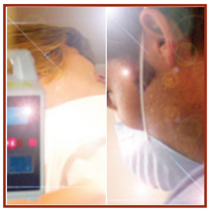

Perceptions Related to Falls and Fall Prevention Among Hospitalized Adults

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Background Prevention of falls during hospitalization depends in part on the behaviors of alert patients to prevent falls. Research on acutely ill patients' intentions to behave in ways that help prevent falls and on the patients' perceptions related to falls is limited.

Objective To explore hospitalized adults' perceptions related to risk for falling, fear of falling, expectations of outcomes of falling, and intention to engage in behaviors to prevent falls.

Methods Adult, alert, acutely ill inpatients (N = 158) at risk for falling completed a survey consisting of 4 scales and 3 single items. Nurses' assessments and patients' perceptions of the risk for falling were compared.

Results Decreased intentions to engage in behaviors to prevent falls were correlated with patients' increased confidence in their ability to perform high-risk behaviors without help and without falling ($P < .001$), decreased fear of falling ($P < .001$), and decreased perceived likelihood of adverse outcomes if they did fall ($P < .001$). Although nurses' assessments indicated a risk for falls, 55.1% of the patients did not perceive a high likelihood of falling while hospitalized. Whereas 75% of patients intended to ask for help before getting out of bed, 48% were confident that they could get out of bed without help and without falling.

Conclusions Although assessments may indicate a risk for falling, acutely ill inpatients may not perceive they are likely to fall. Patients' intentions to engage in behaviors to prevent falls vary with the patients' fall-related perceptions of confidence, outcomes, and fear related to falling. (*American Journal of Critical Care.* 2015;24:e78-e85)

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Falls are the most common adverse event among hospitalized patients, directly contributing to human pain and distress and increased health care costs.[1-9] Complications associated with falls among hospitalized patients can result in death, disability, increased hospital length of stay, placement in an extended care facility, psychological distress, and litigation.[1,4,10-13] In addition, the cost of falls in the United States may be more than $40 billion by 2020.[2,9,14] Researchers have clearly identified factors related to falls[15-25] and interventions that reduce falls.[1,12,18-23,26-34] Yet, falls continue to be a serious safety threat, especially for acutely ill, hospitalized patients.[2,5-8,16,17,19,20,30,31]

Nurses routinely assess hospitalized patients' risk for falls and educate patients on preventing falls. However, strategies to reduce falls have limited effectiveness if patients do not follow the fall-prevention plans.[15,22,23] Patients may have perceptions about their own risk for falling that influence adherence to fall-prevention plans.[32-34] Although studies have been done on fall-related perceptions among community-dwelling adults,[33,35-37] research on fall-related perceptions among acutely ill hospitalized patients is limited. Nurses need new knowledge about why acutely ill patients do or do not engage in behaviors to prevent falls.

Engagement of patients in their own health care is a primary goal of quality and safety initiatives in the United States.[15,38,39] Patients no longer are passive recipients of health care, rather they play a vital role in ensuring their own safety. Alert inpatients can partner with the health care team to minimize errors and adverse events. Research[40-42] supports that nurses are key professionals in engaging patients in the patients' care. However, few investigations have clarified factors that influence, predict, or shape a patient's engagement during acute illness. Particularly missing is evidence of the role of the perceptions of acutely ill patients in decision making about behaviors related to safety and to prevention of falls during hospitalization.

The purpose of this study was to explore acutely ill, alert, hospitalized adults' perceptions related to falls. The 4 aims of the study were as follows:

1. To explore perceptions that could influence patients' engagement in behaviors to prevent falls during hospitalization, such as perceived likelihood of falling, fear of falling, perceived expectations of the outcomes of falls, and intention to engage in behaviors to prevent falls
2. To examine differences between acutely ill patients' appraisal of the likelihood of falling and nurses' assessment of the patients' risk for falling
3. To identify factors predictive of falls among inpatients during hospitalization for acute illness
4. To examine psychometric properties of instrumentation used to measure inpatients' perceptions related to falling

Conceptual Framework

Two theoretical frameworks were used for the study. Protection motivation theory proposes that persons who perceive a health threat may form intentions to take action and avoid harm.[43] Factors contributing to threat appraisals include perceived vulnerability to threats, perceived severity of threats, and fear related to threats.[43-46] Research findings have not yet clarified the proposition that adults may not take action to prevent falls if they do not think they are vulnerable to falling, do not perceive a threat of falling, and are not afraid of falling.

> Falls are the most common adverse event among hospitalized patients.

