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# PROFILE OF FALLS AMONG HOSPITALIZED PATIENTS

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**ABSTRACT**
Falls are identified as major adverse events due to potential consequences, such as an increase in length of hospitalization. This study's objective was to characterize the profile of falls experienced by patients during hospitalization in the different units of a tertiary university hospital. This is a documentary, descriptive, retrospective and quantitative study. The population consisted of all inpatients who experienced falls in 2008 and 2009 and the event they reported. A total of 321 falls were reported, of which 58.9% occurred in Medical Clinic Units, 21.5% in Surgical Units, and 19.2% in other units. The falls most frequently occurred during the night shift, followed by the morning and afternoon shifts. Events most frequently occurred among patients 60 years old or older (30.8%). Regarding drugs administered to patients on the day of the event and on the day before, and which are possibly related to the event, anti-hypertensive drugs, benzodiazepines, and diuretics were the most common. It is extremely important to clinically assess the patients at the time of admission to identify risk factors predisposing them to falls early on and propose protocols to prevent these events.

**Keywords:** Accidental falls. Nursing care. Service indicators.

## INTRODUCTION

Quality care delivery is an ideal to be attained by all professionals working in health facilities. Despite efforts to achieve excellence, however, everyday care practice still presents the risk of adverse or iatrogenic occurrences.

The concept of patient safety involves the prevention of evitable incidents caused to patients during care delivery. An incident in healthcare is a circumstance with the potential to harm patients. Incidents include events that do not result in damage, events that result in damage (adverse events), and those that have the potential to cause harm but do not (near misses)[1-2].

Adverse events are, therefore, facts or occurrences that deviate from the normal or expected course for a given treatment and may cause unpredictable consequences for patients, professionals, and healthcare provider organizations.

Even though iatrogenic occurrences – or adverse events or errors – permeate the universe of healthcare facilities, especially hospitals, these events are for the most part poorly explored or little valued, even by members of the multidisciplinary team itself, an understandable attitude given the ethical-legal implications arising from such events.

Falls are among these occurrences and many authors stress that falls are an important iatrogenic element due to the unpredictable consequences they may cause for patients, the nursing staff and the institution[3]. In 1983, the National Safety Council in the United States reported the occurrence of falls as the leading cause of fatal accidents among individuals over the age of 74. In 1984, more than 680,000 falls were reported in American hospitals. The direct and indirect costs related to such an event in the country represents about US$ 75 to 100 billion dollars every year. It is important to note that, in addition to the measurable costs, there are bone fractures, traumas and other injuries that result from falls that may limit an individual in many ways, compromising their physical and mental wellbeing[4].

One investigation, with the objective to characterize adverse events in the surgical clinic

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of a university hospital, identified falls as representing 18.56% of the occurrences reported[5]. Another study conducted with elderly individuals revealed that such an event occurred with 7.7% of this population[6].

Given the magnitude of this situation, diverse studies were conducted with the objective to identify the risk factors for the occurrence of falls and found the following risk factors: being older than 65 years old, changes in consciousness level, use of medication (antidepressant, benzodiazepines, anti-hypertensives), syncope and postural hypotension, bladder and/or bowel incontinence, balance disorders, motor deficits, sensory deficits (decreasing visual acuity and/or hearing), cognitive deficits, musculoskeletal disorders, unsafe environments, and previous falls[4,7].

Such evidence indicates the importance of developing a body of knowledge concerning the subject to support the management of nursing care because only through proper record-keeping and characterization of falls (place, hour, circumstances, and injuries caused) is it possible to contribute to the implementation of preventive measures[8].

Therefore, this study's objective was to characterize the profile of falls experienced by patients during hospitalization in the different units of a tertiary university hospital.

## METHOD

This documentary descriptive study of a retrospective and quantitative nature was conducted in a public tertiary university hospital located in the Northeast of the state of São Paulo, Brazil.

The population was composed of all the inpatients who fell during hospitalization between January 2008 and December 2009 and whose event was reported to the hospital's Patient Safety Committee.

Data collection was initiated after approval was obtained from the Institutional Review Board according to Process No. 5344/2009. Data from the adverse events reporting form, filled out at the time by health workers, were collected in 2011. The variables included age, sex, shift during which the event occurred, unit in which it occurred, characteristics of fall and place, whether there was companion, whether the event was witnessed, and whether the patient was harmed. The medication used at the time of the event and period of the hospitalization when the fall occurred were also verified. All data were doubled-entered and the frequency of each variable was analyzed using EPinfo.

