

Original Research Report

Falls in A Tertiary Care Hospital— Association With Delirium: A Replication Study



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Background: Delirium has been previously implicated as a risk factor for patient falls. This is a replication study of a 2009 investigation examining the prevalence of diagnosed and undiagnosed delirium in patients who fell during their hospital stay. **Objective:** To determine the prevalence of delirium at our institution and to examine the relationship of falls with delirium, advanced age, and hospital procedures. **Method:** Using the data collection tool developed for the 2009 study, the authors performed a retrospective review of records of 99 patients who fell during their inpatient stay. Similar information was gathered on patient demographics, fall date, fall location, hospital service type, discharge disposition, diagnosis of delirium (DD), synonyms used to describe delirium, metabolic derangements, and surgeries or procedures

performed. Data were collected on the day of admission, day of the fall, and 2 days before the fall. **Results:** Falls in the general hospital were associated with delirium (73% of subjects had evidence or a DD at the time of their fall), advanced age (64.5% were older than 70 years), and specific procedures and surgeries. **Conclusion:** As identified in the previous study, improving delirium recognition and treatment may reduce the number of patient falls and promote more favorable outcomes such as reduced length of stay, fewer discharges to intermediate care facilities, and prevention of fall injuries. A comprehensive fall risk assessment that includes a delirium detection tool would improve the sensitivity and specificity of these instruments to detect those at greatest risk.

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Key words: falls, delirium, replication study, inpatient.

INTRODUCTION

It has been hypothesized that delirium is one of the contributors to patient falls in the hospital setting. A previous study has examined this relationship.¹ A replication study was indicated given the important finding that a large percentage of falls (96%) were associated with delirium in the original study and that 81.3% of those with delirium were not diagnosed. This replication study builds upon the earlier work in an attempt to increase our understanding of the relationship between patient falls and delirium.

According to a Joint Commission report, most hospitals have prevention programs in place consisting of an assessment tool and interventions aimed at

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reducing the risk of patient harm resulting from falls.² Even with heightened awareness and concerted efforts, patient falls continue to occur. In 2008, Currie³ estimated that between 700,000 and 1,000,000 people in the United States fall in the hospital each year. The Centers for Disease Control and Prevention reported that in 2013 falls (all ages, both sexes) led to 8,790,337 nonfatal injuries; 981,662 hospitalizations; and 31,240 deaths.⁴ Stevens et al.⁵ have estimated that in 2000 the direct medical costs for injuries related to falls totaled 0.2 billion dollars for fatal and 19 billion dollars for nonfatal falls. Numerous risk factors are associated with falls in hospitalized patients including unfamiliar environments, acute illness, and medications.⁶

Delirium is often underrecognized by those caring for hospitalized patients. For example, Teodorczuk et al.⁷ have estimated that rates of underdiagnosis vary from 33–72% and diagnostic errors include among other things a misattribution to dementia or depression. Recent study of nurses determined that 75% of the time delirium was failed to be recognized.⁸ Delirium frequently complicates hospital stays. The incidence is particularly high among elderly patients (29–64%),⁹ postoperative abdominal surgery,¹⁰ patients with hip fracture (17–53%),¹¹ and those in intensive care settings (up to 70%).¹² Adverse outcomes of delirium are costly and even deadly resulting in prolonged hospitalization, increased mortality, decline in function, and cognition. In 2011, these adverse outcomes resulted in a total of 164 billion dollars in the United States.^{9,13}

Until recently, the association of delirium and falls has not been well recognized. Lakatos et al.¹ sought to determine a link between delirium and hospital falls with a retrospective review of records of 237 patients in 2009. This investigation demonstrated that 96% of patients who fell displayed evidence of delirium (ED). However, when the records of these individuals were reviewed, even though 72% of staff used descriptors of delirium, only 18.7% had a discharge DD. These results indicated that delirium was an underrecognized and undiagnosed risk factor for falls.¹ A recent study by Doherty et al.¹⁴ determined that an altered level of consciousness (fallers: 28.4% vs nonfallers: 12.4%) and inattention (fallers: 67.2% vs nonfallers: 50.8%) increased the risk for falling. These investigators used specific assessment tests for attention and a scale for level of consciousness and compared patients who did not fall with those who fell. This study suggests that delirium is a risk factor for patient falls. A limitation of

this study was that it included mostly male subjects from a Veteran's Administration facility. Most recent literature is focused on the nonpharmacological interventions to prevent delirium and falls. Hsieh et al.¹⁵ in a meta-analysis determined that multicomponent interventions are effective in reducing the incidence of delirium and preventing falls in addition to decreasing hospital length of stay (LOS) and institutionalization. These studies contribute to our current knowledge base and understanding of the relationship between delirium and falls. A more in-depth understanding of the clinical aspects of delirium and how these appear in an inpatient adult patient population was the focus of interest in this replication study.

At the time of this study, monthly fall rates in our institution exceeded national benchmarks, despite having a fall prevention program and using a well-validated tool to help ascertain fall risk. The tool used at our institution is the New York Presbyterian Fall and Injury Risk Assessment Instrument,¹⁶ which we identified in a previous study as being a sensitive and specific tool to assess those at risk for falls in medical surgical adult population.¹⁷ Although this tool includes a question related to cognition, as many other fall risk assessment tools, it does not include a question or item to assess for delirium. This replication of the Lakatos study¹ was undertaken to determine whether unrecognized delirium may be an associated, potentially modifiable, contributor to falls in our institution.

METHODS

Setting

The study was conducted at a 637-bed urban teaching hospital. The fall rate for 2009 was 3.57 and for 2010 was 3.25 falls per 1000 patient days. The average LOS (adult inpatients) in 2009 was 5.23 days, and in 2010, the average LOS was 5.27 days. In 2009 and 2010, slightly over half (2009: women 50.40%, men 49.60%; 2010: women 50.04%, men 49.96%) of the adult patient population were women. The average age of the adult patient population in 2009 was 62.82 years, and in 2010, this was 62.88 years. Study approval was obtained from the hospital human research ethics committee before the onset of data collection (Institutional Review Board/IRB #4018).

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