Original Article

CARACTERIZAÇÃO DOS EPISÓDIOS DE QUEDA EM UMA UNIDADE DE CARDIOLOGIA: ESTUDO RETROSPECTIVO

CHARACTERIZATION OF FALLS IN A CARDIOLOGY UNIT: A RETROSPECTIVE STUDY

CARACTERIZACIÓN DE EPISODIOS DE CAÍDAS EN UNA UNIDAD DE CARDIOGOLÍA: ESTUDIO RESTROSPECTIVO

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RESUMO

Objetivo: Caracterizar os episódios de queda em pacientes internados em uma unidade cardiológica, quanto à ocorrência, fatores relacionados e risco. **Método:** Estudo descritivo, retrospectivo, por meio da análise de prontuários de pacientes internados em uma unidade de cardiologia que apresentaram episódio de queda entre janeiro de 2015 a dezembro 2016. O risco médio para quedas foi avaliado, conforme a Escala de Morse. **Resultados:** No período de estudo houve 32 episódios de quedas. A queda foi mais frequente em idosos (81,3%) e naqueles que faziam uso crônico de medicamentos, para controle e tratamento de comorbidades preexistentes. Dentre os fatores de risco, 34,4% apresentavam delirium, comprometimento neurológico e déficit de locomoção. O risco médio para quedas foi classificado como elevado ($\geq$ 45), 25% das quedas resultaram em algum tipo de dano (leve ou moderado) e ocorreram em períodos matutinos. **Conclusão:** As contribuições fornecidas pelos registros de eventos adversos, deste estudo, facilitaram a identificação dos fatores de risco, demonstrando a necessidade de se propor intervenções de enfermagem preventivas, uma vez que assumir o evento e identificar suas causas são maneiras de praticar uma assistência de enfermagem segura ao paciente.
Descritores: Acidentes por Quedas; Fatores de Risco; Segurança do Paciente; Medidas de segurança; Cuidados de enfermagem; Cardiologia.

ABSTRACT

Objective: To characterize the episodes of falls in patients hospitalized in a cardiology unit, regarding occurrence, related factors and risk. **Method**: This is a descriptive, retrospective study, analyzing medical records of patients admitted to a cardiology unit who experienced a fall episode between January 2015 and December 2016. The average risk for falls was assessed according to the Morse Scale. **Results**: During the study period, there were 32 episodes of falls. Falls were more frequent in the elderly people (81.3%) and in those people who used chronic drugs to control and treat pre-existing comorbidities. Among the risk factors, 34.4% had delirium, neurological impairment and impaired mobility. The average risk for falls was classified as high (> 45), 25% of the falls resulted in some type of damage (mild or moderate) and occurred in the morning. **Conclusion**: The contributions provided by the records of adverse events in this study facilitated the identification of risk factors, demonstrating the need to propose preventive nursing interventions, since assuming the event and identifying its causes are ways to practice safe nursing care to the patient.
Descriptors: Accidental Falls; Risk Factors; Patient Safety; Security Measures; Nursing Care; Cardiology.

RESUMEN

Objetivo: Caracterizar los episodios de caídas en pacientes hospitalizados en una unidad de cardiología, en cuanto a ocurrencias, factores relacionados y riesgo. **Método:** Estudio descriptivo, retrospectivo, mediante el análisis de las historias clínicas de los pacientes ingresados en una unidad de cardiología que experimentaron un episodio de caída entre enero de 2015 y diciembre de 2016. El riesgo promedio de caídas se evaluó según la escala de Morse. **Resultados:** Durante el período de estudio hubo 32 episodios de caídas. La caída fue más frecuente en los ancianos (81,3%) y en los que usaban fármacos crónicos para controlar y tratar las comorbilidades preexistentes. Entre los factores de riesgo, el 34,4% presentaba delirio, deterioro neurológico y movilidad reducida. El riesgo promedio de caídas se clasificó como alto (> 45), el 25% de las caídas resultaron en algún tipo de daño (leve o moderado) y ocurrieron en la mañana. **Conclusión:** Los aportes que brindan los registros de eventos adversos en este estudio facilitaron la identificación de factores de riesgo, demostrando la necesidad de proponer intervenciones de enfermería preventivas, y a que asumir el evento e identificar sus causas son formas de practicar al paciente cuidados de enfermería seguros.
Descriptores: Accidentes por Caídas; Factores de Riesgo; Seguridad del Paciente; Medidas de Seguridad; Atención de Enfermería; Cardiología.

