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The Effect of Fall Prevention Education that Includes a Fall Safety Agreement on
Fall Incident Rates

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

By

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Paris, KY

2018

Abstract

Patients experiencing falls while in the acute care setting is a challenge that plagues healthcare. In 2014, 29 million hospitalized patients fell causing 7 million injuries. Eighty-five percent or greater of unfavorable hospital occurrences are linked to falls. Falls occur regularly and can have detrimental effects both physically and psychologically. Literature reviews revealed encouraging results in relation to a reduction in falls with fall prevention education and the use of a fall safety agreement. The purpose of this project was to explore the effect of fall prevention education including a fall safety agreement on falls and falls with injury during hospitalization for total knee and hip joint replacement patients. Following 30-minute education sessions, participants were asked to sign a fall safety agreement. Thirty-seven participants received fall prevention education including a fall safety agreement. Participant ages ranged from 30-79 years old with the majority being female. No falls were noted among participants.

Keywords: Fall prevention, safety agreement

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Background and Significance

Problem Identification

Patients experiencing falls while in the acute care setting is a challenge that plagues healthcare. In 2014, 29 million Americans fell causing 7 million injuries (Centers for Disease Control and Prevention [CDC], 2016). According to the Joint Commission (TJC), in-hospital falls with serious injury are in the top ten sentinel events reported (2015). Over the last 20 years, many healthcare providers and institutions have attempted to reduce the incidence of patients falling through implementation of various fall prevention strategies, yet unplanned descents to the floor continue to occur. According to TJC (2015), a reduction in-patient falls has occurred but without a significant, unrelenting decrease. In 2011, patient death or serious injury associated with a fall while hospitalized became a never event according to the Agency for Healthcare Research and Quality. The term never event refers to medical errors that should never occur. The alarming number of patient falls and patient falls with injury authenticate the need for continued efforts to prevent these events.

Context of the Problem

Eighty-five percent or greater of unfavorable hospital occurrences are linked to falls (Lunsford & Wilson, 2015). These falls can be environmental or physiological falls with 30-51% of them causing injuries ranging from contusions to acute lacerations and broken bones (Oliver, Healey, & Haines, 2010). Falls occur regularly and can have detrimental physical and psychological effects. Non-injurious falls can prompt a fear of falling, nervousness, angst,

sadness and a reduction in physical activity leading to an increased likelihood of falling (Miakel-Lye, Hempel, Ganz, & Shekelle, 2013).

Scope of the Problem

Many members of healthcare society have explored the long-standing problem of falls and possible solutions to decrease and alleviate them. Possible solutions over the years include the use of bed/chair exit alarms and scheduled toileting. While these solutions have assisted in decreasing patient falls, patients continue to fall and sustain injuries from those falls. In recent years, acute care hospitals have engaged in the bundling of fall prevention interventions. Johnson, et al. (2011) suggests that the employment of one fall prevention intervention is not enough. Rather, multiple interventions are required to keep patients free from falls. The use of fall safety agreements is included in fall prevention bundles to decrease the incidence of patient falls and falls with injury.

Consequences of the Problem

Patient falls and falls with injury increase hospitalization costs including an increased length of stay. TJC Center for Transforming Healthcare (2015) estimates the cost of a fall with injury at \$14,000 with an additional 6.3 days' length of stay. In addition to increased costs, falls with injury can lead to loss of life. Centers for Disease Control and Prevention (2016) reports that 50% of adults, older than 65 years, that experience a fall with injury will not live longer than one year following the fall.

Evidence-Based Intervention

The practice of providing fall prevention education using fall safety agreements during hospitalization decreases the incidents of unintentional falls therefore improving patient safety (Nicolas, Gayanilo, & Bellas, 2016). Reviewed studies revealed encouraging results in relation

to a reduction in falls with increased patient engagement using fall safety agreements as part of the patients' fall prevention education (Vonnes & Wolf, 2017; Zavotsky, Hussey, Easter, & Incalcaterra, 2014). The use of fall prevention education increases falls prevention awareness and patient engagement while informing patients of risk factors he or she has for falling (Hill, Etherton-Ber, & Haines, 2013). This nurse initiated and driven education provides proactive care instead of reactive care.

Project Purpose

Hospitalized patients expect to receive care for existing health conditions not acquire new ones. It is apparent that a patient falling while hospitalized creates a patient safety issue and a potential for injury. The purpose of this project was to implement evidence-based fall prevention education that includes the use of a fall safety agreement to decrease fall rates.

Theoretical Framework: Mishel's Uncertainty in Illness Theory

Merle Mishel (1988) sought to identify the role of uncertainty as a stressor in acutely ill patients. Dissatisfaction with the traditional linear models prompted her to examine the more vigorous chaos theory to explain how prolonged uncertainty could function as an incentive to change a person's view on life and sickness. The Uncertainty in Illness Theory (UIIT) provides a structured approach at deciding upon actions to enhance social and emotional results during circumstances of indecision or uncertainty such as hospitalization (Germino et al., 2013).

