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Fall Event Reports of a Tertiary-Care Hospital: A Retrospective Analysis

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Abstract

BACKGROUND/AIMS: The current study aimed to perform a retrospective analysis of fall events in a tertiary-care hospital and identify the related risk factors.

MATERIALS AND METHODS: This research was conducted in a 1,160-bed-capacity tertiary-care hospital in Ankara between June 2016 and June 2017. The sample comprises 241 patient falls among 1,009 fall events in the facility between 2006 and 2016. Data were retrospectively collected with patient preassessment forms, daily nursing documentation forms, and daily medication order protocols. Means and standard deviations for continuous variables, frequency distributions for categorical variables, and chi-square analysis for the correlation between two categorical variables were used.

RESULTS: Of the patients with files investigated, 42.7% were aged from 18 to 65 years, 59.3% were male, 74.1% had a chronic disease, 40.3% could complete daily-life activities independently, and 32% were using medication that increased fall risks. Of the fall events, 29.5% occurred in the pediatric clinics, 29.5% in surgery, and 28.2% in internal medicine clinics. 35.2% occurred during the night shift, and 33% occurred within the first three days of admission. Additionally, 35.7% of the fall events happened due to not taking appropriate safety precautions, 20.2% due to not using the nurse call button, 64.7% were in the patient's room, and 32.6% were due to syncope.

CONCLUSION: It was revealed that the riskiest interval for patient falls is in the first three days of admission and during the night shift. While evaluating fall risks, sociodemographic, medical, environmental, and fall-related independent variables should be considered together. It is recommended that fall risk assessment tools be revised by reviewing patients' specific care needs and clinical conditions.

Keywords: Falls, nursing, patient safety, quality of healthcare, risk assessment

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INTRODUCTION

Falls are considered the second leading cause of accidental or unintentional deaths and appear to be a critical patient safety problem for patients admitted for treatment to healthcare institutions worldwide.[1,2] The World Health Organization estimated that each year 646 thousand people die from falls, and fall events mostly occur among individuals older than 65 years of age.[2] The National Safety Reporting System in Türkiye declared that patient falls are the most frequent patient safety issues, and falls constituted 36.2% of patient safety issues in 2018.[3] Falls cause lengthened hospital stays, increased rehabilitation requirements, anxiety and fear, loss of self-confidence, loss of muscle power and function, reduced activity levels and quality of life, and injured patients both physically and psychologically.[4] Also, falls increase health costs, creating an economic load on the healthcare system and society.[5] According to the United Kingdom National Health Service (NHS), falls occurring in England are estimated to cause costs of more than 2.3 billion pounds sterling to the NHS annually,[6] while in Türkiye, falls-related injuries cost 3,302.60 USD and 14.61 additional hospitalization days for each patient.[7]

Falls mostly occur due to many preventable factors linked to the individual or environment. The main factors increasing the risk of falling may be listed as old age, fall history, male gender, amputated extremities, incontinence, anti-convulsant, anti-hypertensive and tranquilizing medication use, cognitive disorders, reduced visual acuity, peripheral neuropathy, lack of muscle power, posture imbalance, vitamin D deficiency, and arthritis.[8] Additionally, being in an unfamiliar environment, the type of diagnosis, medical treatment, and long duration of hospital stay may increase the risk of falls.[9] In order to prevent falls and reduce risks, effective, comprehensive, and structured prevention programs are required.

Identifying fall risk factors and measuring risk levels is a priority for planning preventive interventions because falls are mainly predictable.[10] Risk identification for fall events in Türkiye commonly uses the İtaki (17 years or older) and Harizmi (0-16 years) risk assessment tools, especially developed by the Ministry of Health Quality and Accreditation in the Health and Employee Rights Department. Although the cultural adaptation has not been completed, the Hendrich II Fall Risk Scale and the Morse Fall Scale are commonly used in risk assessment. In addition to risk assessment, an analysis of fall event characteristics specific to an organization is recommended in order to determine preventable risk factors and implement holistic care strategies. In order to plan effective preventive interventions and create organizational policies, it is necessary to determine risk areas, assess risks, and monitor them. Therefore, an analysis of fall event characteristics is needed first of all. As a result, this study aimed to retrospectively analyze fall events in a tertiary-care hospital and identify the risk factors related to patient falls.