## RESULTS AND DISCUSSION

A total of 321 falls were reported, 58.9% of which occurred in the Medical Clinic Units, 21.5% in the Surgical Units, and 19.2% in other units, such as Rehabilitation Center and Therapy Infectious Diseases Unit, which were grouped in this study due to their individual low frequency.

Similar data were found in a study conducted in a general hospital reporting that 85% of the falls took place in the Medical Clinic unit[9]. An increased prevalence of chronic-degenerative diseases is observed in keeping with the change in the Brazilian population pyramid, which has influenced the hospitalization of patients in these units, usually composed of elderly individuals using many medications, with reduced mobility and, consequently, dependence on others to perform activities of daily living. In contrast, hospitalizations in surgical units are usually elective and patients are younger.

The time at which falls were reported is presented in Table 1.

**Table 1 –** Distribution of patients who experienced falls in 2008 and 2009 according to the shift. Ribeirão Preto, SP, Brazil 2011.

| Year | 2008 | | 2009 | | Total | |
|---|---|---|---|---|---|---|
| Shift | N | % | N | % | N | % |
| Morning | 48 | 29.6 | 47 | 29.6 | 95 | 29.6 |
| Afternoon | 33 | 20.4 | 31 | 19.5 | 64 | 20.0 |
| Night | 67 | 41.4 | 65 | 40.9 | 132 | 41.1 |
| No information | 14 | 8.6 | 16 | 10.1 | 30 | 9.3 |
| Total | 162 | 100 | 159 | 100 | 321 | 100 |

Most of the events happened during the night shift (between 6pm and 6am) followed by the

morning and afternoon shifts. Such findings coincide with those reported by a study conducted in a tertiary hospital in which 63.7% of the falls took place during the night shift[10]. It is important to note, however, that the night shift comprises 12 consecutive hours, while the morning and afternoon shifts comprise six hours each. If we adopt the criterion of 12 daytime hours, the highest occurrence of falls is observed during this period with 50% of the occurrences in 2008 and 49.1% in 2009.

The study sample was mainly composed of women (55.6%) in 2008, however, more male patients are observed in 2009 (55,3%). The assessment of risks and incidents of falls in patients hospitalized in the neurosurgical unit found a majority of male patients (50.5%)[7]. Other studies also report a predominance of falls among men, with frequencies reported of 61%, 57.5% and 51%, respectively in those studies[9-11].

The predominance of female workers on the nursing staff should be considered a fact that possibly interferes when a male patient asks for help, more frequently exposing these patients to the risk of falls[10]. Even though gender appears in various studies as a variable that predisposes patients to falls, it cannot however, be considered conclusive.

In regard to age, Table 2 presents the data concerning the studied patients.

**Table 2 –** Distribution of patients who experienced falls in 2008 and 2009, according to the age group. Ribeirão Preto, SP, Brazil 2011.

| Year | 2008 | | 2009 | | Total | |
|---|---|---|---|---|---|---|
| Age group | N | % | N | % | N | % |
| 00 – 09 years old | 11 | 6.8 | 24 | 15.1 | 35 | 10.9 |
| 10 – 19 years old | 07 | 4.3 | 06 | 3.8 | 13 | 4.0 |
| 20 – 29 years old | 18 | 11.1 | 15 | 9.4 | 33 | 10.3 |
| 30 – 39 years old | 19 | 11.7 | 21 | 13.2 | 40 | 12.5 |
| 40 – 49 years old | 29 | 17.9 | 27 | 17.0 | 56 | 17.4 |
| 50 – 59 years old | 28 | 17.3 | 17 | 10.7 | 45 | 14.0 |
| 60 years old or older | 50 | 30.9 | 49 | 30.8 | 99 | 30.8 |
| Total | 162 | 100 | 159 | 100 | 321 | 100 |

The events happened more frequently among patients 60 years old or older (30.8%) and the percentage remained constant in the two years under study.

These findings have been reported by various studies[11-12]. Being of an age equal to or older than 60 years old is one of the main risk factors for the occurrence of falls in the hospital environment. Multiple causes have been described as predisposing elderly patients to a greater incidence of falls, such as: impaired walking, use of medication, diverse pathologies, and refusing to ask for the help of the nursing staff whenever necessary, in addition to problems in the environment's physical structure, such as lack of support bars and protective guardrails on beds [11-12].

