



## Characteristics of the middle-age adult inpatient fall



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### ABSTRACT

**Purpose:** The purpose of this study is to describe characteristics of middle-age inpatients' (ages 45–64) fallers and their fall and fall injury risk factors.

**Background:** Middle-age falls were 42–46% of inpatient falls. Studies related to inpatient falls have not targeted this population.

**Methods:** A 439 retrospective chart review was performed. Middle-age fall and injury rates were compared with ages 21–44 and 65–90.

**Results:** The mean age was 55.75 years (SD 5.26). 28.7% ( $n = 126$ ) of falls resulted in injury. Individual fallers ( $n = 386$ ) had a mean of four comorbidities (SD 1.843), including hypertension (46.5%), anxiety/depression (40.2%), and alcohol and drug abuse (32.9%). There was no significant difference ( $p = .637$ ) in fall rates per 1,000 patient days between ages 45–64 and 65–90.

**Conclusion:** Middle-age inpatients' acute illness makes them as vulnerable for fall and injury as the older population. They should not be overlooked for fall prevention measures.

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### 1. Introduction

Falls with injuries remains one of the most reportable, serious, and costly type of adverse events that occur in United States (U.S.) hospitals, resulting in detrimental morbidity and mortality outcomes (Agency for Healthcare Research and Quality (AHRQ) [AHRQ], 2012; Centers for Medicare and Medicaid Services (CMS) [CMS], 2012; Mion et al., 2012; Oliver, Healey, & Haines, 2010; Quigley & White, 2013). In acute care hospitals, an estimated 1,000 falls occur per hospital each year regardless of size, with over one million inpatient falls reported annually at the national level (Oliver et al., 2010; Shorr et al., 2008). Inpatient injuries also occur in 30–51% of all fall-related events (Bradley, Karani, McGinn, & Wisnivesky, 2010; Oliver et al., 2010; Quigley & White, 2013). The hospital care provided as a result of an inpatient fall has been reported at an estimated cost of \$3,500 for a non-injury to \$27,000 for a single serious injury (Apold & Quigley, 2012; Halm & Quigley, 2011; Quigley & White, 2013).

National agencies such as the National Quality Forum (NQF), the Joint Commission, and the CMS have identified falls as a major quality concern that should not occur during hospitalizations (Quigley & White, 2013). The Joint Commission (2015) found that an inpatient fall with injury or death was the second most frequently reviewed

sentinel event in 2014. Falls were also noted as the leading reported adverse event in the hospital setting (Spoelstra, Given, & Given, 2012).

### 2. Background and Significance

Although it has been well documented that inpatients age 65 and older are at greater risk for falls and injury, middle-age adults (45–64 years of age) have been noted recently to have higher fall rates (Mion et al., 2012; Williams, Szekendi, & Thomas, 2014). In their seminal study, Hitcho et al. (2004) revealed that of 183 adult inpatients who fell, 47% ( $n = 86$ ) were under age 65. The recent fall study by Williams et al. (2014) also identified that middle-aged inpatients 51–60 years old ( $n = 5,561$ ) had the highest reported fall rates, followed by patients age 61–70 years ( $n = 4,699$ ). The middle-age population, according to the U.S. Census Bureau, makes up 27% of the inpatient census, which has increased by 31% since the 2000 census (U.S. Census Bureau, 2012). The National Health Interview Survey (NHIS) 2004–2007 report, which looked at selected health characteristics of adults over age 55, found that 22.9% were identified as in fair-to-poor health; including 19.6% age 55–64 (Schoenborn & Heyman, 2009).

Fall monitoring at one academic teaching hospital in Central Massachusetts supported these similar findings by noting that 42% of inpatients who fell were between the ages of 45 and 64. In addition, the randomized control trial of Dykes et al. (2010), using an electronic fall prevention toolkit (FPTK) with 192 patients, revealed that those in the middle-age group were less likely ( $p = .003$ ) to adhere to the recommended fall prevention interventions. While predictors of falls and

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injuries have been studied across all adult inpatients (Mion et al., 2012; Oliver et al., 2010), research has not specifically addressed the fall risk characteristics in the middle-age. This knowledge will be important for informing nursing and the multidisciplinary team's decisions on implementation of interventions for fall and injury prevention in this age group.

**3. Purpose of the Study**

The purpose of this study was to describe the characteristics of middle-age adult inpatients' that fall, along with their fall and fall injury risk factors. The aims were to (a) describe falls and fall injury risk factors; (b) describe unit-specific data, fall numbers with type of falls, injuries from falls, and prevention strategies; and (c) compare the incidence of fall and fall injury rates of the middle-age (45–64) patients with the hospital adult age groups (21–44 and 65–90).

