Introducing an Evidence-Based Protocol to Reduce and Prevent Fall Events among Elderly Hospice Patients

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A R T I C L E I N F O	A B S T R A C T
Article type: *Research Paper*	***Introduction:*** To examine the effectiveness of a multifactorial intervention to reduce falls for elderly hospice patients who live at home and in skilled nursing facilities. ***Materials and Methods:*** This pre--post intervention study was conducted in a local agency of a healthcare organization for hospice patients in California. The study included 51 hospice patients who did not object to the intervention at the local agency. The multifactorial intervention consisted of four components: (1) fall risk assessment, (2) post-fall huddle session, (3) universal fall precautions education, and (4) the 5 Ps to reduce falls for elderly hospice patients. The primary outcome was the fall rates (falls per 1,000 occupied bed days). Other outcomes included patient fall risk scores, post-fall huddle compliance, and compliance of universal fall precautions and the 5 Ps. ***Results:*** The multifactorial intervention reduced the fall rates for hospice patients from 6.9 in 2017 (baseline period) to 1.7 in 2019 (implementation period) per 1,000 occupied bed days. There was 100% compliance with fall risk assessment, post-fall huddle administration, universal fall prevention documentation, 5 Ps education, and care plan initiation and modification. ***Conclusion:*** The finding of this study indicated a significantly positive effect of a nurse-led multifactorial intervention on fall prevention of hospice patients cared for at home or at skilled nursing facilities. The intervention was easy to implement, cost effective, and took a very short time to complete, which would allow nursing leadership to initiate such interventions to prioritize fall prevention in every hospice healthcare organization.

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Introduction

Falls and fall-associated harm continue to be frustrating and growing public health problems for hospice patients, and urgent attention is needed from organizational nursing leaders to reverse this dangerous trend (1,2). According to published data, fall rates among hospice patients cared for at home or in skilled nursing facilities could be as high as 8.6 falls per 1,000 occupied bed days (3-5). The prevalence of falls among elderly hospice patients not only contributes to the deterioration in quality of their end-of-life experiences (5), it incurs enormous costs, such as direct treatment expenses and spending related to the long-range ramifications of fall-related injuries (6). In the United States (U.S.), Medicare and Medicaid paid 75% of the 50 billion dollars spent on medical costs caused by falls in 2015 (7).

The Joint Commission (TJC) attributes falls to inadequate assessments, poor communication, failure to adopt evidence-based protocols or even general safety guidelines, poor staff orientation, inadequate supervision, staffing problems, unsafe environments, and poor leadership (8). The Centers for Medicare Services recommend that healthcare workers learn to be proactive at preventing falls and their consequences to enhance the quality of life of their patients (9). Nonetheless, many research studies (10-13) and several agencies, including the American Geriatrics Society/British Geriatrics Society in its practice guidelines (14), the Centers for Disease Control and Prevention (15), and the U.S. Preventive Services Task Force (16) recommend multifactorial interventions for fall prevention in elderly populations at high risk for falls.

Although many studies of multifactorial interventions for fall prevention have been published, most were conducted in either hospital (17) or community settings (11), and there are not enough published data on fall prevention among hospice patients cared for at home or in skilled nursing facilities. It is necessary to implement and evaluate fall prevention programs using multifactorial interventions for hospice patients to reduce falls in patients cared for

in these contexts (12).

Following the FOCUS-PDSA model (18,19), the current evidence-based multifactorial quality improvement intervention used a combination of fall-risk assessments, post-fall huddles, and universal fall precautions to reduce falls for elderly hospice patients who live at home or in skilled nursing facilities. The FOCUS portion of this study included the following steps to select the intervention and the measurement method: **F**inding a process to improve the fall prevention protocol, **o**rganizing the implementation team and its resources, **c**larifying knowledge about the process and analyzing baseline fall data, **u**nderstanding sources of variation and clarifying steps in the process, and **s**electing a quality-improvement method (18). The PDSA portion (plan, do, study, and act) was a four-stage problem-solving process used to evaluate and improve the intervention (19).