The theory details how those with illness intellectually manage sickness-derived stimuli and fabricate significance in these occurrences (Mishel, 1988). The UIIT is composed of 15 concepts and conceptual definitions. These concepts define individual movement through different phases of undergoing uncertainty. Uncertainty is the inability to establish the significance of illness-related happenings, occurring when those making choices are not able to

dispense worth to items or happenings, or are not able to foresee outcomes correctly. Cognitive schema is one's understanding of sickness and medical management of that sickness. Stimuli frame is the identification of stimuli structural make-up and composition into a cognitive schema. Symptom pattern is the occurrence of symptoms with a frequency recognized as a pattern. Event familiarity is the level to which a circumstance is customary, recurring, or encompasses familiar signs. Event congruence relates to the uniformity between the anticipated and the actual in sickness. Structure providers are available resources that aid in the understanding of illness. Credible authority is the level of faith and assurance that a person has in his or her medical team. Social supports impacts uncertainty by aiding the person to decipher the meaning of occurrences. Cognitive capacities are the mental abilities of the person including natural born capabilities and circumstantial limitations. Inference pertains to the assessment of uncertainty based upon past-experiences. Illusion relates to principles resulting from uncertainty. Adaptation depicts how a person adapts or changes to meet the demands of sickness such as the development of coping mechanisms. New view of life signifies the articulation of an awareness of harmony derived from the constant uncertainty associated with illness and the acceptance of uncertainty being a-fact-of-life. Probabilistic thinking is the notion that a recurrent certainty and expectedness does not always exist.

Mishel's UIIT includes four major assumptions. The first two assumptions exhibit the conceptualization of uncertainty with the psychology world's information-processing models. Uncertainty is an intellectual state, characterizing the variances of a present cognitive schema to aid in the understanding of sickness-related occasions. Uncertainty is naturally an unbiased encounter, neither good nor bad until evaluated as such. The last two assumptions of the theory represent the origins of the theory in conventional stress and coping paradigms. The two

assumptions postulate a linear association between stress, coping and adaptation. Adaptation is the continuation of an entity's normal behavior and is the preferred result of coping mechanisms. The linkages between illness, uncertainty, evaluation, emotional managing, and adaptation run in a linear fashion and move in one direction from sickness to adaptation. Several years after the development of the theory, Mishel challenged the idea of a linear association and re-conceptualized the theory based upon the chaos theory. The re-conceptualization model details extended periods of uncertainty as a mechanism to alter an individual's outlook on life and sickness (Mishel, Padilla, Grant, & Sorenson, 1991).

The UIIT depicts how a person intellectually handles illness-related stimuli and deriving meaning from those happenings. In the middle range theory, adaptation is the desired end-result after dealing with the uncertainty. Nurses can implement interventions aimed at guiding the ill person's mental processes to focus on the uncertainty creating positive emotional management and adaptation (Mishel et al, 1991). The UIIT theory provides support to for nurses to achieve successful patient outcomes such as reduction in patient falls and establish a holistic equilibrium. It provides explanations for the worries and anxieties associated with the identification and healing of any adverse event including an unplanned descent to the floor. Theory basis is upon rigorous theoretical bases and promotes evidence-based nursing (Germino et al., 2013). Assisting patients to reach certainty in their illness will promote patient safety through a decrease in mental chaos.

Literature Review

The reduction and elimination of patient falls in the hospital is a key patient safety initiative. Throughout healthcare agencies across the United States, patient falls pose one of the utmost quality challenges (Abraham, 2011). A review of literature was conducted with a focus

on identifying effective fall prevention strategies in acute care settings. The Cumulative Index of Nursing and Allied Literature (CINAHL) and the Cochrane Collaboration databases were used for the search. Eight studies (Johnson et al, 2014; Weinburg et al, 2011; Williams, Szekendi, & Thomas, 2014; Zavotsky, Hussey, Easter, & Incalcaterra, 2014; Vannes & Wolf, 2017; Hill, Etherton-Ber, & Haines, 2013; Huang et al, 2014; Teresi et al, 2011) and three systematic reviews (DiBardio, Cohen, & Didwania, 2012; Miake-Lye, Hempel, Ganz, & Shekelle, 2013; Gillespie et al, 2012) related to implementing fall prevention interventions and their effect on patient falls and falls with injury were identified as relevant research and related literature to the project.

Johnson et al. (2014) sought to determine if the incidence of postoperative falls decreased with the implementation of various fall prevention strategies that included provider and patient education, fall risk assessment, fall alert signs, and the use of patient lifts. A retrospective review was conducted of 15,189 patients who underwent total knee arthroplasty (TKA) at Methodist Hospital, Mayo Clinic in Rochester, Minnesota. The overall fall rate was 15.3 (per 1000 patients; 95% CI: 13.4-17.4). During the study time-period, the rate of falls changed significantly (natural cubic spline, $p < 0.001$) with an initial increasing trend followed by a gradual decrease after intervention initiation. The rate of falls increased with older age ($p < 0.001$) and was significantly lower ($p = 0.003$) for patients undergoing revision TKA compared to primary TKA. Approximately 70% of all falls occurred in patients not identified as a high fall risk. Strengths of the review include large sample size and study period. Weaknesses include possible selection bias, responder, diagnostic, and reporting bias. Johnson and associates demonstrated a reduction of falls coinciding with the implementation of a fall prevention program.

Weinberg, et al. (2011) evaluated the effectiveness of a fall prevention initiative (FPI) on fall rates and fall rates with injuries using a quasi-experimental design. The study took place in a 714-bed New York City hospital. One million, ninety-eight thousand, four hundred, seventy-one inpatient days for patients ≥ 18 years of age with an admission of greater than one day served as the sample. Modifications to patient care included fall documentation requirements, restricted use of certain medications, post fall assessments, and the use of bed alarms. Study findings indicated that after 4 years, fall rates decreased by 63.9% ($p < .0001$), documentation of injury level increased by 83.0% and minor and moderate fall related injuries decreased to 54.4% ($p < .0001$) and 64% ($p < .0001$) respectively. Strengths of the study include large sample size and extended length. Weakness involved data collection outside normal business hours of Monday through Friday from 0800 to 1600. The study highlighted the positive effect fall prevention education had on accountability, safety awareness and critical thinking.