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INTRODUCTION

According to the World Health Organization (WHO)[1], the adverse event consists of an incident resulting from assistance that results in unintentional damage to the patient, and that is not related to the natural evolution of the underlying disease. American data report that 3.7% of hospitalizations evolve with the presence of adverse events associated with damage, 6.5% of these events have caused permanent dysfunction and 13.6% involve the patient's death [2]. In Brazil, 7.6% of hospitalized patients have adverse events, 66.7% of which are preventable [3].

The National Health Surveillance Agency (ANVISA) [4], together with the Ministry of Health (MH) [5], through ordinance 529, of April 1st, 2013, designed health programs and strategies aimed at patient safety. Among the established axes are: correct identification of the patient, better communication between health professionals, improved safety in the prescription, use and administration of medications, the guarantee of safe surgery, hand hygiene for preventing infections and reducing the risk of falls and pressure injuries [4-6].

The fall is one of the most prevalent adverse events in the hospital environment, responsible for two out of five undesirable events [7-8]. ANVISA stated in a report on hospital care that 38.2% of adverse events correspond to falls [5]. The fall is conceptualized as an unintentional displacement of the body to a level lower than the initial position, due to multifactorial circumstances that compromise the stability and maintenance of the individual's well-being [9].

It is a complex, unintentional, traumatic and multifactorial incident that can be caused by several factors, whether intrinsic or extrinsic [10-12]. Intrinsic factors are those related to the physiological changes resulting from the aging process, sex, use of medications and pathological conditions. Among the pathological conditions, the most frequent are cardiovascular diseases, use of devices, changes in gait, ocular, hearing and cognitive impairments, impaired mobility and previous history of falls. Extrinsic factors are associated with environmental issues, such as architectural and furniture inadequacies, to which the majority of the elderly people is exposed [12-13].

The occurrence of a fall has a negative impact, since it can be associated with the occurrence of damage, sometimes permanent and of varying severity, impacting the prolongation of hospital stay and unfavorable clinical outcomes [14]. The presence of risk factors for falls is common in the hospital environment, varying according to the clinical characteristics of the patients and the specific epidemiological profile of each service, reaching rates between 1.4 to 10.7 falls / 1,000 patient-days [8, 15].

The use of instruments to stratify the risk of falls, allows the establishment of the vulnerability of each individual and favors the development of an individual and assertive care plan. The Morse Scale, Morse Fall Scale (MFS) [16-17], is commonly used as a risk stratification instrument, categorizing the factors that predispose to falls and identifying the individual's degree of risk [18-19].

The presence of cardiologic comorbidities is associated with several risk factors for falls, which are inherent to the disease itself or related to therapeutic methods, especially pharmacological, since the use of drugs that potentially alter hemodynamic homeostasis, cardiac output and cerebral perfusion [20]. Although the risk predictive scales assess risk factors for falls, the identification of clinical characteristics in a specific population of patients who experienced the adverse event of falls helps to identify the specific risk factors of that group, in addition to directing interventions for preventive nursing care appropriate to these patients.

Thus, the objective of this study was to characterize the episodes of falls in patients hospitalized in a cardiology unit, regarding the occurrence, related factors and risk.

METHOD

This is a descriptive, retrospective, observational study in a cardiology inpatient unit of a private tertiary hospital in the Federal District, to answer the following research question: What are the clinical characteristics and the risk factors presented by patients with an episode of drop in that unit? The study was conducted according to the STROBE Statement [21], which indicates the essential points for conducting an observational study.

The episodes of falls that occurred in patients admitted to the cardiology unit between January 2015 and December 2016 were analyzed and presented at least a fall episode during hospitalization. Fall episodes were monitored daily by the patient's safety unit at the hospital.

