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SOCIOECONOMIC ASPECTS AND FALLS IN OLDER ADULTS SERVED BY THE PUBLIC HEALTH SYSTEM

Aspectos socioeconômicos e eventos de queda entre idosos atendidos no sistema público de saúde

Aspectos socioeconómicos y eventos de caídas en mayores asistidos por el sistema público de salud

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ABSTRACT

Objective: To present the socioeconomic aspects and the occurrence of falls in older patients served by the municipal health system. **Methods**: This descriptive cross-sectional study was conducted with 154 older adults of both sexes (women, n=88; men, n=66) served at health care centers in the municipality of Ituiutaba, Minas Gerais, in 2018. Data were collected using a semi-structured questionnaire that addressed socioeconomic issues (education, occupation, origin, income and marital status) and clinical conditions, including occurrence of falls. The variables were analyzed using descriptive statistics. **Results**: In all, 80.5% (n=124) of the older adults were from rural areas and there was a higher prevalence of women (57.1%; n=68). Regarding falls and related aspects, 37.7% (n=58) of the older adults reported at least one fall in the past 12 months, with a higher prevalence among those aged 70-79 years (55.2%; n=32) and women (67.2%; n=39). Fracture resulting from fall occurred in 32.7% (n=19) of the older adults and 41.4% (n=24) of those who fell said the house presented risks for new falls. **Conclusion**: Falls self-reported by the older adults analyzed were associated with factors inherent to biological aging and there was a marked feminization of aging. However, they were also associated with extrinsic factors related to the environment where they live.

Descriptors: Aging; Social Vulnerability; Accidental Falls; Health of the Elderly; Health Promotion.

RESUMO

***Objetivo**: Apresentar os aspectos socioeconômicos e a ocorrência de eventos de queda entre idosos atendidos no sistema municipal de saúde. **Métodos**: Estudo descritivo e transversal realizado com 154 idosos, de ambos os sexos (feminino, n=88; masculino, n=66), atendidos nas unidades de saúde do município de Ituiutaba, Minas Gerais, em 2018. Realizou-se a coleta dos dados a partir da aplicação de questionário semiestruturado contendo questões socioeconômicas (escolaridade, ocupação, origem, renda e situação conjugal) e de condição clínica, incluindo eventos de queda. Analisaram-se as variáveis por estatística descritiva. **Resultados**: Dos idosos, 80,5% (n=124) era de origem rural, com maior prevalência de mulheres (57,1%; n=68). Sobre as quedas e seus aspectos relacionados, 37,7% (n=58) dos idosos afirmaram ter sofrido algum evento nos últimos 12 meses, sendo mais prevalente entre aqueles com idade entre 70 e 79 anos (55,2%; n=32), do sexo feminino (67,2%; n=39). Em decorrência da queda, 32,7% (n=19) apresentaram fratura e, entre aqueles que caíram, 41,4% (n=24) relataram que a residência apresentava riscos para novos eventos de queda. **Conclusão**: Os eventos de queda autorreferidos pelos idosos investigados associam-se aos fatores inerentes do envelhecimento biológico, com acentuada feminização do envelhecimento, mas também aos fatores extrínsecos associados ao ambiente onde vivem.*

***Descritores:** Envelhecimento; Vulnerabilidade Social; Acidentes por Quedas; Saúde do Idoso; Promoção da Saúde.*

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RESUMEN

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***Descriptores:** Envelhecimento; Vulnerabilidade Social; Acidentes por Quedas; Saúde do Idoso; Promoção da Saúde.*

INTRODUCTION

Population aging is marked by some changes in population dynamics, both in developed and developing countries, in addition to a set of factors characterized by biological changes throughout life[1]. With the demographic transition process (1940 to 2017), the life expectancy of the population increased by 30.5% and reached an average of 76 years[2], which reflects the current population of 29.6 million older adults in Brazil[3].

In addition to the changes in the country's age structure caused by the growth of the older population, the accumulation of aging-related diseases is also very pronounced and has intensified the demand for care in health care facilities and exponentially increased expenses with hospital admissions and medical care in the Unified Health System (*Sistema Único de Saúde - SUS*)[4,5]. In 2013, there were 93,312 admissions to the SUS due to falls among people over 60 years old and such rate tripled among people aged over 65 years. The costs of treating fractures were also high[6,7].

