

Impact of Falls in Older Adults in Pará and Associated Hospital Outcomes

Impacto das Quedas em Idosos no Pará e Seus Desfechos Hospitalares

Impacto de las Caídas en Adultos Mayores en Pará y Sus Desenlaces Hospitalarios

RESUMO

Objetivo: As quedas em idosos representam importante problema de saúde pública devido ao impacto sobre a funcionalidade, a demanda assistencial e as hospitalizações. **Método:** Este estudo analisou o perfil epidemiológico, a distribuição espacial e os desfechos hospitalares relacionados às quedas em idosos no estado do Pará entre 2015 e 2025. Trata-se de um estudo ecológico, quantitativo e descritivo, realizado com dados secundários do Sistema de Informações Hospitalares do SUS, incluindo internações relacionadas a quedas (CID-10: W00-W19). **Resultados:** Foram registradas 20.185 internações, com média anual de 1.835 casos e aumento de 124,9% no período analisado. Observou-se predominância do sexo feminino (56,01%) e da população parda (81,58%). As regiões Metropolitana I, Carajás e Baixo Amazonas concentraram mais da metade das internações. Predominaram quedas sem especificação e quedas no mesmo nível. **Conclusão:** Os achados reforçam a necessidade de estratégias preventivas e fortalecimento da atenção à saúde da pessoa idosa.

DESCRIPTORES: Idoso; Acidentes por Quedas; Hospitalização.

ABSTRACT

Objective: Falls among older adults represent an important public health problem due to their impact on functionality, healthcare demand, and hospitalizations. **Methods:** This study analyzed the epidemiological profile, spatial distribution, and hospital outcomes related to falls among older adults in the state of Pará between 2015 and 2025. This ecological, quantitative, and descriptive study used secondary data from the Brazilian Unified Health System Hospital Information System, including hospitalizations related to falls (ICD-10: W00-W19). **Results:** A total of 20,185 hospitalizations were recorded, with an annual average of 1,835 cases and an increase of 124.9% during the study period. Females (56.01%) and mixed-race individuals (81.58%) predominated. The Metropolitana I, Carajás, and Baixo Amazonas regions accounted for more than half of the hospitalizations. Unspecified falls and same-level falls were the most frequent events. **Conclusion:** These findings reinforce the need for preventive strategies and strengthened healthcare for older adults.

DESCRIPTORS: Aged; Accidental Falls; Hospitalization.

RESUMEN

Objetivo: Las caídas en adultos mayores representan un importante problema de salud pública debido a su impacto sobre la funcionalidad, la demanda asistencial y las hospitalizaciones. **Método:** Este estudio analizó el perfil epidemiológico, la distribución espacial y los desenlaces hospitalarios relacionados con las caídas en adultos mayores en el estado de Pará entre 2015 y 2025. Se realizó un estudio ecológico, cuantitativo y descriptivo con datos secundarios del Sistema de Información Hospitalaria del SUS, incluyendo hospitalizaciones relacionadas con caídas (CIE-10: W00-W19). **Resultados:** Se registraron 20.185 hospitalizaciones, con un promedio anual de 1.835 casos y un aumento del 124,9% durante el período analizado. Predominaron las mujeres (56,01%) y la población mestiza (81,58%). Las regiones Metropolitana I, Carajás y Baixo Amazonas concentraron más de la mitad de las hospitalizaciones. Predominaron las caídas no especificadas y las caídas al mismo nivel. **Conclusión:** Los hallazgos refuerzan la necesidad de estrategias preventivas y del fortalecimiento de la atención a la salud del adulto mayor.

DESCRIPTORES: Anciano; Accidentes por Caídas; Hospitalización.

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INTRODUCTION

Population aging is one of the main demographic shifts and represents a significant challenge for health care systems. In Brazil, this process is occurring at an accelerated pace, driven by declining fertility rates and increased life expectancy, resulting in significant growth in the elderly population over the past decades⁽¹⁾. Data from the 2022 Demographic Census indicate that the population aged 60 and older reached approximately 32.1 million people, corresponding to 15.6% of the Brazilian population, with a continuing trend of expansion in the coming decades⁽²⁾.

