

EVALUATION OF THE CHARACTERISTICS OF FALLS AMONG COMMUNITY-DWELLING ELDERLY**AVALIAÇÃO DAS CARACTERÍSTICAS DAS QUEDAS ENTRE IDOSOS COMUNITÁRIOS****EVALUACIÓN DE LAS CARACTERÍSTICAS DE LAS CAÍDAS ENTRE LOS ANCIANOS COMUNITARIOS**

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ABSTRACT

Introduction: Falls can be caused by multiple factors, and their consequences have a strong impact on older people, their families and the society as a whole. **Objective:** To describe the characteristics related to falls among community-dwelling older adults. **Methods:** A household survey was conducted with 206 older adults who have had falls in the city of Uberaba, state of Minas Gerais, Brazil. Data collection took place from January to April 2014. **Results:** The patio/yard was the location where falls were most frequent. Falls occurred mainly on the same level, having as most frequent consequences excoriations and the fear of falling again. The causes of falls were related to changes in balance and slippery or wet floors. **Conclusion:** This study yielded results that contribute to understanding the factors related to falls and reinforce the necessity of early identification of risk factors for falls in older people and initiatives to provide adequate accessibility in the home environment.

Keywords: Older Adults; Fall Accidents; Risk Factors; Occupational Therapy.

RESUMO

Introdução: As quedas podem ser causadas por múltiplos fatores e suas consequências têm forte impacto aos indivíduos idosos, suas famílias e à sociedade como um todo. **Objetivo:** Descrever as características relacionadas às quedas entre idosos comunitários. **Métodos:** Trata-se de um inquérito domiciliar conduzido com 206 idosos, que tiveram quedas na cidade de Uberaba-MG. A coleta de dados ocorreu no período de janeiro a abril de 2014. **Resultados:** O local mais frequente de ocorrência foi no pátio/quintal. As quedas aconteceram principalmente da própria altura, com consequência as escoriações e o medo de cair novamente. As causas das quedas estiveram relacionadas à alteração do equilíbrio e a pisos escorregadios ou molhados. **Conclusão:** O estudo traz resultados que contribuem para compreender os fatores relacionados às quedas e reforça a necessidade de diagnóstico precoce dos fatores de risco de quedas para o idoso e de iniciativas de acessibilidade adequada do ambiente doméstico.

Palavras-chave: Idoso; Acidentes por quedas; Fatores de risco; Terapia Ocupacional.

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RESUMEN

Introducción: Las caídas pueden ser causadas por múltiples factores y SUS consecuencias tienen un fuerte impacto en las personas mayores, sus familias y la sociedad en su conjunto. **Objetivo:** Describirlas características relacionadas con las caídas entre los ancianos comunitarios. **Métodos:** En encuesta domiciliaria conducida con 206 ancianos que tuvieron caídas en la ciudad de Uberaba-MG. La recolección de datos ocurrió en el período de enero a abril de 2014. **Resultados:** El lugar más frecuente de ocurrencia fue en el patio / patio. Las caídas ocurrieron principalmente de la propia altura, con consecuencia las excoriaciones; y el miedo a caer de nuevo. Las causas de las caídas estuvieron relacionadas con la alteración del equilibrio y los pisos resbaladizos o mojados. **Conclusión:** El estudio trae resultados que contribuyen a comprender los factores relacionados con las caídas y refuerza la necesidad de diagnóstico precoz de los factores de riesgo de caídas para el anciano y de iniciativas de accesibilidad adecuada del ambiente doméstico.

Descriptor: Anciano; Accidentes por Caídas; Factores de Riesgo; Terapia Ocupacional.

Introduction

Falls can occur with people of all age groups. However, their consequences are more frequent in the lives of older people. A fall is defined as “a non-intentional contact with the support surface, resulting from an individual's position change to a lower level than his initial position, without the presence of an intrinsic determining factor or an unavoidable accident, and without loss of consciousness.”¹

Falls can be caused by multiple factors, especially intrinsic ones, which are often amplified by the extrinsic, environment-related ones.²

Most falls occur at home^{3,4}, and its consequences can range from mild physical injuries, such as excoriations, to

more complex ones, such as fractures⁵, which are the main causes of traumas in older people, leading to hospitalization and the need for costly long-term care.³ Research conducted in the city of Parnaíba, in the Brazilian state of Piauí, with older adults admitted to an emergency hospital found that 82.6% of hospitalizations occurred as a result of falls.⁶

