



Perceived top 10 highly effective interventions to prevent adult inpatient fall injuries by specialty area: A multihospital nurse survey ☆☆☆



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ABSTRACT

Purpose: This study identified the perceived top 10 highly effective interventions to prevent fall injuries of adult inpatients based on the perceptions of RN staff by specialty area in acute hospital settings.

Background: The fall prevention precautions to focus on may vary by patients' medical problems and thus by specialty area.

Methods: This cross-sectional nurse survey was conducted at five U.S. health systems (July 2011–February 2012, 68 study units, 10 specialty areas). 560 staff participants completed the survey, yielding an overall response rate of 25.81%. This work is part of a larger project. Descriptive statistics were used.

Results: Each specialty area had its own top 10 effective interventions identified by RNs. The complexity and differences in the top 10 highly effective interventions by the 10 included specialty areas are apparent. For example, only one common intervention (keeping hospital bed brakes locked) appeared in the lists from the medical units and surgical units.

Conclusion: Addressing the unique needs of the patient population by specialty area is essential. Adopting the perceived top 10 highly effective interventions for preventing injurious falls by specialty area with staff consensus might be more feasible for staff buy-in and compliance in inpatient acute care settings. Since patients' characteristics may change over time and the science in fall prevention is advancing, re-prioritizing effective interventions as needed every 2 years is recommended.

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In U.S. hospitals, the operational costs of caring for patient fallers with hospital-acquired serious injury could be \$13,316 higher, and hospital stays could be 6.3 days longer compared with patients who do not fall (Wong et al., 2011). Multifactorial intervention programs and implementation of fall prevention guidelines could significantly reduce both falls and fall injuries among inpatients in hospital settings (Raeder, Siegmund, Grittner, Dassen, & Heinze, 2010; Spoelstra, Given, & Given, 2012; Weinberg et al., 2011). A recent Cochrane review conducted by Cameron et al. (2012) indicated that multifactorial interventions for fall prevention in hospital settings may have benefits; however, the evidence is inconclusive and does not identify any specific interventions as key factors for success.

A study conducted by Tzeng and Yin (2013a) concluded that registered nurses' (RNs') perceptions about the most frequently adopted fall prevention interventions were mostly inconsistent with

the most effective interventions in adult inpatient acute care settings. The inconsistency could be due to a lack of awareness about feasible and available fall prevention measures; it may also be linked to disagreement between RNs' perceptions and their prior knowledge (i.e., gained via on-the-job training). We believe that nurses have a unique body of knowledge regarding the effectiveness of interventions to prevent hospital-acquired patient fall injuries in different specialty areas. There is an urgent need to understand and prioritize preventive interventions and to optimize the limited quality improvement resources from RNs' perspective in relation to current nursing practices across specialty areas in inpatient acute care settings.

1. Conceptual framework

Donabedian's (1986) structure–process–outcome model serves as the guide for this study of a larger project (Tzeng & Yin, 2013a). We conceptualized the perceived effectiveness of the preventive interventions as process indicators. Successful prevention of injurious falls was the outcome. This study focuses only on the dimension of the process. We proposed that having effective fall prevention processes in place might lead to less injurious falls, a better patient-centered outcome, which is the rationale for linking nurses' perceptions to fall

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prevention applications in the clinical setting. In this study, this proposition is not tested. There are a total of 75 possible interventions for preventing injurious falls by adult inpatients (Tzeng & Yin, 2013a). These possible interventions were developed based on the fall literature (Agency for Healthcare Research & Quality (AHRQ) [AHRQ], 2013; Currie, 2008; Shever, Titler, Mackin, & Kueny, 2011; Tzeng, 2011; Tzeng & Yin, 2008a,b), which address structure-related risk factors for falling from 3 focal areas: (a) patient room and environment-related interventions, (b) treatment- and personnel support-related interventions, and (c) institution- and unit-level interventions. More details can be found in the Instrumentation section.

2. Purpose of this study

The purpose of this study was to identify the perceived top 10 highly effective interventions to prevent fall injuries of adult inpatients based on the perceptions of RN staff by specialty area in acute hospital settings. This work is based on RNs' perception of effectiveness, not on actual effectiveness. The data used in this paper is part of a larger project (Tzeng & Yin, 2013a). The research question was the following: What are the top 10 highly effective interventions to prevent fall injuries of adult inpatients as perceived by RN staff by specialty areas in acute hospital settings? In addition, we compared the rankings of the perceived top 10 effectiveness interventions with the mean value rankings of their frequency of use as perceived by RN staff.

3. Background

The AHRQ (2013) recently published "Preventing Falls in Hospitals: A Toolkit for Improving Quality of Care," which was jointly prepared by RAND Corporation, Boston University of School of Public Health, and ECRI Institute. It emphasizes that the choice of fall prevention precautions may vary by hospital as well as by the specialty area associated with patients' medical problems. Thirteen universal fall precautions were identified in the toolkit and were recommended for all patients regardless of their individual fall risk. These precautions are meant to keep patients' occupying environment safe and comfortable in hospital settings.

