



Evaluation of Fall Incidents in Inpatient Wards: A Retrospective Study From a City Hospital

ABSTRACT

Objectives: This study aims to investigate the factors contributing to falls among hospitalized patients and to evaluate the efficacy of preventive measures by analyzing root cause analyses.

Methods: Fall incidents occurring in the Chest, Heart, and Vascular Hospital wards in 2023 were retrospectively analyzed. Demographic data of the patients, information related to the individuals and areas involved in the falls, as well as post-fall pathologies and educational documents, were also examined. Falls were assessed using the ITAKI Fall Risk Scale, which was completed for all inpatients, alongside the routinely utilized Fall Incident Report Form and Root Analysis Record Form specifically for all cases.

Results: A total of 30 fall incidents were evaluated, with a mean age of 72.73 ± 11.75 years (minimum: 53, maximum: 90), of which 60% (n: 18) were male. Twenty-six patients (87%) had an education level of primary school or lower. Fourteen falls (46.7%) occurred between 24.00 and 08.00 hours, and in 22 cases (73.3%), there was no caregiver present at the time of the fall.

Conclusion: The results of the study indicated that men have a higher risk of falling, the risk of falls increasing with age, and despite the education provided prior to the fall incidents and the implementation of protective safety measures, a greater number of falls were observed in patients due to individual factors.

Keywords: Accidental falls, falls, nursing, nursing care, slip and fall

A fall is defined as an unintentional descent to the ground or a lower level, typically occurring due to a loss of balance or stability, and usually without the influence of external forces. Falls are significant health concerns due to their potential to lead to serious injuries, increased healthcare costs, and higher mortality and morbidity rates among affected individuals. Statistically, approximately 10% of falls result in fractures, head injuries, or severe soft tissue trauma, highlighting the serious implications of such incidents (1-3). Various studies have shown that the most common secondary injuries resulting from falls are associated with accidents and fall-related incidents. The fall rate is reported to range from 0.17% to 2.5% (4). Establishing a safe environment within hospital settings is essential to protect individuals from secondary injuries. The risk of falling is a constant concern for all individuals; however, certain treatment conditions and diseases result in higher fall rates compared to the general population (5,6). Increasing pain following surgery, along with heightened stress associated with hospitalization, fluid-electrolyte imbalances, fluctuations in blood pressure, and the presence of medical devices such as urinary catheters and chest tubes, significantly elevates the risk of falls among hospitalized patients (7,8).

In our study, we aimed to analyze all aspects of fall incidents that occurred in the inpatient wards of the Chest, Heart, and Vascular Hospital in 2023.

METHODS

The study aimed to retrospectively evaluate fall incidents that occurred among hospitalized patients in the Chest, Heart, and Vascular Hospital in 2023. Prior to the study, local ethics committee approval was obtained (AEŞH-BADEK_2024-539), and the study was conducted in accordance with the Helsinki Declaration of Human Rights.

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Data on gender, education level, admission diagnosis, ward, level of consciousness, medications used, medical equipment utilization, presence of companions, fall history, fall location, fall cause, and length of stay were retrospectively reviewed for all patients who experienced falls. The study included patients who fell while hospitalized and excluded cases involving falls in the intensive care unit or outpatient settings, as well as instances of near-falls. The times of falls were categorized into three groups: 08:00-16:00, 16:00-24:00, and 24:00-08:00. The causes of falls were analyzed in four groups: internal factors, environmental factors, personal factors, and state of consciousness (9). The groups created for analysis regarding the fall incident were formed by reviewing the literature. At our hospital, all admitted patients receive education related to fall prevention, and the ITAKI Fall Risk Scale is completed upon admission for all patients. For all incidents, a Fall Incident Report Form and a Root Cause Analysis Record Form are filled out. Additionally, routine educational reinforcement is provided to both patients and their relatives following a fall. The Fall Incident Report Form includes the patient's name, surname, gender, age, ward, diagnosis, date of birth,

department of the fall, date of the fall, severity of injury, cause of fall, description of the event, precautions taken prior to the fall, general condition before the fall, and precautions implemented post-fall. The Root Cause Analysis Record Form includes a brief description of the event, the underlying causes of the event, corrective/preventive actions to be taken, and factors contributing to the fall.