Williams, Szekendi, and Thomas (2014) conducted a quantitative, retrospective review of 25,510 patient fall reports. They sought to increase understanding of falls by identifying factors associated with falls, with and without harm, and by exploring the effectiveness of fall risk assessment tools and prevention programs. Inpatient and Emergency Department patient records were reviewed to identify fall rates with and without injury. Quantitative analyses conducted included age, gender, location, time of fall, level of injury, contributory factors, risk status, medications ordered, activity, and prevention strategies at time of fall. The majority of falls occurred in medical surgical units (36%). Seventy-six percent of studied falls resulted in no injury and the greatest number of falls were in 51-60 year olds. Female patients were more likely to experience a fall that resulted in major injury or death. Patients < 17 or > 80 years of age were more likely to sustain minor injury from falling yet > 80 years old sustained major injury or death

two to six times more often than younger age groups. Fall rates decreased to 3.16 per 1000 patient days and fall with injury rates decreased to 0.53 per 1000 patient days. Strengths of the study included good generalizability due to large sample size and range. Weaknesses included data based upon information entered and reported voluntarily. The study authors provided useful information on fall risks and missing links in fall risk assessments and fall prevention interventions including scheduled toileting, bed/chair exit alarms, and patient education. Areas of needed focus for fall prevention strategies were highlighted as the emergency department and women's acute care.

Zavotsky, Hussey, Easter, and Incalcaterra (2014) sought to explore falls that occurred in an academic medical center. The implementation model of the study was the Robert Wood Johnson University Hospital Nursing Conceptual Model for Nursing Practice. A retrospective, quantitative, exploratory descriptive study design was used to analyze data from a preexisting falls database for patients in two age groups: 18 to 64 years old and 65 years and older. The sample included 696 patients who fell while hospitalized. The study examined the effect of participating in a fall safety agreement on the level of fall injury severity following the National Database of Nursing Quality Indicators (NDNQI) injury level guidelines. Outcome measures included fall safety agreement participation and level of fall injury severity. Data analysis included descriptive statistics and chi square comparisons. Findings indicated the mean age for patients who fell but did not suffer injury was 61.5 years old, 67 years old for minor injury, and 71 years old for those with major injuries. A significant relationship existed between fall safety agreement participation and injury severity ($\chi^2 = 6.508, p=0.39$). Implications of this study support implementation of patient agreements to decrease the incidence of fall and accompanying injuries in hospitalized patients.

Vonnes and Wolf (2017) investigated the effect of fall prevention agreements on the incidence of falls and falls with injury for older adults admitted to medical oncology units who receive chemotherapeutic interventions, management of oncological treatment consequences, and cancer progression care. The evidence-based project utilized the Plan-Do-Study-Act (PDSA) Rapid Cycle Improvement to implement the fall prevention agreement. The agreement was presented to participants upon hospital admission and was placed in each participant's hospital room. The baseline mean fall and injury rate (6 months prior to implementation of fall safety agreement) was 3.77 and 2.37, respectively. Following implementation of the fall prevention agreement, rates were measured for eight-quarters. Quarterly fall rates ranged from 1.52 to 3.32 indicating an 11.8%-59.6% decrease in falls. The post intervention mean fall rate was 2.37 indicating an overall decrease of 37%. The post intervention mean injury rate was 0.89 indicating an overall decrease of 58.6%. Although the study was limited in time, researchers concluded that including patients and families into fall prevention practices might have had a slight impact in reducing falls and a significant reduction in falls with injury. Additional studies including multivariate analysis are needed to determine whether supporting evidence links fall and injury reduction to the use of fall prevention agreements.

Hill, Etherton-Ber, and Haines (2013) evaluated the effect of providing tailored multimedia fall prevention education prior to patient discharge and the effect of the intervention on older patients' self-perceived risk of falling and knowledge of fall prevention strategies after receiving the education. Researchers used a two-group pilot, randomized trial with blinded baseline and outcome assessment. Sample size was 48 older adults. Education provided was based upon the Health-Belief Model and informed participants of the risk of falls and fall prevention strategies. Outcome measurements included engagement in fall prevention behaviors

and knowledge, confidence, and motivation levels pre- and post-education. Data were analyzed using adjusted odds ratios and confidence intervals. Participants in the intervention group were significantly more likely to plan how to safely restart functional activities (Odds Ratio (OR) 3.80, 95% CI (1.07, 13.52), $p=0.04$) and were significantly more knowledgeable, confident, and motivated to engage in falls prevention strategies after receiving the education than the control group. Twenty-three participants experienced a fall ($n=5$ intervention, $n=18$ control). The fall rate were 18.7 per 1000 patient days for the control group and 5.4 per 1000 patient days for the intervention group. (OR 3.38, 95% CI (0.98, 11.56), $p=0.05$). Implementation of a multimedia education program is feasible in most hospital settings.

Huang et al. (2015) investigated the effectiveness of Fall Prevention Participatory Program (FPPP) in decreasing falls in oncology patients. Sixty-eight oncology patients, greater than the age of 18 participated in the study. Phase 1 of the study included implementation of a single-group pretest and posttest design using a self-report questionnaire to assess alterations in fall prevention knowledge and self-efficacy. During phase 2 of the study, the effectiveness of the intervention was determined with the use of a two-independent group design. A comparison of the fall incidence rate of the sampling occurred to a matched sample from the prior period. Study findings indicate the fall incidence was 0% (per 100 patient days) for patients involved in experimental group. With frequency matched, the fall incidence among the control group was 19.3% (per 100 patient days). The difference was statistically significant ($p<0.05$). Strengths of the study included feasibility of program use. Weaknesses included the use of self-reported data possibly resulting in reporting bias and small sample size.

