RESEARCH ARTICLE

# Assessment of patient falls using the world health organization's international classification for patient safety: a five-year retrospective study

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## Abstract

**Aim:** To evaluate patient fall incidents using a standardised patient safety classification.

**Method:** The retrospective, descriptive study was conducted from June to November 2023 in the Mardin province of Turkiye, and comprised data from 10 hospitals related to fall incidents occurring between June 2018 and March 2023. The cases were evaluated in the light of the World Health Organisation's International Patient Safety Classification. Data was analysed using IBM SPSS Statistics software (Version 25.0).

**Results:** Of 140 patients with mean age 50.8± years, 71 experienced a fall were aged <18 (50.8%). Fall incidents were associated with facility-related factors, patient-related factors, and nursing staff shortages. Among facility-related falls, slippery floors and the absence of raised bed railings were the leading factors with 60(42.9%) cases. Patient-related falls were highest among those that occurred in paediatric units, with 53(37.9%) cases. Falls attributed to nursing staff shortages accounted for 27 (19.2%) cases. A total of 71 (50.8%) patients who experienced a fall were aged <18 years. Falls occurred predominantly in inpatient units in 112 (80.6%) cases, and in 115 (82.4%) cases, the incident was witnessed by a family member/companion or a member of the healthcare team. Almost all of the falls (n=131, 93.6%) resulted in no injury.

**Conclusions:** Falls occurred due to the complex interplay involving the healthcare facility, patients, and nurses.


**Key Words:** Patients, Patient safety, Nurses.

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## Introduction

The World Health Organisation (WHO) describes patient safety as the avoidance of mistakes and negative occurrences associated with healthcare that impact patients.[1] The Agency for Healthcare Research and Quality (AHRQ) defines patient safety as the implementation of practices aimed at decreasing the likelihood of adverse events that might occur during a patient's medical treatment.[2] It has been reported that one in every 10 patients admitted to a hospital is harmed due to medical errors.[3,4] In the United States, medical mistakes are believed to be the third most prevalent cause of death, following heart disease and cancer.[5] In Canada, it has been found that one patient is harmed in every 18 hospitalisations.[1] Research in developed countries, like the USA, Canada, Australia, New Zealand, the United Kingdom (UK) and Denmark, has indicated that the occurrence of medical mistakes ranges from 3.2% to 16.6%, and around 10% of patients worldwide experience significant impacts due to medical errors[3,6], with 14% of these errors resulting in death and 70% in disability. These rates are estimated to be much higher in developing countries.[6]

It is evident that patient safety incidents can result in severe harm or fatalities. In order to confront and avert these risks, healthcare institutions need to identify underlying causes and devise systemic solutions that tackle issues from a broader perspective. Despite advancements in healthcare, shortcomings persist.[7] Approximately 5-10% of healthcare spending is attributed to unsafe practices, resulting in health issues, with a significant portion stemming from system deficiencies rather than individual actions. The WHO has acknowledged the significance of patient safety and designated it as a top public health concern. Patient safety standards are a set of requirements critical to the establishment of a health system.[8]

Falls present a significant challenge, raising the risk of both mortality and morbidity while contributing to reduced physical, psychological, and social wellbeing as a result of complications. Many of the factors contributing to falls can be avoided. Thus, by recognising and addressing falls, as well as identifying, removing, and preventing the risk factors, the occurrence of falls can be minimised.[9]

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In Turkiye, the Ministry of Health has certain regulations on the prevention of falls in public, private, and university hospitals, stressing that in order to avoid falls, it is essential to assess the risk of falling and implement preventive measures.[10]

The current study was planned to evaluate patient fall incidents using a standardised patient safety classification.

## Patients and Methods

The retrospective, descriptive study was conducted from June to November 2023 in the Mardin province of Turkiye, and comprised data from one provincial hospital and nine district hospitals related to fall incidents occurring between June 2018 and March 2023. All 10 hospitals provided outpatient and inpatient services, and the number of beds in each hospital exceeded 100.

After approval from the ethics review committee of a public-sector university (Mardin Artuklu University, Turkey 2022/13-4) all patient records that were accessible and contained no missing data were included in the study from patients who fell while being treated in the clinic and who stayed for at least one day in the Internal Medicine Department, Surgery Department, or the Emergency Department. After written permission from the hospital administrations, an effort was made to have access to all data within the relevant period. Those cases were excluded that had missing data. Data was retrieved from the hospital-based electronic system, which was also connected with the national health system database, whose accuracy is verified by the Turkish Ministry of Health.