Statistical Analysis

The SPSS 20 statistical package program was used to evaluate the data. The variables that were evaluated for the study were not compared to other factors. Consequently, the collected information was not evaluated with any sort of statistical methods. The mean, standard deviation, frequency, and percentage were calculated and utilized to present descriptive data. Continuous data are presented as the mean±standard deviation and maximum and minimum values. The frequency and percentage were calculated for categorical variables.

RESULTS

In the Chest, Heart, and Vascular Hospital, 17,223 patients received inpatient treatment throughout 2023. Only 48 of these patients fell during inpatient treatment. Of the 48 fall cases, 30 were included in the study. Due to the incomplete filling of the Fall Incident Report Forms, the other 18 patients who experienced a fall incident were not included in the study. The mean age of the patients was 72.73±11.75 years (min: 53, max: 90). Patient demographics, including gender, education status, status of consciousness at the time of the fall, time groups of falls, presence of companions at the time of the fall, ward information, previous fall history, location of the fall, and causes of the fall, are presented in Table 1. All patients and their companions received standardized education on fall incidents at the time of admission. Variables related to the patient's medical history are presented in Table 2. Following the fall incident, nursing services were implemented, including a re-fall risk assessment for 96.67% of cases (n=29), provision of adequate lighting for 40% (n=12), removal of bed rails and organization of the patient's room for 73.33% (n=22), checking wet slippery floors and placing warning signs for 30% (n=9), and re-fall training for 86.67% (n=26).

Table 1. General information related to the patient and the fall incident

	n	%
Gender		
Female	12	40
Male	18	60
Level of Education		
Illiterate	10	33.33
Primary School	16	53.33
High School	1	3.33
Higher Education	3	10
State of Consciousness		
Clear	27	90
Confused	3	10
Fall Time		
08.00-16.00	8	26.67
16.00-24.00	8	26.67
24.00-08.00	14	46.67
Presence of Companion		
Yes	8	26.67
No	22	73.33
Clinic		
Chest Diseases	8	26.67
Thoracic Surgery	7	23.33
Cardiology	10	33.33
Cardiovascular Surgery	5	16.67
Previous Fall Incident		
Yes	6	20
No	24	80
Area Where the Falling Occurred		
Bathroom/WC	13	43.33
Corridor	1	3.33
Patient Room	14	46.67
Other	2	6.67
Situations That Cause Falls		
Internal Factors	1	3.33
Environmental Factors	9	30
Personal Factors	15	50
State of Consciousness	5	16.67

Table 2. Evaluation of variables related to medical history

	n	%
Number of Drugs Used		
3-5	4	13.33
5 and above	26	86.67
Chronic Disease		
Diabetes	14	46.67
Hypertension	21	70
Chronic Obstructive Pulmonary Disease	14	46.67
Heart Failure	11	36.67
Other	9	30
Need for Assistive Vehicle/Companion		
Walking Stick	4	13.33
Companion	26	86.67
Biomedical Device Presence		
Yes	8	26.67
No	22	73.33
Number of Medical Equipment		
1-2	26	86.67
3 and above	4	13.33

DISCUSSION

Patient falls are the leading causes of preventable injuries that lead to serious injuries, increase hospital stays and costs, and indicate the quantity and quality of nursing care (10, 11). Patients, their relatives, and healthcare professionals, especially nurses, have a major role in preventing falls, a significant patient safety problem (11). In this context, patients should be assessed for risk from hospitalization, and precautions should be taken according to the identified risks (12).

Among the services where patients fall, the rate of chest diseases, cardiology, and cardiovascular surgery services should not be ignored (9,13). In this study, it was observed that the highest rate of falls among inpatient services was in cardiology services. In the study conducted by Mert and Özkan (2023), it was concluded that neurosurgery, cardiovascular system (CVS), and cardiology patients are at higher risk of falling than other patient groups (13). According to a 2023 study by Tkacheva and colleagues, elderly individuals with cardiovascular disease have a higher risk of falling (14).

The World Health Organization has stated that the frequency of falls increases with advancing age and that the rate of falls in individuals aged 70 and over increases to 32-42% (15). In a study conducted by Albsoul and colleagues in 2023, it was concluded that the fall rates among elderly individuals aged 75-94 were significantly higher (16). In the study conducted by Sayar and colleagues in 2022, it was observed that the frequency of falls increased with age in individuals over 65 years old (17). In our study, the age factor is also directly proportional to the incidence of falls.