In summary, the purpose of this research was to examine the effect of a nurse-led fall prevention education program in a sample of hospice patients. With the data obtained in this study, we also aimed to provide guidance to nurses, healthcare professionals, and researchers who are developing or implementing fall prevention programs for hospice patients. This project was intended to inform clinical practice, contribute to quality improvement and the safety of the nursing care provided to hospice patients who live at home or in skilled nursing facilities, and reduce their risk of falls.

Material and Methods

Study Setting

The healthcare organization for hospice patients used in this study has three smaller agencies scattered throughout California. The corporate office is in Long Beach, California, and the organization's administrators are housed there. This project was conducted at a location in a small city in Los Angeles County, where there are, a director of nursing (DON), an agency administrator, a medical director, a nurse practitioner (NP), two registered nurses (RNs), four licensed vocational nurses (LVNs), four certified home health assistants (CHHAs), one licensed clinical social worker, and two administrative secretaries. The

medical director and NP during the study period had offices away from the project site but could be reached by phone or a ten-minute drive.

Study Design

A pre-and-post intervention design was used to evaluate the effectiveness of the multifactorial intervention to reduce falls for elderly hospice patients who live at home and in skilled nursing facilities. Approval to conduct the study was obtained from Capella University's institutional review board (IRB). Permission was also obtained from the chief executive officer (CEO) of the healthcare organization where the project was conducted. Finally, the hospice healthcare organization's board of directors approved the study. This study did not meet federal regulations for the definition of human-subject research, so IRB review and oversight were not needed.

The author is a director of patient care services at the healthcare organization where the study was conducted. Financial support was not an issue during this project because the interventions were part of an existing fall-prevention program that needed to be improved. Financial support was provided through the original program, and the interventions took place during regular nursing visits. The computer used to store data was already being used by the director of nursing, who is also the main author, as she was employed by the organization. There were no additional costs. Through this study, the hospice healthcare organization was able to fulfill its mission of providing safe care and keeping patients comfortable at the end of their lives. The study was conducted as part of the author's requirements for a doctorate of nursing practice at Capella University. The author decided to conduct the study after observing excessive fall rates among patients. The author kept a record of patients' falls from August 2017 to August 2018, and the high numbers motivated this study as a means of reversing the trend.

Study Participants

The participants included 51 hospice patients, who were on the census and did not object to the intervention, and all the nursing staff (1 DON, 2 RNs, 4 LVNs, and 4 CHHAs) of the agency. Patients were informed of the project, and verbal consent was obtained from family members or responsible parties, as most of the patients were not well oriented on their time, place, or situation. These parties understood that the project was aimed at improving patients' safety by preventing falls, and there were no objections. The responsible parties were also informed of their right to refuse participation without retaliation. A few patients were alert and oriented enough to make their own decision about participation.

Table 1 shows the demographics of the study participants (patients and nurses). When the project was developed, 12 patients (23.5%) resided in four skilled nursing facilities (two were within a five-minute drive of the agency's office, and the other two were an hour away) and 39 (76.5%) lived at home with family members or caregivers. Most of the patients were female (80.4%), widowed (76.5%), and Caucasian (72.5%). All were low income, retired, and on Medicaid or Medicare, and all had many co-morbidities. The mean age of the patients was 77.42 years ± 10.48 (min-max = 64–93 years). All the nurses who participated were females between the ages of 25 and 50 (mean age 35.26 ± 14.58). Most of the staff members had an associate degree (72.7%), and most were Caucasian (81.8%). Their average time working as nurses was 8.98 years ± 9.27.

The researcher, the DON, participated in training the nursing staff on how to implement multicomponent evidence-based fall-prevention strategies and how to effectively present information about fall prevention to patients and caregivers during several mandatory staff meetings and interdisciplinary (IDT) meetings. The RNs were the case managers who planned, organized, and directed hospice care and patient education. The LVNs were responsible for providing direct patient care. The CHHAs were paraprofessional members who performed various services for the patients as required to meet their personal needs. The nurses were required to visit patients' places of residence. The RNs made two such visits per month, and the LVNs made six per month. The CHHAs made two visits a

week to provide hygiene care and remind patients, families, and caregivers about

universal fall precautions.

