

## A DAY-TO-DAY ACTION: THE PREVALENCE OF CHAIR FALLS IN THE ELDERLY IN BRAZIL

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*Vinicyus Eduardo Melo Amorim*

Faculdade Pernambucana de Saúde. Recife,  
Pernambuco, Brazil

ORCID: 0000-0003-4541- 690X

<http://lattes.cnpq.br/3530467921354204>

*Calline Aguiar Cavalcanti*

Faculdade Tiradentes. Jaboatão dos  
Guararapes, Pernambuco, Brazil

ORCID: 0009-0007-6635-9410

<http://lattes.cnpq.br/8696624172194632>

*Luiz Henrique Fernandes da Silva*

Faculdade Tiradentes. Jaboatão dos  
Guararapes, Pernambuco, Brazil

ORCID: 0009-0000-1803-2500

<https://lattes.cnpq.br/4420595426182426>

*Rayza Cecília Chaves de Siqueira*

Faculdade Pernambucana de Saúde. Recife,  
Pernambuco, Brazil

ORCID: 0000-0001-9443-2274

<https://lattes.cnpq.br/5049970227207084>

*Maria Clara Cirilo Gomes*

Faculdade Pernambucana de Saúde. Recife,  
Pernambuco, Brazil

ORCID 0000-0001-5402-5025

<http://lattes.cnpq.br/8542008618409335>

*Victor Rafael Barbosa Pereira*

Universidade Católica de Pernambuco.  
Recife, Pernambuco, Brazil

ORCID: 0000-0003-1814-8217

<http://lattes.cnpq.br/6324525515200077>

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**Roberto Bessoni Kehrlé Carvalho**  
Universidade Católica de Pernambuco.  
Recife, Pernambuco, Brazil  
ORCID: 0000-0003-4042-9613  
<http://lattes.cnpq.br/8449003504597367>

**Larissa Ricarte Linhares Lucena Seixas**  
Faculdade de Medicina de Olinda. Olinda,  
Pernambuco, Brazil  
ORCID: 0009-0005-7996-1414  
<http://lattes.cnpq.br/0350112735286221>

**Camila Caroline de Lorena Santana**  
Centro Universitário Maurício de Nassau.  
Recife, Pernambuco, Brazil  
ORCID: 0000-0003-4086-2820  
<https://lattes.cnpq.br/7158846441121301>

**Heitor Rodrigues Flôr**  
Universidade Católica de Pernambuco.  
Recife, Pernambuco, Brazil  
ORCID: 0000-0002-1910-1245  
<http://lattes.cnpq.br/4744489669009480>

**Marcílio Rocha de Albuquerque Neto**  
Centro Universitário Maurício de Nassau.  
Recife, Pernambuco, Brazil  
ORCID: 0009-0006-0643-9438  
<https://lattes.cnpq.br/5881769849839838>

**Gilberto Vilaça de Menezes Filho**  
Faculdade Tiradentes. Recife, Pernambuco,  
Brazil  
ORCID: 0000-0003-2882-9286  
<http://lattes.cnpq.br/7603696562651752>

**Abstract: Introduction:** Aging is the natural process of human development that begins at birth. In the first years there is an increase in strength and autonomy and at the end of life this tends to decrease. With the loss of strength, many elderly people are subject to falls and the negative consequences of the impact they have on the quality of life of these individuals are countless. **Goal:** To describe the epidemiological profile of hospitalizations due to falling from a chair in Brazil between 2008 and 2022, as well as to understand the measures implemented to combat this situation. **Methodology:** This is a descriptive observational study, whose data were collected by the DataSUS platform. The collection started from the Hospital Information System (SIH), through hospital morbidity data by place of hospitalization between January 2008 and December 2022 through the disease category: chair falls CID 10 - W07 in elderly people in the Brazil. **Results and discussion:** In Brazil, 4,157 seniors fell from chairs in recent years. The highest prevalence was in females, however, the highest mortality rate is in males, increasing with age. Furthermore, the average length of hospital stay in the elderly increases with age, from 5.4 days in those aged 60 to 64 years to 7.8 days in those aged over 80 years. Although age is considered a risk factor for falls, when comparing the prevalence of falling from a chair, there was no significant difference when comparing the age groups every five years in the number of hospitalizations. **Conclusion:** In addition to the physical consequences, falls can affect the mental health of the elderly, leading to fear of falling again and even not carrying out daily activities. Among the consequences observed after a fall in the elderly are the fear of falling again, dependence to perform activities of daily living, loss of autonomy and depression/isolation. Thus, preventing falls and encouraging healthy habits is the best

prevention alternative.