**4. Conceptual Framework**

The study framework (see Fig. 1) was adapted from the World Health Organization's (WHO), "Risk factor model for fall in older age," The WHO Global Report on Fall Prevention (WHO, 2007). This framework was adapted with permission for use in the inpatient setting. Extrinsic and intrinsic variables from four risk factor groupings of biological, socioeconomic, behavioral, and environmental and their related outcomes were used to describe characteristics of the middle-age inpatient's fall and fall injury risk. Demographics and characteristics from an earlier prospective descriptive study of inpatients from ages 17–96 by Hitcho et al. (2004) were used for identification of variables to collect in the four risk factor groupings.

The multifactorial and interactive nature of these fall risk factors increases the risk of a patient fall and the potential for injury. Our adapted framework suggests also that Fawcett's (1984) metaparadigm of nursing be used as the foundation for nursing and the multidisciplinary team identification and prevention for falls and associated injuries.

**5. Study Design and Methods**

**5.1. Design**

This study was a secondary analysis of falls that occurred between January 1, 2012 and July 31, 2014. The retrospective review took place August 1, 2014–December 31, 2014. The research took place in a large academic teaching hospital in Central Massachusetts and used incident-reporting data, electronic medical records (EMR), and hospital staffing and financial data. The conceptual framework was used to identify the discrete variables collected for aims 1–3 (Fig. 1). This academic teaching hospital has about 36,690 hospital discharges yearly, with an average daily inpatient adult census of 404 patients. For this study, patient falls were reported from adult medical (n = 6), surgical (n = 4), mixed medical/surgical (n = 4), critical care (n = 8), and other specific type units (n = 4) such as post-anesthesia care, procedural areas, and the emergency department (ED).

**5.2. Protection of human subjects**

Institutional review board (IRB) approval was obtained prior to conducting the study.

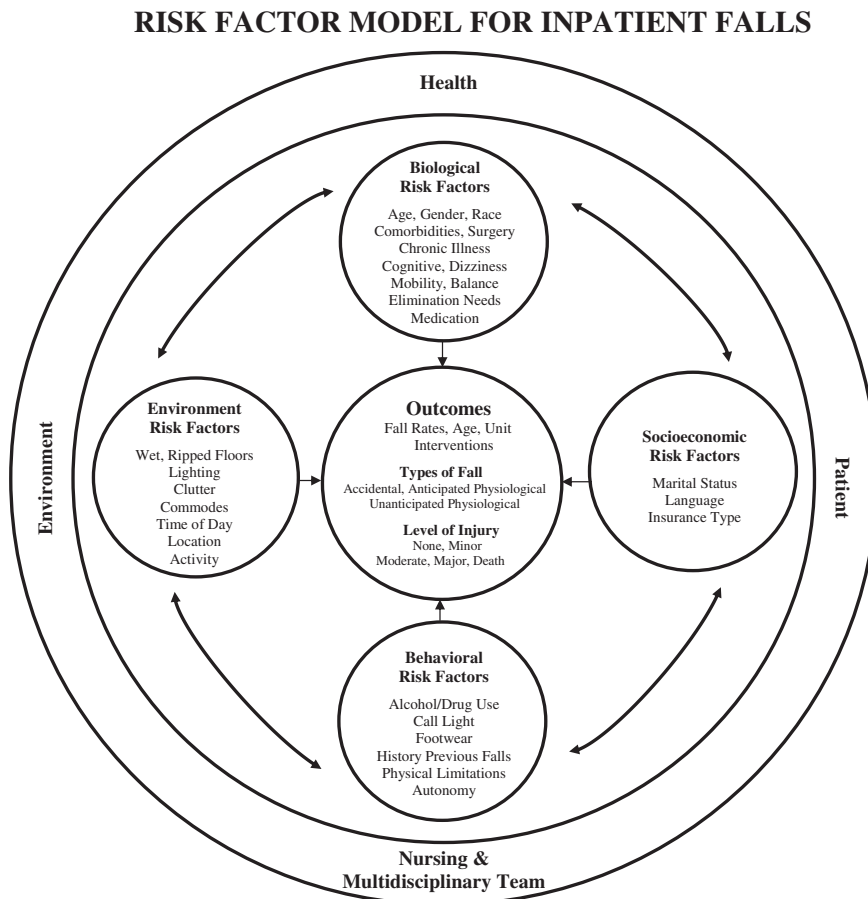


Fig. 1. Risk factor model for inpatient falls. Adapted with permission from the World Health Organization (WHO) (WHO), 2007.

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