Aging is directly associated with an increase in multimorbidity, frailty, and functional limitations, thereby increasing the demand for continuous care and the reorganization of health-care networks. In this context, falls among older adults represent one of the most significant health issues in clinical practice and public health, as they are associated with loss of functionality, fractures, prolonged hospitalizations, institutionalization, and increased mortality⁽³⁾. Furthermore, they represent an important marker of clinical and functional vulnerability, often related to musculoskeletal, neurological, and sensory changes characteristic of aging, as well as to the presence of chronic diseases and polypharmacy⁽⁴⁾.

In Brazil, falls are among the leading causes of hospital admissions due to external causes in older adults, re-

sulting in a significant economic and healthcare burden. Between 2000 and 2020, more than 1.7 million hospital admissions related to falls were recorded among people aged 60 and older in the country, with costs exceeding R\$ 2.3 billion for the Unified Health System (SUS)⁽⁵⁾. Hip and proximal femur fractures stand out among the most serious outcomes, frequently associated with a loss of functional independence and an increased risk of mortality, especially among frail older adults with multiple comorbidities⁽⁶⁾.

In the state of Pará, population aging is also showing significant growth. Between 2010 and 2022, the elderly population rose from approximately 535,000 to 876,000 people, reflecting an increase of about 64% over the period⁽²⁾. There was an increase of approximately 87.8% in hospital admissions of older adults due to falls between 2008 and 2018, highlighting the magnitude of this problem in the regional context⁽⁷⁾. Recent data from the Metropolitan Urgent and Emergency Care Hospital, a state-level trauma center, also show a significant increase in the number of cases related to falls among older adults, especially in the home setting⁽⁸⁾.

In addition to clinical repercussions, falls among older adults have a significant social and economic impact, increasing the demand for hospitalizations, surgical procedures, rehabilitation, and long-term care. In regions such as the Amazon, characterized by structural inequalities, dif-

ficulties in accessing health services, and a concentration of specialized care in urban centers, outcomes related to falls tend to be even more critical. Thus, understanding the epidemiological profile of hospitalizations due to falls, their spatial distribution, and the associated hospital outcomes and mortality rates among older adults in the state of Pará, between 2015 and 2025, is essential to inform prevention strategies, strengthen health care for older adults, and formulate public policies aimed at reducing morbidity, mortality, and preventable hospitalizations.

METHOD

This is a quantitative, observational, ecological study with a descriptive, analytical, and time-series design, based on secondary data obtained from official health information systems of the Unified Health System (SUS). Data were drawn from the SUS Hospital Information System (SIH/SUS) and the Mortality Information System (SIM), both provided by the SUS Information Technology Department (DataSUS). The study covered the period from 2015 to 2025 and included individuals aged 60 years or older residing in the state of Pará.

Records of hospital admissions and deaths whose cause was related to falls were included, according to codes W00 through W19 of the International Classification of Diseases, 10th Revision (ICD-10). The use of aggre-

gated data allowed for an analysis of the epidemiological patterns of falls among the elderly population over time, as well as the identification of spatial patterns and trends related to hospitalizations and mortality within the regional context of Pará. The units of analysis for the study corresponded to the health regions of the state of Pará, enabling an assessment of the spatial distribution of hospitalizations and hospital outcomes according to the regionalization of health care. Sociodemographic and clinical variables were analyzed, including sex, age group, race/ethnicity, type of fall, and length of hospital stay.

The study used exclusively secondary, aggregated, and publicly available data, without individual identification of participants. Thus, there was no direct contact with human subjects nor any possibility of identifying the individuals analyzed. The research followed the ethical principles established by Resolution No. 466/2012 of the National Health Council and was therefore exempt from review by a Research Ethics Committee.

The collected data were organized and systematized according to the study's objectives, enabling the epidemiological characterization of falls among the elderly population in the state of Pará. A quantitative approach to descriptive epidemiology was adopted, including the analysis of sociodemographic and clinical variables. Data analysis was performed by calculating relative frequencies.