In an attempt to mitigate health risks and problems through primary care, SUS has, since its creation, consolidated a care system on the basis of the inseparability of its principles, such as comprehensiveness and universality. However, in the face of changes in the population, new challenges in primary care have been observed[8]. Health promotion has sought to accompany epidemiological changes by consolidating and expanding health protection and recovery services through plans for investigating and outlining the demands of users even before any disease sets in[8].

As a cause of death and demand for care in the SUS, falls are important multifactorial events that cause health problems which require the creation of strategies for intervention and prevention of new cases. Interdisciplinary care requires exploring the period before the fall of the older person and analyzing its intrinsic and extrinsic factors and presence of morbidities in addition to verifying the post-fall consequences and their influence on the life of the older person in order to reduce recovery, hospitalization and institutionalization time[9].

Health system guidelines and support growth measures to guarantee health care to older adults will depend on their clinical condition at admission. Health care strategies and health care improvement are the challenges to which public policies for health promotion actions targeted at older adults are subjected[10].

Health promotion and health care levels must be linked to the guarantees provided for in the Federal Constitution[11] and in the Statute of the Older Person[12], which are aimed at preserving and promoting the integrity of older adults and the security of their social rights, such as a minimum wage that allows living conditions, access to support programs and local health services for disease prevention and health maintenance, and geriatric and gerontological care in outpatient clinics and in the reference center.

Public health policies aimed at monitoring the aging of Brazilians and educational and health promotion practices need to be studied so as to present outcomes aimed at the needs of older adults and the use of methodologies to help and expand care in health care centers[13].

Thus, the aim of the present study was to present the socioeconomic aspects and the occurrence of falls in older patients served by the municipal health system.

METHODS

This descriptive cross-sectional study was carried out in the municipality of Ituiutaba, Minas Gerais, Brazil, between the months of April and June 2018 with 154 older adults of both genders (women, n=88; men, n=66) aged 60 years old or over. The participants were not institutionalized and were treated at health care centers located in the following neighborhoods: Alvorada, Camargo, Elândia, Independência, Jardim do Rosário, Natal, Novo Horizonte, Novo Tempo 2, Pirapitinga, Santa Maria, Setor Norte and Sol Nascente.

The sample size was estimated considering the error of 0.05 and sampling error between 4 and 0.8% for prevalence rates between 50 and 1%, respectively. The confidence interval was set at 95% based on the prevalence of older adults in Ituiutaba[14], which is located in the Pontal do Triângulo Mineiro mesoregion and corresponds to 10% of the population of Minas Gerais. The municipality has 97,171 thousand inhabitants, mostly urban (95.8%; n=93,122), and 10,173 of them are aged 60 or over. The municipality has an average of 2.2 minimum wages per formal worker per month and a human development index of 0.739[15].

Data were collected using a semi-structured questionnaire[16] in an interview conducted by members of the research group on older adults' preventive and educational health care of the Federal University of Uberlândia, Pontal campus. The instrument contained questions on socioeconomic issues (rural or urban origin, age, sex, education, occupation and household income) and clinical conditions (manifestation of chronic diseases and falls).

After being authorized by the Municipal Health Secretary and the person in charge of the Health Care Center, the researchers were divided by ward or waiting room in search for patients aged 60 years or older. The older adults were invited to participate in the study while waiting for care. After introducing themselves and presenting the study, the participants accepted to participate and the researchers started the interview using the data collection instrument.

The application of the questionnaire was finished when saturation of the population group was achieved. Inclusion criteria were older adults who belonged to the population and were interested in participating in the interview and who agreed to sign the Informed Consent Form. Older adults with inability to answer the questionnaire were excluded from the study.

The data were tabulated in a spreadsheet and the variables were analyzed using descriptive statistics in the BioEstat software, version 5.0. The data are described as absolute (n) and relative (%) frequencies based on the sample size.

The study was approved by the Ethics Committee of the Federal University of Uberlândia (*Universidade Federal de Uberlândia - UFU*), Approval No. 3.070.463, and the Federal University of Juiz de Fora with the co-participation of UFU, Approval No. 1.089.051.

RESULTS

The interviewed population consisted of 154 older adults, 57.1% (n=88) of whom were women. Most women came from rural areas (77.3%; n=68) as described in Table I. Most interviewed women from rural areas were between 60 and 79 years old (95.6%; n=65) and men from rural areas were predominantly aged 70-79 years (53.6% ; n=30).