Social cognitive theory proposes that human behaviors are shaped in part by persons' self-efficacy.[47] Efficacy expectations, one component of self-efficacy, are the belief that a person can perform a desired behavior. Outcome expectations, a second component of self-efficacy, are the belief that a behavior will result in a desired effect. If a person is not confident that he or she can perform a behavior or does not think the behavior will create desired outcomes, the person has little incentive to act.

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Methods

Design and Setting

A correlational design was used to target a population of adult inpatients in acute care units at Indiana University Health Ball Memorial Hospital, Muncie, Indiana. This 350-bed teaching hospital is part of a state-wide health care system.

Sample

Power analysis[48] indicated that a sample size of 150 to 180 patients would have 80% power to detect relationships with a medium- or large-effect size at $\alpha = .05$. A sample size of 90 patients could be sufficient under ideal conditions; however, intercorrelations among perceptual variables were expected to be high,[33] calling for an estimated variance inflation of 2.0.

Patients were included in the convenience sample if they were nonpregnant, English-speaking adult inpatients on an acute care unit; cognitively alert and oriented; assessed by nurses as being at risk for falls (using the assessment tool[21] the hospital used at that time); and in stable physiological condition. Exclusion criteria included a medical diagnosis of dementia or delirium and hospitalization in an intensive care unit, extended care unit, obstetric unit, or emergency department. Inpatients hospitalized on acute care units were assumed to be acutely ill.

Falls were incidents in which a patient made an unplanned descent to a lower level.

Measures

The study instrument consisted of a survey of fall-related perceptions, specifically 4 scales and 3 single items. The Confidence to Perform Without Falling Scale (Confidence Scale), developed for this study, was used to measure participants' perceived confidence that they could perform activities that increased the risk for falling during hospitalization without assistance or falling. The response format was a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). A sample item was *While hospitalized, I am confident that I can get out of bed to stand without help and without falling.*

The Fear of Falling While Hospitalized Scale (Fear Scale), developed for this study, followed the format of fear-of-falling measures designed for community-dwelling adults.[35,37] Degree of concern about falling while performing high-risk activities was measured on a 4-point Likert scale from 1 (not at all concerned) to 4 (very concerned). A sample item was *While hospitalized, how concerned are you that you might fall while getting out of a chair without help?*

The Consequences of Falling While Hospitalized Scale (Consequences Scale) was used to measure potential adverse outcomes of falling and was adapted from a scale designed for community-dwelling adults.[36] The response format was a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree). A sample item was *If I fall while in the hospital, I will be in pain.*

The Intention to Engage in Fall Prevention Scale (Intention Scale), developed for this study, was used to measure participants' intention to ask for help when performing high-risk behaviors. A sample item was *While hospitalized, I intend to ask for help to go to the bathroom.* The response format was a 5-point Likert scale 1 (strongly disagree) to 5 (strongly agree).

Three single items were used to measure participants' perceived likelihood of falling while hospitalized, perceived likelihood of injury if they did fall while hospitalized, and perceived fear of falling. Response formats were 5-point Likert scales from 1 (not at all likely) to 5 (very likely).

All scales and single items were reviewed by a panel of experts on instrument development and safety during critical and acute illness and then were pilot tested. Final revisions resulted in a 38-item survey of fall-related perceptions for acutely ill inpatients.

Three scales developed for community-dwelling adults were also administered as part of data collection, specifically the Falls Efficacy Scale-International,[35] the Falls Efficacy Scale,[37] and the Consequences of Falling Scale.[36] Moderate correlations among scores for community-dwelling and hospitalized adults were anticipated, as evidence of criterion-related validity.

Falls were defined as incidents in which a patient made an unplanned descent to a lower level. Occurrences of falls were recorded by nursing personnel on a report form.

Procedures

After the study was approved by the appropriate institutional review boards, informed consent was obtained from inpatients who met the inclusion criteria, and patients' fall-risk status was reviewed to verify that the patients were at risk for falls. If a patient's cognitive alertness was uncertain, the Mini-Cog examination[49] and the Confusion Assessment Method[50] were used to assess the patient for dementia and delirium. Scores of probably normal and normal, respectively, qualified patients to continue in the study. Participants completed the study instruments by using pen and paper or by verbally responding when the researcher read items verbatim aloud while displaying yellow cards imprinted with large-font response scales. After a patient was discharged from the hospital, the number of falls the patient experienced after enrollment in the study was counted.