MATERIALS AND METHODS

Study Design and Setting

This research was completed in a tertiary-care hospital in Ankara from June 2016 to June 2017. Data were retrospectively collected from fall event report forms and patient files, and the fall event characteristics were analyzed.

The 1,160-bed hospital comprises of three main sections, namely adult, pediatric, and oncology. The adult hospital has a 730 bed-capacity with 30 outpatient, 28 inpatient, ten intensive-care units, and two surgery rooms. In this hospital, an average of 2,700 patients currently receive care in inpatient services per month. The pediatric hospital comprises 270 beds and delivers healthcare services to an average of 11,000 inpatients annually. Finally, the oncology hospital with 160 beds provides outpatient and inpatient healthcare services to approximately 80,000 patients annually.

Prevention and Follow-Up Protocol of the Institution Regarding Inpatient Falls

The tertiary-care hospital where this study was conducted follows a standardized protocol for all units (Fall Events Prevention and Monitoring Procedure) in collaboration with Quality Coordinators. The protocol identifies the fall types, factors increasing risks, and activities to prevent and monitor falls for the patients admitted to the organization or receiving outpatient healthcare services. As a standardized protocol, nurses assess the patients' fall risks using the Hendrich II Fall Risk Scale, plan nursing interventions, and record them on a daily documentation form. During admission to the inpatient clinics, nurses inform the patient and the family about using the nurse call buttons in the patient rooms and wards. Within the standard safety precautions framework, bed rails are elevated, and the bed is kept at the lowest level. Unused medical equipment is removed from the room, and corridors between rooms are tidied up, with devices used for mobility (e.g., wheelchairs, trolleys) being kept with wheels locked. Additionally, windows are locked. Patient rooms and corridors are well-lit, and wet-floor signs are used while cleaning the corridors and rooms.

Additionally, patients keep frequently used personal items (e.g., glasses, water) close to the bed, are encouraged to ask for help with hygiene and excretion needs, and are given information that slippers should not have slippery soles. When situations occur that may increase the risk of falls (e.g., performing interventional implementations, changes in consciousness) and during transfer between wards, fall risks are reassessed, and risk assessment is recorded on the daily nursing documentation forms. On the day of admission, the nurse responsible gives the patient a brochure about the definition, causes, and preventions that should be taken to prevent falls. It is ensured that those patients with high fall risks are accompanied by a caregiver, if possible.

Sampling

The research population comprised 425,751 patients admitted to adult, pediatric, and oncology clinics in the hospital from January 2006 to May 2016. Between these dates, a total of 1,009 fall events occurred and were reported to the Quality Coordinator, and the files for 666 patients who experienced fall events were available to be accessed (66%). Over this ten-year period, the ratio of patients who fell to those admitted showed that the fall frequency was 0.2%. When the tolerance value is accepted as d=0.006, the appropriate sample size was 221 according to sample calculations for the known population. Among the accessible 666 patient files, a total of 241 were randomly chosen for data collection (Figure 1).

Data Collection Procedure and Forms

When fall events occur in the hospital, a fall event report form is completed and sent to the Quality Coordinator by the nurses. The Quality Coordinator records the patients' file numbers on a list. This

