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Jodie Shipley

University of Missouri-St. Louis, jlkzm6@umsystem.edu

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Fall Prevention Among Older Adult Behavioral Health Patients

Jodie Shipley

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Doctor of Nursing Practice with an emphasis in Psychiatric Mental Health Nurse

Practitioner

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Advisory Committee

Anne Thatcher, DNP, MSW, APRN, PNHNP-BC, LMSW

Susan Dean-Baar, PhD, RN, FAAN

Sara Jackson, DNP, APRN, FNP-C

Abstract

Problem: Inpatient falls are a major patient safety issue. Behavioral health units experience higher rates of falls among elderly patients with between 13.1 to 25 falls per 1,000 occupied bed days (OBD). The risk of falls for the aged population is increased on a psychiatric unit due to a myriad of issues including psychotropic medications, over-activity on the unit, and confusion (Wong & Pang, 2019).

Methods: This QI project is an observational descriptive pilot intervention evaluation of a redesigned fall prevention program with the aim to reduce falls on a midsized suburban Midwestern inpatient geriatric behavior health unit by 10%. A retrospective and prospective case record review of falls was evaluated three months pre and post implementation.

Results: During the pre-pilot period, 15.65 falls occurred per 1,000 OBD and post-pilot, 4.37 falls occurred per 1,000 PBD. An unpaired *t*-test, resulted in a *p*-value of 0.1180, showing no statistically significant reduction of falls after implementation. This data may be skewed as one patient experienced seven falls during their admission in the pre-implementation period, with suspected behavioral intent.

Conclusion: The findings of this study highlight the need for continued practice improvement to reduce the likelihood of falls. Reinforcing current policy for implementation and required documentation would assist in the determination of overall improvement. Barriers to adequate implementation and documentation needed to be addressed by the administration of the older adult behavioral health unit to determine if workforce needs or lack adequate fall prevention equipment were factors in the omission of required implementation strategies and documentation.

Fall Prevention Among Older Adult Behavioral Health Patients

Inpatient falls are a major patient safety issue; these adverse events can lead to injury, functional decline, prolonged hospital stays, higher costs, and death (Ocker et al., 2020; Zhao, Bott, & He, 2019; Wong & Pang, 2019). Current hospital studies among elderly inpatients report rates of between three and five falls per 1,000 occupied bed days (OBDs), representing over one million falls throughout hospitals in the United States (U.S.) (Zhao, Bott, & He, 2019).

Characteristics routinely observed in elderly, non-psychiatric patients with a higher frequency of falls include muscle weakness, history of falls, deficits in vision, gait, and balance, neurologic problems, such as stroke or Parkinson's Disease, arthritis, depression, and cognitive impairment (Wong & Pang, 2019). Also, the use of four or more medications was linked with an increased risk of falling among this population (Wong & Pang, 2019).

Behavioral health units experience higher rates of falls among elderly patients with between 13.1 to 25 per 1,000 OBDs. Psychiatric units exacerbate the risk of falls for the aged population owing to myriad issues, including use of psychotropic medications, over-activity on the unit, and confusion (Wong & Pang, 2019). These risks are compounded by other factors such as anxiety, agitation, overactivity due to mania, depression, urinary frequency due to bladder control issues, and comorbid physical problems such as obesity, respiratory disease, metabolic or blood pressure instability (McMinn, Booth, Grist, & O'Brien, 2016). Due to the nature of the older adult behavioral health unit, the site of falls differs from the acute care setting. In the acute care setting, falls are likely to occur at the patient's bedside or transferring from bed to chair. Older patients in mental health units are more ambulatory during hospitalization, given the communal nature of these units and that patients do not stay in their rooms as part of milieu

therapy. These units reported activities at the time of fall, including standing, walking, or wandering, as the most common (McMinn, Booth, Grist, & O'Brien, 2016).

Low-level falls in the young are presumed to be innocuous but falls in the older population are associated with considerably higher morbidity and mortality rates, with 30% to 50% of hospital falls resulting in some injury (Morris and O'Riordan, 2017). In 2021, the Joint Commission Center for Transforming Healthcare reported that each of these injuries increased the length of stay by 6.3 days, and the associated cost is about \$14,056 per event. The Centers for Medicare & Medicare Services (CMS) (2021) identify falls and trauma on its list of Hospital-Acquired Conditions, but reimbursement is limited, especially for falls that result in fractures, dislocations, and intracranial injuries, further straining the overburdened healthcare budget.