Data Analysis

Demographic and clinical variables were analyzed descriptively. Mean scores on multi-item scales were calculated. Instrumentation psychometrics were examined by using principal axis factor analysis, Cronbach α, and Pearson *r* correlations. Interrelationships and differences among variables were examined by using Pearson *r* correlations, χ^2 test of association, analysis of variance, and *t* tests. Multiple and logistic regressions were planned to identify perceptual factors predictive of patients who fell. Level of significance was $P < .05$. Analyses were performed by using SPSS, version 18.0. software (IBM SPSS).

Results

Sample characteristics are displayed in Table 1. Participants (N = 158) were primarily elderly women who had a history of falls in the preceding year. The proportion of participants admitted with cardiopulmonary conditions that required cardiac monitoring and the proportion admitted with orthopedic trauma or for orthopedic surgery were both more than 40%.

Table 1
Demographic and clinical characteristics of the inpatient sample (N = 158)

Characteristic	Value[a]
Age, mean (SD), range, y	69.9 (13.37), 31-98
Sex	
Female	107 (67.7)
Male	51 (32.3)
Primary admitting diagnosis/service line[b]	
Cardiac	48 (30.4)
Orthopedic	70 (44.3)
Respiratory	18 (11.4)
Neurological	6 (3.8)
Number of comorbid conditions[c]	
1-2	38 (24.1)
3-5	50 (31.6)
≥6	64 (40.5)
History of falls in 3 months before hospitalization	
No	101 (63.9)
Yes	57 (36.1)
History of falls in past year	
No	55 (34.8)
Yes	103 (65.2)

[a] Values are number (percentage) unless otherwise indicated in first column. Percentages may not total 100 because of rounding.
[b] SIxteen patients had other primary admitting diagnoses.
[c] Data were missing for 6 patients.

Descriptive and Correlational Analysis

Descriptive statistics for study measures are displayed in Table 2. Almost half of the participants (48%) reported being confident or very confident that they could get out of bed without help and without falling, and 81% reported they could reach for items on the bedside table without help and without falling.

The highest mean score on the 4 scales was on the Intention Scale. More than 75% of participants reported they would call for assistance before getting out of bed to walk to the bathroom, walk around in the room, and walk outside the room. However, 10% reported that they would not call for help for any mobility activities. The mean scores of the 3 single items indicated that participants perceived they had a slight likelihood of falling, were somewhat likely to be injured if they fell, and were slightly afraid of falling while hospitalized.

Correlational results are displayed in Table 3 to address the first aim of the study. Significant correlations were found among scores on all 4 scales

Table 2
Descriptive data for instrumentation (N = 158)

Scale or item	No. of items	Mean	SD	Actual range (possible range)	Cronbach α
Confidence to Perform Without Falling While Hospitalized Scale (Confidence)	7	2.90	1.03	1-5 (1-5)	0.94
Fear of Falling While Hospitalized Scale (Fear)	7	2.24	0.90	1-4 (1-4)	0.95
Consequences of Falling While Hospitalized Scale (Consequences)	12	2.63	0.44	1.25-4 (1-4)	0.84
Intention to Engage in Fall Prevention Scale (Intention)	9	3.89	0.66	2-5 (1-5)	0.90
Likelihood of falling while hospitalized item	1	2.40	1.23	1-5 (1-5)	NA
Likelihood of injury as outcome of fall while hospitalized item	1	3.16	1.10	1-5(1-5)	NA
Fear of falling item	1	2.19	1.30	1-5 (1-5)	NA

Abbreviation: NA, not applicable.

Table 3
Correlation results (Pearson *r* coefficients)[a]

Scale or item	Confidence to Perform Without Falling While Hospitalized Scale	Fear of Falling While Hospitalized Scale	Intention to Engage in Fall Prevention Scale	Consequences of Falling While Hospitalized Scale	Likelihood of falling item	Outcome expected of injury item	Fear of falling item
Confidence Scale	1	-0.591 n = 152 *P* < .001	-0.393 n = 155 *P* < .001	-0.329 n = 154 *P* < .001	-0.138 n = 154 *P* = .09	-0.199 n = 153 *P* = .02	-0.235 n = 152 *P* = .004
Fear Scale	-0.591 n = 152 *P* < .001	1	0.463 n = 152 *P* < .001	0.472 n = 151 *P* < .001	0.266 n = 153 *P* < .001	0.216 n = 151 *P* = .008	0.368 n = 152 *P* < .001
Intention Scale	-0.393 n = 155 *P* < .001	0.463 n = 152 *P* < .001	1	0.290 n = 154 *P* < .001	-0.133 n = 153 *P* = .10	0.075 n = 152 *P* = .36	0.085 n = 152 *P* = .30
Consequences Scale	-0.329 n = 154 *P* < .001	0.472 n = 151 *P* < .001	0.290 n = 154 *P* < .001	1	0.164 n = 152 *P* = .04	0.305 n = 151 *P* < .001	0.207 n = 151 *P* = .01
Likelihood of falling item	-0.138 n = 154 *P* = .09	0.266 n = 153 *P* < .001	-0.133 n = 153 *P* = .10	0.164 n = 154 *P* = .04	1	0.356 n = 155 *P* < .001	0.553 n = 155 *P* < .001
Outcome expected of injury item	-0.199 n = 153 *P* = .01	0.216 n = 151 *P* = .008	0.075 n = 152 *P* = .36	0.305 n = 151 *P* < .001	0.356 n = 155 *P* < .001	1	0.386 n = 153 *P* < .001
Fear of falling item	-0.235 n = 152 *P* = .004	0.368 n = 152 *P* < .001	0.085 n = 152 *P* = .30	0.207 n = 151 *P* = .01	0.553 n = 155 *P* < .001	0.386 n = 153 *P* < .001	1

