# Prevalence of falls among the elderly in a long-term institution

**RESUMO |** Objetivo: analisar a prevalência bem como as associações entre as variáveis independentes relacionadas às quedas dos idosos. Método: estudo descritivo, quantitativo, realizado no ano de 2017 em uma Instituição de Longa Permanência para Idosos, após aprovação pelo Comitê de Ética em Pesquisa sob parecer nº2.152.185. Utilizado questionário elaborado a partir das variáveis de risco para queda conforme o Protocolo de Quedas do Ministério da Saúde e Morse FallScale. Elaborado banco de dados em Excel e realizada análise descritiva e de associação dos dados cálculos das frequências absolutas e relativas, p-valor e teste qui-quadrado. Resultados: a prevalência geral de quedas foi de 48,5%. A polifarmácia foi o fator de risco associado que obteve maior significância. Conclusão: o número de quedas encontrado e fatores associados são preocupantes frente a população idosa estudada ao considerar as quedas como um indicador da qualidade da assistência.
**Palavras-chaves:** Acidentes por quedas; Envelhecimento; Instituição de Longa Permanência para Idosos; Saúde do Idoso; Cuidados de Enfermagem.

**ABSTRACT |** Objective: to analyze the prevalence as well as the associations between the independent variables related to falls among the elderly. Method: descriptive, quantitative study, carried out in 2017 in a Long Stay Institution for the Elderly, after approval by the Research Ethics Committee under opinion nº 2.152.185. A questionnaire was used based on the risk variables for falls according to the Falls Protocol of the Ministry of Health and Morse FallScale. Prepared an Excel database and performed descriptive analysis and data association, calculations of absolute and relative frequencies, p-value and chi-square test. Results: the overall prevalence of falls was 48.5%. Polypharmacy was the associated risk factor that had the greatest significance. Conclusion: the number of falls found and associated factors are of concern to the elderly population studied when considering falls as an indicator of quality of care.
**Keywords:** Accidental Falls; Aging; Homes for the Aged; Health of the Elderly; Nursing Care.

**RESUMEN |** Objetivo: analizar la prevalencia y las asociaciones entre las variables independientes relacionadas con las caídas en los ancianos. Método: estudio descriptivo, cuantitativo, realizado en 2017 en una Institución de Larga Estancia de Mayores, previa aprobación del Comité de Ética en Investigación bajo dictamen nº 2.152.185. Se utilizó un cuestionario basado en las variables de riesgo de caídas según el Protocolo de Caídas del Ministerio de Salud y Morse FallScale. Se preparó una base de datos en Excel y se realizó análisis descriptivo y asociación de datos, cálculos de frecuencias absolutas y relativas, valor p y prueba de chi-cuadrado. Resultados: la prevalencia global de caídas fue del 48,5%. La polifarmacia fue el factor de riesgo asociado de mayor significación. Conclusión: el número de caídas encontradas y los factores asociados preocupan a la población anciana estudiada al considerar las caídas como un indicador de la calidad de la atención.
**Palabras claves:** Accidentes por Caídas; Envejecimiento; Hogares para Ancianos; Salud del Anciano; Atención de Enfermería.

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## INTRODUCTION

Population aging is a worldwide phenomenon, a consequence of changes in the demographic structure of countries, related to the decrease in mortality and birth rates, as well as the increase in life expectancy. [1] There are estimates that, in 2025, Brazil will rank sixth in terms of the number of elderly people, reaching 32 million people aged 60 years and over. [2]

The aging process is associated with the accumulation of molecular and cellular damage, with a reduction in physiological storage, and thus, a decline in intrinsic capacity with greater predisposition and exposure to health problems by the elderly. [3,4] Thus, falls are frequent events among the elderly

and an important issue discussed in public health. [5,6,7,8,9]

Worldwide, falls reach 28% to 35% of people over 65 each year, in addition to an increase of 32% to 42% among the elderly over 70 years. The incidence of falls is higher among elderly people who live in Long-Term Care Institutions for the Elderly (LTCIE's) compared to those who live in the community. [6,9] It is estimated that this incidence is between 34% and 67% and that one in two elderly people present new episodes within six months. [10]

LTCIE`s represent a possibility to take care of the elderly, especially those who are considered fragile and with a high degree of dependence in the exercise of their basic activities of daily living. [11] In Brazil, they are regulated by the National Health Surveillance Agency through RDC No. 283/2005, which define them as governmental or non-governmental institutions, of a residential nature, intended for the collective domicile of people aged 60 years or over, with or without family support, in a condition of freedom and dignity and citizenship. [12,13]

These spaces, therefore, must guarantee the elderly to maintain a good state of health, with safety and quality of life, prioritizing physical, psychological and social autonomy and independence. [14]

Based on this assumption, that LTCIE`s are places of continued care commonly sought by families and that evidence has shown that falls are more expressive in these environments, this study aimed to analyze the prevalence, risk and factors related to falls among elderly people from a philanthropic LTCIE in a municipality in Zona da Mata Mineira.

