Risk of falls in elderly patients admitted to a University Hospital in the Brazilian Northeast

Risco de queda em idosos internados em um hospital universitário no Nordeste brasileiro

Riesgo de caída en ancianos ingresados en un hospital universitario en el Nordeste brasileño

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ABSTRACT

Objective: To analyze the risk of falls in elderly patients admitted to a University Hospital. **Methods:** *This is a cross-sectional, descriptive, and observational study conducted in a university hospital in the Northeast of Brazil. The study population consisted of individuals of both sexes, aged 60 years or older, admitted to surgical and medical clinical units. Data collection was carried out using a structured instrument developed by the authors to obtain sociodemographic and clinical information, fall risk with the Morse Scale, and actions implemented to reduce risks. Data analysis was performed using simple descriptive statistics and the analysis of the association between sociodemographic and clinical variables and fall risk according to the Morse scale, using Chi-square and Fisher tests, with a significance level of 5% and p-value ≤ 0.05 in the Epi Info program.* **Results:** *Of the 174 participants, the majority were male (51.72%; n= 90), diagnosed with cardiovascular diseases (39.65%; n= 69), and had a hospital length of stay of 0 to 4 days (51.72%; n= 90). It was observed that 57% (n= 99) of the elderly had a high risk of falls, 14.94% (n= 26) wore safe footwear, 97.12% (n= 169) of the beds did not have a functional companion, and 17.81% (n= 31) of the patients had a risk identification bracelet.* **Conclusion:** *The majority of the elderly presented a high risk of falls. Additionally, there are failures in the implementation of prevention measures by the hospital institution that favor the risk of falls and consequently affect the quality of care.*

Descriptors: Patient safety; Risk factors; Hospitalization; Elderly; Nursing care.

RESUMO

Objetivo: Analisar o risco de quedas em idosos internados em hospital universitário. **Métodos:** *Estudo transversal, descritivo e observacional realizado em um hospital universitário do Nordeste brasileiro. População composta por pessoas de ambos os sexos, hospitalizadas nas unidades de internação cirúrgica e clínica médica, com idade igual ou superior a 60 anos. A coleta de dados ocorreu por meio de instrumento estruturado elaborado pelos autores para obtenção de informações sociodemográficas e clínicas, risco de quedas com Escala Morse e ações implementadas para redução de riscos. A análise dos dados foi realizada por meio de estatística descritiva simples e análise da associação entre variáveis sociodemográficas e clínicas, bem como risco de quedas segundo a escala de Morse, utilizando-se os testes Qui-quadrado e Fisher, com nível de significância de 5% e p-valor ≤ 0,05 no programa Epi info.* **Resultados:** *Dos 174 participantes, a maioria era do sexo masculino (51,72%; n= 90), com diagnóstico de doenças cardiovasculares (39,65%; n= 69) e tempo de internação de 0 a 4 dias (51,72%; n= 90). Observou-se que 57% (n= 99) dos idosos apresentaram alto risco de queda, apenas 14,94% (n= 26) possuíam calçados seguros, 97,12% (n= 169) dos leitos não possuíam companhia funcional e 17,81% (n= 31) dos pacientes possuíam pulseira de identificação de risco.* **Conclusão:** *A maioria dos idosos apresentou alto risco de quedas, além disso, há falhas na implementação de medidas de prevenção pela instituição hospitalar que favorecem o risco de quedas e, consequentemente, implicam na qualidade da assistência e prejuízo nas condições de saúde.*

Descritores: Segurança do paciente; Fatores de risco; Hospitalização; Idoso; Cuidados de enfermagem.