Another study with older adults attended to by the emergency medical service after fall events found that 62.8% needed hospitalization, and 37.7% remained for 13 hours or more hospitalized.³

The scientific literature has also shown that falls can cause or aggravate disabilities and consequently make the older person more susceptible to new falls, fear of falling again, loss of autonomy,

social isolation, fractures, hospitalizations and death.⁷ In view of the aforementioned, there are growing costs related to the need for medicines, hospital visits, treatments and rehabilitation for older people who sustained falls.⁷

It is important to highlight that falls have a high prevalence^{8,9,10} and involve multiple risk factors,^{7,8,10,11} which demand a multiprofessional approach.⁸ A systematic review of the literature found that, despite the large number of articles on the subject with older people living in the community, there is a need to expand information regarding the occurrence of falls in different geographic regions of Brazil,⁸ since this issue may vary according to the living conditions of the population.¹¹

Moreover, local studies can be relevant for other regions, as well as contribute to understand the factors involved in fall events, in order to guide actions in all levels of health care.¹¹

Another important aspect is that most studies have a cross-sectional design,⁸ with focus on prevalence rates and fall-related factors, especially intrinsic and socioeconomic ones.^{7,8,10,11} In that sense, research is essential to broaden the discussion about extrinsic factors^{8,11}, since they are also determinants of falls, as well

as studies aimed at describing the profile of falls among older adults.

Considering that, this study aims at describing the profile of falls among older adults with regards to the variables: frequency, location, type, physical consequences, need for hospitalization, risk factors and repercussions on the older person's daily life.

Methodology

A cross-sectional observational study with a quantitative approach was conducted by means of a household survey with 206 older adults who have had falls in the city of Uberaba, state of Minas Gerais, Brazil. This research is part of a larger project titled "Falls and Violence against Older Adults from Uberaba – MG", carried out by the Collective Health Research Group of the Federal University of Triângulo Mineiro.

The population sampling was calculated considering a fall prevalence of 33.3%,⁹ a precision of 3.4% and a confidence interval of 95%, for a finite population of 36,703 older adults. A sample of 724 subjects was obtained.

The criteria considered for inclusion were: being 60 years or older, residing in the urban area of the city of

Uberaba, not experiencing cognitive decline, and having sustained falls in the past 12 months. Thus, 206 older adults participated in the study.

The data were collected from January to April 2014, at the participants' house, by means of direct interview. The cognitive decline was assessed using the Mini-Mental State Examination (MMSE), translated and validated for Brazil,¹³ and the characteristics of falls using the instrument created by Schiavetto, with assessment by physicians, nurses and gerontology researchers.¹⁴

The study variables were:

- characteristics of the older person — gender (male or female); age group (aged 60 | 80 years, or aged 80 or older); housing arrangement (lives alone or with others); marital status (single, married, widowed or divorced); individual income (no income, up to 1 minimum wage, 1 minimum wage, 1 | 3, 3 | 5, or more than 5 minimum wages) and years of schooling (no schooling, 1 | 4 years, 4 | 8 years, 8 years or more);
- characteristics of falls — intrinsic factors (difficulty walking, changes in balance, muscle weakness, dizziness/vertigo, postural hypotension, mental confusion, loss of muscle tone without loss of consciousness, fainting, or other); extrinsic factors (inadequate lighting in the home, loose rugs, uneven or pitted floors, slippery or wet floors, high steps and/or gaps on the floor, objects on the floor, pets, climbing an object/piece of furniture to reach for something, stairs without handrails, bathrooms without grab bars, or other); location (patio/yard, kitchen, entrance hall, bedroom, living room, bathroom, sidewalk, street/garden, when getting into or out of a vehicle, or other); type (bed, chair or armchair, bath chair and/or toilet, on the same level, stairs, roof or other);
- hospitalization (yes or no);
- physical consequences (none, excoriations, injuries requiring stitches, fractures, sprains, dislocations or neurological injuries);
- repercussions of the fall on the older person's daily life (fear of falling again, affected gait, anxiety,

need for help with the Activities of Daily Living — ADLs, social isolation, change of residence, admission to long-term care facilities for the elderly, family rearrangement, depression, loss of autonomy, and others).

To carry out the interviews, 10 interviewers were selected, who underwent training and received guidance on ethical aspects of the research. After data collection, a database was prepared in an Excel® spreadsheet and data were double-typed. Subsequently, the consistency between the two typed databases was checked and, when necessary, corrections were made by searching the data in the original interview.