The age of the patients in the older adult behavioral health care setting includes patients 60 years and older (Finder, 2021). This variability in patient age is also noted in mobility level and diagnosis, resulting in a fluctuation of patient fall prevention and safety needs. This presents a challenge to traditional fall prevention strategies being successful for this population (Ocker et al., 2020). In one large suburban Midwestern hospital behavioral health unit, current safety strategies include: a nursing fall assessment scale upon admission, with each initial shift assessment and, more often per nursing judgment, education on interventions to minimize the possibility of the risk(s) resulting in a fall, nonskid slipper socks or other nonskid footwear, personal items within reach, activity order appropriate for the patient's ability to perform activities of daily living (ADL), a gait belt is used for the patient's ordered "up with assist" and whenever deemed necessary per nursing judgment, bed alarm and or chair alarm, use of a fall risk bracelet, and fall risk score on all handoff communication forms (Finder & Marrow, 2019). Despite the implementation of a fall risk protocol, the number of falls in this Midwestern

hospital's older adult behavioral health unit remains high when compared to other inpatient units. Thus, the fall prevention program needs to be evaluated to assist with developing population-specific intervention strategies to address the increased fall-related injury rate.

Purpose

The purpose of this quality improvement (QI) project is to evaluate the impact of a pilot fall prevention intervention at a midsized suburban Midwestern hospital on an older adult inpatient behavioral health unit. This pilot intervention aims to reduce falls by 10% among older adult patients on an older adult behavioral health unit. This process improvement initiative will obtain baseline data for three months before implementation of the redesigned fall prevention program for older adult behavioral health inpatients and will compare it to data collected for three months post-implementation. This project aims to answer the following study questions:

1. What (if any) change was there in the number of inpatient falls after implementation of the redesigned fall prevention intervention?
2. If a fall occurred, what (if any) change was there in the events precipitating the fall?
3. What (if any) change occurred in fall risk assessment scores on the Hester Davis Fall scale completed prior to and post fall per the RN.
4. In falls that occur, how many are a result of orthostatic hypotension?

PDSA Cycle

The Plan-Do-Study-Act (PDSA) model was utilized in this QI project as it has a structured approach and ability to implement change in a timely manner (Connelly, 2021). Repeated cycles of change and evaluation were used to determine if there was a reduction in falls on the older adult psychiatric unit. Utilizing the analysis of pre- and post- intervention data were used to determine if the proposed intervention met the specified goals of reducing falls by 10%

on this unit. Finally, incorporating the results can direct in what areas subsequent changes are needed to meet future goals and improve patient safety.

Literature Review

A comprehensive literature search was conducted to identify the current research surrounding factors associated with and implications of falls within psychogeriatric inpatients. A search was performed using Summon, EbscoHost, and Google Scholar databases. Search terms included *falls, psychiatric units, and older adults* with Boolean operators AND/OR which produced 1,657;1,364; and 4,530 results, respectively. The literature search was further defined by utilizing Medical Subject Headings (MeSH) selected for falls, inpatient psychiatric, risk factors, and older adults and limited to peer-reviewed journal articles written in English published between January 2016 through September 2021. The refined search produced 162 journal articles. Inclusion criteria were 65 years of age and older, falls and/or fall risk, studies from any country published in English, and studies related to inpatient hospitalization. Exclusion criteria were studies published before 2016 that did not include fall and/or fall risk, inpatients under the age of 65, and studies published in a language other than English. After removing duplicates, 15 relevant articles were selected and reviewed, with 13 articles retained for final inclusion.

Nursing Education

Research findings suggest that the environment of the behavioral health unit, coupled with behavioral health diagnosis and comorbid medical conditions, increases the risk of falls in older adults admitted to the behavioral health unit (Turner et al., 2020; Suga et al., 2020). Studies indicate a need for adequate assessment and identification of patients at a greater risk of falls to minimize injury and possible long-term health consequences (Turner et al., 2020; Suga et al.,

2020). A study by Chinh et al. (2021) found that nursing knowledge about fall prevention was moderate, with critical areas for improvement needed in the knowledge of fall management and risk assessment. In redesigning a fall prevention program, Ocker et al. (2020) incorporated nursing education to improve fall risk assessment scoring into the revised fall action program, resulting in a reduction in falls and fall-related major injuries. Fall prevention protocols implemented based on the results of the fall risk assessment in conjunction with staff education on how to conduct fall risk assessments to raise awareness of fall prevention protocol has been shown to be an effective strategy in preventing inpatient falls and injurious falls (Zhao et al., 2019).