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RESUMEN

*Objetivo: Analizar el riesgo de caídas en ancianos ingresados en hospital universitario. **Métodos:** Estudio transversal, descriptivo y observacional realizado en un hospital universitario del Nordeste brasileño. Población compuesta por personas de ambos los sexos, hospitalizadas en las unidades de ingreso quirúrgico **y clínica médica,** con edad igual o mayor que 60 años. La recogida de datos se dio por medio de instrumento estructurado creado por los autores para obtención de informaciones sociodemográficas y clínicas, riesgo de caídas con Escala Morse y acciones implementadas para disminución de riesgos. El análisis de los datos fue realizado por medio de estadística descriptiva simple y análisis de la asociación entre variables sociodemográficas y clínicas, como también riesgo de caídas según la escala de Morse, utilizando los tests Chi-cuadrado y Fisher, con nivel de significancia de 5% y p-valor ≤ 0,05 en el programa Epi info. **Resultados:** De los 174 participantes, la mayoría era del sexo masculino (51,72%; n= 90), con diagnóstico de enfermedades cardiovasculares (39,65%; n=69) y tiempo de ingreso de 0 a 4 días (51,72%; n=90). Fue observado que 57% (n=99) de los ancianos presentaron alto riesgo de caída, solamente 14,94% (n=26) poseían calzados seguros, 97,12% (n=169) de los lechos no poseían compañía funcional y 17,81% (n=31) de los pacientes poseían pulseras de identificación de riesgo. **Conclusión:** La mayoría de los ancianos presentó alto riesgo de caídas, además de esto, hay fallos en la implementación de medidas de prevención por parte de la institución hospitalaria que promueven el riesgo de caídas y, consecuentemente, implican en la calidad de atención y perjuicio en las condiciones de salud.*

Descriptores: Seguridad del paciente; Fatores de risco; Hospitalización; Anciano; Atención de enfermería.

INTRODUCTION

In Brazil, the National Patient Safety Program (PNSP) emphasizes active patient participation, highlighting the importance of humanization, effective communication, and patient recognition in preventing incidents and adverse events[1]. These undesirable events result from various factors, such as circumstances, actions, or omissions that increase the risk of incidents. Health promotion is an effective approach to addressing these problems, integrating technical and scientific knowledge and mobilizing institutional resources to improve quality of life[2].

Among the adverse events related to health care, falls stand out, which are defined as an unexpected and unplanned displacement of the body to a lower level, with multifactorial causes[3]. In Brazil in 2023, they ranked fourth in the total number of adverse event notifications in health services, occurring mainly in rooms, during walking or transfers[4]. The high incidence of falls reveals a lack of safety in care, being a priority concern in care quality control systems[5].

In Elderly people, the occurrence of this adverse event is a relevant issue in terms of public health due to the high rates of morbidity and mortality and significant socioeconomic costs. They can also result in deterioration of mobility and the development of fear of additional falls, negatively impacting quality of life and contributing to loss of autonomy and increased complications, such as fractures[6].

Age is a significant risk factor for falls in hospitalized adults, with those over 65 years of age being most susceptible[7]. Thus, falls are considered a geriatric syndrome with negative impacts on the quality of life and functionality of the elderly, who have limited mobility and independence[8].

Fall risk assessment in hospital units is a relevant indicator of hospital quality, especially for elderly people aged 60 or over. Risk assessment scales are essential, as these tools allow for a correct assessment of the risk of falling, contributing to the reduction and prevention of these events. As a source of objective data for the nursing process, it allows the professional to plan and direct care according to the individual needs of each patient[5].

Nursing plays a fundamental role in preventing falls, seeking to reduce risks, and offering the best possible care to patients, considering the place of care and continuous monitoring of hospitalized people. However, these professionals often face an excessive workload due to the multiple demands of the field, which can result in the fragility of essential care. Addressing this issue requires adopting consistent measures, establishing institutional guidelines to prevent falls, and exploring new approaches to improving patient safety. This way, the nursing team will be able to guarantee a more protected environment and promote a better quality of life for everyone involved[9].

Therefore, it is essential to understand the topic and its specificities to ensure effective direction of nursing care and reduce falls in the hospital environment. Assessment scales are indispensable tools for determining the risk of falling. Furthermore, health education is crucial to inform both professionals and patients about best practices and prevention strategies, promoting a safer environment and reducing the incidence of this event.

In this sense, this study aimed to analyze the risk of falls in elderly people admitted to a University Hospital.

METHODS

It is a cross-sectional, descriptive, and observational research carried out in a university hospital (HU) located in the municipality of Petrolina-PE, a reference for high complexity care for the 53 municipalities of the Interstate Health Care Network of the Middle São Francisco Valley – PEBA (Pernambuco and Bahia), which together total 1.3 million inhabitants.