Teresi et al. (2011) conducted a comparative effectiveness study to estimate the effects of implementing evidence-based education on fall rates. Basis for the conceptual framework of the

study was intrinsic and extrinsic factors. Forty-five institutions participated in one of three conditions: standard training, training and implementation modules provided to facility staff, or staff training and implementation modules augmented by surveyor training. Participants included 7361 residents of 45 long-term care facilities in New York State who completed pre and post knowledge tests before and after each training module using a 10-item knowledge test for each module. Training modules provided basic knowledge about vision including visual impairments and descriptions of fall risk factors associated with uncorrected visual deficits. Environmental adjustments such as removing clutter and reducing glare were also included. Cronbach's alpha for the developmental sample ranged from 0.60 to 0.70. Cronbach's alpha for the intervention sample at both pre- and posttest were 0.77 and 0.75 respectively. Data was collected from the Minimum Data Set (MDS) depression rating scale and MDS behavior scale. Data analysis occurred by bivariate, covariate and residential plots. Study findings indicated a 15% reduction in falls ($p=0.17$) and a significant reduction ($p=0.0028$) in negative affect for facilities in the experimental group. Strengths of the study included a large sample size and noted positive impact on patient safety. The study supports reduction in fall rates in healthcare facilities through implementation of multi-faceted interventions including educational training.

DiBardio, Cohen, and Didwania (2012) assessed the impact of team-based, multidisciplinary quality improvement efforts to reduce inpatient falls in acute care inpatient hospitals. Through systematic review, the researchers sought to identify key features that determine fall prevention effectiveness. Authors searched MEDLINE, CINAHL, EMBASE and the Cochrane Library. Only primary studies related to fall prevention in acute care settings were selected for the purposes of data extraction. Review of six primary articles occurred. All but one study had a large sample size with 1000-patient days ranging from 11.1 to 160.3. Data

analysis included odds ratios, confidence interval, and Cochrane Q statistic. Findings indicate no statistical inconsistencies between the studies or study designs. Using the random-effects model, the summary odds ratio was 0.90 (95% CI, 0.83 to 0.99) ($p=0.02$) ($I^2 = 0\%$). Authors provided evidence that fall prevention programs reduce falls focusing on inpatients of acute care facilities. Limitations included quality and quantity of the original research articles.

Miake-Lye, Hempel, Ganz, and Shekelle (2013) conducted a systematic review to identify benefits and harms of multicomponent inpatient programs for fall prevention. Twenty-one studies were chosen that met the criteria for review. The effects of multicomponent fall prevention programs among inpatients were identified via searches conducted from 2005 through September 2012. Reviews of fall prevention programs in community-based settings were excluded. Study designs included pre-and post- design, randomized controlled trials (RCT) and cohort studies. Greater than 335,000 patients participated in the studies collectively. Ten of the reviewed studies reported significantly fewer falls and/or falls with injury while eight studies reported fewer falls without significance. Three studies reported a greater number of falls without significance. Results from the systematic review were consistent with previous reviews on inpatient fall prevention programs. Themes identified as successful components of those programs included education, training and leadership support of fall prevention measures. Relevance of this study demonstrates the use of fall prevention interventions to reduce inpatient fall rates.

Gillespie et al. (2012) conducted a systematic review of the literature to identify outcomes of interventions designed to reduce the incidence of falls in older people living in the community. Authors searched Cochrane Bone, Joint, and Muscle Trauma Group Specialized Register, CENTRAL, MEDLINE, EMBASE, CINAHL and online trial registers. Randomized

trials of interventions such as exercise, treatment of vision problems, and individual risk assessment to reduce falls in community-dwelling older people were included. One hundred, fifty-nine trials with 79,193 participants in 21 countries were included in the review. Fall rates between intervention and control groups were compared using rate ratio (RaR) and 95% confidence interval (CI). Risks of falling were compared using RaR and 95% CI based on the number of people falling in each group. Findings indicated multiple-component group exercise significantly reduced rate of falls (RaR 0.71, 95% CI 0.63 to 0.82; 16 trials; 3622 participants). Exercise interventions significantly reduced the risk of sustaining a fall-related fracture (RR 0.34, 95% CI 0.18 to 0.63; 6 trials; 810 participants). Multifactorial interventions, which include individual risk assessment, reduced rate of falls (RaR 0.76, 95% CI 0.67 to 0.86; 19 trials; 9503 participants). Implications of this review include exercise programs aimed at reducing falls in older adults appear to also reduce the incidence of falls with injury. The researchers also indicate that treatment of vision problems reduces falls. While results indicate home safety interventions such as lighting and anti-slip shoe devices, reduce fall rates as well as fall risk, interventions involving a multidisciplinary team are effective in reducing rate of falls but not risk of falling.

The use of fall prevention strategies to decrease falls and falls with injury was a central theme in all the studies reviewed. The role of patient education as a fall prevention strategy was highlighted in six studies (Johnson, et al., 2014; Williams, Szekendi, & Thomas, 2014; Hill, Etherton-Ber, & Haines, 2013; Huang et al, 2015; Teresi et al., 2011; Miake-Lye, et al, 2013). Two studies (Zavotsky et al, 2014; Vonnies & Wolf, 2017) reviewed the role of fall safety agreements in fall prevention and demonstrated a decrease in fall and fall with injury incidences.