RESULTS

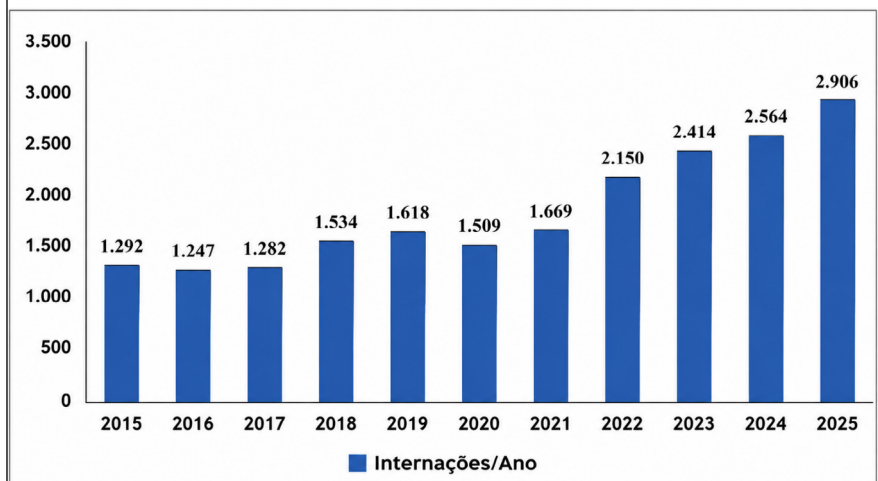
The results showed that, between 2015 and 2025, there were 20,185 hospital admissions due to falls among older adults in the state of Pará, with an annual average of 1,835 cases. An upward trend was observed over the time series, rising from 1,292 hospitalizations in 2015 to 2,906 in

2025, representing an approximate increase of 124.9% (Figure 1). The monthly distribution of hospitalizations showed a relatively consistent pattern, with a slight increase in June and July, which recorded the highest annual averages of cases (Figure 2).

With regard to the sociodemographic profile, women predominated, accounting for 56.01% of hospitalizations, while men accounted for 43.99% of cases. People of mixed race accounted for 81.58% of the records.

The 60–69 age group had the highest number of hospitalizations (38.18%), followed by the 70–79 () and 80 years or older (29.95%) age groups. However, when the analysis was stratified by sex and age, a predominance of women was observed in the older age groups, especially among older adults aged 80 years or older, in whom women accounted for 66.21% of hospitalizations.

Figure 1: Distribution of hospitalizations due to falls among older adults aged 60 years or older in the Regional Health Districts of the state of Pará, from 2015 to 2025.

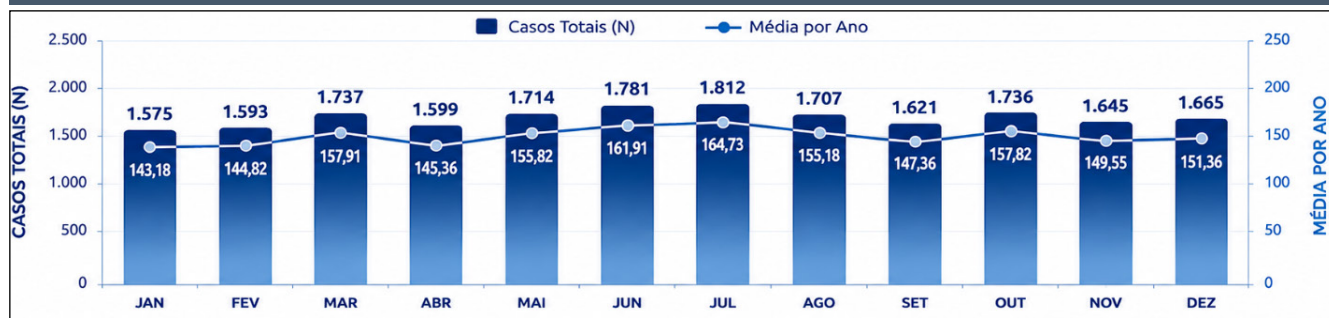


Fonte: Ministério da Saúde – Sistema de Informações Hospitalares do SUS (SIH/SUS).

The average length of hospital stay remained high throughout the analyzed period, ranging from 6.1 to 7.5 days, with an overall average of 6.6 days. The longest length of stay was observed in 2019, possibly related to the greater clinical severity of the cases, especially those involving femur fractures and the need for surgical intervention. Regarding spatial distribution, hospitalizations were concentrated in three health regions: Metropolitan I (30.87%), Carajás (14.94%), and Lower Amazon (14.88%), which

together accounted for more than half of the cases recorded in the state. Among the municipalities, Ananindeua, Marabá, and Santarém stood out, accounting for the highest absolute numbers of hospitalizations.