Table 1: Demographic Characteristics of the Participants (Patients and Nurses)

Participants	Demographics		N (%)
Patients (N = 51)	Gender	Male	10 (19.6)
		Female	41 (80.4)
	Age (Mean ± SD)		77.42 ± 10.48
	Marital status	Single	10 (19.6)
		Married	2 (3.9)
		Widowed	39 (76.5)
	Race	Caucasian	30 (72.5)
		Hispanic	8 (15.7)
		Black	6 (11.8)
	Co-morbidities	Yes	51 (100.0)
	Low income (yearly income < 15000)	Yes	51 (100.0)
	Employment	Retired	51 (100.0)
	Insurance	Medicaid / Medicare	51 (100.0)
Nurses (N = 11)	Gender	Female	11 (100.0)
	Level of education	Bachelor's degree	3 (27.3)
		Associate's degree	8 (72.7)
	Age (Mean ± SD)		35.26 ± 14.58
	Years of work experience (Mean ± SD)		8.98 ± 9.27
	Race	Caucasian	9 (81.8)
		Hispanic	2 (18.2)

Intervention

The multifactorial intervention employed in this study had four components: (a) fall-risk assessment (for patients), (b) post-fall huddle sessions (for families, with nurses), (c) universal fall-precaution education (for hospice patients, families, and caregivers), and (d) the 5 Ps (for caregivers). The intervention was planned and tested during a training period by the interdisciplinary team members for clarification and refinement of the tools before the final implementation. The intervention started on October 7, 2019, and ended on December 13. Fall risk assessment. Before this project began, no formal assessment or documentation of fall risk was conducted during the admission of patients to hospice services. Assessing fall risk during all admissions could be helpful for identifying patients at high risk for falls so that interventions and caregiver education could be provided on the same day. . During the project's implementation, nurses used the

Missouri Alliance for Home Care's fall risk assessment tool (MAHC-10) and generated a score for each patient at admission and after each fall (20). The researcher trained the nurses to use the MAHC-10 effectively on the day of admission.

Post-fall huddle. Reiter-Palmon et al. (2015) defined the post-fall huddle as a professional communication tool used after a fall to analyzes performance standards and help team members determine what happened, why, and how to prevent similar incidents. Studies have recommended post-fall huddles because they improve learning and patient outcomes (22).The second component of the intervention used a post-fall huddle tool developed by the University of Nebraska Medical Center, during the Collaboration and Proactive Teamwork Used to Reduce (CAPTURE) Falls project, to document all the circumstances leading to a fall in order to prevent subsequent falls (23). When a fall occurred, the family or caregiver of the patient notified the hospice office

immediately, and the office staff notified the team assigned to that patient. The team immediately called the patient's caregiver to set up an appointment to initiate a post-fall huddle. A series of questions were asked during the huddle to determine the cause of the fall and identify the errors that could have contributed to it. Nurses were educated on how to document fall information in the agency's electronic record system. In addition, the nurses completed a fall incident report after every fall, and that practice continued after the project ended, following organizational policy and as a part of quality control. All other interdisciplinary team members were updated on the huddle's findings. Appropriate changes were discussed with the core fall team, family members, and other caregivers after the huddle and then implemented. Care plans were modified after each fall, with the new interventions and goals specified.

Universal fall-precaution education. The third component of the intervention involved the education of nurses on how to promote evidence-based fall prevention strategies adopted from Cameron et al. (2018) to educate hospice families, caregivers, and patients about how to prevent falls. According to the Agency for Healthcare Research and Quality (24), universal fall precautions are the foundation of any fall prevention program because they prevent falls in all patients. Introducing such precautions requires training all healthcare staff members and caregivers who interact with patients. Universal fall precautions are called "universal" because they affect all patients, regardless of fall risk. They include the basics of patient safety and can be implemented in all residential environments and safeguard not only patients but family members, visitors, and staff.