The data collection happened in 2017 through the analysis of electronic medical records. For the patients who presented the event of interest, clinical data (diagnosis of hospitalization,

length of stay, medications in use), demographic characteristics (age, sex) and characteristics related to the fall event (reason, time and place of the disease, presence of neurological impairment, presence of impaired locomotion, risk of falling) were collected according to the Morse Fall Scale (MSF) [19]; and the occurrence or not of damage, in order to describe the characteristics and factors of most prevalent risk factors in patients who presented episodes of falls. The variables were collected using a structured instrument developed by the authors.

The MSF consists of six items with two or three possible answers for each of them, corresponding to a certain score. The evaluated items deal with: history of falls, presence of secondary diagnosis, degree of need for assistance in walking, use of continuous intravenous therapy or salinized/heparinized intravenous device, quality of gait and mental status. According to the evaluation carried out, the sum of the scores obtained, in each of the six items, results in a score that indicates the risk of falling. The reference values for the risk of falls are: <24 = low risk; 25-44 = moderate risk; > 45 = high risk.

The data referring to the stratification of the risk of falls, through the MSF, were evaluated in three moments: the day before the fall, the day of the fall and the day after the fall.

The collected data were transcribed to an electronic spreadsheet and exported to Graphpad Prism version 7.0. The sample was characterized using descriptive statistics. Continuous variables were reported as a measure of central tendency and dispersion (mean, median and standard deviation) and categorical variables by measure of frequency and percentage.

The research was submitted and approved by the Research Ethics Committee (CEP), under protocol No. 58103816.8.0000.5667, respecting resolution 466 of 2012.

RESULTS

During the study period, there were 14,236 hospitalizations in the unit (6,894 in 2015 and 7,252 in 2016) and 32 episodes of falls. The rate of falls in the unit was 2.7 falls/1000 patient-days in 2015 and 1.5/1000 patient-days in 2016. In 2015, there were 24 episodes of falls (75% of the total events), the mostly elderly people, with a mean age of 72.1 (SD 4.3), 26 (81.3%) were older than 60 years-old. Regarding admission reasons, six (19%) of these patients were admitted after surgical/invasive procedures (myocardial revascularization, angiography and angioplasties) (Table 1).

Table 1 – Clinical and demographic characteristics of patients who experienced a fall episode in a cardiac inpatient unit. Brasília, DF, Brazil, 2016.

Characteristics	Sample (n = 32)
Gender, n male (%)	16 (50)
Age in years, mean (SD)*	72,1 (14,3)
Age group, n (%)	
< 20 years-old	1 (3,1)
21 to 40 years-old	0 (0)
41 to 60 years-old	5 (15,7)
>60 years-old	26 (81,3)
Hospitalization diagnosis, n (%)	
Clinical	26 (81,3)
Surgical	6 (19,0)

Source: Internal hospital data regarding episodes of falls that occurred between 2015-2016.
* SD - standard deviation

Agitation and delirium, as well as neurological impairment and impaired locomotion, were identified in 11 (34.4%) patients, while 31 (96.6%) of the patients used long-term / chronic medications for control and/or treatment of pre-existing comorbidities, especially cardiologic and metabolic. The average hospital stay was 18.6 (SD 17.7) days, the increase in hospital stay as a consequence of the fall episode was not evaluated.

The mean MFS score was assessed on three occasions: the day of the fall episode, the day before and after the event (Table 2).

Table 2 – Stratification of the risk of falling and the presence of damage in patients who experienced a fall episode in a cardiac inpatient unit. Brasília, DF, Brazil, 2016.

Characteristics	Sample (n = 32)
Morse scale (MFS) before the event, mean (SD)	47,4 (22,4)
Morse scale (MFS) on the day of the event, mean (SD)	49,2 (25,7)
Morse scale (MFS) after the event, mean (SD)	48,8 (25,4)
Damage occurrance, n (%)	
No damage	24 (75)
Mild damage	5 (15,6)
Moderate damage	3 (9,4)
Severe damage	0 (0)

Source: Internal hospital data regarding episodes of falls that occurred between 2015 and 2016.

* SD - standard deviation.