**METHOD**

This is an epidemiological, descriptive and observational research, with a sectional design, carried out in a phi-lanthropic ILPI in a municipality in the Zona da Mata Mineira, in the context of academic training of the Graduate Program Stricto Senso Masters in Nursing at the Federal University of Juiz de Fora. This institution has an agreement with the aforementioned university for being

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a teaching field for undergraduate health courses.

The research started from a total population (N) at the end of July 2017 of 50 elderly people. The interviews were carried out between July and September 2017. Elderly people of both sexes, aged 60 years or over, who were regis-tered as residents of the institution and who agreed to participate in the research, were included in this research. Those elderly who did not have the mental, cognitive and clinical conditions to answer the questionnaire (diagnosed of advanced neurological disease, disorientation in time and space) were excluded. These elderly people were previously evaluated by the researcher, in consultations with clinical records and guidance given by health professionals from the LTCIE, in addition, those who were not present at the institution at the time of the interview were also excluded for two attempts.

The research complied with the provisions and guidelines with regard to conducting studies with human beings, in accordance with the principles of the Research Ethics Committee of the Federal University of Juiz de Fora, approved by the Embodied Opinion of CEP nº 2.152.185, on July 03rd, 2017.

To carry out the research, a questionnaire with a script containing questions and answer options was applied. This instrument was developed based on demographic and socioeconomic variables and risk factors identified in the Fall Prevention Protocol. [15]

To assess the risk of falls, the Morse Fall Scale (MRS) was used 16 which was successful in its results and indicated it as an important strategic tool in patient safety plans that focus on preventing falls.

Functional capacity was assessed according to the Index of Independence in Activities of Daily Living developed by Katz, 17 as one of the most used instruments in gerontological studies.

To build the database, the Statistical Package Social Survey Software (SPSS), version 15.0, was used. We started with a descriptive and exploratory data analysis with univariate and bivariate analyses. In the univariate analysis calculations of descriptive statistics of absolute and relative frequencies, description of means and respective

**Table 1 – Distribution of the occurrence of falls in the institutionalized elderly population, according to gender, age, education. Juiz de Fora, 2017 (N = 33).**

| Variables | Fall occurrence | | Total |
|---|---|---|---|
| | Yes (%) | No (%) | |
| **Sex** | | | |
| Female | 13 (81%) | 12 (70%) | 25 (76%) |
| Male | 3 (19%) | 5(30%) | 8 (24%) |
| **Age group (years)** | | | |
| Under 80 y/o | 6 (37,5%) | 7 (41%) | 13 (39%) |
| Greater/equal to 80 y/o | 10 (62,5 %) | 10 (59%) | 20 (61%) |
| **Education** | | | |
| Illiterate | 2 (12%) | 1 (6%) | 3 (9%) |
| Incomplete Elementary School | 7 (44%) | 7 (41%) | 14 (43%) |
| Complete Elementary School | 3 (19%) | 3 (18%) | 6 (18%) |
| Complete High School | 3 (19%) | 4 (23%) | 7 (21%) |
| Incomplete high school | 1 (6%) | -- | 1 (3%) |
| Complete Higher Education | -- | 2(12%) | 2 (6%) |

Source: the authors (2021).

**Table 2- Occurrence of falls in the institutionalized elderly population according to the classification of the risk of falls by the Morse Falls Scale. Juiz de Fora, 2017 (N = 33).**

| Variable | FA | FR | Falls | Non-falls | P-value |
|---|---|---|---|---|---|
| **Fall Risk Scale** | | | | | |
| High Risk | 17 | 52% | 11(69%) | 6(35%) | 0,04 |
| Medium Risk | 7 | 21% | 3 (19%) | 4(24%) | |
| Low Risk | 9 | 27% | 2(12%) | 7(41%) | |
| Total | 33 | 100% | 16 (39%) | 17(100%) | |

Source: the authors (2021).