Because the patients, families, and caregivers did not like long lectures, for this study the strategies were summarized to highlight the most practical ones to follow:

• Familiarize the patient with the environment.

• Have the patient demonstrate how to call for help.

• Keep a tool to call for help within reach.

• Keep the patient's personal possessions within the patient's safe reach.

• Have sturdy handrails in the patient's bathrooms, bedroom, and hallway to hold onto while walking.

• Place the hospital bed in a low position when the patient is resting in it; raise it to a comfortable height when the patient is getting out of bed.

• Keep hospital bed brakes locked.

• Keep wheelchair wheel locks in the locked position when stationary.

• Keep nonslip, comfortable, well-fitting footwear on the patient.

• Use nightlights or supplemental lighting.

• Keep floors clean and dry. Clean up all spills promptly.

• Keep patient care areas uncluttered.

• Follow safe patient handling practices.

During an admission, the researcher demonstrated how to initiate a fall-prevention conversation with patients, families, and caregivers. All subsequent fall-prevention education was provided by nurses repeatedly during every patient visit. The researcher observed the nurses during their interactions with patients and families and provided feedback to improve their teaching skills and compliance. Changes were made accordingly. Nurses were required to document when universal fall precautions were discussed and what the responses were from the patients, families, and caregivers.

The 5 Ps. The fourth component of the intervention was the 5 Ps, which required caregivers to check in on patients every hour, and if the patient were awake, to address the following: pain, personal needs, position, placement, and preventing falls (24). The 5 Ps were reinforced to caregivers by nurses at every patient visit. They are a set of items to mentally review when rounding on the patient. Specific instances might include the following:

• Pain: Assess the patient's pain level and provide pain medication if needed.

• Personal needs: Offer the patient help with voiding or bowel movement. Offer hydration and food. Empty the bedside commode or urinal.

• Position: Help the patient get into a comfortable place in a bed or chair. Reposition bedbound patients to preserve

skin integrity.

• Placement: Verify that the patient's essential needs are met and that necessities are within easy reach (call light, phone, reading materials, toilet equipment, etc.).

• Preventing falls: Review the process of asking for help by using any tool that makes noise. Ask the patient to put on the call light when they need to get out of bed, if they reside in a facility, or to use anything that makes noise if they live at home.

Data Collection and Outcome Measures

Baseline data were collected for the entire year of 2017, but the period for comparison with 2019 was just the ten weeks from October 7 to December 13. The data were entered into a password-protected computer by the researcher. Several outcome measures were chosen for this study: chart reviews, patient fall-risk scores, post-fall huddle compliance, and fall rates (falls per 1,000 occupied bed days).

Chart reviews. Chart audits were used to check whether nurses were documenting MAHC-10 fall risk assessments, and whether they were documenting in their notes when a patient's fall risk was assessed, what the score was, when the patient fell, and whether they discussed universal fall precautions and the 5 Ps with the family to prevent further falls. In addition, the care plans indicated in the electronic chart whether they were initiated or modified after the patient fell. Demographic information was also obtained from these chart reviews.

Patient fall risk scores. The MAHC-10 tool was completed for each patient during the ten-week data collection period, both at admission and after every fall at the place of residence or the facility. The MAHC-10 tool has been validated and found reliable for assessing fall risk in home health patients (20). It has 10 core elements, and a "yes" to any of the elements is assigned a score of 1. A total score of 4 or higher puts the patient at high risk for a fall (20). The core elements are (a) age 85+, (b) 3 or more diagnoses, (c) history of falls within the last 3 months, (d) incontinence, (e) visual impairment, (f) impaired functional mobility, (g) environmental hazards, (h) polypharmacy (4 or more prescription types), (i) pain affecting level of function, and (j) cognitive impairment (20).