For data analysis, the database was imported into the Statistical Package for the Social Sciences (SPSS) software version 17.0. Data were submitted to descriptive analysis (absolute and percentage frequencies).

This project was approved by the Human Subjects Ethics Committee of the Federal University of Triângulo Mineiro, Protocol no. 573,833. A Free and Informed Consent (FIC) form was signed by the

older person before the interview was carried out.

RESULTS

With regards to the participants' characterization, the highest percentages were female (78.3%), aged 60–80 years (73.4%), living with others (88.3%), widowed (50.0%), with 1–4 years of schooling (51.9%) and an income of 1 minimum wage (50.0%).

The main intrinsic factors that caused the older person's fall were: changes in balance (31.6%); dizziness/vertigo (28.9%); muscle weakness (22.3%) and difficulty walking (17.2%). As for extrinsic factors, the main ones were: slippery or wet floors (34.7%); high step and/or gaps on the floor (28.9%); objects on the floor (17.4%); climbing an object/piece of furniture to reach for something (11.8%); and inadequate lighting at home (7.2%).

The characteristics of falls regarding location, type, hospitalization and physical consequences are described in Table 1, in which it is possible to verify that the falls occurred mainly on the same level, in the patio/yard, and had excoriations as physical consequences.

Table 1. Distribution of the frequency of falls among older adults in the city of Uberaba, state of Minas Gerais, according to location, type, hospitalization and physical consequences (n = 206). 2014.

Variables	N	%
Local		
Patio/yard	47	22.8
Kitchen	17	8.3
Entrance hall	10	4.9
Bedroom	16	7.8
Living room	19	9.2
Bathroom	17	8.3
Sidewalk	30	14.6
Street/Avenue	34	16.5
Garden	3	1.5
Getting into or out of a vehicle	4	1.6
Other	9	4.5
Type		
Bed	5	2.4
Chair or armchair	5	2.4
Bath chair and/or toilet	3	1.5
On the same level	171	83.0
Stairs	10	4.9
Roof	0	0.0
Other	12	5.8
Hospitalization		
Yes	53	25.7
No	153	74.3
Physical Consequences		
None	67	32.5
Excoriations	80	38.8
Injuries requiring stitches	7	3.4
Fractures	33	16.0
Sprains and dislocations	18	8.8
Neurological injuries	1	0.5

With regards to repercussions on the older person's daily life, the fear of falling again had the highest percentage (42.7%), followed by: affected gait (16.5%), increased anxiety (14.6%), need for help in ADLs (13.6%), and social isolation (12.6%).

DISCUSSION

Among intrinsic factors, changes in balance were found to have the highest percentage in a study in the of Ribeirão Preto, state of São Paulo, Brazil,⁹ corroborating the result of this research.

Regarding extrinsic factors, slippery or wet floors also prevailed in other surveys.^{9,10} Therefore, the accessibility proves to be essential for older people, both in the home

environment and out of it, so as to provide safety and enable them to live in a more independent and autonomous way.^{2,5,15}

In addition, in order to reduce extrinsic risk factors, health professionals must conceive changes that take into account the physical environment, the development and recommendation of assistive technology resources, and the organization of the older person's human activities.¹⁵

Among such changes, we highlight: a flat, even, non-slip floor, with no gaps or steps; environment organization, avoiding objects scattered around the floor and loose wires; preference for low-bristled, rubberized, non-slip rugs and/or mats with suction cups; maintenance of adequate lighting in all rooms; installation of grab bars on bathrooms, handrails on both sides of stairs, and non-slip tread tapes.¹⁵

Such changes must be carried out in collaboration with the older persons, with their consent, as well as involving their family in the process. Moreover, one must not disregard the subjective meaning of the older persons' relationship with their home environment. Therefore, their active participation in this process must be stimulated and the decisions must be based on their personal needs and preferences.

Many professionals may be involved in the work of accessibility and environmental adaptation, such as occupational therapists, physiotherapists, physical educators, nurses, social workers, gerontologists and engineers. Among all these professionals, occupational therapists are of utmost importance, as they are considered the professional qualified to provide this kind of technical help,¹⁵ by identifying and understanding the facilitators and barriers in various aspects of older people's activities.

The findings related to the location of the fall are in line with those of other studies in which the older person's residence patio or yard was also the prevailing place where falls occurred.^{9,16} Divergent data were found among older residents of the city of Chapecó,¹² in the Brazilian state of Santa Catarina, where the bathroom was found to be the most frequent location.