Orthostatic Hypotension

Orthostatic hypotension (OH), a blood pressure reduction of at least 20mmHG in systolic blood pressure (SBP) and/or 10mmHg in diastolic blood pressure (DBP) within three minutes after standing up, is considered a risk factor for patient falls (Mol et al., 2019). Medical therapy is one of the leading causes of non-neurogenic OH, particularly in older patients (Rivasi et al., 2020). Psychiatric medications that pose the highest risk of OH include antidepressants, antipsychotics, trazodone, and benzodiazepines (Gaxate et al., 2017). As most people with OH are asymptomatic, monitoring for OH is clinically relevant for assessment of patients with mental illness, since OH is one of the most common adverse autonomic side-effects encountered by individuals taking psychotropic medications (Gaxate et al., 2017). One way to identify fall risk is obtaining OH blood pressures on all admitted patients. At the 2017 National Nurses Improving Care for Health-System Elders (NICHE), a study was presented which achieved an overall reduction of falls in units that adopted this novel approach to fall assessment (Shields, Quill, & DiCenso, 2020).

Purposeful Rounding

Many hospitalized older people have risk factors for falling, but there remains a limited understanding of the full range of mental health-specific fall risk factors for inpatients (McMinn, Booth, Grist, & O'Brien, 2016; Zhao, Bott, & He, 2019). Common recommendations include the use of specific and comprehensive assessment tools tailored to the unique needs of this population, with reassessment occurring upon a change in assessment. It is recommended to give specialized attention to sleep disturbances and malnutrition, and to maintain close supervision to prevent falls in this ambulatory population (McMinn, Booth, Grist, & O'Brien, 2016). There are few studies estimating how many falls occur in psychiatric care settings. However, Turner et al. (2020) found that most falls in U.S. psychiatric care settings were unassisted by a staff member. Turner et al. (2020) studied 1,159 units in 720 hospitals and found that 119,246 falls were reported. Of those falls, 25,807 (21.6%) resulted in injury, and only 7.0% of the total falls in psychiatric units were assisted by a staff member. Falling unassisted was associated with a higher likelihood of fall-related injury (Turner et al., 2020). In studies of various hospital units, hourly rounding has shown to be an effective strategy in preventing future or recurrent inpatient falls (Zhao et al., 2019). These rounding sessions allow nursing staff to purposefully check on patients to ensure care and assistance are available to patients as needed (Zhao et al., 2019).

Patient Attire

Increased cold sensitivity is reported in many older adults, which can be related to the normal aging process or due to chronic health conditions present in the geriatric psychiatric population (Biggers, 2019). As people age, metabolism slows, subcutaneous adipose tissue thins, and reduced vascular elasticity decrease circulation, making it difficult for the older person to retain heat (Providence, 2021). These changes, coupled with preexisting conditions, such as

cardiovascular disease, anemia, kidney disease, diabetes, and thyroid disorders, increase a person's sensitivity to cold. Colder temperatures, even indoors, can have severe consequences for older adults, with hypothermia being noted in nursing homes and group facilities if the rooms are not kept warm enough (National Institute on Aging, 2018). Feeling cold while hospitalized can also lead to an increased risk of falls, with one study noting that patients would frequently ambulate in common areas with a blanket wrapped around them for warmth, leading to a tripping fall (Ocker et al., 2019). To reduce this environmental hazard, sweat suits were provided as a substitute for traditional hospital-provided attire, eliminating falls due to environmental factors, such as slips or trips, after implementation (Ocker et al., 2019).