**Table 3 – Risk factors associated with falls in institutionalized elderly. Juiz de Fora, 2017 (N=33).**

| Variables | Falls | Non-falls | P-value |
|---|---|---|---|
| **Polypharmacy** | | | |
| Yes | 16(100%) | 11(64,7%) | 0,018* |
| No | 0 | 6(35,3%) | |
| **Difficulties in ADL`s** | | | |
| Yes | 10(62%) | 2(11,8%) | 0,004* |
| No | 6(38%) | 15(88,2%) | |
| **Dizziness** | | | |
| Yes | 10(62%) | 3(18%) | 0,013* |
| No | 6(38%) | 14(82%) | |

*: p < 0,05 by the chi-square test. Source: the authors (2021).

bution of the occurrence of falls according to sex, age and education.

The assessment of the risk of falling, verified by the Morse scale, identified that 52% had a high risk of falling, of which 69% (11) had fallen in the last 12 months. Therefore, risk was associated with self-report of falls (p-value 0,04), as shown in Table 2.

From the variables investigated in this study (Table 3), statistically significant associations were established for polypharmacy, difficulty in Basic Activities of Daily Living (ADL's) and self-reported dizziness.

As for the use of medication by the elderly (N = 33) according to the classes of medication identified as risk for falls, 21% (7) use antiarrhythmics; 3% (1) antihistamine; 15% (5) antipsychotics; 27% (9) of antidepressants and of these, all made use of benzodiazepines; 3% (1) muscle relaxants; 36% (12) of vasodilators and 15% (5) of oral hypoglycemic agents. None of the elderly people surveyed used insulin, laxatives and digoxin.

In this study, health conditions were evaluated based on those identified as risk factors for falls, also referred to in the Falls Protocol. 15 Of the elderly respondents who suffered falls in 2016, 19% (3) had suffered a previous stroke; 12% (2) had postural hypotension, 62% (10) reported dizziness; 12% (2) already had seizures; 19% (3) reported syncope and 62% (10) reported severe pain, located in the lower limbs and spine.

**DISCUSSION**

Falls in the elderly are considered to be common aging events. [18] This is due to the presence of functional decline with advancing age, as well as changes in their physiological structures. [19] The prevalence of falls found in this study (48,5%) is close to the results found in investigations among the elderly living in LTCFs, with rates ranging from

37,5%, 62,9% to 66,7% of elderly people who reported having fallen at least once in the last twelve months. [10,18,20]

Such differences are evidenced in different research situations with institutionalized elderly people, such as the variation in the age group found, in the levels of dependence presented by the elderly, in the physical space of institutions that can contribute to or reduce the occurrence of falls. [10]

When it comes to functional incapacity, evaluated by the performance of activities of daily living, those elderly who reach up to five activities are more likely to fall compared to those who did not have functional incapacity or even who have limitations in all of them, as the more limited elderly they tend to move less and many are bedridden, a situation that reduces the risk of falls. [21]

In this study, it is not possible to establish an association that shows the prevalence of falls among women due to the fact that the majority who participated in the survey were female (76%). But the literature points out that women have greater health problems due to chronic-degenerative diseases and have greater frailty associated with muscle weakness and sarcopenia. [22]

Polypharmacy was a significant condition in this study related to the outcome "falls". Associated with the increase in diagnosed pathologies, results of studies conclude that the use of many medications is a potent predictor of falls in the elderly. [23] Among the most associated drugs are opioids, antipsychotics, anxiolytics, hypnotics and antidepressants, which can lead to dizziness, postural instability and fatigue. [12,23,24]

Decreased musculoskeletal, visual, somatosensory and vestibular functions increase the risk of falls in the elderly. [25] A cross-sectional study with 62 elderly people from the LTCIE found that 16,1% of them suffered the episode of falling due to changes in balance, difficulty in walking or dizziness. [26]

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## CONCLUSION

This research made it possible to identify the general prevalence of falls in this group of elderly people, as well as the risk of falls among them.

Important risk factors for falls were identified with statistical significance, these associated with intrinsic factors such as polypharmacy, difficulty in performing activities of daily living and dizziness. Many other risk factors pointed out by the Falls Protocol used in this study did not obtain significant statistical values, assuming that the population studied did not present sufficient quantities to establish these associations.

Information bias is considered a study limitation, which leads to uncertainties regarding the reliability of the data collected, as these may be compromised, as they depend on the elderly's recall.

The construction of recording instruments for falls, in which the incidence of these falls is assessed, is necessary for the daily routine of nursing in the planning of preventive actions, since professionals in this category are the first to care for the elderly after the event of the fall, as was confirmed by the speech of the elderly themselves and the professionals of the LTCIE in this study. Considering falls as an indicator in the process of evaluating the quality of care, the choice of this scale becomes essential for predicting risks and establishing care plans.

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