

# In-Patient Falls: Investigation of Two-Year Electronic Health Records of the Hospital

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## ABSTRACT

Patient falls are accepted as a significant problem of patient safety in health care institutions worldwide, and they appear to be among the most common reasons for secondary injury in hospitals. Falls may lead to such serious injuries as fractures, cuts or bleeding, which could in turn extend hospital stay, decreasing the functional capacity of the hospital and increasing health care costs. This research was conducted using descriptive and retrospective research design. The study was carried out in a 400-bed urban academic teaching hospital in the city of İzmir, Turkey. Information pertaining to patients aged over 65 (N=11702) (>24-hour stay) with a risk of fall according to the Fall Risk Scale was reviewed through electronic health records from January 1, 2015 through January 1, 2017. The patients who participated in the study aged between 65 and 99 and the mean age is  $74.72 \pm 6.79$  dur. Fall records of the hospital over the last 2 years show that 23 (0.19%) patients experienced falls during their stay at the hospital. Two-thirds of the patients (69.8%) who fell sustained no injuries. Minor and major injuries were observed in 21.6% and 8.6% of the patients respectively. Majority of falls (74%) occurred in the patient's room. In-patient falls in hospital occur frequently, particularly in emergency rooms. Previous studies have found similar characteristics of falls in relation to the location and consequences. However, the rate of falls we have found is much lower in comparison with previous studies. Also, falls can be devastating for hospitalized adults of older age, and it is important to identify high risk patients for better prevention.

**Key words:** In-patient falls, hospital, elderly, nursing.

## INTRODUCTION

Falls are frequently seen in hospitals, and most occur in elderly patients. At least one fall is experienced by nearly 2-12% of patients in hospital admission. <sup>(1)</sup> Literature shows a varying incidence of falls according to the hospital unit and the patient population. <sup>(2-5)</sup> fall rates vary by different clinics in hospitals, but they are also affected by such factors as fall prevention interventions, variations in patient and organizational characteristics, and the measurement methods used to evaluate falls. <sup>(6)</sup> Falls may directly cause problems

ranging from bruises and minor injuries (28%) to severe wounds of the soft tissues (11.4%) and bone fractures (5%). The most serious complication is hip fracture; which can cause immobility in 20% of cases and death in 14-36% in 1 year. <sup>(1)</sup> These complications often result in longer hospitalization and increased treatment costs. <sup>(1,6)</sup> Moreover, the fear of falling develops in patients, and this may add to immobility and increased dependence of care. <sup>(1)</sup>

A great majority of falls in hospitals occur when the patient falls from or near the

bed. Other most frequent places of falls are corridors, bathrooms and toilets. <sup>(7)</sup> Schwendimann et al. (2008) determined that falls were frequently seen during daytime and evening hours when patients were more active due to various activities such as toilet, food and treatment. <sup>(8)</sup>

Common risk factors for falls in hospitalized patients could be listed as impaired balance or gait, altered mental state (e.g., agitated delirium), urge incontinence, increasing age, impaired cognition, depression, dizziness or vertigo, orthostatic hypotension, visual impairment, falling history, using “culprit” drugs and restraints, slippery floors with excessive glare, and an unfamiliar environment to an ill person. <sup>(4,9)</sup> Identifying the patients at high risk is an important step in hospital fall prevention programs. <sup>(9)</sup> These programs include fall risk assessment, which leads to a 25% reduction in fall rates. <sup>(10)</sup> It is important for nurses to be aware of falling risk factors and to take precautions for them In order to prevent patient falls. <sup>(11)</sup> In addition, information should be given to health professionals through in-service training programs which should also include the causes and prevention strategies of patient falls. <sup>(12)</sup>

This study was conducted to determine the rate of falls in patients over 65 years hospitalized in an urban academic teaching hospital.

## **MATERIALS AND METHODS**

### **Research Design**

The study was carried out in a descriptive and retrospective research design.

### **Setting and Sample**

The present study was carried out in a 400-bed urban academic teaching hospital in the city of İzmir, Turkey. The reason for choosing this hospital is that it is one of the 7 hospitals using electronic data recording system in Turkey since May 2015 and that the most reliable retrospective data could be obtained from this hospital. The information pertaining to the patients over 65 (N=11702) (>24-hour stay) who have a risk of fall

according to the Fall Risk Scale was reviewed through electronic health records from January 1, 2015 through January 1, 2017.

### **Data Collection**

Inpatient falls were consecutively reported by registered nurses within 24 h following each event with the hospital's standardized fall incident report form. A fall is defined as ‘an event in which a patient suddenly and involuntarily comes to rest on the floor’. The Data collected using the fall incident report form included: clinical department, patient demographics, location of the fall and severity of injuries. Severity of injuries was classified as (1) no injuries, (2) minor injuries including pain, bruises, hematoma, and lacerations, or (3) as major injuries, including fractures, internal head injuries, and luxations.