Assuming that continuous monitoring could reduce the risk of falls among these patients, we sought to identify whether there was a companion with those who experienced falls. The presence of a companion is guaranteed by law to specific groups of patients, such as children under the age of 18 (Law No. 8.069/Statute of the Child and Adolescent) and individuals 60 years old or older (Law No. 10.741/Elderly Statute). In this study, however, patients did not have a companion from among their family members during hospitalization. Only 141 (72.3%) patients, who had the right to a family caregiver, had a companion at the time of their falls.

A fact that draws attention is that professionals, family members, or other patients witnessed more than 60% of the falls

that took place in the period under study. Similar findings are reported by a study in which patients had a companion in 58.8% of the falls[13].

Given the implications of falls for the physical and emotional integrity of patients, this event has been considered an indicator of quality of care with implications for patient safety.

Analysis of immediate consequences for patients showed that in 30% of the cases, the event threatened the physical integrity of patients. One study describing fall-related adverse occurrences among hospitalized patients revealed that among the consequences most frequently found in the medical files of elderly individuals were fractures, both in upper and lower limbs, including the indication of corrective surgeries[14].

Another study analyzed the immediate consequences for patients after a fall and revealed that in 51.2% of the cases, there was some type of consequence, with the most frequent being abrasions (16.3%) and hematomas (11.3%)[13]. One study conducted in a hospital facility in Colombia[15] reported that most of the falls (64.5%) did not cause physical damage to patients, but there were minor injuries in 25.8% of the falls. The fall of one patient (1.6%) did result in death.

In regard to the place where falls occurred, data are presented in Table 3.

**Table 3 –** Distribution of patients who experienced falls in 2008 and 2009, according to the characteristics of the event. Ribeirão Preto, SP, Brazil 2011.

| Year / Characteristic | 2008 | | 2009 | | Total | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **From height** | 99 | 61.1 | 98 | 61.6 | 197 | 61.4 |
| **Bed/gurney** | 31 | 19.1 | 31 | 19.5 | 62 | 19.3 |
| **Chair/armchair** | 19 | 11.7 | 19 | 11.9 | 38 | 11.8 |
| **No information** | 08 | 4.9 | 02 | 1.3 | 10 | 3.2 |
| **Bathroom** | 01 | 0.6 | 02 | 1.3 | 03 | 0.9 |
| **Others** | 04 | 2.6 | 07 | 4.4 | 11 | 3.4 |
| **Total** | 162 | 100 | 159 | 100 | 321 | 100 |

Falls from their own height predominated, with 61.4% of the cases reported, followed by fall from bed/cradle/gurney with 19.3%, while falls from a chair or armchair occurred in 11.8% of the cases. These results are similar to those found in another study that analyzed adverse events during hospitalizations, where falling from one's own height predominated[14].

In regard to the environment in which patients fell, the bedroom was the most frequent, with 56.8% of occurrences in 2008 and 53% in 2009, followed by the bathroom with 19.8% and 22.7%, respectively. Events in other places such as a hallway, dining room, living room and elevator lobby were also identified.

These results confirm what was found in a study carried out in a private hospital verifying that the most frequent places for falls were also the bedroom (65.0%) or bathroom (26.3%). Most were falls from one's own height (56.3%) and, less frequently, from chairs (13.8%) or beds (11.3%)[13]. Investigations indicated that environment-related factors that predispose patients to falls include: the inappropriate use of guardrails and of wheelchairs, high beds, wet floors, inadequate lighting, periods of intense activity within the unit, patient admission, night shift, and obstacles in the walk way or around the bed[16]. These factors indicate the importance of health facilities paying attention to the assessment of the safety of environments available to the patients under care.

Another study shows the need to consider the existence of extrinsic and intrinsic factors that predispose patients to falls. Extrinsic factors are associated with inadequate lighting, furniture in inappropriate places, slippery floors, non-adapted bathrooms and stairs. Intrinsic factors are described

as hypotension, hypovolemia, drugs (antiarrhythmic, hypnotics, anxiolytics, neuroleptics, antidepressant, hypoglycemic, anticonvulsants, anti-Parkisonian), musculoskeletal and neurological diseases[17].