While all evidence reviewed demonstrated a reduction in fall and fall with injury incidences, only one study indicated a cost reduction associated with fall prevention (Teresi et al, 2011). The definition of older adult varied between studies and multiple fall risk assessment tools were used to measure risk of falling. Strengths in the reported evidence included large sample sizes and study designs. Weaknesses included retrieval of data from databases without actual assessment of subjects. In addition to providing evidence that fall prevention programs reduce falls, researchers provided insight on how to successfully implement these programs.

Agency Description

The implementation of the fall prevention education project occurred at 180 bed, not-for-profit hospital, which is a satellite facility of a large academic medical center. The project was implemented on a 34 bed post-surgical unit that cares for acute medical surgical patients. The targeted population included patients, ages 18 to 90, who were admitted within 48 hours following hip or knee joint replacement. The evidence-based intervention was congruent with the agency's strategic plan to improve value and care through use of best practices supported by evidence. Patient safety and '*doing no harm*' aligns with the goals of the agency to provide valuable clinical care to people it serves.

Inpatient fall reduction requires a multidisciplinary approach. Key stakeholders included patients, families, bedside care providers and hospital leaders. Bedside care providers include registered nurses, nursing assistants, physical and occupational therapists, as well as clinical pharmacists. Hospital leadership supported the project and were key to the project's implementation.

Statement of Mutual Agreement with Agency

A mutual agreement was completed (Appendix A) between the project leader and the agency to complete the fall prevention education including a fall safety agreement. An agency representative received a brief description of the project and guideline for completion. Project updates were provided to the agency representative throughout the project.

Project Design

This evidence-based project used an evidence-based educational intervention. Project participants received fall prevention education that included a fall safety agreement.

Project Methods

Evidence-Based Intervention

The fall education provided included when to call for help and strategies that hospital staff use to prevent falls. The strategies included: 1) use of non-skid socks; 2) keeping bed in lowest position; 3) conducting bedside nursing shift report; 4) following physical and occupational therapy mobility recommendations; 5) the use of bed/chair alarms; and 6) risk factors associated with falling. Following a 30-minute education session, a fall safety agreement was signed acknowledging that the participants agreed to be engaged in their own safety. The signed agreement was strategically placed in the participant's room as a continual visual cue to remind participant about fall prevention strategies in use.

Implementation Framework

The Iowa Model of Evidence-Based Practice (EBP) served as a guide for this project. The model provides a rational, down-to-earth approach for using evidence to influence practice at the hospital level. The model involves five steps (Titler et al., 1994). The first step is selection of a topic. During this phase of the model, priority and scale of the problem as well as

relevance to all practice areas are considered. The topic selected for the project was inpatient fall reduction and prevention. The second step of the model is forming a team. The team includes interested stakeholders and is responsible for development, application, and assessment (LoBiondo-Wood & Haber, 2006). The team for project included bedside caregivers and nursing leadership. Nursing leadership consisted of the patient care manager and director as well as the clinical nurse specialist responsible for the pilot unit. The next step is a critique of relevant literature. In addition to addressing individual research, the team must address the overall strength of the body of evidence. A review and synthesis of relevant literature review was conducted. The 11 most relevant studies were synthesized for the purposes of the project. The synthesis revealed a strong body of evidence related to the use of education to decrease fall incidence. The fourth step is implementing practice change. During this phase, participants received fall prevention education including a fall safety contract and demographic data was collected. The fifth and final step is disseminating the results. After an evaluation of desired outcomes, a plan was put in place to implement the fall education strategy including a fall safety agreement throughout the hospital system.

Procedure

IRB Approval

Institutional Review Board (IRB) approval from the Office of Research Integrity at the academic medical center (Appendix B) was obtained. An IRB Authorization Agreement (IAA) from Eastern Kentucky University (Appendix C) recognized the academic medical center as the IRB of record.

Measures and instruments

Descriptive statistics were collected (Appendix D) from the medical record. Frequency of falls with and without falls were also analyzed (Appendix E).

The Baptist Health High Fall Risk Assessment (BHHFRA [Appendix F]) was used to assess risk of falling while hospitalized (Corley et al., 2014). The BHHFRA tool is comprised of seven items that measure risk for falling. Scores range from 0-36 with scores ≥ 13 denoting a high fall risk. BHHFRA psychometrics (sensitivity, 0.64-1.00; specificity, 0.50-0.70; and DOR, 4.73-7.0) suggest correlations exist between increased fall risk and incidence of falling (Corley et al., 2014).

Implementation

The patient care manager (PCM) for the nursing unit recruited participants following explanation of the intervention. Only patients who had undergone hip or knee-replacement surgery were approached for inclusion in the project intervention. Informed consent was obtained from those choosing to participate. The project leader verbally presented one on one fall prevention education that lasted approximately 30 minutes to consenting participants. Family members of the participants had the choice of being present during the education but were not asked to participate in the project. Following education, the fall safety agreement (Appendix G) was signed. Once the participant signed the fall safety agreement, participants were provided a signed copy of the consent and copy of the signed fall safety agreement was posted in the participant's hospital room within full view of anyone entering.

Results

Thirty-seven (N=37) patients participated in the project. All were English speaking, able to read and write, and had no cognitive limitations. Data was entered into the Statistical Package

for Social Science (SPSS®) Version 24.0 (IBM Corporation, 2016). Statistical significance was set at 0.05 (Polit, 2010). Descriptive statistics were summarized. Frequency of fall rates and fall rates with injury were analyzed.

Females comprised the majority of the sample participants (68%) and only one participant (2.2%) had less than a high school education (Table 1). The mean age of the group was 61.97 years old with ages ranging from 30 to 79 years of age.