The study population consisted of elderly people admitted to this hospital unit between July and November 2022. Considering a percentage of 52.3% of high risk of falls, a total of 486 hospitalizations from July to November 2021 of people over 60 years old at HU, and a confidence level of 90%, a sample calculation was performed in the statistical calculator of Epi info version 7.2.5.0, using the formula for descriptive studies with a finite population, resulting in a minimum sample of 174 participants.

The inclusion criteria were: people of both sexes, hospitalized in the surgical and clinical medical inpatient units, aged 60 years or older, able to understand the questions on the instruments, and who agreed to participate in the research by signing the Informed Consent Form (IFC). People with the functional inability to fall were excluded from the study, that is, quadriplegic, in a coma, sedated; those who had communication difficulties that prevented them from responding to the instruments or those whose health condition was crucial and/or unstable, thus avoiding discomfort during collection. The IFC was presented to each patient and their respective companions, and guidance on the study was provided clearly and objectively. No participant was exposed to any type of risk during data collection.

Data collection was carried out through the application of a structured instrument, developed by the authors, composed of sociodemographic variables, Morse scale[10], and preventive measures that should be implemented by the hospital unit's Standard Operating Protocol (SOP)[11]. The data was entered into Excel spreadsheets. The classification of fall risk was according to the Morse scale score. The scale score can range from 0 to 125 points, with 0 to 24 points considered low risk, 25 to 44 points regarded as moderate risk, and ≥ 45 points considered high risk. A simple descriptive analysis was performed, with the calculation of relative and absolute frequency for qualitative variables and mean and standard deviation (SD) for quantitative variables. The analysis of the association between sociodemographic and clinical variables and risk of falling according to the Morse scale was performed using the Chi-square test, with a significance level of 5% and p-value ≤ 0.05. Statistical tests were performed using the Epi info program version 7.2.5.0.

The research was submitted and approved by the Ethics Committee of the Faculdade de Integração do Sertão under Opinion number 5,563,287.

RESULTS

A total of 174 elderly people participated in the study, with a mean age of 72.15 (±8.54 SD) years, the majority of whom were male (51.72%; n=90), with incomplete elementary education (55.17%; n=96), followed by illiterates (28.89%, n=52). The main causes of hospitalization of these elderly people were cardiovascular diseases (39.65%; n= 69), followed by neurological diseases (31.60%; n= 55) with an average of 5.35 (±4.62 SD) days of hospitalization (Table I).

Table I – Sociodemographic and clinical variables of hospitalized elderly people. Petrolina, Pernambuco, Brazil. 2023.

Variables	N=174	%
Sex		
Female	84	48.28
Male	90	51.72
Age		
60-70	84	48.27
71-80	58	33.33
81+	32	18.39
Age Average	72.15±8.54 SD	
Level of education		
Illiterate	52	28.89
Incomplete primary education	96	55.17
Complete primary education	9	5.17
Incomplete secondary education	3	1.72
Complete secondary education	12	6.90

Higher education	2	1.15
Medical diagnosis		
Cardiovascular diseases	69	39.65
Lung diseases	7	4.54
Kidney diseases	6	3.44
Neurological diseases	55	31.60
Gastrointestinal diseases	3	1.72
Neoplasms	2	1.14
Others	32	18.39
Other comorbidities		
Yes	148	85.05
No	26	14.94
Length of hospital admission (days)		
0-4	90	51.72
5-9	55	31.60
10 and +	29	16.66
Average length of hospital admission	5.35±4.62 SD	
Place of hospitalization		
Medical clinic	101	58.04
Surgical clinic	73	41.95

Caption; SD-standard deviation

Among the medications used by the interviewees, 64.94% (n= 113) used antihypertensives, and 26.43% (n= 46) used antidiabetics. Furthermore, 34.48% (n=60) – patients used more than one medication.

The assessment of the risk of falls using the Morse Scale identified that the majority of participants presented a high risk of falls (57%; n=99), followed by the moderate risk category (27%; n=48) and low risk (15%; n=27).

Table II shows the distribution of participants' responses to the items assessed by the Morse Scale. As critical points that increase the risk of falls, it is worth noting that 44.82% (n=78) had poor gait and 87.35% (n=152) used intravenous therapy.