Therefore, for the prevention of these events, identifying all the risk factors present among inpatients is strategically important, since there may be the coexistence of these factors in a single patient, which aggravates the risks.

One aspect verified in this study and which drew our attention was the occurrence of more than one fall per patient during a single period of hospitalization. Most of the patients experienced a single fall, but 10% of the patients experienced two falls, while in 1.8% of the cases, the patients experienced three falls during the period under the study.

Such a situation was also verified in a study conducted with neurosurgical patients: 81% fell once; 4.7% fell twice; 4.7% fell three times, and 9.6% fell four times or more. Of the patients who had fallen prior to their hospitalization, which corresponded to 21.6% of the studied population, 14.3% also fell during the current hospitalization[7].

Thus, considering the data from the literature, we sought to identify the period in which falls were observed, based on length of hospitalization in the unit. Data are presented in Table 4.

**Table 4 –** Distribution of patients who fell in 2008 and 2009, according to the day of fall, in regard to time of hospitalization. Ribeirão Preto, SP, Brazil 2011.

| Year / Time of hospitalization (in days) | 2008 | | 2009 | | Total | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **01 to 05** | 99 | 61.1 | 61 | 38.4 | 160 | 49.8 |
| **06 to 15** | 30 | 18.5 | 56 | 35.2 | 86 | 26.8 |
| **16 to 30** | 20 | 12.4 | 21 | 13.2 | 41 | 12.8 |
| **31 to 70** | 13 | 8.0 | 11 | 6.9 | 24 | 7.5 |
| **No information** | 0 | 0 | 10 | 6.3 | 10 | 3.1 |
| **Total** | 162 | 100 | 159 | 100 | 321 | 100 |

The incidence of falls varied according to the length of hospitalization, while most falls happened in the first week of the patient's hospitalization in the unit. This statement is corroborated by a study that verified that in 61.7% of the cases studied, falls occurred in the first five days of hospitalization[10].

Such information suggests that events may be related to factors such as beginning a new medication therapy, lack of familiarity with the environment's spatial organization, and anxiety arising from the new condition.

The literature shows a need to consider the use of medication as a factor predisposing patients to falls. In this study, this information was obtained from the medical prescriptions and culminated in a list of medications presented in Table 5.

**Table 5 –** Medication used by patients who fell during hospitalization in 2008 and 2009. Ribeirão Preto, SP, Brazil 2011.

| Year / Medication | 2008 | | 2009 | | Total | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Anti-hypertensive** | 84 | 30.7 | 54 | 30.7 | 138 | 30.7 |
| **Benzodiazepines** | 68 | 24.8 | 51 | 29.0 | 119 | 26.4 |
| **Diuretics** | 46 | 16.8 | 31 | 17.6 | 77 | 17.1 |
| **Antipsychotics** | 33 | 12.0 | 14 | 7.9 | 47 | 10.4 |
| **Antidepressant** | 21 | 7.7 | 11 | 6.2 | 32 | 7.1 |
| **Hypoglycemic** | 17 | 6.2 | 15 | 8.6 | 32 | 7.1 |
| **No information** | 05 | 1.8 | 0 | 0 | 05 | 1.2 |
| **Total** | 162 | 100 | 159 | 100 | 321 | 100 |

The use of anti-hypertensive medication was verified among most patients who fell, confirming the data presented in other

studies[11,18]. Benzodiazepine users also presented a high risk in this study, which may be explained by the drug's sedative activity and alpha-adrenergic blockade, which is responsible for psychomotor changes and an increased probability of postural hypotension leading to an increased risk of falls[4].

The identification of risk factors through consulting the inpatients' records and medical files revealed the use of medications (benzodiazepines, antipsychotics and sedatives) as a risk factor of higher incidence (36%), followed by mobility impairment (23%), psychomotor agitation (9%), dizziness (7%), and hypotension (1%)[9].

Psychotropic and anti-parkinsonian medication may cause drowsiness, dizziness, weakness, and cause gait disorders. Diuretics and anti-hypertensive drugs, used to treat cardiovascular diseases, may reduce cerebral perfusion causing dizziness, loss of consciousness, and falls[10]. Tricyclic antidepressants mainly are potential causes of orthostatic hypotension (vertigo and dizziness, especially when standing up) and sedation. Oral hypoglycemic agents may lead to a condition of hypoglycemia and when not detected early, may cause loss of consciousness[10].