Summary

Falls are a major safety concern for older adults, which is especially true in a psychiatric setting where fall rates are between 13.1 to 25 per 1,000 occupied bed days (OBDs) (Wong & Pang, 2019). Adverse events from inpatient falls constitute a significant patient safety issue that can lead to injury, functional decline, prolonged hospital stays, higher costs, and death (Ocker et al., 2020; Zhao, Bott, & He, 2019; Wong & Pang, 2019). Key components that reduce falls in an older adult inpatient setting include a thorough assessment and identification of patients that are at an increased risk of falling, tailoring fall prevention to the psychiatric population, improved communication, and monitoring for orthostatic hypotension (McMinn, Booth, Grist, & O'Brien, 2016; Ocker et al., 2020; Shields, Quill, & DiCenso, 2020; Suga et al., 2021; Turner et al., 2020; Wong & Pang, 2019; Zhao, Bott, & He, 2019). Additionally, providing sweat suits as an alternative to the current hospital-provided attire can assist in preventing trip falls from ambulating while wrapped in a blanket (Ocker et al., 2020). Implementing a nursing education program on fall risk assessment and prevention, orthostatic blood pressure monitoring on all

admitted patients, purposeful rounding, and warmer patient attire are possible interventions to decrease falls on an older adult psychiatric unit.

Gaps identified in the literature included estimating the incidence of falls in the psychiatric setting and studies with limited sample sizes. Study findings were not generalizable or designed to meet the specific needs of this patient population. Limited validity and generalizability were noted due to the variability in the conceptualizations and measurement of data. Additionally, fall prevention programs in older adult psychiatric settings have not been frequently studied.

Methods

Design

This QI project is an observational descriptive pilot intervention evaluation to address falls among geriatric behavior health patients on a 12-bed inpatient psychiatric unit. The redesigned fall prevention program was implemented by the unit beginning on December 31, 2021. This program included online nursing education on the Hester Davis Fall Scale (HDFS) with a certificate of completion and a choice of completing a nursing fall prevention case study or attending a Safe Patient Handling (SPH) Unit Peer Leader Class to become an SPH unit practice leader. A retrospective case record review of patient charts, who experienced a fall, was evaluated for three-months prior to implementation from October 1, 2021, to December 31, 2021, and a post pilot implementation record review was conducted for three-months after initiation from January 1, 2022, to March 31, 2022, was completed, all data was deidentified and used unique patient identifiers. The results from this evaluation will be provided to organizational leadership to allow them to use this information for further fall development programming.

Setting

The setting for this QI project was a midsized suburban Midwestern hospital's older adult behavioral health unit serving a rural and suburban area (Finder, 2021). The population of this unit are generally ambulatory. They are predominantly 60 years of age or older, with exceptions made based on the patient's individual needs. This 12-bed facility is part of a larger healthcare organization serving approximately 3,000 patients annually.

Sample

The project utilizes a convenience sample of patients who are ordinarily cared for in the setting where the activity will take place. Patients on this unit are generally ambulatory and interact in a communal setting. They are generally 60 years of age or older, with exceptions made based on the patient's individual needs. This project used a sample of patients seeking inpatient psychiatric care between October 1, 2021, to March 31, 2022. Patients younger than 60 years of age and patients not admitted to the older adult behavioral health unit were excluded.

Data Collection and Analysis

Aggregate patient data from three months prior to fall prevention intervention implementation was collected via retrospective chart review and included demographic data such as age, gender, and race/ethnicity. Patient data included fall risk assessment scoring, location of fall (i.e., patient room, patient bathroom, hallway, day room), mobility status (i.e., up ad-lib, with assist, etc.), orthostatic blood pressure monitoring, hourly rounding, and fall injuries status. The same data was collected post-implementation of the redesigned fall prevention intervention via record review. Data was stored on a password-protected computer owned by the primary investigator. To assess the effect of fall rates on the older adult psychiatric unit, pre-and post-

pilot intervention data was analyzed utilizing descriptive statistics and an unpaired *t*-test of the rate of falls.

Procedures

Implementing new evidence-based fall prevention strategies versus current practice on fall prevention was a QI project selected by the healthcare organization. Key stakeholders, including the executive director of nursing administration-behavioral health and the fall reduction task force were instrumental in implementing the redesigned fall reduction strategies. Healthcare providers, including nurses and patient care technicians, were provided with education on evidence-based fall prevention strategies prior to project implementation. Data was collected by the primary investigator and transferred into an Excel spreadsheet for analysis.

Approval Process

This study was reviewed and approved by the University of Missouri-St. Louis Institutional Review Board and by Mercy Hospital Institutional Review Board committees of the psychiatric hospital. The collection and recording of the data history of fall cases were performed by hospital staff trained to collect data from inpatient documentation. Statistics related to inpatient falls were provided for analysis.