Other studies, both in Brazil³ and in other countries,⁴ reinforced that most falls occur at home and during daily activities, and that such in-home falls are responsible for most emergency department visits.¹⁷ Therefore, special attention should be given to information such as time, place and description of the activity performed at

the time of the fall, along with the risk factors.

Those results can be explained by the fact that the home environment is the place where older people are more confident to walk, thus becoming less careful for considering it safer and familiar. As a consequence, the older person's residence, which should be a safe place, can become a risky environment, more conducive to fall events.¹²

Educational actions need to be developed by occupational therapists, in collaboration with other professionals, to address the risk factors present in the home environment. The home visit is an important strategy to know the potential risks. Furthermore, it is essential to consider the older persons' willingness to follow the guidance regarding the risk behaviors they engage in while performing their daily activities and the changes needed in their home environment.

Health professionals can use different behavioral strategies aimed at helping older people adopt and sustain a new behavior, such as positive reinforcement, regular performance feedback and health contracts.²

The fall on the same level also prevailed in surveys conducted with older

adults living in other cities in Brazil.^{16,18} Another study found that falls on the same level were responsible for the highest percentage of mortality (35.0%), hospitalizations (47.5%) and emergency department visits (66.0%), and demonstrated that their importance increases with age.¹⁷

The hospitalization of older people who sustained falls, although necessary, often demands a reorganization of the family dynamics as a result of the care required during and after it, which may also have repercussions on the lives of everyone involved in that care. These conditions denote the need for actions to reduce hospitalizations due to preventable causes, such as those resulting from falls, and also that care should be extended beyond the older people to also include their caregivers.

Corroborating the findings of this research, an investigation with older adults residing in the urban area of Chapecó found that most of them reported having sustained some type of injury (92.0%), of which excoriations (46.5%) and fractures (29.1%) were the most frequent.¹⁰ These injuries can cause changes in the level of care and assistance needed, since they can inflict more difficulties upon older people

in the performance of daily activities and in their own health care. This can also lead to dependence on other people or admission to long-term care facilities.

It is noteworthy that fractures are the main responsible for traumas in older adults, contributing to long-term hospitalization. In the city of Parnaíba, a study with older adults admitted to an emergency hospital with fractures found that 82.6% of hospitalizations occurred as a result of falls.⁶ An epidemiological investigation conducted in seven cities of the state of São Paulo found that the fractures were the injuries responsible for the highest percentage of hospital visits among older adults who sustained falls (25.0%), particularly lower limb (12.0%) and upper limb (8.6%) fractures.¹⁷

As a consequence of falls, the predominance of the fear of falling again is consistent with other investigations in Brazil.^{3,19,20} The fear of falling is considered one of the most disabling conditions in the life of older people as it may limit their participation in essential activities²⁰, leading them to immobility, social isolation and sadness.⁹ The occupational therapist can help by training them in the daily activities that they are most afraid to perform due to excessive

worry about falling again and anxiety when walking.

CONCLUSION

Falls occurred mainly on the same level, in the patio/yard, on streets/avenues and sidewalks, and had as physical consequences excoriations and fractures. Among the causes, changes in balance and dizziness/vertigo prevailed as intrinsic factors, and slippery or wet floors and high steps and/or gaps on the floor as extrinsic factors. The repercussions on the older person's daily life were the fear of falling again, difficulty walking, increased anxiety, need for help with ADLs, and social isolation.

The results of this study showed the necessity of early identification of intrinsic and extrinsic factors that pose fall risks to older people, as well as the need for occupational therapists to create and develop initiatives, in collaboration with older people's families and the healthcare team, aimed at providing adequate accessibility in the home environment and implementing strategies for a safer performance of desired and necessary activities.

This study presents limitations related to a potential memory bias, since participants were asked about the

occurrence of falls in the past year and details of the event, as well as to the discriminatory power of descriptive statistics, which restricts the generalization of the conclusions. Nevertheless, the application of the MMSE as an inclusion criterion may have minimized such bias, and the description of the information collected can contribute to understand the characteristics of falls among older adults in the city of Uberaba, which have a strong impact on the lives of older people, their families and the society as a whole.

Longitudinal studies are needed to better characterize the falls and understand which interventions are more adequate to minimize the occurrence of this event that is so frequent among older people, as well as its consequences.

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