PFH) were implemented within the agency as clinical policy for all patient falls. Per the new policy, post-fall huddles should include all who were present for the fall or were involved in the care of the patient. PFH's should happen as soon as possible after the fall and no later than the end of the shift. See appendix B for copy of the post- fall huddle tool.

The pre/post-test was developed by the Agency for Healthcare Research and Quality (2014) as part of a publically available fall prevention kit for long-term care facilities (accessed at: <https://www.ahrq.gov/professionals/systems/long-term-care/resources/injuries/index.html>). Although publically published with no indication of

need for permission for use, the project leader did request permission for use via phone call. This permission was granted on 8/4/17 via phone call. This was used before and after the mandatory staff development training to assess the efficacy of the education provided. See appendix C for copy of pre-test.

Description of Evidence-based Intervention

A new fall prevention policy was created for the facility that included implementation of a daily safety checklist (SAFE checklist), the use of post-fall huddles (PFH) and the identification of a fall prevention champion. Pre-intervention, there was no policy in place directing the staff to implement specific evidence-based interventions, such as non-skid footwear, bed in the lowest position and the call bell within reach, however they were encouraged to do so by management.

The SAFE checklist was implemented to ensure compliance to universal fall precautions. Although not all patients are identified as high risk by the assessment tool, the universal fall precautions listed on the SAFE checklist were implemented on every patient regardless of the risk assessment score. At the request of the facility administration team, every member of the clinical team will complete the checklist on every patient, every shift.

When falls happen, it is imperative to investigate the specific circumstances surrounding the fall to identify trends. Using a tool published by the The National Center for Patient Safety (2004), post-fall huddles (PFH) were implemented within the agency as clinical policy for all patient falls. Per the new policy, post-fall huddles should include all who were present for the fall or were involved in the care of the patient. PFH's should happen as soon as possible after the fall and no later than the end of the shift. It is

anticipated that these huddles will identify trends, highlight specific conditions that contributed to the fall, provide an arena for honest reporting and allow for transparency within the care.

Next, mandatory staff development training was held at the facility to provide education to the clinical staff on the new evidence-based fall prevention program. The project leader was the primary presenter. Attending one of these in-services was a required condition of employment for all clinical staff; however, participation in the study was optional and did not impact employment or benefits. The importance of fall prevention, the proper use of the SAFE checklist and the post-fall huddle tool was presented. Multiple classes were offered to accommodate various schedules. The facility administrator collected a sign-in sheet for attendance at each class. A packet was given to every person in attendance. The cover letter was the top page, followed by a pre-test, a blank SAFE checklist, a blank post-fall huddle tool and a post-test. The pre/post-test was developed by the Agency for Healthcare Research and Quality. It consisted of 7 multiple-choice questions and is recommended by AHRQ as a means to assess efficacy of the educational intervention (2012).

The cover letter served the purpose of obtaining consent from the participants by ensuring participants were informed about the study and that participation was optional and did not affect employment status or benefits. The project leader explained the study at the beginning of the class and answered any questions. Participants were asked to complete the pre-test. Three non-identifiable demographic questions were included on the pre-test so the project leader could accurately describe the population. The questions were age, gender and license/certification. Data collection instruments in each packet

included a numeric code from 1-100 and allowed the project leader to pair data for analysis. The project leader then presented the fall prevention education, lasting approximately 30 minutes. At the end of the class, attendees were asked to complete the post-test and return the data collection instruments to the packet. Participants who chose not to participate did not fill out the pre or post-test. Regardless of whether the participant chose to participate or not, all packets were collected at the end of the class to protect participant anonymity. After all staff development classes were conducted, the fall prevention program was officially implemented at the facility. A fall prevention policy was created that included the SAFE checklist as part of the clinical staff's daily routine, the post-fall huddle tool as a part of the incident report packet and the appointing of a fall prevention champion.

Next, a fall prevention champion was appointed to ensure both compliance and sustainability of the program. The falls champion will incorporate the fall prevention presentation to all future new employee education. This will ensure sustainability of the fall prevention program.

Lastly, fall rate data was collected one month post-intervention. Data was also collected on the number of post-fall huddles that were completed in the month following implementation. The results of the pre/post test given at the staff development training were entered into SPSS. Frequency analysis was done on the demographic questions and a paired T-test was used for analysis of the efficacy of the education provided at the staff development training.

Implementation Framework

There are many implementation models to guide evidence based practice quality improvement projects. The purpose is to guide the user through the process to ensure a successful adaptation from the literature to practice. One such model is the IOWA model. Developed in 2001 by Dr. Titler, the IOWA model is a 7-step process that starts with selection of a topic and ends with evaluation of the efficacy of the implemented program. This framework served as the implementation framework for this project.