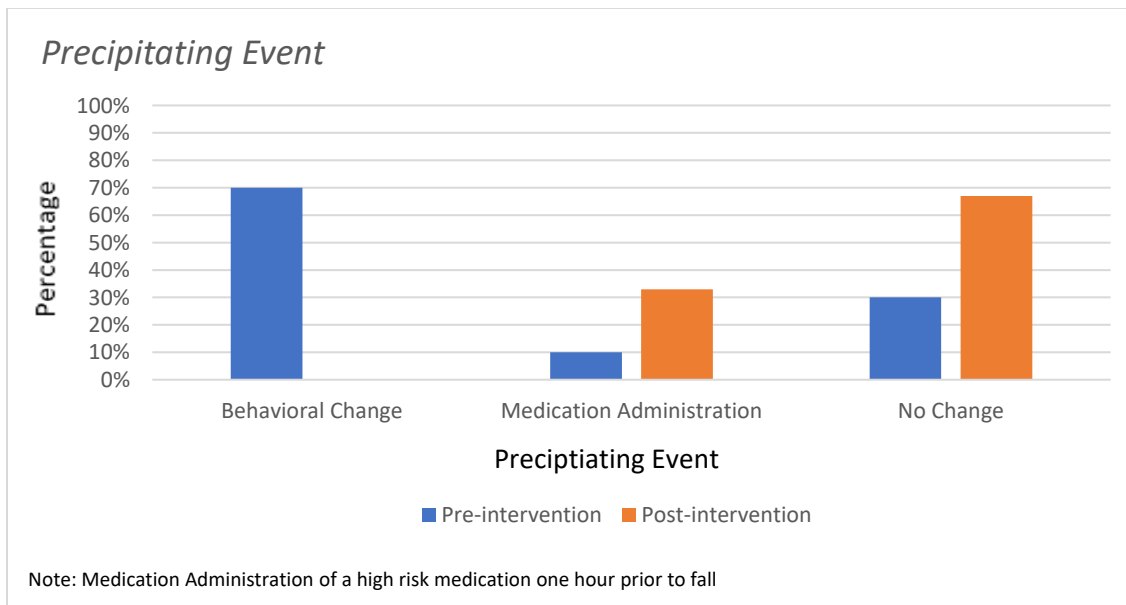
Results

During the three months prior to the pilot redesigned fall prevention program implementation, 13 falls occurred, of which 10 met inclusion criteria for this QI project, with three being excluded as the patients were under the age of 60. Post-pilot implementation, nine falls occurred, of which three patients met inclusion criteria as six were under the age of 60 and were excluded. Pre-implementation there were 15.65 ($N = 639$ patient days, $n = 10$) falls per 1,000 patient bed days and post-implementation there were 4.37 ($N = 677$ patient days, $n = 3$)

falls per 1,000 patient bed days. An unpaired *t*-test, resulted in a *p*- value of 0.1180, showing no statistically significant reduction of falls after implementation.

Factors that precipitated a fall were assessed to determine if there was a relationship to events and falls. Prior to the intervention, 10% of patients with a fall and subsequently 33% of patients in the post-implementation period with a fall had documented medication administrations of a high-risk fall medication prior to the fall. Pre-implementation, there were documented behavior changes in 70% of incidents prior to a patient fall, including verbal or physical aggression and non-compliance with staff. There were no documented behavioral changes in the post implementation period prior to falls (see *Figure 1*).

Figure 1



During the pre-implementation period, 60% of patients who fell were considered low-fall risk per the HDFS scores, 30% were found to be at medium-risk, and 10% were found to be at high-risk pre-fall. These scores showed minimal change after the fall with HDFS scores found to be 50% at low-risk, 30% medium-risk, and 20% high-risk post falls. After nursing re-education on the HDFS as a result of the pilot program, HDFS scores of fall patients showed 33% low-risk,

33% medium-risk, and 33% high-risk prior to a fall. Post-fall documentation of those with falls was assessed with 0% low-risk, 0% medium-risk, and 67% high-risk, and 33% of patients who fell did not have a documented HDFS score (see *Figure 2* and *3*).