Regarding the types of falls, category W19 (fall, unspecified) was the most common, accounting for 49.71% of the records. Next were categories W18 (other falls on the same level, 20.55%) and W01 (falls on the same level due to slipping, tripping, or misstepping, 19.07%).

Figure 2: Distribution of hospitalizations due to falls by month related to causes W00–W19 among older adults aged 60 to 80 years or older, from 2015 to 2025, in the state of Pará.

DISCUSSION

The increase in hospitalizations due to falls among older adults parallels the process of population aging and highlights the impact of this condition on health services, especially since it is an event frequently associated with frailty, multimorbidity, and functional limitations in the older adult population. These findings corroborate national studies indicating a progressive increase in fall-related hospitalizations among older adults in Brazil. Stolt et al. identified more than 1.1 million hospitalizations and 54,000 deaths related to falls among older adults between 1998 and 2015, highlighting a rising trend in hospitalization and mortality rates in the country⁽⁹⁾. Population aging, combined with a higher prevalence of chronic diseases, sarcopenia, balance disorders, and functional dependence, directly contributes to this scenario.

Although seasonal variation was not significant, the slight increase in hospitalizations during June and July suggests a possible influence of environmental and behavioral factors on the occurrence of falls, reinforcing the need for continuous preventive strategies throughout the year. In this context, initiatives implemented in primary health care—such as fall risk assessment, encouragement of physical activity, medication reviews, and home environment modifications—

are essential for reducing preventable hospitalizations. The higher frequency of hospitalizations among women has also been observed in recent national studies and may be related to women's longer life expectancy, higher prevalence of osteoporosis, frailty, and reduced muscle mass—factors associated with an increased risk of falls and fractures⁽⁴⁾.

The long average length of hospital stay observed in the study suggests greater clinical severity of the cases treated, especially those related to fractures, and the need for surgical intervention. Older adults hospitalized due to falls are at higher risk for in-hospital complications, functional loss, and the need for prolonged rehabilitation—factors that directly contribute to longer hospital stays⁽¹⁰⁾. The concentration of hospitalizations in a few health regions likely reflects higher population density, a greater concentration of hospital services, and better diagnostic capacity in these locations. Furthermore, the uneven distribution of records highlights structural and socioeconomic differences among the state's regions, directly influencing access to specialized care and the capacity to report cases⁽¹¹⁾.

The predominance of records classified as “fall, unspecified” highlights weaknesses in the completion of health information systems, hindering more detailed epidemiologi-

cal analyses and the planning of preventive measures targeting the main mechanisms involved. Nevertheless, a predominance of same-level falls was observed, generally associated with slipping, tripping, gait disturbances, and environmental hazards in the home—findings similar to those described in recent national studies⁽¹²⁾.

Falls among older adults represent a major cause of morbidity, functional disability, and hospitalization within the context of the Unified Health System. In addition to their clinical impact, these events generate high demand for care, increased hospital costs, and a greater need for rehabilitation and long-term care⁽⁹⁾. In this context, the findings of this study reinforce the need to strengthen public policies aimed at fall prevention, expand initiatives to promote healthy aging, and improve comprehensive health care for older adults in the state of Pará⁽¹³⁾.

CONCLUSION

The results of this study demonstrate that falls among older adults represent a significant public health problem in the state of Pará, as evidenced by the progressive increase in hospital admissions between 2015 and 2025. A higher prevalence of hospitalizations was observed among women, along with a greater frequency of same-level falls, particularly

those related to slipping, tripping, and missteps. The Metropolitan I, Carajás, and Lower Amazon regions accounted for the majority of hospitalizations, revealing territorial inequalities related to the distribution of health services and care capacity. Furthermore, the long average length

of hospital stay underscores the functional and clinical impact of falls, particularly in cases associated with fractures. The findings also highlighted weaknesses in hospital records, particularly due to the high frequency of falls classified as unspecified. Thus, the study underscores the need to

strengthen fall prevention initiatives, promote healthy aging, improve comprehensive care for older adults, and enhance epidemiological surveillance systems in the state of Pará.

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