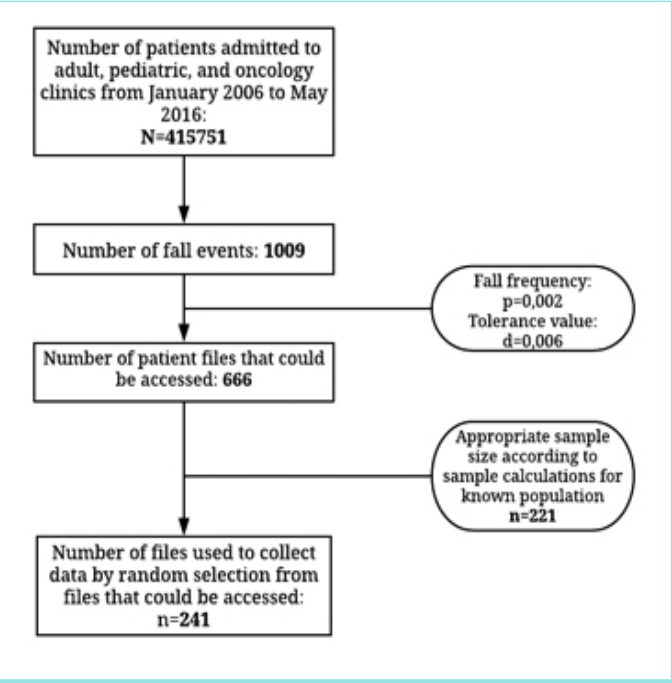

Figure 1. Data collection flow chart.

list containing patients who fell over the ten-year period was obtained from the coordinator, and the patient files were obtained from the hospital archive between May and July 2016 by the researchers. The patient preassessment forms, daily nursing documentation forms, and daily medication order protocols were investigated, and the data were recorded onto a Microsoft Excel file.

Sociodemographic Data and Fall Event Characteristics

Sociodemographic data and fall event features were recorded using a data collection form created by the researchers after a literature review[7,11,12] and based on the institution's fall event report form. This form includes a total of twenty-two questions about age, gender, shift and day of the week when the fall occurred, fall history of the patient, fall risk assessment tool scores for the day of the fall, admission ward, the type of admission, the presence of chronic disease, the type of chronic disease, the use of medications which may cause falls (anti-epileptics and benzodiazepine group medications in medication groups on the Hendrich II Risk Assessment Tool), the independence level for activities of daily living (ADL), the use of assistive devices and the type of device used, the limitation status of the patient, precautions not taken before the fall event, the location of fall, the type of fall, injury status and type if present, the day of admission and the number of days since the patient was admitted.

Dependence Level in ADL

Data related to ADL were obtained from the standard patient preassessment form used in the hospital. This form defines these activities as eating/drinking, personal hygiene, balanced walking, getting up from bed, turning in bed, and toilet requirements under "Daily living activities and functional assessment." The patient's ability to complete activities is assessed as independent, semi-dependent, or dependent.

Fall Risk Assessment

The Hendrich II Fall Risk Assessment Tool was developed by Hendrich et al.[13] in 1995. The highest point obtainable from this scale is 20, with five points and above being assessed as high risk. The Hendrich II Fall Risk Assessment Tool comprises seven factors; namely confusion/disorientation, symptomatic depression, changes in excretion, dizziness, gender, anti-epileptic and benzodiazepine group medication intake, and chair stand test.[13]

Ethical Consideration

The study was approved by the Hacettepe University Non-Interventional Clinical Research Ethics Committee (approval number: 2016-14-GO 16/45-32). Informed consent was not required due to the retrospective nature of this study.

Statistical Analysis

Statistical analysis was completed with the IBM SPSS (Statistical Package for Social Sciences) Statistics Data Editor 23 (United States of America) program. Mean ± standard deviation was used for continuous variables, while frequency distribution was used for categorical variables. Chi-square analysis was used to investigate the relationship between two categorical variables. In the 95% confidence interval, $p<0.05$ was accepted as statistically significant.

RESULTS

Within the scope of this research, 241 files were analyzed. In this sample, it was observed that there were deficiencies in recording the data for some independent variables. For this reason, the numbers of independent variables for which data could be accessed among the 241 patient files are given in parentheses as "(n=...)" in the tables. The data regarding the patients' sociodemographic and clinical characteristics are shown in Table 1, and the characteristics related to falls are presented in Table 2.