Table 1

Frequency of Sociodemographic Characteristics

Variable	<i>n</i>	%
Gender		
Male	12	32.0
Female	25	68.0
Educational Status		
Less than High School	1	2.7
High School/Equivalency	14	37.8
Some College/Vocational Educ.	2	5.4
College Degree	15	40.5
Graduate Degree	5	13.5

Only one participant had a high fall risk score based on the BHHFRA (Figure 1).

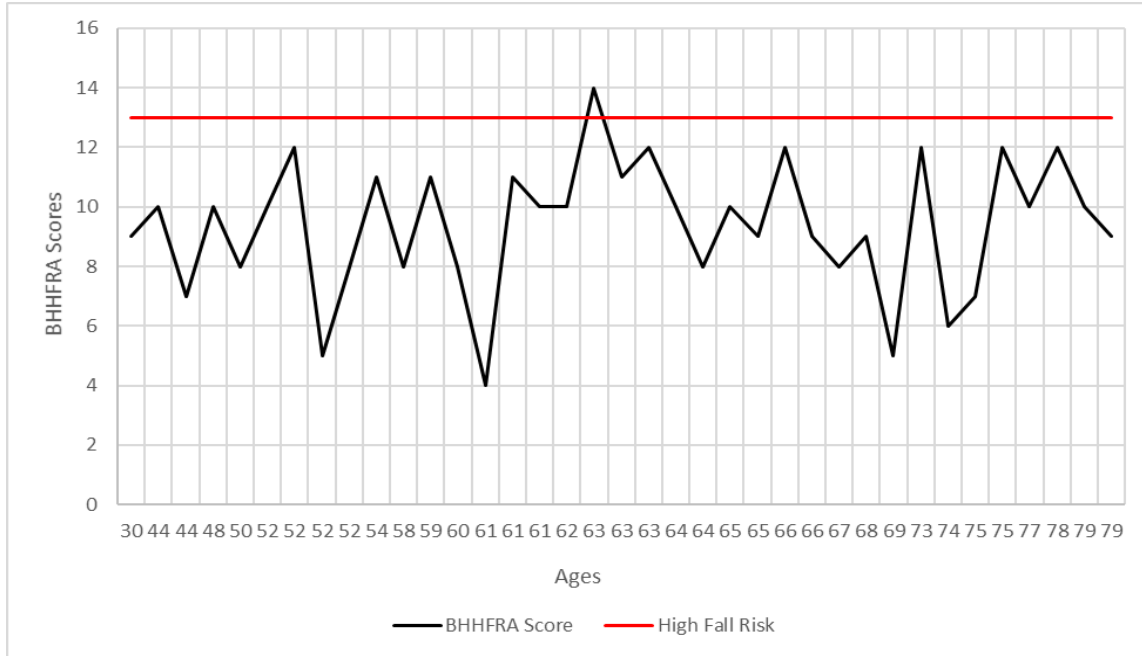


Figure 1. BHHFRA scores by age.

There were no occurrences of falls or falls with injury while the participants remained hospitalized representing an improvement based upon agency quality improvement data (Figure 2).

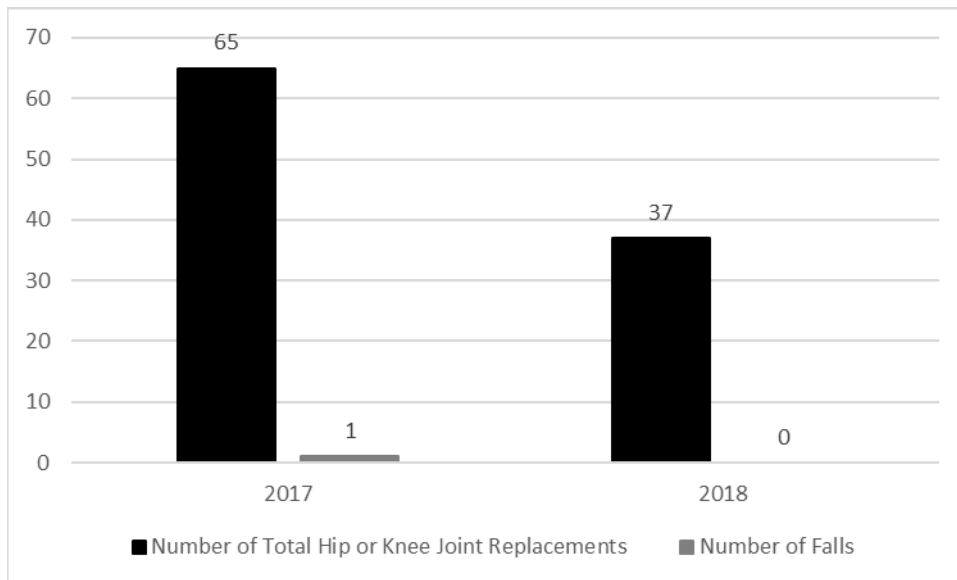


Figure 2. Fall incidence of participants who received (2018) and did not receive (2017) a fall safety agreement.

Discussion and Implications

The project's aim was to decrease fall rates using fall prevention education that included a fall safety agreement during hospitalization for patients who had undergone total joint replacement (knee or hip). Limitations of the project included a small sample size and limited time frame for the project. Time needed to provide education (30 minutes) may be seen as a barrier to the bedside nurse. Time can be a barrier to implementing change; however, results indicate the clinical value of utilizing a fall safety agreement and decreasing incidents of falls.

The implementation of falls education and a fall safety agreement have implications for the feasibility and sustainability as fall prevention interventions for hospitalized patients. Standardized fall prevention education and the use a fall safety agreements will be disseminated to other inpatient-nursing units with oversight from the agency's fall prevention committee.