Post-fall huddle compliance. Post-fall huddles were completed for each patient at the place of residence or facility after each fall to identify any errors of four types (task, judgment, coordination, and system) that contributed to the fall, in order to prevent those errors and further falls (21,22,25).

Fall rates. A fall was defined as an incident that resulted in a person's descending to rest unintentionally on the ground or floor or other lower level (26). Falls per 1,000 occupied bed days were computed for the baseline period and the implementation period using Brightree LLC software.

Statistical Analyses. Data were imported into and analyzed using SPSS version 23 for Windows (IBM Corp., Armonk, NY). Frequency tables and descriptive statistics were used to determine whether data for the MAHC-10 tools, chart reviews, and post-fall huddles were entered correctly. Frequency tables were used to summarize all survey responses, MAHC-10 scores, and qualitative data collected in chart reviews and post-fall huddles. The fall rates for October 7 to December 13 of 2017 (baseline period) and 2019 (implementation period) were compared using an incidence rate ratio and 95% confidence intervals (CI) (27). For all tests, a *p*-value of less than .05 was considered significant.

Results

MAHC-10 tool. Fall-risk was assessed using the MAHC-10 tool for all 51 patients at the beginning of the ten-week data collection period and whenever a patient fell. In total, there were five falls among four patients (one fell twice).

Two patients who fell once each were assessed twice, and the patient who fell twice was assessed three times. However, a patient who fell once was assessed only once. In total, 55 fall risk assessments were performed, and the MAHC-10 scores are summarized in Table 2. All patients had a high risk of fall, as the MAHC-10 scores were all above 4.

Table 2: Summary of MAHC-10 Scores

MAHC-10 score	Frequency	%
6	2	3.6
7	4	7.3
8	12	21.8
9	25	45.5
10	12	21.8

Chart review. Formative evaluations of patient charts and demographic data collection were initiated for the four patients who fell (1 facility patient and 3 home patients). The patients discussed in post-fall huddles included one single male (25.0%) and three widowed females (75.0%). There were three Hispanic patients (75.0%) and one Caucasian patient (25.0%). Their ages ranged from 79 to 89. The chart review (Table 3) revealed that for all five falls, no injuries resulted, evidence of education was provided, fall-risk scores were calculated and reported in nurses' notes, universal fall precautions were discussed, education on the 5 Ps was provided, and evidence of care-plan initiation and modification after a fall was observed.

Post-fall huddle. The results of the post-fall huddles are presented in Table 4. All four patients who fell were known to be at high risk due to previous falls.Those falls had all happened within the past three months, but well before the study was initiated.

During the study, patients fell in the bathroom, in the bedroom, and outside. Three of the four patients were walking unsafely, without a walker or help from a caregiver or family member. One slid off his bed at the nursing facility while trying to pick up a blanket from the floor in the early morning.

Table 3: Results (Frequency Counts) of Chart Reviews for Patient Falls

	Yes	No
Fall with injuries	0	5
Did the patient have a fall previously?	4	1
Evidence of education provided	5	0
Fall risk score calculated and reported in nurses' notes	5	0
Injuries reported	0	5
Universal fall precautions discussed	5	0
Education on the 5 Ps	5	0
Evidence of care plan initiation and modification after a fall	5	0

Table 4: Results (Frequency Counts) of Post-Fall Huddle

	Frequency
Patient at High Risk of Injury from a Fall (4 patients)	
Did we know this patient was at risk?	4
Has this patient fallen previously during this stay?	3
Was this patient age 85+?	1
Did this patient have brittle bones?	0
Did this patient have coagulation?	0
Was this patient a surgical post-op patient?	0
Participants of the huddle for each fall (5 patient falls)	
Patient	5
Primary nurse	5
Physical therapist	0
Family/caregiver	1
Pharmacist	0
Physical therapist assistant	0
Charge nurse	1
Occupational therapist	0
Pharmacy tech	0
Quality improvement coordinator	1
Proximal cause of the fall	
Environmental risk factors	5
Known patient-related risk factors	5
Unknown, unpredictable risk factors	0
Unsure	0
Type of errors that contributed to the fall	
Task	4
Judgment	4
Coordination	5
System	4