As for occupation, Table I shows that 80.7% (n=71) of the retirees and/or pensioners (85.7%; n=132) were women and 92.4% (n=61) were men. When asked about income, 85.1% (n=131) of the older adults from both rural and urban areas reported earning two wages. The minimum wage at the time was 954 reais. A total of 86.4% (n=19) of those who reported earning more than 2 wages (14.3%, n=22) were retirees/pensioners (Table I).

In all, three older adults from rural areas did not provide information on occupation (a man and a woman) and monthly household income (a woman).

The study showed that the marital status of the older adults served at the health care centers in the municipality did not show any variation related to the presence/absence of a partner when compared with the older adults' origin. However, the analysis of gender revealed that 54.5% (n=48) of the older women reported not having a partner compared with 40.9% (n=27) of the older men (Table I).

With regard to level of education, 47.4% of the older adults interviewed (n=73) reported having studied for less than 4 years. The analysis of origin revealed that the older adults from rural areas corresponded to 82.3% (n=102) of the participants with low levels of education, that is, illiterate, functional illiterate or those who studied for less than 4 years. The older women who had less than four years of study corresponded to 43.2% (n=38) of the participants compared with 53% (n=35) of the men with the same level of education, as described in Table I.

Table I - Sociodemographic characteristics of the older adults served at the health care centers stratified by origin (urban or rural) and sex and expressed in numbers (%). Ituiutaba, Minas Gerais, Brazil, 2018.

Variables	Women			Men			Total
	Urban n=20	Rural n=68	Total n=88	Urban n=10	Rural n=56	Total n= 66	Total n=154
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Age							
60-69	9 (45.0)	33 (48.5)	42 (47.7)	7 (70.0)	16 (28.6)	23 (34.8)	**65 (42.2)**
70-79	10 (50.0)	32 (47.1)	42 (47.7)	3 (30.0)	30 (53.6)	33 (50.0)	**75 (48.7)**
≥ 80	1 (5.0)	3 (4.4)	4 (4.6)	0 (0)	10 (17.9)	10 (15.2)	**14 (9.1)**
Occupation							
Retiree and/or pensioner	14 (70.0)	57 (83.8)	71 (80.7)	9 (90.0)	52 (92.9)	61 (92.4)	**132 (85.7)**
No occupation	1 (5.0)	5 (7.4)	6 (6.8)	0 (0)	0 (0)	0 (0)	**6 (3.9)**
Other occupations	5 (25.0)	5 (7.4)	10 (11.4)	1 (10.0)	3 (5.4)	4 (6.1)	**14 (9.1)**
Not informed	0 (0)	1 (1.4)	1 (1.1)	0 (0)	1 (1.8)	1 (1.5)	**2 (1.3)**
Monthly household income (R$ 954.00)							
1 minimum wage	9 (45.0)	34 (50.0)	43 (48.9)	2 (20.0)	24 (42.9)	26 (39.4)	**69 (44.8)**
1-2 wages	10 (50.0)	26 (38.2)	36 (40.9)	4 (40.0)	22 (39.3)	26 (39.4)	**62 (40.3)**
More than 2 wages	1 (5.0)	7 (10.3)	8 (9.1)	4 (40.0)	10 (17.9)	14 (21.2)	**22 (14.3)**
Not informed	0 (0)	1 (1.5)	1 (1.1)	0 (0)	0 (0)	0 (0)	**1 (0.6)**
Marital status							
With partner	9 (45.0)	31 (45.6)	40 (45.5)	5 (50.0)	34 (60.7)	39 (59.1)	**79 (51.3)**
Without partner	11 (55.0)	37 (54.4)	48 (54.5)	5 (50.0)	22 (39.3)	27 (40.9)	**75 (48.7)**
Education							
Illiterate	2 (10.0)	12 (17.6)	14 (15.9)	1 (10.0)	4 (7.1)	5 (7.6)	**19 (12.3)**
Functionally Illiterate	3 (15.0)	13 (19.1)	16 (18.2)	2 (20.0)	9 (16.1)	11 (16.7)	**27 (17.6)**
< 4 years	8 (40.0)	30 (44.1)	38 (43.2)	1 (10.0)	34 (60.7)	35 (53.0)	**73 (47.4)**
≥ 4 years	7 (35.0)	13 (19.1)	20 (22.7)	6 (60.0)	9 (16.1)	15 (22.7)	**35 (22.7)**

As for falls and their related aspects, 37.7% (n=58) of the older adults reported having fallen in the past 12 months, with a predominance of falls among those aged between 70 and 79 years (55.2%; n=32) and women (67.2%; n=39). Older adults with fractures due to falls corresponded to 32.7% of the participants (n=19), with a predominance of women (57.9%; n=11), as shown in Table II.