These precautions can be categorized into 3 categories. Category I includes 2 items related to patient care area design and features: (a) having sturdy handrails in patient rooms, bathrooms, and hallway, and (b) using supplemental or night lighting. Category II encompasses 9 items requiring proactive and timely staff actions: (a) familiarizing patients with their environment, (b) having patients demonstrate call light use, (c) maintaining patients' call light button within their reach, (d) keeping patients' personal possessions within their safe reach, (e) keeping well-fitting and nonslip footwear on patients, (f) placing patient beds in a low position when patients are resting and raising beds to a comfortable height when they are transferring out of the bed, (g) keeping patient bed brakes locked when stationary, (h) keeping wheelchair wheels locked when stationary, and (i) adhering to safe patient handling practices. Category III comprises 2 items related to cleanliness and tidiness of patient care areas: (a) keeping the floor clean and dry by cleaning up all spills promptly and (b) keeping the areas uncluttered (AHRQ, 2013).

In comparison, the study conducted by Shever et al. (2011) reported the results from interviews conducted with nurse managers of the participating nursing units on fall prevention practices in adult medical–surgical inpatient acute care units in the United States. This study is part of a large, national study funded by the Robert Wood Johnson Foundation's Interdisciplinary Nursing Quality Research Initiative program. The common fall prevention intervention is using bed alarms (90%), followed by implementing regular rounds (70%), using sitters (68%), and relocating patients closer to the nurses' station (56%). The study conducted by Tzeng and Yin (2008a) used

interviews with RNs and nurse aides working in an adult medical–surgical inpatient acute care unit in the United States to identify 24 clinically accessible solutions to minimize the risk factors of inpatient falls. These solutions included 15 related to promoting a safe care environment, 5 related to addressing inadequate caregiver communication, 3 related to conducting adequate assessment and reassessment, and 1 related to ensuring adequate care planning and provision.

4. Research methods

4.1. Design

This cross-sectional nurse survey was conducted at five U.S. nonprofit health systems located in the midwest from July 2011 through February 2012. There were 68 adult critical care, step-down, and noncritical inpatient acute care study units, including 10 specialty areas (also called unit types): (1) medical, (2) surgical, (3) combined medical–surgical, (4) telemetry, (5) oncology, (6) orthopedics, (7) cardiac, (8) behavioral, (9) women's health and delivery, and (10) rehabilitation units. This study was approved by each health system's institutional review board (Tzeng & Yin, 2013a).

4.2. Sample and procedures

All participants met the inclusion criteria of being ≥ 21 years old, having at least an RN license in the State of Michigan, being employed as a staff nurse in the study unit for at least 12 months, working an average of at least 20 hours per week, and providing direct patient care. Contingent or travel nurses were excluded from the study. Invitations to participate in the survey were placed in the mailboxes of all eligible staff nurses at the study units. Participation was voluntary and anonymous, and identifiers and personal information were not recorded or tracked (Tzeng & Yin, 2013a).

The survey tool, a consent form, and an energy bar as a token gift were included in each of the survey packages, which were disseminated to potential participants by two trained research assistants. Participants were instructed to place the completed survey in an attached envelope, seal the envelope, and drop it into the survey collection box located in the nurses' lounge. A returned survey was interpreted as willingness and consent to participate in the study. If potential participants were not willing to participate, no action was required; the reason for being unwilling to participate was not asked. Data were kept confidential and were used for research purposes only (Tzeng & Yin, 2013a).

We identified 2170 potential RN staff participants who met the inclusion criteria, and 560 of them completed the survey, for an overall response rate of 25.81%. All hospitals were not academic medical centers. The demographic characteristics and the response rate for each health system were as follows (Tzeng & Yin, 2013a):

- (1) a regional medical center with 400 beds and without the magnet status via The Magnet Recognition Program® (1 study unit), 7 of 19 RNs completed surveys (36.84%);
- (2) a teaching medical center with 304 beds and without the magnet status via The Magnet Recognition Program® (8 study units), 92 of 277 RNs completed surveys (33.21%);
- (3) a regional teaching medical center with 443 beds and without the magnet status via The Magnet Recognition Program® (12 study units), 39 of 396 RNs completed surveys (9.85%);
- (4) a regional medical center with 436 beds and without the magnet status via The Magnet Recognition Program® (13 study units), 142 of 453 RNs completed surveys (31.35%); and
- (5) a health system with 916 beds, including 4 teaching hospitals and two of them have earned the magnet status via The Magnet Recognition Program® (34 study units), 280 of 1025 RNs completed surveys (27.3%).

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