In all five of these falls, no caregiver was present. In three, no system was in place for

the patient to call for help. The two patients at the facilities who fell before the project

began had call lights but were not within reach of them. One said that the call light was activated but no one responded, so the patient decided to take herself to the bathroom. She fell inside the bathroom but suffered no obvious injuries. The other facility patient was also examined after the fall and did not have any injuries. All three of the home patients were transported to the ED, examined, and discharged home.

All four of these patients were cognitively impaired and had periods of confusion and forgetfulness. The primary nurses, the PFH coordinator/quality improvement coordinator, and a family member or caregiver were always present. A charge nurse was present at one post-fall huddle. Other charge nurses were briefed privately after the huddle. Certified nurse assistants were not present at all sessions but were briefed on each PFH and its findings.

The post-fall huddles indicated that most of the falls' causes were environmental or known risk factors for the patient, as shown in Table 3. The environmental (extrinsic) factors included equipment problems and malfunctions, and clutter. Patient-related (intrinsic) factors that were identified included confusion, weakness in extremities, and poor balance. All the patients had front-wheel walkers but were not using them when they fell. All the falls were unwitnessed, and the patients were found on the floor. Furthermore, data collected from the post-fall huddles revealed several types of errors that contributed to falls. A task error takes place when a caregiver fails to perform part of an expected task. A judgment error occurs when a nurse or caregiver does something that shows a lack of good judgment. A coordination error occurs when a nurse or caregiver fails to pass on critical information to others who care for a common patient. A system error is a combination of related factors in the whole system, involving both caregivers and nursing staff. All these types of errors were discussed by the interdisciplinary team to develop strategies for preventing similar errors and falls.

Fall-rate assessment. In the baseline period, there were 19 falls in 2,754 occupied bed days, or 6.9 falls per 1,000 occupied bed days (95% *CI* = [4.4, 10.8]). In the implementation period, there were 5 falls in 2,941 occupied bed days, or 1.7 falls per 1,000 occupied bed days (95% *CI* = [0.7, 4.1]). The ratio of the baseline to the implementation rates was 4.058 (χ^2(1) = 7.766, *p* = .005; 95% *CI* = [1.515, 10.868]), meaning the fall rate in the baseline period was significantly higher.

Discussion

The fall rate of 6.9 in 2017, when the idea for developing effective fall prevention strategies started, fell within the range of published data on fall rates (2.9–8.6 per 1,000 occupied bed days) among hospice patients cared for at home or in skilled nursing facilities (3-5). This high rate pointed to the need for prevention programs for hospice patients. This study explored the effects of a nurse-led multifactorial quality-improvement intervention—a combination of fall-risk assessments, post-fall huddles, and universal fall precautions—on the fall behavior of hospice patients cared for at home or in skilled nursing facilities.

Although the elderly individuals in this study were all at high risk of falling according to the MAHC-10 assessment, the short-term effects of the intervention were apparent in the significant decrease in falls, from 6.9 in 2017 to 1.7 in 2019. These results could not be compared directly to past studies results with the same population, as there were no such studies, but the findings aligned with past research on the use of multifactorial interventions for fall prevention among high-risk elderly populations in hospital or community settings (10-13). For example, in a quality improvement study conducted by Godlock, Christiansen, and Fieder (2016), the creation of a patient safety team that involved frontline staff in patient safety and fall prevention reduced fall rates from 1.9 to 0.70 per 1,000 occupied bed days. The significant decrease found in this study may be a result of the multifactorial intervention, as nurses and caregivers adopted better methods of caring for and protecting elderly patients from falls. According to While (2020), nurses are well positioned to reduce falls among the elderly by identifying those at risk among their clients and making interventions to minimize that risk. In

addition, through the multifactorial intervention, hospice patients' awareness of falling was raised so that they could avoid risky situations and adopt safer behaviors (29).