A total of 22.4% (n=13) of the older adults who suffered falls reported having some post-fall complication and 41.4% (n=24) said there was an apparent risk of falling at home, including stairs, steps and slippery floors. The chance of having a fracture was higher among women (66.7%; n=16) due to falls (32.7%; n=19) (Table II).

Regarding the disabilities/disorders self-reported by the older adults who suffered a fall in the past 12 months, 65.5% (n=38) of the participants reported having vision problems, 53.4% (n=31) reported having some musculoskeletal disorder, 34.5% (n=34) reported having mobility disorders and 29.3% (n=17) reported having some mental health disorder. Only 5.2% (n=3) of the older adults reported having some respiratory disorder. All the aforementioned conditions were more predominant among women. (Table II).

Table II - Variables related to falls and self-reported disabilities/disorders among older adults served at health care centers stratified by sex and expressed in numbers (%). Ituiutaba, Minas Gerais, Brazil, 2018.

Variables	Women (n=39)	Men (n=19)	Total (n=58)
Age			
60-69	16 (76.2)	5 (23.8)	**21 (36.2)**
70-79	20 (62.5)	12 (37.5)	**32 (55.2)**
≥ 80	3 (60.0)	2 (40.0)	**5 (8.6)**
Fracture	11 (57.9)	8 (42.1)	**19 (32.7)**
Prosthesis	2 (66.6)	1 (33.3)	**3 (5.2)**
Post-fall	8 (61.5)	5 (38.5)	**13 (22.4)**
Risks in the household	16 (66.7)	8 (33.3)	**24 (41.4)**
Self-reported disability/disorder			
Visual	28 (73.7)	10 (26.3)	**38 (65.5)**
Musculoskeletal	23 (74.2)	8 (25.8)	**31 (53.4)**
Mobility	14 (70.0)	6 (30.0)	**20 (34.5)**
Mental	14 (82.4)	3 (17.6)	**17 (29.3)**
Respiratory	2 (66.6)	1 (33.3)	**3 (5.2)**

DISCUSSION

The change in the demographics of a country's population is synchronized with the behavior of population growth rates and the speed of redistribution of different age groups[17].

The results obtained in the population interviewed in the health care centers of the municipality showed a majority of young older adults aged between 60 and 79 years, women and people from rural areas. However, this may be the result of a marked demographic transition in the mid-1970s, as pointed out in records from the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística – IBGE*)[18].

The demographic and population changes of the country is linked to society's lifestyle and economic, behavioral, cultural and, mainly, social aspects. Public policies aimed at reducing disabilities and vulnerabilities are crucial for maintaining active aging and address the increase in the participation of this age range[19].

The predominance of women in the present study is explained by an IBGE survey[15] that showed 53.6% of older women in the municipality analyzed and 55.5% in Brazil. This finding shows how older men culturally do not engage in self-care and do not seek health care services that favor quality senescence. Therefore, health care measures to tackle the impact of aging on men need to be promoted through projects and basic health care activities[20].

As for the social aspects analyzed in this study, women's aging was marked by the worst indicators in terms of income (up to 2 minimum wages), education (less than 4 years of study), marital status (without a partner) and occupation (retirees and/or pensioners). Of all the women interviewed, 89.8% (n=79) said they earned up to 2 minimum wages in the first half of 2018, whereas the same income was found in 69.7% of the older women in 2015, thus revealing an increase in vulnerability in the municipality[14].

With regard to paid jobs, women have historically experienced wage devaluation and now earn a retirement income below that of men as a result of lower contribution and/or income[21]. In comparing 2018 epidemiological data with those obtained in 2015 in the municipality of Ituiutaba, Minas Gerais[22], we noted an increase in the number of retirees and/or pensioners (+13.3%) and a decrease in the monthly household income above 2 minimum wages (-2.9%).

Illiteracy is a determining factor in the life of the older person as it interferes with family vulnerability. Low levels of education are associated with other social factors, such as low per capita income and job instability, which lead older adults to have difficulty accessing work because they do not have a specialized workforce[23]. The low levels of education found among women in the present study, which was carried out in the aforementioned city of Minas

Gerais, revealed many respondents with less than four years of study or who were illiterate and/or functionally illiterate, thus revealing the need to encourage the participation of older adults in programs focused on learning and literacy.