Figure 2

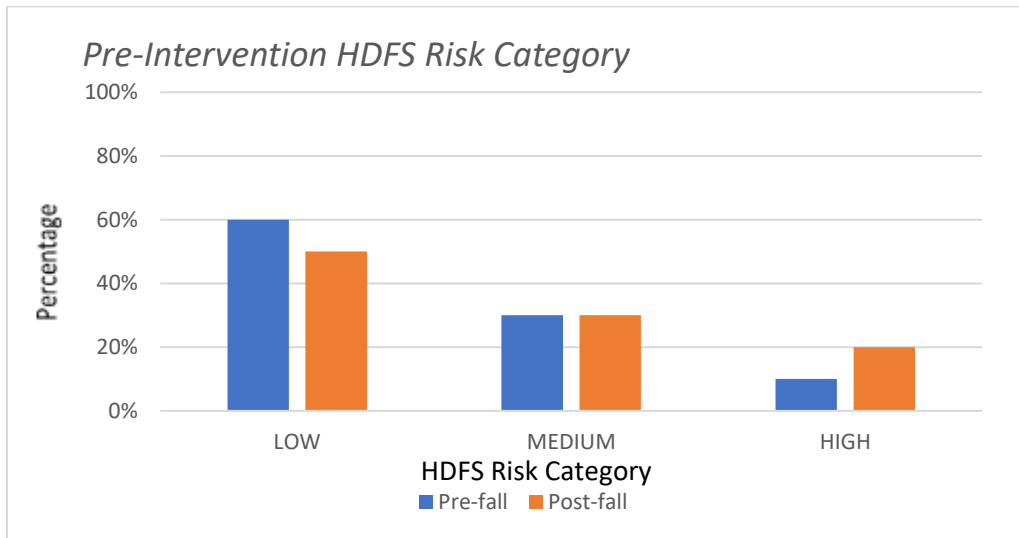
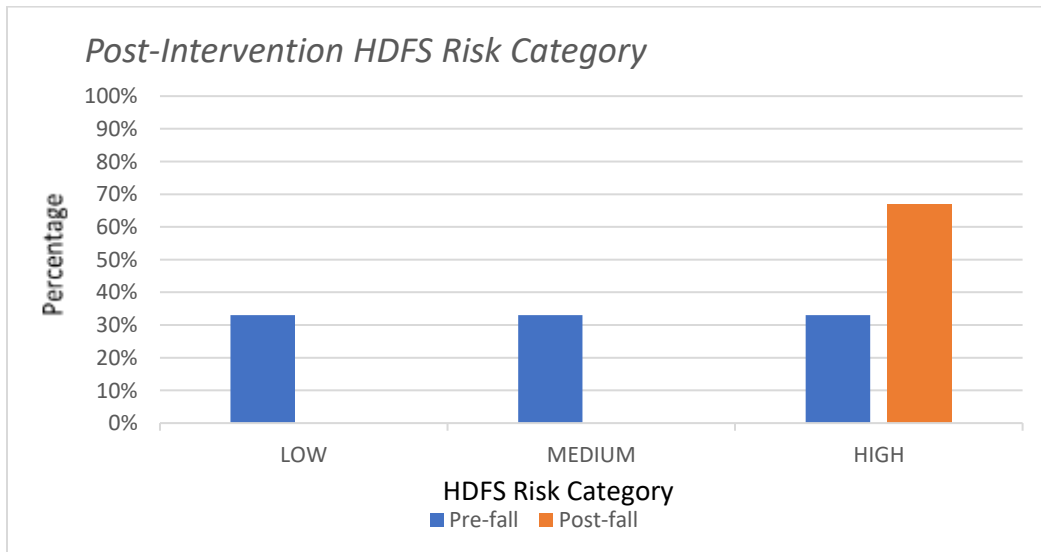