It should be noted that during the baseline period, 11 patients fell a total of 19 times (multiple patients experienced repeat falls), but during the implementation period, four patients fell, with only one repeat fall: a significant improvement. Despite the effectiveness of the intervention, there may have been other factors in this change, including data not collected in this study, such as patients' co-morbidities and medications in both periods. These should be investigated to determine whether they were related to the repeat falls. Many elderly individuals suffer from multiple medical conditions and must take multiple drugs, which increases their risk of falls (While, 2020). As elderly people are often unaware of the effects and side effects of their medications, to avoid misuse of drugs that might increase their risk of falls, it is recommended that medication education or counseling be provided to them (29).

There was 100% compliance with fall-risk assessment, post-fall huddle administration, universal fall prevention documentation, 5 Ps education, and care-plan initiation and modification. Patients' safety increased, and their end-of-life quality was enhanced. In all the fall cases, however, patients were alone, and the falls were unwitnessed. The 5 Ps targeted for caregivers suggest hourly checks on patients, even at home. It is not clear whether the caregivers forgot to check on the patient in these cases or just did not understand that the patient had generalized muscle weakness and required assistance with ambulation. Nonetheless, caution was taken not to label caregivers as negligent after the falls, but to work with them to develop a practical plan for keeping the patient safe. Finally, all the types of errors— task, judgment, coordination, and system— were factors in the falls. These errors were identified in the post-fall huddles and allowed for modification of care plans and implementation of new plans to prevent the errors from being repeated. This is evidence that post-fall huddles prevent repeat falls (22,26).

Although the results of this quality improvement project are intriguing, there are several limitations. First, the sample size of this project was small, with only 51 patients. This makes generalization to the larger hospice population doubtful. It may be beneficial to repeat the study with a larger sample. Second, the project did not account for several possible confounding variables, such as diagnoses and cognitive impairment that might also be factors in the observed change in fall rates. Third, even though the fall-prevention education sessions did not take more than ten minutes each, this was noted to be more than nurses could properly handle on some days. More efficient intervention strategies could be investigated using qualitative interviews to understand the obstacles to implementation and to design education that works better for the nurses.

Conclusion

Patients receiving hospice care are experiencing a high incidence of falls. Falls and fall-associated harm are dangerous and growing public health problems that require urgent attention from organizational nursing leadership. This study showed a significant positive effect of a nurse-led multifactorial quality improvement intervention using fall-risk assessments, post-fall huddles, and universal fall precautions on hospice patients at home or in skilled nursing facilities. The intervention was quick and easy to implement and cost effective. Nursing leaders could plan, initiate, and guide such interventions to prioritize fall prevention in every hospice healthcare organization.

To prevent falls among elderly patients, the researcher suggests that hospice healthcare organizations adopt the following policies:

1. Top managers of the organizations should support nursing projects that address falls in elderly patients. This support can be monetary and in-kind.

2. Nursing directors must plan and implement fall-prevention projects that include primarily the nursing staff, since they are the ones who spend the most time with patients.

3. Healthcare budgets must allocate money specifically to fall-prevention projects.

If these policies are implemented, falls will decrease, and the quality of patients' end-of-life care will increase. Patients will be safe from falls and can spend more quality time with loved ones. Elderly patients can maintain their independence if this is possible, without a fall interrupting it. Medicare and Medicaid will spend less than the billions of dollars they currently spend on medical costs caused by falls (7). Overall, there will be a decrease in healthcare costs attributable to falls.

Efforts should continue until there are enough ideas to develop an effective fall-risk protocol that can be tailored for hospice patients. Information obtained from multiple PDSA cycles and huddles will contribute to the development of an effective, evidence-based fall-prevention protocol just for hospice patients. The interventions used in this project will be continued by all the staff members, and the evidence-based strategies will continue to be taught at every nursing visit and expanded in the current and possibly other hospice organizations.

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