[a] Because all participants did not answer every item, the n's vary.

and single items. Scores on the Fear Scale were most strongly correlated with scores on other scales and items. The activity that raised the most fear was walking outside the hospital room (46%). The most frequently reported anticipated consequences of falling while hospitalized were pain (89%) and difficulty getting up (86%). Participants reported that if they fell, they would still be able to cope alone (69%), be independent (60%), and be active (65%).

Participants' Characteristics and Fall-Related Perceptions

Data analysis revealed no differences between men and women on total scale scores or single items. Mean scores on the Fear Scale were positively correlated with age in years ($r = 0.28$; $P = .009$). Perceived likelihood of falling also increased with age ($r = 0.38$; $P = .04$). Furthermore, compared with other participants, participants hospitalized on cardiac progressive care units reported significantly higher perceived likelihood of falling ($t = 2.14$; $P = .03$) and higher perceived likelihood of being injured if they fell ($t = 2.32$; $P = .02$), yet less fear of falling ($t = 3.15$; $P = .002$) and less intention to engage in fall-prevention behaviors ($t = 1.98$; $P = .049$).

Data related to the second aim of the study revealed that although assessed by 2 nurses as being at risk for falls, more than half of the participants (n = 87; 55.1%) reported they were not at all likely or were slightly likely to fall during hospitalization. Patients who did not perceive that they were likely to fall anticipated significantly fewer negative outcomes of falling ($t = -1.94$; $P = .05$) and less fear of falling ($t = -2.67$; $P = .009$) than did patients who perceived that they were likely to fall. Participants who did perceive that they were likely to fall had fallen in the preceding year ($\chi^2 = 14.0$; $P = .003$).

The third aim of the study was to identify perceptions predictive of falls that occurred after enrollment in the study. However, no participants fell after enrollment, despite the statistical projection from hospital databases that 20 patients would fall during the time of data collection. Therefore, the third aim of the study was not addressed.

Psychometric Evaluation of Instruments Used

In order to address the study's fourth aim, reliability and validity were assessed for all 4 multi-item scales. Internal consistency reliabilities of all scales were high (Table 2). Deletion of any item on any scale would have lowered the reliability. Scores on the adapted Consequences Scale and the newly developed Fear Scale and Confidence Scale were significantly correlated with scores on similar scales developed for nonhospitalized adults,[35-37] thus supporting criterion-related validity of the new instruments ($r = 0.40$-0.73; $P = .001$) Construct validity was examined by using principal axis factor analysis. Single-factor solutions emerged for the Confidence Scale (73% of variance explained; eigenvalue = 5.1), the Intention Scale (59% of variance explained; eigenvalue = 5.3), and the Fear Scale (77% of variance explained; eigenvalue = 5.4). A single-factor solution for the Consequences Scale explained only 29% of the variance, with an eigenvalue of 3.5 and some weak factor loadings. However, because internal consistency reliability was high and intercorrelations with scores on related scales were in an expected direction and magnitude, the Consequences Scale was treated as a single-factor scale.

Discussion

The primary purpose of this study was to explore perceptions that could influence engagement in behaviors to prevent falls during hospitalization among alert, at-risk, acutely ill inpatients. Relative to the study's first aim, findings reflected that participants with a low intention to engage in fall prevention reported low fear of falling, low perceived likelihood of adverse outcomes from falling, few consequences of falling, and high confidence in safely performing risky behaviors. These findings support the tenets of the protection motivation theory,[43] because intention to perform protective health behaviors, such as following fall-prevention plans, was significantly related to perceived vulnerability to a health threat, measured as likelihood of falling; perceived severity of a threat, measured as consequences of falling; and perceived fear of a threat, measured as fear of falling.