Chronic diseases that increase with age also bring about the use of multiple medications. In the study conducted by Ashraf and colleagues (2024), polypharmacy was observed in 84% (n=21) of the elderly individuals who fell. The most commonly encountered medications in elderly individuals who fall were identified as antihypertensives, diuretics, and antidepressants (18). Using polypharmacy, especially with specific drugs like opioids and anxiolytics, increases the risk of falls in hospitalized patients, according to a 2023 study by Jeon and colleagues (19). The risk of falling was 23 times higher for elderly patients who used five or more drugs than for those who did not, according to a study by Bouzas and colleagues on elderly patients admitted to an emergency department (20). This situation is by the findings of our study. The results of our study are consistent with the literature. In the study of Gürkan and Akpınar (2018), it was observed that 25% of the patients fell while they were alone despite having a companion (21). In our study, 46.67% of the patients fell in the patient room and 43.33% in the bathroom-WC areas. As a result of the study conducted by Turhan and Ünalın (2022), it was determined that 34.6% of the patients fell in the toilet bathroom (9). In the study conducted by Filik et al., it was reported that 43.0% of the falls occurred in the patient room, 38.0% in the toilet, and 12.7% in the corridor (22). The reason why falls occur most in the patient room can be explained as falling by tripping or hitting objects in the patient room despite being conscious or due to impaired consciousness due to the medications they use. In our study, 60% of the patients who fall are men. In Ahmedov's (2021) study, it was determined that 68.3% of the patients who fell (n=43) were female, which does not align with our study (23). Additionally, in the research conducted by Ghosh and colleagues (2021), it was

found that 59.8% of the patients who fell (n=2216) were male (24). This finding supports our investigation.

In our study, it was determined that 46.67% of the fall incidents occurred in the morning hours of the 24.00-08.00 night shift, and 73.33% of the falls occurred when the patient's companion was not with them at the time of the fall. These incidents that occurred on the night shift can be associated with reasons such as the patient's decreased attention due to waking up from a deep sleep in the morning and having urgent needs. Additionally, it was determined that 73.33% of the patients in our study did not use biomedical devices. Based on this, it can be concluded that patients who believed they could meet their own needs attempted to move independently and consequently fell.

This situation may be due to the patients being in a hurry to meet their daily needs, not using the call bell, inadequate training of the attendant, or the patient being at risk of falling despite having an attendant (25). To reduce the risk of falling, the Commission Accreditation of Healthcare Organizations recommends lifting the bed edges, educating the patient and family, arranging the call system, and using low beds (26). In this context, the education of healthcare professionals, inpatients, and their relatives indicates the need for new methods for implementing standard precautions.

The Limitations and Drawbacks of the Study

This study has some limitations. Firstly, the study was conducted in only one hospital, which limits the generalizability of the findings to different hospital settings and regions. Studies involving different hospitals and a larger sample group may increase the validity and generalizability of the results obtained. Another limitation of the study is that the patients in the wards of the hospital where the study was conducted already have a high risk of falls. Since the study was conducted with a retrospective data collection method, the data related to fall events may be incomplete or incorrectly recorded. Future studies can obtain more comprehensive results by overcoming these limitations and contribute to the development of more effective strategies for the prevention of fall risks for patients.

The Value of the Study

This study examines the risks and causes of falls in hospitalized patients. Prevention of inpatient falls is very important for patient safety and the quality of health services. The study contributes to a better understanding of this problem by analyzing the frequency, causes, and demographic characteristics of falls. The study helps healthcare personnel to evaluate risk factors more effectively by revealing the relationship between factors such as age, gender, comorbidities, and drug use with fall events. The findings provide valuable information to reduce risks and increase patient safety in clinical practice. As a result, this study not only contributes to the academic literature but also enables concrete steps to be taken to create a safe hospital environment in practice.

CONCLUSION

In conclusion, despite hospitalization education efforts, patient falls primarily stem from individual patient factors. Therefore, it is crucial to prioritize tailored, structured training over standard education, actively engaging patients in the learning process and subsequently assessing their self-efficacy and knowledge. In addition to changes in patient companions during education, which may impact monitoring, necessitating alternative solutions such as

repeated training for new companions. Prospective studies should further investigate this issue.

Ethics Committee Approval: This study was approved by the Ethics Committee of Ankara Etlik City Hospital (No: AEŞH-BADEK-2024-539, Date: 12/06/2024).

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