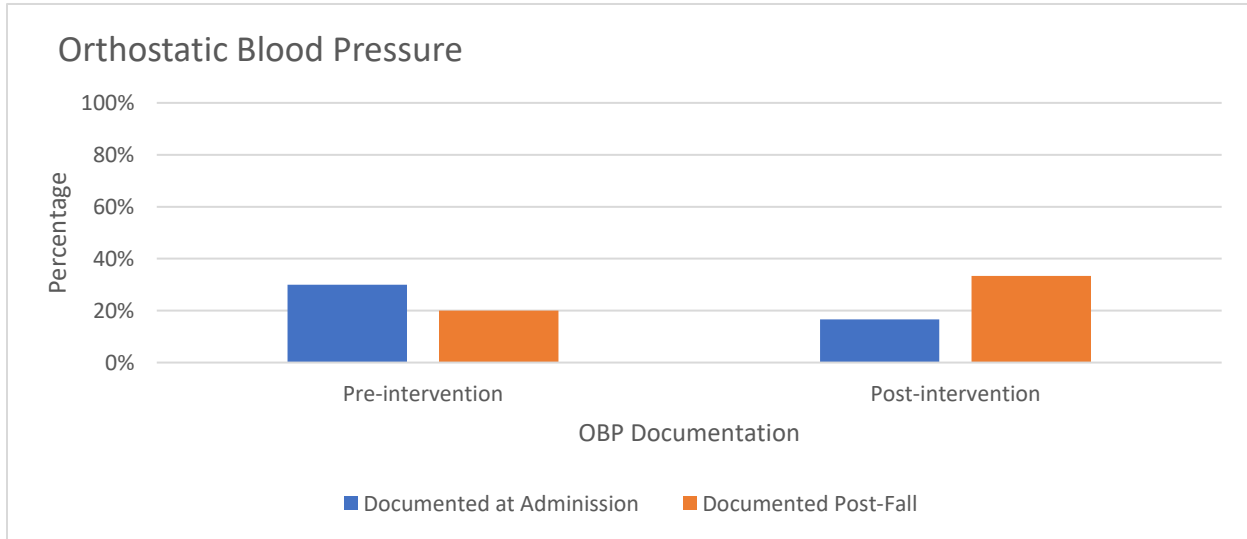
Figure 3



Prior to the pilot program change, orthostatic blood pressure (OBP) was not routinely assessed, with only 30% of patients having a documented OBP prior to a fall. Assessing for OBP

on admission and post-fall was included in the fall prevention program and only 20% had OBP assessed post fall prior to the pilot program change. During the post-implementation period, OBP was documented in 33 % of patients’ pre-fall and 67% of patients’ post-fall with no indications of orthostasis. (see *Figure 4*).