Our findings also support the link between self-efficacy and incentive to take action, as set forth in social cognitive theory.[47] For example, high efficacy expectations, measured in this study as confidence to perform risky behaviors without falling, were significantly related to intention to follow fall-prevention plans. The relationship was inverse, although conceptually consistent, because the measure of confidence was related to performance of a risk-associated behavior, not a healthy behavior.

Intention to engage does not necessarily mean actual engagement in fall-prevention plans. Acutely ill patients may report an intention to ask for help; however, if help is not quickly available, patients who are confident and unafraid and perceive little likelihood of falling may override their intentions and perform high-risk behaviors.

Our findings suggest that fear of falling is a key perception for nurses to assess in designing fall-prevention plans. Furthermore, fear of falling has been linked to decreased postural control, changes in gait, use of sedatives, and increased falls in numerous studies of community-dwelling adults.[31,51,52]

Findings related to the second aim of the study revealed a distinct mismatch between nurses' and patients' evaluations of the patients' risk for falling. Although all participants were assessed by 2 nurses as being at-risk for falling per the hospital's fall risk assessment tool,[21] more than half of the participants did not perceive that they were likely to fall. These findings are similar to those of a recent study[52] in which 88% of 193 inpatients did not perceive that they were at risk for falling. In addition, few participants in our study reported being afraid of falling, and few thought they were likely to be injured if they did fall. Furthermore, 10% did not intend to call for assistance when performing any behavior associated with risk for falling.

Surprisingly, no participants fell after enrollment in the study. Because of the mismatch between nurses' and patients' assessments of the risk for falls and because no patients fell, could it be that nurses' assessments were not valid and that participants were not at risk for falling? Perhaps the hospital's assessment tool did not provide information accurately predictive of patients who might fall. In contrast to earlier reports of the tool's specificity and sensitivity in hospitalized patients,[21] a recent study[53] showed that the results of using this tool were not accurately predictive of inpatients who fell.

A competing explanation for the finding that patients did not fall after enrollment in the study is that participants may have experienced a heightened awareness of the danger of falls after completing the survey. Although fall-prevention information was not provided during data collection, fall-prevention messages from the survey may have become encased in a positive nurse-patient relationship, thus increasing the likelihood that participants might have followed fall-prevention plans. Further study is needed to evaluate changes in behavior associated with a risk for falling after a 15- to 30-minute exposure to fall-prevention questions in the context of a nurse-patient relationship.

> If help is not available, patients may override their intentions and perform high-risk behaviors.

Our findings have implications for nurses caring for acutely ill patients. Nurses should assess each patient's risk factors, including fall-related perceptions, and then integrate information on specific risk factors into a fall-prevention plan.[53-57] Nurses can tailor communication about falls to fit a patient's perceptions and use the teach-back method to determine how much and how well the patient comprehends and recalls what the nurse told them.[56,57] Because research[52] suggests that inpatients may not call for help for fear of losing their independence, nurses can emphasize the temporary nature of the activity restrictions. The aim is to create a realistic appraisal of risk without undue anxiety and to provide hospitalized patients with resources and information to make safe decisions.[45]

Instrumentation for Fall-Related Perceptions

Currently, the only instruments available to measure fall-related perceptions among inpatients are the scales and items used in this study. Reliability and validity of the Confidence Scale, Fear Scale, and Intention Scale were acceptable but require further evaluation. Revision of the Consequences Scale may be warranted, because all adverse events listed may not have relevance for hospitalized patients. A shortened version of this study's survey is being tested by the research team for possible usefulness as a clinical tool.

One limitation of our study was the use of a single-site, convenience sample. Second, because of social desirability, patients may have overstated intentions to engage in fall prevention.

We have several recommendations for future research. Studies are needed that do the following: measure actual engagement in behaviors to prevent falls, rather than simply intention to engage; use qualitative methods to identify relevant perceptions beyond those explored in our study; assess the effectiveness of nursing strategies in which fall-prevention education is individually tailored and embedded in a trusting nurse-patient relationship; and test the Schmid[21] fall-risk assessment for predictive ability in inpatients. Furthermore, the development of a conceptual framework for engagement in fall-prevention activities could guide research and contribute to the attainment of national patient safety goals.

In conclusion, inpatients' intentions to engage in behaviors to prevent falls were related to patients' perceptions of confidence, fear, and likelihood of adverse outcomes from a fall. More than half of the inpatients at risk for falling did not perceive a high likelihood of falling. New strategies are needed to shape the perceptions of patients at risk for falls and to engage acutely ill, alert patients in staying safe during hospitalization.

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