When fall risk levels of those patients who fell were assessed according to the Hendrich II scale, there were no statistically significant differences found according to age groups (X^2=2,335; p=0.331), gender (X^2=0.718; p=0.397), use of medication increasing fall risk (X^2=0.206; p=0.650) or the presence of chronic disease (X^2=0.351; p=0.554). A statistically significant difference was identified between the assessed fall risk levels of those patients with the ability to complete daily living activities independently (X^2=6,029; p=0.049).

DISCUSSION

Admission to hospital for any reason brings with it the risk of falls. The current study retrospectively analyzed fall events in a tertiary-care hospital. This analysis dealt with the fall events occurring in healthcare institutions and the sociodemographic characteristics of the participants. It is expected that the findings of this study may contribute to planning individualized care regarding fall prevention in order to improve patient safety in the short term.

This study found that fall events mostly occurred in the surgery and internal medicine clinics. Mata et al.[14] suggested that most adult patients in the postoperative period were evaluated as having high fall risks. In contrast, Hajduchová et al.[15] found that almost half of the patients who fell were admitted to internal medicine units.

Table 1. Distribution of patients' sociodemographic and clinical characteristics (n=241)

Sociodemographic characteristics	n	%
Age		
1-3	48	19.9
4-17	23	9.6
18-65	103	42.7
66-95	67	27.8
Gender		
Male	143	59.3
Female	98	40.7
Unit of admission (n=161)		
Outpatient clinic	119	73.9
Emergency service	37	23.0
Transferred from external center	5	3.1
Chronic disease (n=135)		
No	35	25.9
Yes	100	74.1
Type of chronic disease* (n=154)		
Cardiovascular system diseases	72	46.9
Type 2 diabetes	23	14.9
Malignancy	5	3.2
Hemiplegia	1	0.6
Arthritis	1	0.6
Other**	52	33.8
Ability to complete daily living activities independently (n=149)		
Independent	60	40.3
Semi-dependent	41	27.5
Dependent	48	32.2
Use of assistive devices (n=142)		
No	120	84.5
Yes	22	15.5
Presence of invasive devices (n=144)		
No	35	24.3
Yes	109	75.7
Type of invasive device* (n=147)**		
Peripheral venous catheter	88	59.9
Central venous catheter	28	19.0
Urinary catheter	25	17.0
Hemovac drain	5	3.4
Nasogastric tube	1	0.7
Physical restraint status (n=156)		
No	148	94.9
Yes	8	5.1
Use of medications increasing fall risk (n=150)		
No	102	68.0
Yes	48	32.0

*Multiple data, one patient may have more than one chronic disease, **Anemia, asthma, goiter, chronic obstructive pulmonary disease, chronic renal failure, epilepsy, hyperlipidemia, benign prostate hyperplasia, hyperparathyroidism, Hashimoto's thyroiditis, multiple sclerosis, Parkinson, cirrhosis, hypothyroidism, ***Multiple data, one patient may have more than one invasive device.

Table 2. Distribution of the characteristics related to fall events (n=241)

Characteristics related to fall events	n	%
Clinic		
Pediatrics	71	29.5
Surgical	71	29.5
Internal medicine	68	28.2
Emergency	15	6.2
Psychiatry	10	4.1
Intensive care	6	2.5
Assessment of fall risk (n=139)		
High risk (5 points and above)	93	66.9
No risk (1-4 points)	46	33.1
Shift when fall occurred (n=239)		
Morning (08.00-16.00)	73	30.5
Afternoon (16.00-24.00)	82	34.3
Night (24.00-08.00)	84	35.2
Weekday when fall occurred		
Monday	34	14.1
Tuesday	37	15.4
Wednesday	44	18.3
Thursday	29	12.0
Friday	35	14.5
Saturday	33	13.7
Sunday	29	12.0
Precautions not taken to prevent fall* (n=90)		
No appropriate safety precautions were taken	32	35.7
Not using the nurse call buttons	18	20.2
Caregiver's lack of attention	14	15.4
No appropriate physical restraint precautions were taken	8	8.9
Wet floor	5	5.5
Insufficient information given to patient/caregiver	5	5.5
Unnecessary material left in the clinical area	3	3.3
Lack of assessment of fall risk	1	1.1
Not specified	4	4.4
Location of fall (n=220)		
Patient room	156	70.9
Bathroom	34	15.5
Ward corridor	22	10.0
Outpatient clinic	6	2.7
Surgery room	2	0.9
Type of fall (n=230)		
Syncope	75	32.6
Fall from bed/trolley	65	28.3
Foot slip	49	21.3
Fall from chair/wheelchair	16	7.0
Loss of balance when walking	10	4.3
Fall from mother's lap	5	2.2
Tripping (e.g., cable)	4	1.7
Not specified	6	2.6