The first step was to identify a topic. This was done in May 2017 when the primary investigator met with the DON at St. Mark's Village. After discussion of various areas of possible improvement, the high fall rate was decided upon as the most important matter to address. Step two was to form a team. Formation of a team started in 2016 with Dr. Corley being appointed as the primary investigator's capstone advisor. Annie Schweikert, Dr. Corley, Dr. Sands and the facility DON comprise the team addressing this problem. Step three was evidence retrieval. This was completed in July 2017 when an evidence-based program was created using literature to back all process changes. Steps four and five included grading the evidence and forming an EBP standard to be implemented. Weekly meetings between the primary investigator and Dr. Corley helped to complete these steps. Step six was the implementation of the plan. This step occurred in September 2017, after Eastern Kentucky University's Internal Review Board (EKU IRB) granted approval. The last step was evaluation, which happened one month after implementation when the fall rates and measurable outcome measures were analyzed.

Theoretical Framework Application

Lewin's Theory of Change (1935) was used to guide the implementation of this project. The 'unfreezing' stage is the stage wherein the team's current thought process or process is brought into question. This phase was initiated prior to the fall prevention intervention implementation. Statistics and informational data were sent via email to all staff to help them recognize the need for change and inform them of the upcoming project. This data was reinforced during the in-services to remind the clinical staff of the need for change.

The next step in Lewin's Change Theory is to 'move' or 'transition'. During this phase, the action plan is implemented (Lewin, 1935). All clinical staff attended a mandatory in-service that educated them on the new fall prevention program, including the SAFE checklist and post fall huddles. Multiple in-services were held to accommodate various scheduling needs of the staff. After these in-services were completed, the program was implemented.

Once the transitional phase was complete, the 'refreezing' phase began. This phase is where the change becomes permanent (Lewin, 1935). During this phase, a new fall prevention policy was created to ensure that the changes would not fade away with time. A falls champion was appointed to ensure both compliance and sustainability of the program. It is anticipated that this member of the team will be crucial to the success and the longevity of the process change (Burnett, Lewis, Joy & Jarrett, 2012). Lewin's transitional phase continue within the agency until the change becomes the permanent and well accepted by the clinical team.

Resources

This program utilizes minimal resources within the facility. There is no yearly maintenance cost associated with the implementation of any of these evidence-based interventions. The DON of the facility approved the cost associated with the wages for additional hours the staff members to attend the staff development trainings. Other incidental costs such as paper and printer ink were approved by the facility. The packets for the staff development training will be printed at the facility using their paper and ink.

Feasibility for Sustainability

The need for an evidence-based intervention has been well established through discussion of the prevalence of falls, and the serious consequences as a result of an inpatient fall. Internal and external data has been provided. Each intervention has been well established as an evidence-based and effective part of a large-scale inpatient fall prevention program. Once the fall prevention program was established, sustainability is very feasible. A fall prevention policy was created that included the SAFE checklist as part of the clinical staff's daily routine and the post-fall huddle tool as a part of the incident report packet. The designated fall prevention champion will ensure both compliance and sustainability of the program indefinitely. The fall prevention program was not intended to be an intermittent or short-term program.

Results

The project leader collected the pre/post test data via anonymous questionnaire at the staff development trainings. Data was entered into SPSS computer software, cleaned then analyzed using simple descriptive statistics. Of the 38 staff members in attendance at the in-services, 26 participants completed the optional pre/post test questionnaires. The

study population was comprised of 76.9% females (N=20; see Table 1). The majority of the participants (53.8%) were Certified Nursing Assistants (CNA; N=14; see Table 2), whereas 23.1% were Licensed Practical Nurses (LPN; N=6) and Registered Nurses (RN) closely following at 19.2% (N=5). Only one participant had no certification or clinical license. The age of participants ranged from 20-64 years old, with a mean of 45.15 years old (SD=12.99; see Table 3).

Table 1

Frequency of Gender of Participants

Gender	Frequency	Percent
Female	20	76.9
Male	6	23.1
Total	26	100

Table 2

Highest Certification/License Earned

Certification/License	Frequency	Percent
Registered Nurse	5	19.2
Licensed Practical Nurse	6	23.1
Certified Nurse Assistant	14	53.8
No certification	1	3.8
Total	26	100.0

Table 3

Age of participant at time of in-service

	N	Minimum	Maximum	Mean	Std. Deviation
Age	26	20	64	45.15	12.99

A paired-samples t-test (Table 4) was conducted to evaluate the impact of the in-service on students’ scores on the pre/post-test. There was a statistically significant increase in scores from pre-test (M = 5.65, SD = 1.29) to post-test (M = 6.46, SD = 0.90), $t(25) = -3.18, p = .004$ (two-tailed). The mean increase in scores was -0.80 with a 95% confidence interval ranging from -1.33 to -0.28. The eta-squared statistic (.29) indicated a large effect with substantial difference in the test scores obtained pre and post intervention.