Data was collected from the Fall Incident Notification Form, which included the date of notification, the patient's name and surname, age, gender, diagnosis, date of fall, hospitalisation unit, place of fall, fall risk score, occupation of the reporting person, cause of fall, measures taken for fall risk, general condition before the fall, and general condition after the fall. The fall risk score was based on the Itaki Fall Risk Scale (IFRS)[11] and the Harizmi Fall Risk Scale (HFRS). IFRS was developed to determine the risk of falls in hospitalized adult individuals and consists of a total of 19 items. The risk factors included in the scale are divided into two groups: major (8 factors) and minor (11 factors); major risk factors are scored as 5 points, and minor risk factors are scored as 1 point. For each item, a score is given for the presence of the risk factor, and 0 points for its absence. The sum of the scores obtained from all items constitutes the individual's fall risk score. A total score of 5 or higher is considered a high risk of falls.[11] HFRS was specifically developed to determine fall risk in paediatric patients and includes multiple clinical and environmental risk factors. Each risk factor in the scale is evaluated with specific points, and the patient's total fall risk score is calculated by summing these factors. The scale identifies 9 fall risk factors, with "Having a specific medical condition/symptom associated with fall risk" worth 15 points, and other factors worth 5 points each. Patients with a total score of 15 points or higher are considered high-risk. Based on the total score obtained, patients are divided into low and high-risk groups, and necessary preventive clinical interventions are planned according to the determined risk level.[12] Data was analysed using IBM SPSS (version 25.0). Data was analysed using Descriptive statistics, including frequencies (n) and percentages (%), were performed to determine the demographic characteristics of the participants. Data was expressed as frequencies and percentages. $P<0.05$ was considered significant.

## Results

Of the 160 patients whose records were screened, 140 (87.5%) with mean age 50 ± 8 years, patients who experienced a fall were aged <18 (50.8%). Among facility-related falls, slippery floors and the absence of raised bed railings were the leading factors in 60 (42.9%) cases. Patient-related falls were highest among those that occurred in paediatric units, with 53 (37.9%) cases. Falls attributed to nursing staff shortages accounted for 27 (19.2%) cases. Falls occurred predominantly in inpatient units with 112 (80.6%)cases, and in 115 (82.4%) cases, the incident was witnessed by a family member/companion or a member of the healthcare team. Almost all of the falls (n=131, 93.6%) resulted in no injury, while 9 (6.4%) had

**Table-1:** Data related to patients' fall.

| Variables | N(140) | % |
|---|---|---|
| **Causes of falls** | | |
| Bed railings being down and wet floors | 60 | 42.9 |
| Patient-induced | 53 | 37.9 |
| Due to shortage in the number of nurses | 27 | 19.2 |
| **Mean Age** | | |
| Under 18 years of age | 71(50.8) | |
| **Fall locations** | | |
| Clinics | 112 | 80.6 |
| Outside the clinic | 28 | 19.4 |
| **Injury status** | | |
| Yes | 9 | 6.4 |
| No | 131 | 93.6 |
| **Mode of injury (n:9)** | | |
| Minor injury (bruises, soft tissue injuries, injuries not requiring sutures) | | |
| **Was the patient alone at the time of injury?** | | |
| Yes | 25 | 17.6 |
| No | 115 | 82.4 |

**Table-2:** The degree of harm to fall patients.

| Injury Level | Description |
|---|---|
| No injury | The patient has no symptoms requiring treatment. |
| Light injury | Patient symptoms are mild. Loss of function/damage is minimal or moderate but short-lived; minimal intervention required. |
| Moderate injury | Patient symptoms require intervention. Causes prolonged hospitalization or permanent/long-term loss of function/damage. |
| Severe injury | Patient symptoms require life-saving intervention. Causes shortened life expectancy, permanent or long-term loss of function/impairment. |
| Death | When all possibilities were evaluated, it was determined that the patient's death was caused by the event or contributed to by the event in the short term. |