Table 2. Continued		
Characteristics related to fall events	**n**	**%**
Injury due to fall (n=92)		
None	63	68.5
Present	29	31.5
Type of injury (n=29)		
Head injury	15	51.8
Pain in hip	3	10.3
Not specified	11	37.9
Admission interval (in days) (n=165) (M=17)		
0-3	14	8.5
4-7	15	9.1
8-15	45	27.2
16-30	48	29.1
31-159	43	26.1
Day of fall since admission (n=185) (M=6)		
0-3	61	33.0
4-7	49	26.5
8-14	29	15.7
15-107	46	24.8
*Multiple data, more than one precaution may be related to one event.		

Although there are different perspectives, it is argued that the fall risks differ due to the different characteristics of surgical and internal medicine patients. Accordingly, surgical patients need to be identified in the high fall-risk group due to lengthened preoperative fasting, the narcotic analgesics used in the postoperative period, and physical activity limitations. Patients admitted to internal medicine clinics have fall risk due to the requirement for long durations of hospital care and having chronic disease diagnoses, which lead to physical movement limitations due to effects on muscle, nerve, and circulation systems. Therefore, when assessing the fall risks of patients admitted to internal medicine and surgery clinics, it is necessary to consider individuals with chronic diseases and factors which may increase their risk of falling in the pre- and post-operative periods.[14,16]

When reporting fall events, recording time intervals allows health professionals to determine when patients frequently fall and are exposed to most risks during the day. In addition, this enables health professionals to take suitable precautions to prevent falls. Majkusová and Jarošová[16] reported that surgical patients fell mostly during the night shift, while McKechnie et al.[17] reported that fall events occurred during the day and evening shifts. Moreover, in long-term departments, it was suggested that falls frequently occurred in the afternoon when the patients were visited by their families/relatives.[16] In our study, most falls were identified as occurring on the night shift between 24.00 and 08.00. This situation is possibly due to the lower number of staff nurses working the night shift than the day and evening shifts. Also, attempting to go unassisted for urgent toilet requirements without disturbing the nurse or caregiver, the short-duration loss of orientation, or orthostatic hypotension occurring after waking may lead to falls at night.

Our study findings showed that patients most frequently fell within the first three days of admission. Hajduchová et al.[15] noted that falls were mostly reported in the first week of admission. It is suggested that this situation is due to the patient experiencing difficulty orienting to the hospital environment in the early period of admission and using devices they are unfamiliar with. Moreover, our findings showed that lengthened admission increased the risk of falling. A prolonged hospital stay is among the most critical risk factors for fall events. Majkusová and Jarošová[16] indicated that long-term patients suffered the most falls compared to other inpatient units. Hospitalization for an extended period may likely cause loss of muscle tone and result in patient facing weakness and being unable to prevent themselves from falling.

In this study, it was identified that falls most frequently occurred in the patient's room. Similarly, it has been reported that fall events frequently occur in environments such as the patient's room, corridors, and bathroom, forming the patient's environment in the hospital setting.[12] Abreu et al.[18] stated that falls were most common in the patient's room, occurring when the nurse was absent and the patient was attempting to stand up without assistance. Also, the patient room is the place where the patient spends most of their time, and falls from bed are frequently experienced. Consequently, it is considered that patients experience difficulties orientating to the room environment during admission and especially to safety precautions related to the bed.