At all times evaluated, the average score portrayed a high risk for the occurrence of falls (> 45); however, it is worth mentioning that, on the day of the event, 15 (46.9%) patients were at high risk for falls (MFS> 45). Of the falls assessed, only 8 (25%) resulted in some type of damage, of which mild damage 5 prevailed (15.6%), followed by moderate damage, 3 (9.4%) (Table 2).

It was observed that 4 (12.5%) of the patients had already a previous history of falls. Falls were more frequent in the morning, 10 (31.2%) occurred more frequently while transferring the person from the bathroom to the bed. As for the factors that may have contributed to the fall, identified from the medical records, they were: getting up from bed without a companion and going to the bathroom (Table 3).

Table 3 – Frequency of characteristics related to the fall episode in patients in a cardiac inpatient unit. Brasília, DF, Brazil, 2016.

Characteristics	Sample (n = 32)
Fall episode time, n (%)	
Morning	10 (31,2)
Afternoon	7 (21,9)
Night	8 (25)
Dawn	7 (21,9)
Previous fall history, n (%)	
Yes	4 (12,5)
No	28 (87,5)
Fall place, n (%)	
Bed	11(34,6)
Bathroom	12 (37,5)
Armchair	1 (3,1)
Bathroom scale	1 (3,1)
Hall	1 (3,1)
Bedroom	5 (15,5)
Nursery	1 (3,1)

Source: Internal hospital data on episodes of falls between 2015 and 2016.

DISCUSSION

Studies show that geriatric syndromes are quite prevalent in hospitalized individuals and are an important factor to be considered in predicting the risk of falling [9-10,22-24]. The age group of the population in this study shows the predominance of elderly patients, in line with global data. It is worth mentioning that individuals over 65 years-old present functional decline, weakened health, increased fragility, more comorbidities, especially neurological, and vulnerability to mortality [11,22,25], in addition to an increased chance of falls with the age progress [10,15,22,26-27].

Although the literature does not present a consensus on gender as a risk factor for falls [28], some studies indicate that there is a higher incidence of falls in women [20,28-30]. This can be justified by the decrease in muscle mass strength,

greater contact with domestic activities, hormonal changes such as the reduction of estrogen, with consequent loss of bone mass and the presence of osteoporosis [20,28-30]. On the other hand, studies mention that the occurrence of falls in male individuals can be explained, in part, by cultural factors, such as the fact of not accepting assistance for certain tasks, such as getting out of bed and walking [15,20, 28,31-32]. In the present study, the frequency of falls was similar in both genders.

The patients in this study had a high risk of falling in all the periods evaluated: on the day of the fall, on the day before and after the event, therefore with average scores lower than those shown in other studies [17,28]. A study carried out with clinical surgical patients with a mean age of 58.1 years-old (SD 15.4), demonstrated an average MFS of 31.7 points, indicating a moderate risk of falls [17]. Another Brazilian study, whose objective was to analyze the risk factors for falls, in the first 48 hours of hospitalization in clinical and surgical units, with individuals with a median age of 54 years-old, found an average MFS score of 39.1, indicative of moderate risk for falls [28]. International studies show higher mean MFS values [18]. These different findings [17-18,28] may be the result of the diversity of clinical characteristics (age, comorbidities, degree of dependence for carrying out activities of daily living and walking, mental state) presented by the patients in each study.

Studies report an average increase in hospital stay of 12.3 days due to the treatment of damage resulting from the fall incident, as well as an increase in hospital costs [15,20,26,30]. The average length of stay, in the sample studied, was 18.6 days; however, in this study, the increase in length of stay was not evaluated as a result of the fall episode.

Of the falls assessed in the present study, 8 (25%) resulted in some type of damage, of which 5 patients who had mild damage (15.6%), followed by moderate damage in 3 patients (9.4%) and no serious damage. Regarding the degree of severity of the damage, it was found that falls with mild damage were the most prevalent, similar to other studies reported in the literature, where excoriations/abrasions and bruises were the most frequent injuries [27,31].

Regarding the period of the day of the fall, the data in this study are different from other studies, in which the highest occurrence of falls occurred in the night shift [27-28]. This divergence could be explained by a possible underreporting of falls in this period. It is believed that, during the night, many patients do not request assistance to perform the activities, due to overestimating their physical capacities or due to embarrassment [15,28]. In the morning shift, the occurrence of falls is related to hygiene activities, dressings, travel to exams and physiological eliminations [20,27].