One study conducted with 190 patients who had 214 episodes of falls reported identifying those who were medicated with drugs such as antiepileptics, sedatives, hypnotics, and antidepressants were seven times more likely to fall (Odds Ratio =7.14; $p< 0.05$)[19].

Thus, falls are multifactor events of considerable complexity, associated with an environment and context of care in constant change, which indicates the need for continuous investigation concerning the main risk factors, incidences, consequences, and preventive measures specific to this event in order to prevent it[20].

## CONCLUSIONS

The incidence of falls among inpatients of the institution under study presented little change of behavior in 2008 and 2009, showing the need to implement preventive measures intended to reduce occurrences of this event, such as adequacy of the hospital's physical structure and qualification and training of the nursing staff in order to provide quality care delivery.

The study also shows the importance of nurses performing a clinical assessment of patients at the time of admission to enable the early identification of the existence of risk factors that may predispose patients to falls during hospitalization. Being aware of those with greater risk, professionals can adopt specific safety and preventive measures to preserve the integrity of patients and ensure the quality of care delivery. This assessment should occur periodically because risk factors change during the period of hospitalization. Therefore, further studies addressing this subject in the hospital context are essential, as well as addressing the need to establish strategic measures that minimize the occurrence of falls.

## PERFIL DAS QUEDAS EM PACIENTES HOSPITALIZADOS

**RESUMO**

As quedas vêm sendo apontadas como importante evento adverso, pelas consequências que podem acarretar como o aumento do tempo de internação. O objetivo deste estudo foi caracterizar o perfil das quedas sofridas pelos pacientes durante sua internação, nas diferentes unidades de um hospital de ensino de nível terciário. Trata-se de pesquisa documental descritiva, retrospectiva e quantitativa. A população foi constituída por todos os pacientes internados nos anos 2008 e 2009, que sofreram queda durante a internação e tiveram o evento notificado. Foram relatadas 321 ocorrências de quedas, sendo 58,9% nas Unidades de Clínica Médica, 21,5% nas Unidades Cirúrgicas e 19,2% em outras unidades. As quedas aconteceram predominantemente no período da noite, seguido da manhã e da tarde. Houve predomínio de ocorrências nos pacientes com idade igual ou superior a 60 anos (30,8%). Quanto aos medicamentos administrados aos pacientes no dia do evento e no dia anterior, que podem estar relacionados ao evento, houve predomínio dos anti-hipertensivos, benzodiazepínicos e diuréticos. É de suma importância a realização da avaliação clínica do paciente no momento da sua admissão hospitalar, visando identificar, de

forma precoce, a existência de fatores de risco predisponentes às quedas e propor protocolos para prevenção desses eventos.

**Palavras-chave:** Acidentes por quedas. Cuidados de enfermagem. Indicadores de serviços.

## PERFIL DE LAS CAÍDAS EN PACIENTES HOSPITALIZADOS

**RESUMEN**

Las caídas vienen siendo señaladas como un importante acontecimiento adverso, por las consecuencias que pueden ocasionar como el aumento de la duración de la hospitalización. El objetivo de este estudio fue caracterizar el perfil de las caídas sufridas por los pacientes durante su hospitalización en las diferentes unidades de un hospital de enseñanza de tercer nivel. Se trata de una investigación documental, descriptiva, retrospectiva y cuantitativa. Los sujetos del estudio fueron todos los pacientes internados en 2008 y 2009, que habían sufrido caídas durante la hospitalización y habían notificado el evento. Fueron reportados 321 accidentes de caídas, de los cuales el 58,9% ocurrió en Unidades Clínicas, el 21,5% en Unidades Quirúrgicas y el 19,2% en otras unidades. Las caídas ocurrieron principalmente durante la noche, seguida de mañana y tarde. Hubo el predominio de las ocurrencias en los pacientes con edad igual o mayores de 60 años (30,8%). En cuanto a los fármacos administrados a los pacientes en el día del evento y en el día anterior, que puedan estar relacionados con el evento, hubo un predominio de los antihipertensivos, benzodiacepinas y diuréticos. Es extremadamente importante la realización de la evaluación clínica del paciente en el momento de la admisión hospitalaria, pretendiendo identificar, precozmente, la existencia de factores de riesgo que predisponen a las caídas y proponer protocolos para la prevención de estos eventos.

**Palabras clave:** Accidentes por caídas. Cuidados de enfermería. Indicadores de servicio.

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