Summary

Inpatient falls are within the top ten adverse events occurring in hospitals across the United States (TJC, 2015). Inpatient falls and falls with injury lead to an increased utilization of health care dollars. In recent years, acute care hospitals have engaged in the bundling of fall prevention interventions. Johnson et al. (2011) suggests that the employment of one fall prevention intervention is not enough. Rather, multiple interventions are required to keep patients free from falls. Considerable evidence exists that fall prevention education is effective in reducing inpatient falls and falls with injury (Johnson, et al., 2014; Williams, Szekendi, & Thomas, 2014; Hill, Etherton-Beer, & Haines, 2013; Huang et al, 2015; Teresi et al., 2011; Miake-Lye, Hempel, Ganz, and Shekelle, 2013). Fall prevention education including a safety agreement is an additional intervention to assist in keeping hospitalized patients safe from harm (Nicolas, Gayanilo, & Bellas, 2016). The implementation of this project serves as a critical

element in strategizing for patient safety and provides a gateway for application throughout the hospital system.

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Appendix A Statement of Mutual Agreement



Eastern Kentucky University
Department of Baccalaureate and Graduate Nursing
Doctor of Nursing Practice Program

Statement of Mutual Agreement for DNP Project

The purpose of a Statement of Mutual Agreement is to describe the agreement between a designated clinical agency and the DNP student regarding the student's DNP project.

I. General Information

Student Name: Rebecca Dotson
 Project Title: The Effect of Fall Prevention Education Including a Fall Safety Agreement on Fall Incident Rates
 Agency: UK HealthCare Good Samaritan Hospital
 Agency Contact: Jill Blake, MSN, RN

II. Brief description of the project

Patients experiencing falls while in the acute care setting is a challenge that exists in healthcare. The Agency for Healthcare Research and Quality (AHRQ) (2017) estimates that 700,000 to 1 million hospitalized patients fall each year with more than one-third of these falls resulting in injury. This statistic is supported by the incidence of inpatient falls at UK Healthcare (UKHC). In fiscal year 2016 (FY16), 559 inpatients fell for a rate of 2.15 per 1000 patient days. In fiscal year 2017 (FY17), 490 inpatients fell for a rate of 1.86 per 1000 patient days (J. Blake, personal communication, November 6, 2017).

At UKHC, a plethora of fall prevention interventions have been implemented including the use of bed/chair exit alarms, non-skid socks, hourly rounding and scheduled toileting.

While these initiatives have made some impact, patients continue to fall. The continued incidence of patient falls leaves healthcare providers and leaders searching for innovative interventions to address the problem. Zavotsky, Hussey, Easter, and Incalcaterra (2014) found that structured fall prevention education in the form of a fall safety agreement may have impacted the degree of injury obtained during an inpatient fall. Nicolas, Gauanilo, and Bellas (2016) also found that the practice of providing fall education including employing fall safety agreements upon patient admission decreased the incidence of unintentional falls.

The approach of this study is in-line with the UKHC Nursing strategic plan which focuses on patient centeredness and the use of safety metrics data to guide evidence based care (UK Healthcare, 2016). The use of fall prevention education including a fall safety agreement could positively impact patient safety by potentially decreasing the incidence of patient falls. This education/safety agreement not only informs patients and families of risk factors associated with falling, but promotes patient and family engagement in the patient's plan of care.



Eastern Kentucky University
 Department of Baccalaureate and Graduate Nursing
 Doctor of Nursing Practice Program

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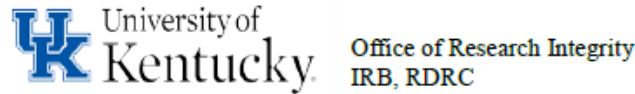
III. Agreement of written and oral communication

- Reference to clinical agency in student’s academic work, publications, and presentations
- Restrictions on discussion of any project or agency details
- Formal agency approval needed for any publicly shared findings.

IV. Required Signatures:

<p><i>Rebecca Probst</i> Student</p>	<p><u>3/1/18</u> Date</p>
<p><i>Dr. Julie Cochran</i> DNP Project Advisor</p>	<p><u>3/1/2018</u> Date</p>
<p><i>Jill Blake</i> Agency Representative</p>	<p><u>3/1/18</u> Date</p>

Appendix B IRB Approval



Initial Review

Approval Ends
February 5, 2019

IRB Number
17-0771-P2H

TO: Rebecca Dotson, RN, MSN
Nursing Professional Practice and Excellence
B-152 Good Samaritan Hospital
PI phone #: (859)257-0150

FROM: Medical Institutional Review Board (IRB)

SUBJECT: Approval of Protocol Number 17-0771-P2H

DATE: February 7, 2018

On February 6, 2018, the Medical Institutional Review Board approved your protocol entitled:

The Effect of Fall Prevention Education that Includes a Fall Safety Agreement on Fall Incident Rates

Approval is effective from February 6, 2018 until February 5, 2019 and extends to any consent/assent form, cover letter, and/or phone script. If applicable, attached is the IRB approved consent/assent document(s) to be used when enrolling subjects. [Note, subjects can only be enrolled using consent/assent forms which have a valid "IRB Approval" stamp unless special waiver has been obtained from the IRB.] Prior to the end of this period, you will be sent a Continuation Review Report Form which must be completed and returned to the Office of Research Integrity so that the protocol can be reviewed and approved for the next period.

In implementing the research activities, you are responsible for complying with IRB decisions, conditions and requirements. The research procedures should be implemented as approved in the IRB protocol. It is the principal investigators responsibility to ensure any changes planned for the research are submitted for review and approval by the IRB prior to implementation. Protocol changes made without prior IRB approval to eliminate apparent hazards to the subject(s) should be reported in writing immediately to the IRB. Furthermore, discontinuing a study or completion of a study is considered a change in the protocol's status and therefore the IRB should be promptly notified in writing.