Our study revealed different causes of falls in adults compared to pediatric patients. Adult patients most frequently fall due to syncope, standing up from the bed/trolley, or foot slip. In contrast, pediatric patients frequently fall when standing from the bed/trolley or chairs. Studies conducted with adult patients showed that patients in the hospital have similar causes of falling, which aligns with our results. It was reported that adult patients' most common activities during falls were standing up from the bed, ambulating, going to the toilet, and moving to a chair.[16] When the causes of falls in pediatric patients were investigated, falls were mostly observed due to broken rails, a lack of attention by the family, or not educating the child's primary caregiver about falls.[19] Chang et al.[20] revealed that falls occurred among the 0-6 age group due to jumping out of the bed or lowering the bed railings. Therefore, it is possible to say that interventions to reduce fall risks differ depending on the age groups, and a proper arrangement of the hospital environment is required.

It is known that falls and their related mortality-morbidity rates are higher in childhood and at older ages. However, this study did not identify a significant correlation between age and fall risk levels, with patients who fell found to be middle-aged or older on average. Variations occurring with older age, such as reduced physiological functions and the limitations of daily living activities, an increase in multiple medication use, and chronic diseases, are independent factors increasing fall risk.[20] Additionally, in this study, nearly one-third of fall events were observed in pediatric patients. As pediatric patients are still in the development stage for neuromotor, physical, cognitive, and psychosocial processes, falls occur as a part of this development process and are different from the adult ages.[21] For example, learning to walk at an early age and running while playing leads to falls in children. Not requesting help from caregivers or nurses and meeting hygiene and toiletry requirements due to the excessive importance attached to privacy are among the risk factors for falls adolescents. As a result, when assessing fall risks, focusing on the specific risk factors related to the individual's developmental period is recommended.

In the current study, more than half of the patients with high fall risk were men, but gender was not a significant variable for fall risk. Results have been put forward arguing both for and against gender being a fall

risk factor. Majkusová and Jarošová[16] indicated that falls are expected to happen among females older than 65 due to their higher age and higher hospitalization rate; in contrast, Pereira et al.[22] emphasized high fall rates among the male population. Tanrikulu and Sari[23] found no correlation between gender and fall risks, and our results are similar to their research. However, it is essential to consider that causes of falls may differ according to gender characteristics, such as hearing loss in males and urinary incontinence, living alone, and repeated fall history being associated with increased fall risks.[24]

Functional insufficiency in individuals with chronic disease results in an increased risk of falls. In our study, though most patients had chronic disease diagnoses, no statistically significant difference was found between this situation and fall risk points. In a cross-sectional study, Sibley et al.[25] revealed that elderly patients with at least one or more chronic disease diagnoses had an increased risk of falls. Our study revealed that half of the patients with chronic disease were diagnosed with hypertension and/or diabetes. Gangavati et al.[26] identified that repeated fall risk was 2.5 times higher in elderly patients with hypertension and uncontrolled blood pressure. Similarly, Sibley et al.[25] revealed that patients with hypertension had significantly higher fall risk. Acute orthostatic falls in blood pressure reduce blood flow to the brain, and temporary cerebral ischemia creates syncope-related falls. Findings from a meta-analysis by Yang et al.[27] showed increased fall risks for diabetes patients. Berra et al.[28] concluded that increased fall risks in diabetic individuals were due to irregularities in blood glucose levels. In line with these results, it was revealed that determining specific risk factors of various chronic diseases is essential.