Table 4

Paired T-test Comparison of the Agency for Healthcare Research and Quality Test Pre-Test and Post-Test

Score	Mean \pm SD	t	df	p
Pre-test (N=26)	5.65 \pm 1.29	-3.18	25	.004
Post-test (N=26)	6.46 \pm 0.90			

Post-fall huddles were conducted for 100% of the falls one-month post intervention. Although they were completed, they were not completed in the proper time frame (by the end of the shift) listed in the policy. This is an area for on-going improvement. Baseline data were collected on the number of patient falls for 1 month prior to implementation of the fall prevention program. This raw fall number (15 falls)

was converted to a standardized fall rate per 1000 patient days by using 15 as the numerator and 2100 (70 occupied patient beds x 30 days in a month) as the denominator x 1000 as the constant. This gave the project leader the baseline rate of 7.14 falls per 1000 patient days. One-month post intervention, the raw fall rate was again collected. The number of falls was unchanged at 15 falls one-month post intervention, with the unchanged rate of 7.14 falls per 1000 patient days.

Discussion

Implementation of the fall prevention policy was well received by the facility and the team members. The leadership team of the agency wanted the staff to feel empowered to make a change. Regardless of their status, role or job title, all clinical staff attended the same in-service. The staff in-services were well attended and the information was well received. The paired t-test comparing the Agency for Healthcare Research and Quality pre-test and post-test showed that the scores were significantly increased after the staff in-service was taught. This suggests that the education provided increased the fall prevention knowledge of those in attendance.

Post-fall huddles were conducted on 100% of patient falls post-intervention. Evidence shows that continuation of this intervention will likely allow the team to track trends, allow for team transparency and formulate patient-specific plans to prevent recurrent or future falls. Meetings with the DON one month post-intervention revealed that although the huddles were happening, they were not as effective or efficient as was hoped. Some huddles were not happening within the allotted time frame (as soon as possible, no later than the end of the shift). This meant that the huddle was less effective because the whole clinical staff was no longer present. Under the direction of the DON,

the project leader provided additional training to the leadership team regarding proper use of post-fall huddles. Personal accountability was stressed within this training. Whoever is in charge of the unit when a patient fall occurs is to be the leader of the post-fall huddle. This training was well received by the leadership team. It is anticipated that greater understanding of the tool, as well as better compliance of the recommended timeframe, will make post-fall huddles more effective.

The lack of impact of the fall prevention interventions on patient fall rate within the one-month time frame was anticipated. If prolonged monitoring of the fall rate after continued compliance with the implemented evidence-based interventions were an option for this project, a decrease in the fall rate would be anticipated. Jensen, Lundin-Olsson, and Nyberg found a 51% reduction in falls after 34-weeks post intervention (2002). Peterson and Berns reported a 24% decrease in falls 1-year post intervention (2006). This indicates that an accurate assessment of intervention impact on long-term fall rates must be measured in a longer time frame than was possible for the purpose of this project. Although the fall rate was unchanged (7.14 falls per 1000 patient days both pre-intervention and post-intervention), the other two outcomes measures showed great improvement.

Limitations

The implementation timing was an extreme limitation to the success of this project. The in-services were taught the day before Hurricane Irma hit Florida. This was a Category 5 storm predicted to directly hit the Tampa Bay area. Many hospitals and facilities had already implemented disaster protocols or had evacuated their patients. The agency for this project did not need to evacuate, so the in-services proceeded as planned

per the direction of the agency leadership team. Although the physical storm damage to the area was less than anticipated, stress levels and tensions were high. Water, gas and food were in short supply, and many people were without electricity, for weeks following the storm. The month post intervention was also the month post Irma. It is possible that the clinical staff at the agency were so distracted by the post Irma stress that they didn't have the capacity to focus on the successful implementation of the new fall prevention program. This could have impacted the lack of improvement in the post-intervention fall rate.

Another major limitation of the study is the short timeline wherein the project leader gathered post-implementation data. The academic timeline of the project leader dictated that one-month post intervention was the maximum data that could be collected for this study. However, one month is likely not sufficient time to establish the success or failure of an evidence-based fall prevention intervention. Although the program was created for sustainability, further investigation on the measurable outcomes at longer intervals post intervention would be recommended.

Conclusion

An evidenced-based fall prevention program was implemented to improve patient outcomes within a 70 bed, skilled nursing, long-term care facility located in Tampa, Florida. The evidence shows that a multifaceted fall prevention program is the most effective way to decrease a facility's inpatient fall rate (Vlaeyen et al., 2015; Nitz et al., 2012). This program included staff education, implementation of the SAFE checklist for universal fall precautions, implementing post fall huddles and appointing a falls champion to ensure long-term sustainability of the program. Staff in-services successfully

increased the clinical staff's knowledge of fall prevention interventions, post-fall huddles were successfully implemented for every patient fall and a falls champion has been appointed to ensure program sustainability. However, further investigation is needed for conclusive data on the impact of these interventions on the long-term fall rate within the facility.

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