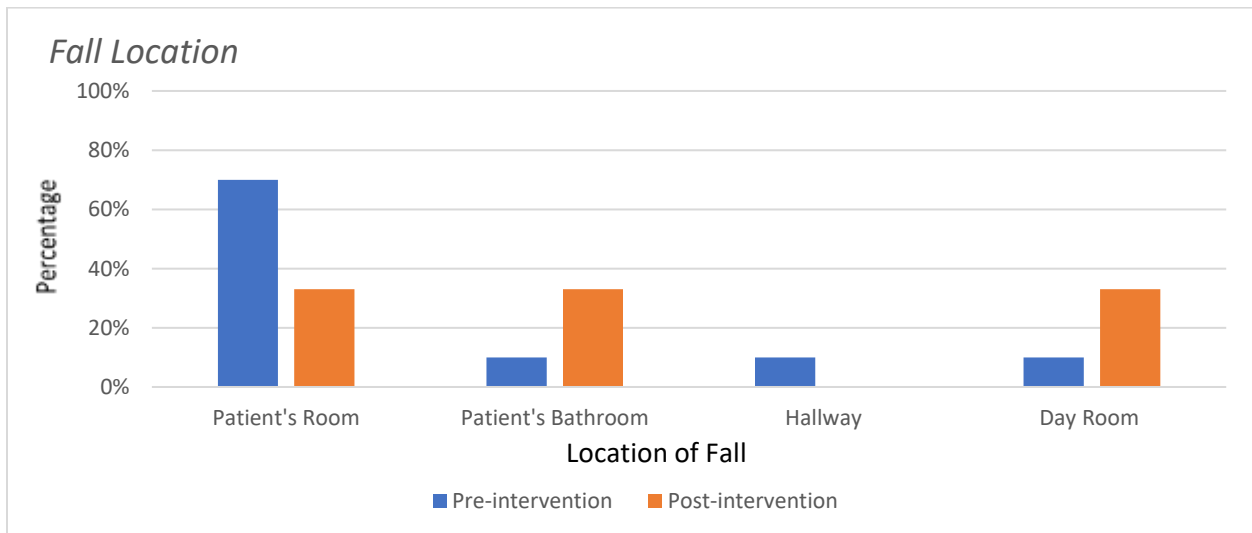
Figure 4



The policy available from the organization states that rounding needs to be performed hourly during the daytime hours of 0600-2200 and every two hours from 2200-0600. During the rounding session, specific attention and acknowledgment should be placed on the five P’s: pain assessment and management; potty- assist to the restroom as needed; position-position for comfort; possessions-in reach and clutter-free area; proactive- anticipating needs and checking the environment. Prior to the implementation of the new evidence-based fall prevention strategies, hourly rounding was not documented, thus of the 10 fall that occurred during the pre-intervention period 0% of patient who fell had experienced purposeful rounding. After implementation, of the three fall that occurred practice with a purpose rounding was documented on 100% of patients.

In the pre-implementation period, 60% of falls occurred in the patient’s room, and 10% of falls occurred in the following areas: the patient’s bathroom, hallway, and day room. No one was injured during this period. The post-intervention timeframe saw 33% of falls occurring in the patient’s bedroom and 33% in the patient’s bathroom without injury, while 33% occurred in the day room with an injury sustained. (see *Figure 5*).

Figure 5



Discussion

The number of falls decreased from 15.65 falls per 1,000 PBD to 4.37 falls per 1,000 PBD. While the reduction in falls was not significantly significant, this data was further skewed due to one patient experienced seven falls during their admission in the pre-implementation period, with suspected behavioral intent. This QI project highlights the need for continuing education in the prevention of falls. While there was not a statistically significant reduction in the overall fall rate during this study period, other results further indicate the inefficacy in re-education efforts. Re-education needs to be done on HDGS scores as evidenced by the lack of a documented HDGS score post fall. Additionally, it is evident that more education on fall precaution and prevention policy needs to be conducted as during the post-implementation

period, OBP was assessed in 67% in patient's pre-fall and 33% of patient's post-fall. Revision of the platform or content may be needed in future education efforts. The current fall prevention policy is comprehensive and is not always feasible in a psychiatric setting. Creating a psychiatric unit specific and a simplified policy language can assist in recall and compliance. Furthermore, small group training can be utilized to facilitate a greater understanding of the assessment, prevention, and documentation required for current and future patients.

During the study period, the patient's bedroom was the most frequent area for falls to occur. An assessment of the challenges that are present in this area is recommended to include staffing, the availability of bed/chair alarms, and environmental factors that pose fall risks. Stakeholders can determine if the layout of this area is a barrier to fall prevention while simultaneously determining the availability of staff and equipment or barriers to having staff and prevention equipment in this location.

Orthostatic hypotension (OH) is considered a risk factor for patient falls (Mol et al., 2019). While patients may appear asymptomatic, monitoring for OH is clinically relevant in this patient population as OH is the most common adverse autonomic side-effects encountered by individuals taking psychotropic drugs (Gaxate et al., 2017). This evaluation showed an indeterminate impact on falls from orthostasis in the assessment of OBP due to the inconsistency in assessment and documentation pre- and post- fall. Without further education and a more consistent following of protocol occurs, determining the efficacy of this intervention is not feasible for the determination of statistical significance.

Limitations

This study was limited by its small sample size; incorporating an older adult behavioral health unit at a sister facility would help address this issue. Also, stringent inclusion criteria limited the data and should be revised to incorporate all patients admitted to the unit instead of only those over the age of 60. Lack of documentation was also a hindrance to this study, further indicating the need for continued education for nursing staff to ensure adequate patient documentation. A short time frame limited the results; extending the study period should be considered in future evaluations. Lastly, in the pre-implementation period of the 10 falls that occurred, seven were suspected to be behavioral in cause, possibly skewing the data.

Conclusion

Inpatient falls are a significant patient safety issue; the risk of falling is exasperated by the dynamics present on an older adult behavioral health unit. The findings of this study highlight the need for continued practice improvement to reduce the likelihood of falls. Reinforcing current policy for implementation and required documentation would assist in the determination of overall improvement. Barriers to adequate implementation and documentation need to be addressed by the administration of the older adult behavioral health unit to determine if workforce needs or lacking adequate fall prevention equipment were factors in the omission of required implementation strategies and documentation.

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