For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research" from the Office of Research Integrity's IRB Survival Handbook web page [<http://www.research.uky.edu/ori/IRB-Survival-Handbook.html#PIresponsibilities>]. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORI's web site [<http://www.research.uky.edu/ori>]. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at (859) 257-9428.

see blue.

315 Kinkead Hall | Lexington, KY 40506-0057 | P: 859-257-9428 | F: 859-257-8995 | www.research.uky.edu/ori/

An Equal Opportunity University

Appendix C
IRB Authorization Agreement

IRB Authorization Agreement

Name of Research Project: The Effect of Fall Prevention Education that Includes a Fall Safety Agreement on Fall Incident Rates

Principal Investigator(s): Rebecca Dotson, MSN, RN

IRB Protocol Number: 17-0771 PLH

Sponsor or Funding Agency, if any:

Name of Institution Providing IRB Review (Institution A): University of Kentucky
 OHRP Federalwide Assurance (FWA) Number: FWA00005295
 IRB Registration Numbers: IRB00000423 U Kentucky IRB #1
 IRB00000424 U Kentucky IRB #2
 IRB00000977 U Kentucky IRB #3
 IRB00005975 U Kentucky IRB #6

Name of Institution Relying Upon IRB Review Above (Institution B): Eastern Kentucky University
 OHRP Federalwide Assurance (FWA) Number: FWA00003332
 IRB00002836

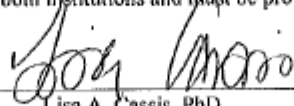
Officials signing below agree that Institution B may rely on the above IRB review, approval, and continuing oversight provided by the University of Kentucky under its Assurance for the project identified above.


This agreement applies only to the project named above and to no other research projects in which Institution B may be engaged in at present or in the future.

The review, approval, and continuing oversight performed by the relied-upon IRB satisfy the requirements of the HHS regulations for the protection of human subjects at 45 CFR 46, as well as the requirements of University of Kentucky's OHRP-approved Assurance. Institution B retains the obligation to comply with all other requirements of 45 CFR 46 and as otherwise required by the FWA, or other applicable law or regulations.

Institution B remains responsible for ensuring compliance with the IRB's determinations and with the terms of its OHRP-approved Assurance.

This document should be kept on file at both institutions and must be provided to OHRP upon request.

Signatures:
 Authorized Official of Institution "A"  Date 2/23/18
 Lisa A. Cassis, PhD
 Vice President for Research
 University of Kentucky

Authorized Official of Institution "B"  Date 2/16/18
 Name Printed
 Gerald Pogatshnik
 Associate Vice President for Research
 Eastern Kentucky University

Appendix D
Demographic Data Collection Sheet

**FALL PREVENTION STUDY
DEMOGRAPHIC DATA**

Study ID # _____

Age: _____

Gender: _____

Educational Level

1. Less than high school
2. Completed high school
3. Some college
4. Completed college
5. Graduate education

Baptist Health Fall Risk Assessment Score: _____

Appendix F
Baptist Health High Fall Risk Assessment

Baptist Health High Risk Falls Assessment

	Points
Fallen in past 6 months	5
Age	
< 60	0
60 - 69	1
> 70	2
Mental Status	
Confused	1
Elimination	
Frequent toileting	2
Urgency	2
Mobility	
New mobility issue	2
Requires assistance – transfer, walker, etc.	2
Medications	
Narcotics	1
Sedatives	1
Diuretics	5
Laxatives	1
Hypnotics	1
Insulin / Oral hypoglycemic	1
Assessment Score Total	→
Nurses' Clinical Judgment	
Low Risk	High Risk
0 1 2 3 4 5 6 7 8 9 10	Judgment Score
	→
Reason for Clinical Judgment Score:	

(Assessment Score + Judgment Score) = **TOTAL FALL RISK SCORE**

Total Score 13 or above = *HIGH RISK

Nurse Signature

Appendix G
Fall Safety Agreement

Fall Prevention: Patient Agreement Form

Your safety is important to us. The hospital is a different environment than your home. You may be connected to various types of wires, monitors, and tubes. We are here to make your stay as comfortable as possible, and most importantly, to keep you safe and prevent you from having a longer hospital stay as a result of a fall.

The nursing staff is here to help **YOU**, and we ask that you please use your call light for all needs.

Things for which you may need to call us for help include:

- o Getting out of bed or changing your position
- o Walking to and from the bathroom
- o Getting something that is out of reach
- o Daily activities, such as getting dressed, eating, brushing teeth, or showering
- o Moving from recliner to bed or vice versa

Things we will do to help prevent a fall include:

- o Teaching you and your family about fall prevention
- o Putting your call light within reach and showing you how it works
- o Giving you non-skid, gripper socks to wear
- o Bedside nursing shift reporting
- o Hourly rounding, to assess if you need anything, are in pain, need to use the bathroom, or need to be repositioned
- o Keeping bed rails up if needed
- o Keeping bed in low position
- o Following recommendations made by Physical and Occupational Therapy
- o Placing bed/chair alarm and/or safety belt on
- o Putting Fall Risk sign outside of door

***It is important to remember, that you might feel strong enough to move around by yourself or with family members, but you are still at risk for falling. ***

By signing this agreement, you agree to help us keep you safe. We are here to help you, and asking for assistance is NOT a burden to the staff!

Please sign below that you have read and understand the Fall Prevention: Patient and Family Agreement form:

Patient Signature	Date/Time

Nurse Signature

Date/Time