Table II – Frequency of responses to items on the Morse Scale. Petrolina, Pernambuco, Brazil, 2023.

Scale items	N= 174	%
Fall history		
No	119	68.39
Yes	55	31.60
Secondary diagnosis recorded in medical records		
No	106	60.91
Yes	68	39.08
Aid in walking		
None/ Bedridden/ Assisted by health professionals	140	80.45
Crutches/ Cane/ Walker	24	13.79
Furniture/ Wall	10	5.74
Terapia endogenous		
No	22	12.64
Yes	152	87.35
Gait		
Normal/ Non-ambulatory/ Bedridden/ Wheelchair-bound	40	22.98
Weak	78	44.82
Impaired/ Staggering	56	32.18
Mental status		
Oriented/ Capable of ability/ Limitation	157	90.22
Overestimates ability/ Forgets limitations	17	9.77

According to data presented in Table III, there was no significant association between sociodemographic and clinical variables and the risk of falls, which shows that these factors did not influence the risk of falls in the sample studied.

Table III – Association between sociodemographic and clinical variables and risk of falls in elderly people according to the Morse Scale. Petrolina, Pernambuco, Brazil, 2023.

| Variables | Morse Scale | | | | | | p Value | Total |
| | Low risk | | Medium risk | | High risk | | | |
	N	%	N	%	N	%		
Sex								
Female	12	14.3	21	25.0	51	60.0	0.616*	84
Male	15	16.7	27	30.3	48	53.3		90
Age range (years)								
60-70	14	16.6	26	31.0	44	52.4	0.976**	84
71-80	08	13.8	16	27.6	34	58.6		58
81+	05	15.6	06	18.8	21	65.6		32
Previous hospitalizations								
No	08	16.3	03	26.6	28	57.1	0.971*	39
Yes	19	15.2	35	28.0	71	58.6		125
Place of Admission								
Surgical clinic	12	16.4	20	27.4	41	56.2	0.959*	73
Medical clinic	15	14.9	28	27.7	58	57.4		101
Medical diagnosis								
Cardiovascular diseases	12	17.39	15	21.74	42	60.87	0.468*	69
Neurological diseases	07	12.73	15	27.27	33	60.0		55
Other diseases	08	16.0	18	36.0	24	48.0		50

Caption: *Chi-square test, **Fisher's exact test

Regarding actions to reduce the risk of falls in the elderly, the factors indicated in the literature and present in the HU POP as aggravating factors for falls were observed. Thus, it was found that only 14.94% (n=26) of the participants had safe footwear that attached to the foot, approximately 97.12% (n=169) of the beds did not have working bells, as well as 17.81% (n=31) of the patients had a bracelet identifying the risk of falls (Table IV).

Table IV – Measures proposed in the HU Standard Operating Protocol for fall prevention. Petrolina, Pernambuco, Brazil, 2023.

Preventive measures	N=174	%
Safe footwear		
Yes	26	14.94
No	148	85.05
Obstacle-free and well-lit access		
Yes	173	99.42
No	01	0.58
Bell within reach of the patient		
Yes	5	2.87
No	169	97.12
Risk identification bracelet		
Yes	31	17.81
No	143	82.18
Low bed, locked and with raised rails		
Yes	73	41.95
No	101	58.04
Dry surfaces and floors		
Yes	174	100
No	--	--
Presence of companion		
Yes	166	95.40
No	8	4.59
Personal use materials within reach		
Yes	174	100
No	--	--

DISCUSSION

The sociodemographic and clinical profile of the study participants corroborates the findings in the literature, which identifies multiple diseases and advanced age as significant risk factors for falls in hospital settings[7,8]. Furthermore, elderly people with low levels of education have more difficulty understanding information about health care and fall prevention, which can negatively impact their quality of life[12], which points to the importance of continuous educational actions to reduce the risk of falls.

The predominance of individuals with cardiovascular diseases, followed by those with neurological diseases, was evident. These diagnoses are associated with a high risk of falls, as both conditions can cause asthenia and fatigue and generate changes in gait, as identified in the study sample, increasing the vulnerability of the elderly[12,13]. Research in clinical and surgical hospital units demonstrates the association between comorbidities and the risk of falls[14,15].