According to our study, more than half of falling patients could not complete ADL independently, and a statistically significant correlation was found between dependence levels and fall risk. Hajduchová et al.[15] concluded that more than half of the patients who fell were moderately or highly dependent according to the Barthel ADL index. Similarly, de Souza et al.[29] revealed that fall risks increased as the need for ambulation support increased. Dependence for ADL occurs when individuals are faced with environmental dangers due to loss of muscle power and physical limitations, which increases fall risks. Dependence in ADL is revealed by the individual's need to use assistive devices. In our study, some patients who fell were identified as using assistive devices (glasses, walkers/walking sticks, or extremity protheses). Choi and Lee[30] emphasized that most individuals requiring physical support when walking had a high risk of falling. Similarly, a weakness of visual acuity is among the risk factors, and nearly one-third of falls are reported to be due to visual impairments.[31] Additionally, some of our patients were found to fall due to not using the nurse call button. Fall events occurring in the patients' rooms were especially related to patients who did not receive assistance when standing up from the bed/chair or going to the toilet. It is known that the use of the nurse call button when attempting to leave a bed or a chair reduces fall events.[32]

Medications that increase fall risks are listed as anti-hypertensive agents, diuretics, B blockers, sedatives and hypnotics, neuroleptics and antipsychotics, antidepressants, benzodiazepines, narcotics, and non-steroidal anti-inflammatory drugs.[33] Signorovitch et al.[34] highlighted that the use of non-insulin anti-diabetic drugs is significantly associated with higher fall risks by resulting in hypoglycemia. It was also shown that polypharmacy had become a critical issue among elderly patients, contributing to their hospital falls.[35] On the one hand, the Hendrich II risk evaluation tool only defines anti-epileptics and benzodiazepines as medications that increase fall risks. On the other hand, in our study, nearly one-third of patients were using at least one of the medications included in the two groups stated in this risk tool, and there was no statistically significant difference between medication use and fall risk scores. Thus, assessment tools need to include the other medication groups that may increase fall risks.

Study Limitations

In our study, some limitations are present due to inaccessible data from the retrospective study design. Consequently, insufficient fall precautions may have been derived from inadequate written records about interventions in the past.

CONCLUSION

Fall events are a crucial public health issue for all age groups and are commonly used as healthcare service quality indicators. In this study, fall events mostly occurred in the internal medicine and surgery clinics between the hours of 24.00 and 08.00, with most patients falling in their room due to syncope, rising from their bed, or foot slip. Fall events occurred most frequently in the first three days of admission, with the risk of falls observed to increase as admission duration lengthened. When the causes of falls were investigated, patients frequently did not take appropriate safety precautions and did not use the nurse call button. Those patients who fell were mainly in the middle-aged group and male and could not complete their daily living activities independently, had at least one chronic disease diagnosis, and were assessed as having high fall risk.

On this basis, we conclude with the following recommendations: individuals with chronic diseases affecting the muscle, nerve, and circulation systems should be closely monitored; patients in surgery clinics should have factors that increase risk in the pre- and post-operative periods defined in detail and included in scale tools; especially those patients at high risk should be assessed at intervals during the night shift; all patients should be accepted as high risk during care interventions on the first three days of admission; family members should be supported in taking an active role in the patient's room, and orientation in the ward and medication groups forming a risk factor for falls should be defined in detail and included in risk assessment tools.

MAIN POINTS

- Falls are critical in causing physiological and psychological damage to individuals by reducing their quality of life.
- Patient falls have become an essential indicator of healthcare service quality.
- A set of sociodemographic, medical, environmental, and fall-related independent variables should be considered when evaluating fall risks.
- Fall risk assessment tools should be revised by reviewing the patient's specific care needs and clinical conditions.

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ETHICS

Ethics Committee Approval: The study was approved by the Hacettepe University Non-Interventional Clinical Research Ethics Committee (approval number: 2016-14-GO 16/45-32).

Informed Consent: Informed consent was not necessary due to the retrospective nature of this study.

Authorship Contributions

Concept: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Design: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Supervision: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Fundings: D.U., N.A.E., F.K., İ.A., Materials: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Data Collection and/or Processing: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Analysis and/or Interpretation: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Literature Search: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Writing: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T., Critical Review: D.U., N.A.E., F.K., İ.A., Y.A., M.D.T.

DISCLOSURES

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