Neurological impairment is a known risk factor for the highest risk of falls. In a case-control study, carried out with 358 patients, in 12 clinical and surgical units of a university hospital in southern Brazil, disorientation and agitation were reported as factors associated with the risk of falls (OR 4.45 p <0.001) [20]. In the present study, 34.4% of patients had delirium or neurological impairment.

Drug therapy is an important aspect to be considered, since it can potentiate the risks for the occurrence of falls, as it promotes adverse effects such as postural imbalance, muscle weakness, hypotension, mental confusion and delirium [11,20,25,30]. Among the drugs that enhance the risk of falls, we can mention the drugs that act on the central nervous system and those that act on the cardiovascular system, such as: hypnotics, antipsychotics, anxiolytics, benzodiazepines, opioids, barbiturates, antihistamines, anticonvulsants, sedatives, antidepressants, laxatives, antihypertensives and diuretics [9,20,25].

In cardiac patients, the use of medications that increase the risk of falls is frequent, what, in general, can affect cardiac output and cerebral perfusion [20]. An evaluation of 86 patients with a medical diagnosis of cardiac ischemia, from a specialized hospital in Fortaleza/Ceará/Brazil showed that 98.8% of the victims of falls used antihypertensive drugs, diuretics and narcotics [25]. In the present study, 31 (96.9%) patients used drugs for chronic diseases, especially cardiovascular diseases.

Regarding preventive physical and structural measures, it is recommended to implement safety measures in the hospital environment, such as railings, non-slip floors, support bars, carrying out the evolution of the patient's condition every day, and continuous observation [10.22]. In addition, it is important to dispel the patient safety culture in the hospital and/or health environment and make the team aware of the importance of notification of events, especially among the nursing staff. In this context, the attention of the nursing team is extremely important in order to prevent the occurrence of falls, stratifying the risk and implementing

qualified assistance, according to the demand for care, and it is necessary to consider intrinsic and extrinsic factors to the patient [10-11,17,20,29].

It is important to note that in 2016 preventive measures were implemented for the occurrence of falls in the researched unit, such as adequacy of physical structure, team training, awareness of patients and family, which resulted in a significant decrease in the rate of falls in that year (1.5 falls/1,000 patient-days in 2016), compared to the previous year (2.7 falls/1,000 patient-days in 2015).

The data in this study contribute to the knowledge of the theme, especially in view of the fact that the epidemiological and demographic profile of each population must be known, in addition to supporting the proposition of new studies aimed at exploring issues related to the predictors of falls, aiming at strategies implemented by nurses that are essential, in the context of patient safety, to provide qualified assistance.

It is emphasized that for the implementation and effective execution of the protocols in clinical practice, it is important to involve the multi-professional team, understanding the patients' demands, during the hospitalization period and, therefore, hospital management must enable the analysis, reviewing and proposing solutions to new problems, in addition to constant assessment of educational and preventive interventions.

CONCLUSION AND CLINICAL IMPLICATIONS

During the study period, there was a decrease of more than 50% in the rate of falls, in the cardiac inpatient unit studied, 2.7 falls/1000 patient days in 2015 to 1.5 in the following year. There was a predominance of the fall event in patients older than 60 years-old, who were admitted predominantly by clinical disorders, regardless of gender.

The study patients presented high risk stratification for falls, at all times evaluated, in 25% of the falls there was some type of damage, with a higher frequency of mild damage. There was a need for greater care for the elderly person during the morning period, as falls were more frequent in this period, occurring more frequently with activities related to going to the bathroom and getting out of bed.

We emphasize as a limitation of the study, the sample size, the use of secondary data from electronic medical records or registration of notification of the adverse event of the institution, as well as the analysis of only one hospitalization unit. However, the contributions provided by the records of adverse events, in this study, facilitated the identification of risk factors, demonstrating the need to propose preventive nursing interventions, since assuming the event and identifying its causes are ways to practice a safe nursing care for the patient.

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