The high risk of falls in most of the sample was also found by other authors who identified this parameter in 52.3%[16] and 54.35%[12] of the participants. However, no statistical association was observed between sociodemographic and clinical variables and the risk of falling, a fact that may be related to the homogeneous profile of the sample with a proportional distribution of the variables investigated. Knowing the characteristics of the population served by health services is essential for directing actions aimed at the needs of users.

According to the literature, the older the person, the greater the risk of falling due to factors such as decreased visual acuity, risk of orthostatic hypotension, muscle weakness, and gait disorders, in addition to the continuous use of multiple medications that intensify weaknesses[12,17,18]. Women, as they age, tend to be more vulnerable to falls due to a higher reduction in bone density and inadequate physical performance, with postmenopausal changes increasing vulnerability[12]. There is also a higher prevalence of chronic diseases, mainly cardiovascular, in this population segment, contributing to the adverse outcome[18].

In the analysis of the Morse Scale, the variables with the highest scores and that influenced the high-risk classification were: the use of intravenous therapy and changes in gait, similar to what was found by other authors[12,19].

Most interviewees did not have safe and suitable footwear, which encourages slipping and imbalance, makes safe walking difficult, and increases the risk of falls[19]. The low proportion of working bells on beds and the use of risk identification bracelets indicate institutional weaknesses in the implementation of fall prevention measures despite the existence of SOPs since 2022. This reality is alarming, as identifying the risk of falling is a fundamental measure of promoting patient care and safety[20]. The importance of a continuous and detailed risk assessment is reinforced, together with the constant application of the Morse scale, as essential strategies to reduce the occurrence of falls[12,13,17].

In addition to risk assessment, prevention and surveillance actions involving environmental care are necessary to reduce these adverse events (raising rails and lowering the height of the bed, use of appropriate footwear, marking of slippery floors, permission for companions, bell near the bed to request help, well-lit environments), notification of adverse events, as well as educational actions with the interprofessional team, patients and companions/family members[21,22].

Another important aspect is that these weaknesses occur in a university hospital, a space for training human resources and developing technologies for the health sector, which provides services to the population, develops technical protocols and offers continuing education programs, which allow technical updating of professionals in the health system[23]. In this context, it is relevant to foster a culture of patient safety that integrates the multidisciplinary team, family members, and patients and that, above all, influences the training of professionals who are aware of the risks associated with health care and how to prevent them[21]. To this end, hospitals must overcome the paradigm of institutions focused on curative and rehabilitation practices and become environments that promote health and quality of life[24].

In the multidisciplinary team, the role of the nursing team stands out, as they spend more time in contact with patients, and is fundamental in the development of strategies for preventing falls, such as effective communication between health professionals and professionals/patients, educational actions for patients and companions, identification of patients at high risk through bedside signage or a bracelet with a different color; greater attention when moving patients; allocating patients at high risk of falls to beds closer to the nursing station; support for carrying out personal hygiene care, among others[12].

This article has the limitation of a cross-sectional descriptive methodology that does not allow for the analysis of causal associations (exposure and effect) between variables. However, this method is essential for determining the distribution of events according to time, place, and the characteristics of a population, as the results can contribute to the planning of health strategies and interventions and serve to generate hypotheses for future investigations[25].

CONCLUSION

The main findings of the study are the high risk of falls for most participants, in addition to weaknesses in preventive measures for adverse events, such as the low proportion of bells within reach and the use of risk identification bracelets.

These findings point to the need for the institution to review the strategies adopted to reduce falls, in addition to better monitoring concerning the implementation of the measures proposed in the POP. The need for an adequate assessment and identification of the risk of falls associated with educational actions involving the multidisciplinary team is highlighted in students, patients, and family members, as well as monitoring and reporting of cases, to foster an institutional culture of patient safety to reduce harm and improve the quality of care provided.

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AUTHORS' CONTRIBUTIONS

Joyce Rocha Ramos contributed to the conception and design of the study; acquisition, analysis, and interpretation of data, and writing of the manuscript. **Bruna Silva Souto** contributed to the acquisition, analysis, and interpretation of data and the writing of the manuscript. **Luiza Taciana Rodrigues de Moura** contributed to the conception and design of the study; analysis and interpretation of data and critical review of the manuscript.

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