Moreover, in order to prevent patients' falls, which constitute a part of “Patient Safety” practices in Quality Standards in Health, Itaki Fall Risk Assessment Scale is used in all Public Hospitals in Turkey. Itaki Fall Risk Scale is one which is applied on adult patients and specifies fall risk scores. The scale consists of 19 risk factors (11 minor, 8 major) and is evaluated over the total score. Each of the minor risk factors is 1 points and each major risk factor is 5 points. Fall risk of the patient is accepted as low risk if the total score is under 5 and as high risk if over 5. <sup>(11,13)</sup>

### **Ethical Considerations**

Approval was obtained from the Ege University College of Nursing Ethics Committee (number 2016-215) in Izmir prior to data collection. Hospital administrators provided written approval to conduct the study.

### **Data Analysis**

Data analysis was performed with SPSS version 17.0 software (SPSS Inc., Chicago, IL). General subject characteristics were analyzed using descriptive analysis. Frequencies, percentages and means were used for descriptive statistical analysis and  $p < .05$  was accepted as the value for statistical significance.

Fall rate in our study was determined using the falling patient calculation method recommended by the Turkish Ministry of Health [(Number of falling in-patients /total number of inpatients) x100].

**RESULTS**

The patients who participated in the study aged between 65 and 99 and the mean age is 74.72 ± 6.79'dur. 67.1% (n=7850) of the patients are male, 32.9% (n=3851) are female.

Fall records of the hospital over the last 2 years show that 23 (0.19%) patients experienced falls during their stay at the hospital. 11 (47.8%) falls occurred in 2016 and 12 (52.2%) in 2017. Two-thirds of the patients (69.8%) with falling experience had no injury. Minor and major injuries were seen in 21.6% and 8.6% respectively. Majority of falls (74%) occurred in the patient's room, and a quarter (26%) in the bathroom (Table 1). In the evaluation of the precautions taken after the falls, it was seen that bed-side barriers were removed for 9 patients, 9 patients and their attendants were informed about the issue, two used physical restrain while three patients had no intervention. The services where the patients fell distributed as follows; 47.8% (n=11) at emergency, 17.4% (n=4) at the physical treatment unit and 13% (n=3) at the chest diseases unit.

with age. (15-17) Falls, especially in patients aged 65 and over, can cause injury and loss of mobility. (18-20) to our knowledge, the present study is the first to examine inpatient hospital falls in an urban public hospital over an extended period in Turkey. During the 2-year period of the retrospective study, a total of 23 (0.19%) falls were experienced out of 11702 hospitalized patients in all clinical departments. This fall rate is lower than the rates found in the studies carried out by Hitcho et al (2004) (6.12), (10) Schwendimann et al (2006) (7), (8) Schwendimann et al (2008) (7), (21) Milisen (2007) (7.3), (14) Cina-Tschumi et al (2009) (from 0.1 to 3.8) (22) and Milisen et al (2012) (7.9) (23) while it is similar to the results of the study conducted by Tanil et al (2014) (0,33%) in Turkey. (13) This is considered to result from the difference between the calculation method used in foreign studies and the calculation method recommended by the Turkish Ministry of Health. Moreover, it is known that nurses do not report each falling case unless the falling patient has any injuries.

Injuries caused by falls are an important issue of patient safety. Serious fall-related injuries lead to increased hospital costs and extended length of stay. Falls may result in minor to major consequences which can increase hospital stay and costs at a varying degree. (23) Even though nearly half the hospital falls hospitals do not cause an injury, patient falls are known to be the possible reasons of a serious injury or even death. (14,24) The data we have concerning fall related injuries are similar to other hospital studies reporting that 24.8 to 32.6% of patients had minor injuries, and 4.9 to 6% sustained major injuries. (8,14,21,23) The percentage of patients with consequent injuries appears to remain relatively stable irrespective of fall rates.

Our findings on the locations of falls in the hospital are similar to those of previous studies, with 75.7-85% in patients' room, and 10.9-15.2% in bathrooms. (10,21) This could be due to the fact that patients spend most of their illness or awaiting

**Table1. Falling States of Patients and Distribution of Falls**

	n	%
Falling incidence in patients		
Yes	23	0.19
No	11679	99.81
Distribution of falls by years *		
2015	12	52.2
2016	11	47.8
Severity of injury*		
No injuries	16	69.8
Minor injuries	5	21.6
Major injuries	2	8.6
Places of falls *		
Patient room	17	74.0
Bathroom	6	26.0

\* Percentages were calculated over falling patients.

**DISCUSSION**

Falls frequently occur in hospitalized patients, which depend on the type of hospital and patient population. (14) It is stated in the literature that fall risk increases

diagnostic or therapeutic procedures in these places.

Our study has found that half the patients who fell (47.8%) did so at the emergency department. Fall prevention for older adults in acute care settings will be challenging. <sup>(25)</sup> Likewise, it was found in Tanrikulu and Sarı's (2017) study that one third of patients have high falling risk, 4.4% had experienced unsteadiness, which may contribute to a tendency to fall, and 0.3% of them had fallen. <sup>(26)</sup> Another study found that 35.7% of patients in the emergency department had a high risk of falling. <sup>(20)</sup>

## CONCLUSION

No matter how low the rate of falls and injuries may seem in the results of our study obtained from the 2 year electronic records, in-patient falls must be regarded as an important safety issue particularly for older patients with already diminished health status. Attention should be given to early identification of patients at risk and implementation of effective interventions to prevent patient falls and minimize fall related injuries.

## Declaration of Conflicting Interests

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