## INTRODUCTION

Aging was defined by the Pan American Health Organization (PAHO, 2005) as “a sequential, individual, cumulative, irreversible, universal, non-pathological process of deterioration of a mature organism, typical of all beings of a species”.<sup>1</sup> Throughout the aging process, the human organism undergoes several changes, among them, muscle strength, which grows until adulthood and begins to reduce in the elderly. This way, there is a decrease in balance and functional independence.<sup>2</sup>

Strength is the muscle's ability to overcome resistance, while balance is the individual's ability to maintain static and dynamic stability.<sup>3</sup> With the loss of these two components, the individual tends to gradually lose their functional independence, understood by the ability to carry out daily activities without depending on help from third parties to carry them out. Ensuring this independence is fundamental in promoting the health of the elderly, as it affects their psychomotor life completely, increasing the number of injuries, emotional disturbances and deaths. When this ability is compromised, the elderly can suffer from falls, making the situation even worse, as in addition to affecting their physical health, it can generate emotional triggers that prevent them from performing that activity again for fear of falling.<sup>5</sup>

Falls are currently considered a serious public health problem. According to data from the World Health Organization (W.H.O.), about 30% of elderly people suffer falls in a period of one year.<sup>6</sup> Falls are commonly defined as “inadvertently coming to rest on the ground or on another lower level, excluding intentional changes of position to lean on furniture, walls or other objects”, occurring as a result of a complex

interaction of risk factors that reflect the diversity of health determinants that, directly or indirectly, affect well-being. Biological risks encompass characteristics of individuals that are related to the human body such as age, sex and race, which are not modifiable. Behavioral risks, on the other hand, concern human actions, emotions or daily choices. These are potentially modifiable. There are also environmental risks, which comprise the interaction of individuals' physical conditions and the environment that surrounds them, including some problems and harmful aspects of public environments.<sup>7</sup>

From this, it is inferred that the fall is related to multifactorial circumstances, intrinsic (physiological changes inherent to aging, sensory and cognitive disorders, neuromuscular disorders and diseases, which affect balance and gait) or extrinsic (risks offered by the environment, such as: uneven surfaces, slippery floors, inadequate lighting, stairs without handrails, carpet that has come off the floor and high or narrow steps).<sup>8-10</sup>

Extrinsic factors are modifiable, while intrinsic factors are not subject to change or cure, so they can result in fractures, sprains and injuries, leading the elderly to fear falling and limitations in day-to-day activities, due to this fear. Simple activities like sitting/getting up from a chair or climbing to get an object from above become major challenges.<sup>11</sup> Annually, hundreds of elderly people are hospitalized in Brazil due to this type of fall, compromising their lives and affecting their autonomy, independence, performance of daily activities and exposing them to social isolation, insecurity, decrease in functionality and, consequently, in muscle strength.<sup>12</sup> Thus, the objective of this work is to describe the epidemiological profile of hospitalizations due to falling from a chair in Brazil between 2008 and 2022, as well as to understand the measures implemented to

combat this condition.

## METHODOLOGY

This is a quantitative descriptive ecological observational study, whose objective is to understand the epidemiological distribution of falls from a chair CID 10 – W07 in elderly people in Brazil. Data were collected by the DataSUS platform, through information obtained by the Notifiable Diseases Information System (SINAN). The collection started from the Hospital Information System (SIH), through hospital morbidity data by place of hospitalization between January 2008 and December 2022.

The study population is composed of patients who were admitted to any hospital in the Brazilian territory of both sexes aged over 60 years. The indicators used were: sex, age, color/race, deaths and mortality rates. The study was carried out in line with the principles of Resolution 466/2012 of the National Health Council of Brazil.