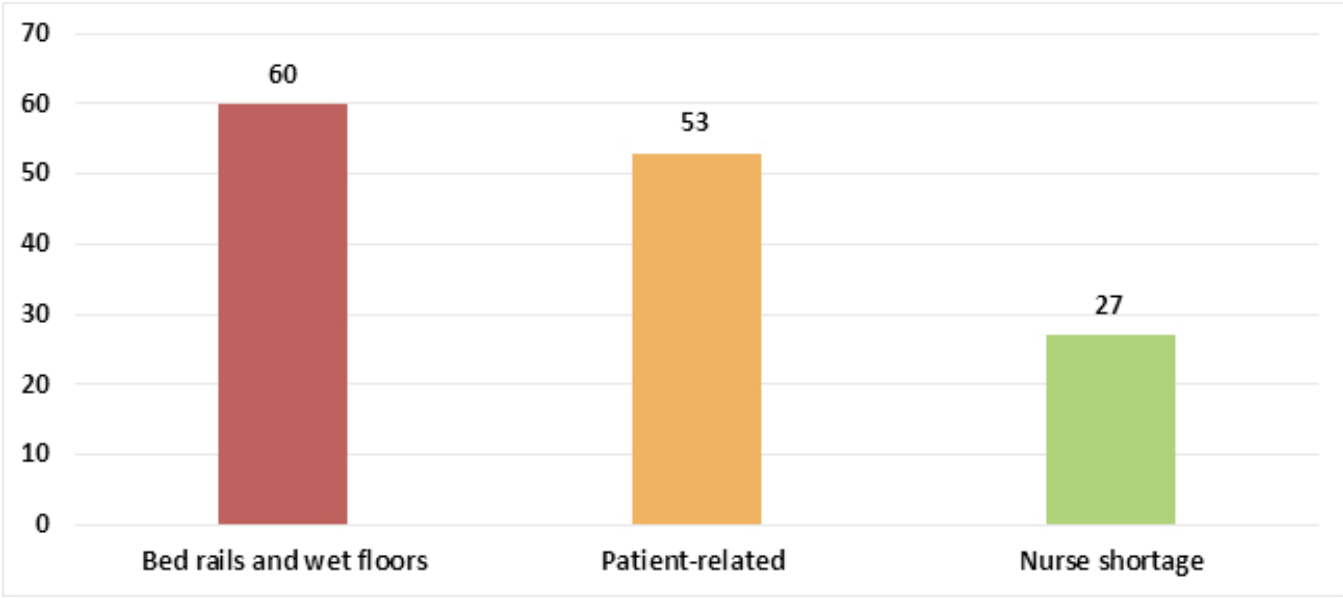


**Figure-1:** Risk of fall startification.

minor injuries. The degree of injury related to falls was in the mild category (Table 1). Risk analysis showed that facility–related falls were in the first place, followed by patient-induced falls and falls due to a shortage of nurses (Figure 1).

## Discussion

According to the WHO definition, patient safety has two goals: prevention of preventable harms in the healthcare process, and coordinated efforts between patients and employees to prevent harms arising out of healthcare itself.[3]

Patient falls prolong hospitalisation, reduce quality of life, and require additional treatment.[7] In a study on the cost analysis of patient falls, it was found that the additional cost of injuries caused by falls was 8,726.94 Turkish lira (TL), and increased the patient's hospital stay by 14.61 days.[10] Regardless of the clinical status of the patients, falls and injuries damage their health and quality of care, cause dependence in terms of daily living activities, and seriously impair the quality of life.[13] Falls cause recurrent hospitalisations, increase treatment and care costs, and cause anxiety and fear among caregivers. Therefore, they pose problems not only for patients, but also for healthcare professionals, healthcare organisations, and society at large.[14] Dunne et al.[14] discovered that 43.7% of patients experienced harm from a fall, while Wong et al.[15] determined that the average hospital stay was extended by 6.3 days. A study in Turkiye calculated the extra hospital cost resulting from severe fall injuries to be 3,302.60 United States dollars.[13]

The average age of the patients in the current study was below 18 years. A study found that 62% of patient safety incident reports made by parents of paediatric patients were confirmed to be medical errors, and 30% of these were medical errors that caused harm to the patient.[16] Harm due to medical care continues to be an important source of morbidity and mortality for children in the USA.[17]

In the current study, 80.6% of the falls occurred in clinics. Of these falls, 42.9% were caused by physical environmental conditions, and 37.9% were caused by the patients. Earlier studies have noted that surgical clinics

and types of surgical clinics have no effect on the risk of patients' falls.[18] In-hospital falls are responsible for an increase in mortality rates, length of hospital stay, hospitalisation costs, and a decrease in quality of life.[19] Moreover, factors such as slippery floors, inadequate footwear, and unsupportive furniture contribute to the heightened risk of falls. Both slippery floors and unsafe footwear are environmental factors that have consistently been linked to increased fall risk.[20] Some patients, unaware of their fall risk, may engage in activities without nursing assistance, thereby elevating the risk of falling.[21] A systematic review indicated that the use of bed rails does not prevent falls, but raises the likelihood of patient injuries.[22]

Nurses are well-placed to identify the causes and circumstances of falls, as the majority of falls occur during the everyday activities that nurses are supposed to oversee.[23] A study revealed that paediatric nurses made mistakes due to extended work hours and low nurse-to-patient ratios.[24] The shortage of nurses was found to be one of the reasons for falls in the current study (19.2%). The ability of nurses to prevent or contribute to falls hinges on their decisions regarding the selection and implementation of strategies to prevent falls.[25] Equipping nurses with current evidence-based information will aid them in making informed choices about interventions. Furthermore, nurses require training on when to transition their focus from preventing falls to minimising fall-related injuries.[26] Another study suggested that training and practice in a simulated environment replicating fall scenarios would enhance nurses' awareness of such situations.[27]

The current study has limitations. The data were from hospitals in only one province, which has affected the generalisability of the results. The retrospective design of the study was also a limitation, as the implementation status of preventive actions and the effect of the implementation on falls could not be evaluated.

Despite the limitations, however, the current findings underscore the need for having an effective incident reporting system, focusing on evidence-based practices, improving professional practices by increasing in-house trainings, and creating a patient safety culture with the participation of all employees.

## Conclusion

Falls occurred due to the complex interplay involving the healthcare facility, the patients, and the nurses.

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**Conflict of Interest:** None.

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**GCY:** Concept, design, data acquisition, analysis, interpretation, drafting, revision, final approval and agreement to be accountable for all aspects of the work.