## RESULTS AND DISCUSSIONS

The search for quality of life for the elderly, especially in emerging countries marked by severe poverty and inequalities, is a constant challenge in Brazil and in the world, especially with the increase in global life expectancy. Brazil was once considered a country with a young population; however, with increasing longevity, there has been a significant increase in the population aged over 60 years. In the early 2010s, the population aged over 65 in Brazil, according to the IBGE (Brazilian Institute of Geography and Statistics) census, totaled approximately 14 million inhabitants. The Brazilian population maintained the aging trend of recent years, surpassing the mark of 30.2 million elderly people over 60 years of age in 2017, according to the Continuous National Household Sample Survey – Characteristics of Residents and Households, released today

by the IBGE.

The aging process brings with it a series of changes, generally related to the emergence or worsening of chronic diseases. However, it is possible to continue living with quality, as long as these diseases are controlled, which implies preventive work. Preserving autonomy and independence, within the possibilities and articulated to a humanized assistance, is an important objective in the care of the elderly.

In Brazil, between 2008 and 2022, 4,157 elderly people were hospitalized for falling from a Table 1.0 chair. The region with the highest number of cases was the Southeast with 59.8% of admissions. The second region was the South with 16.4% of cases, followed by Northeast, Midwest and North. This can be explained by the unequal distribution of elderly people in the country, as well as the different life expectancy and proportion of elderly people/population in each state.<sup>13</sup>

Most falls occur within the home itself, which demonstrates the need to keep this environment safe in order to avoid falls and the consequent damage to the health of the elderly person.<sup>14</sup> Maintaining a safe environment helps to prevent falls, as they can lead to adverse health outcomes such as injuries, bone fractures, hospitalization and death.<sup>15</sup> Alves et al., in a study carried out with 206 elderly people enrolled in a Family Health Strategy (ESF) team in the municipality of Barbacena, Minas Gerais, reported the occurrence of fractures in 8.7% of the elderly and that, after a fall of 29.3% of the elderly had difficulties in performing daily activities and 17.3% stopped performing them.<sup>16</sup>

As a way to make the home environment safer, guidelines are given to the use of non-slip, flat and regular flooring, fixed mats, adequate lighting in the rooms, placement of grab bars and handrails next to the stairs, non-slip mats in the living area shower, keep walking areas clear.

In a systematic review study carried out by Sousa et al., it was identified that female gender, low education and low family income are risk factors for falls in the elderly.<sup>17</sup> In this study, the same relationship between genders was verified Table 2.0. Women were responsible for approximately 66% of hospitalizations due to chair falls. When functionality was analyzed in elderly people who suffered a fall and developed a fear of falling, there was also a higher prevalence of fear in females.<sup>18</sup>

Furthermore, when analyzing the prevalence among the races of elderly people who fell from chairs, the Caucasian race accounted for 48.6% of all cases Table 3.0. If we disregard patients with no information about race, this number rises to 59.4%, more than all other races combined.

Although age is considered a risk factor for falls, when comparing the prevalence of falling from a chair, there was no significant difference when comparing the age groups every five years in the number of hospitalizations Table 4.0.

Although the incidence does not change according to age group, the length of stay of hospitalizations related to falls varies and tends to be proportionally longer with age, due to the consequences that this can entail. The mean length of hospital stay in elderly aged 60 to 64 years is 5.4 days, while that of those over 80 years is 7.8 days Table 5.0.

Just as the permanence rate increases with age, the death rate also increases proportionally. The mortality rate in the elderly between 60 and 64 years old is 2%, between 65 and 69 years old 3.14%, between 70 and 74 years old 4.96% and between 75 and 79 years old 6.15%. The population over 80 has the worst prognosis, 11.04% progress to death. Mortality also varies according to sex. Although female patients are the most hospitalized, the death rate is about 40% lower (5.51%) when compared to males (9.26%).

The overall rate is 6.78%.

To prevent falls is a real challenge of population aging. The economic impact of falls is critical to the family, community and society. Based on the WHO Global Report on the Prevention of Falls in Old Age, it is possible to visualize that the impacts and costs for the health sector of falls in the elderly are increasing significantly all over the world. The average cost per hospital stay in Brazil is R\$1,594.12 and increases with age. Thus, behavioral change towards a healthy lifestyle is a key ingredient in encouraging healthy aging and preventing falls.<sup>7</sup>

When analyzing the elderly who suffered falls, two thirds of them will have a new fall in the following year. One of the most frequent complications of falls is based on the fear of a new event, which often prevents the elderly from walking normally, leaving them restricted to bed or wheelchair, increasing weakness in physical conditioning.<sup>19</sup>

The elderly have certain risk behaviors that lead to the possibility of falls. Messias and Neves state that “risk attitudes on the part of elderly people who have never fallen and who have good functional status seem to be as important as the presence or exposure to environmental risk”. The Brazilian Society of Geriatrics and Gerontology (2008) draws attention to the behavioral factor linked to the degree of exposure to risk, since, “apparently, the most inactive and most active people are those who are at greater risk of falling, possibly due to fragility of the former and the degree of risk exposure of the others”.<sup>20</sup> However, inactive people tend to have more problems other than falls compared to active people. Therefore, encouraging physical activity, especially bodybuilding, is essential to ensure a good quality of life for the elderly.

## CONCLUSION

In Brazil, 4,157 seniors fell from chairs in

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>TOTAL</b>	37	273	130	157	187	178	232	220	269	291	291	290	401	402	402	397	4.157
<b>North</b>	-	2	3	1	7	7	4	11	15	8	4	9	16	10	15	17	129
<b>Northeast</b>	4	28	27	31	20	29	30	30	41	38	39	45	80	74	60	87	663
<b>Southeast</b>	6	65	63	94	125	109	161	154	174	213	189	187	244	246	239	219	2.488
<b>South</b>	27	176	30	23	29	22	26	17	26	23	36	37	40	54	62	52	680
<b>Midwest</b>	-	2	7	8	6	11	11	8	13	9	23	12	21	18	26	22	197

Table 1.0 Number of patients over 60 years old hospitalized due to falling from a chair reported by region between 2007 and 2022.

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS). 2023.

Region	Male	Female	Total
TOTAL	1.415	2.742	4.157
North	43	86	129
Northeast	206	457	663
Southeast	877	1.611	2.488
South	208	472	680
Midwest	81	116	197

Table 2.0: Distribution by sex of the population over 60 years hospitalized due to falling from a chair reported by region between 2008 and 2022

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS). 2023

Region	White	Black	Brown	Yellow	Indian	Without information	Total
<b>TOTAL</b>	2.019	118	1.208	45	7	760	4.157
<b>North</b>	2	4	90	1	1	31	129
<b>Northeast</b>	46	12	388	9	-	208	663
<b>Southeast</b>	1.334	84	636	27	1	406	2.488
<b>South</b>	592	15	21	4	-	48	680
<b>Midwest</b>	45	3	73	4	5	67	197

Table 3.0 Distribution by race of the population over 60 years hospitalized due to falling from a chair reported by region between 2008 and 2022

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS). 2023.

Region	60 to 64 years	65 to 69 years	70 to 74 years	75 to 79 years	80 years or over	Total
TOTAL	650	669	565	634	1.639	4.157
North	19	24	19	25	42	129
Northeast	100	95	81	101	286	663
Southeast	372	402	322	378	1.014	2.488
South	125	117	102	100	236	680
Midwest	34	31	41	30	61	197

Table 4.0: Distribution by age group of the population over 60 years hospitalized due to falling from a chair reported by region between 2008 and 2022.

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS). 2023

Region	60 to 64 years	65 to 69 years	70 to 74 years	75 to 79 years	80 years or over	Total
TOTAL	5,4	6,1	6,8	7,2	7,8	6,9
North	3,7	4,4	5,5	4,9	10,2	6,4
Northeast	4,7	6,9	7,1	8,2	7,9	7,2
Southeast	5,8	6,2	7,2	6,6	7,7	6,9
South	5,1	5,4	5,6	7,9	8	6,6
Midwest	5,2	6,5	6,1	9,9	7,3	7

Table 5.0: Average length of stay in days by age group of the population over 60 years hospitalized due to falling from a chair reported by region between 2008 and 2022.

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS). 2023

recent years. The highest prevalence was in females, however, the highest mortality rate is in males, increasing with age. In addition to the physical consequences, falls can affect the mental health of the elderly, leading to fear of falling again and even not carrying out daily activities. Among the consequences observed after a fall in the elderly are the fear of falling again, dependence to perform activities of daily living, loss of autonomy and depression/isolation. The guarantee of a safe environment in order to avoid the occurrence of falls can contribute to the quality of life and maintenance of independence and autonomy of the elderly person.

## CONFLICT OF INTERESTS

There is not any.

## FINANCING

Own researchers

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