The prevalence of older women who do not have a partner was a reality in our study, and most of them were originally from urban areas. A study carried out in Viçosa, Minas Gerais, identified the predominance of widowed, single and divorced women (62.5%)[24].

Social and economic variables are intimately related to the occurrence of falls in this population group. Higher levels of education, active life and income are associated with a lower risk of falls and better living conditions and access to health care services[25]. Given that and based on the SUS universality principle, there is a need to deliver primary care to the vulnerable population of the municipality who do not have access to health care services[11].

Since biological aging is an irreversible process, it is also marked by the loss of functional capacity resulting from multifactorial physiological changes, such as musculoskeletal, visual, auditory, mobility and cognitive decline. Additionally, it may also be associated with chronic diseases. Therefore, the accumulation of these organic changes increases the risk of falls among older adults and hence become a concern to be considered in preventive actions in primary care[26].

In Ituiutaba, about a third of the older adults reported having fallen in the past 12 months, with most of the fallers aged 70-79 years. Other studies have also reported falls in Pelotas, Rio Grande do Sul, with 28.1%[27], in Cuiabá, Mato Grosso, with 37.5%[28], and in Curitiba, Paraná, with 34.6%[29].

Of the conditions reported by the older adults who fell, disorders/disabilities, including visual and musculoskeletal disorders, were the ones most associated with falls, followed by mobility and mental disorders. The senescence process is followed by sensory changes, such as visual impairment, and therefore older adults may present disabilities in the performance of activities since advancing age may lead to loss of visual acuity, restricted field of vision and reduced depth perception[30].

Older adults have difficulty performing activities of daily living (ADL) due to severe sarcopenia and osteopenia and may lose about 45% of muscle strength up to 80 years of age[31]. A study has shown that 35% of older adults need assistance to perform ADL and instrumental activities of daily living[27]. This finding supports the theory that structural changes influence the mobility and functional capacity of older adults, thereby resulting in an increase in the number of falls[32].

A marked loss of functional capacity is seen in socially vulnerable older adults because the higher the indicators of low education and low income, the greater their isolation due to the difficulties older adults face in their clinical self-perception and the distance from urban centers, which hinder access to health care services[33].

Older adults' access to comprehensive health care services and assistance is ensured by the Federal Constitution[11] and the Statute of the Older Person[12]. To assist older adults living far from public health services, actions aimed at preserving their physical and mental health can be carried out in the municipality in compliance with the universality principle through individualized and interdisciplinary care, thus ensuring support for the older adults.

A meta-analysis carried out until the year 2013 found that functional disability is different across genders[34]. In addition, it is an important factor for influencing the lifestyle that the older person will adopt after disability, such as loss of quality of life, greater dependence on family members and exposure to situations of health deterioration, such as falls, fractures, institutionalization and even death[32].

Fractures were the most reported consequence of falls among the older adults analyzed in the present study. Falls that result in fractures significantly increase morbidity and mortality and have a negative impact on older adults' mobility[35]. Social and educational policies to promote health aimed at maintaining life through disease prevention and monitoring and policies to promote access to multidisciplinary health care services are essential to reduce the risks of falling in old age[36].

It is important to assess not only the intrinsic factors during senescence, but also the environmental and behavioral causes that increase the risk of falls among older adults[36]. In the present study, there was a high percentage of reports on factors present in the households of the older adults that favor falls. The same was reported in a study carried out in Pelotas, Rio Grande do Sul[28], where 56.4% of the falls among older adults occurred within their own homes.

A multicenter study carried out with patients from six orthogeriatric hospitals in Barcelona, Spain, found that most falls were caused by intrinsic factors (78.5%) or a combination of two factors (20.6%)[37]. Thus, planning prevention strategies through multidisciplinary care aimed at guiding and educating older adults is a fundamental measure delivering comprehensive health care through SUS with the responsibility of ensuring well-being and care in aging[38].

Thus, epidemiological designs that seek to outline the profile of a population and the occurrence of diseases in it, as in the present study, are fundamental to guide public health policies based on the promotion of quality of life

and the prevention of factors that cause morbidities. In addition, they are important to direct health education actions to the population at risk in order to intervene before the disease sets in[20].

The limitations of this study should be highlighted since there might have been some outcome biases on the part of the interviewees, such as forgetfulness bias when they were asked about falls and post-fall consequences, and omission bias in relation to income and/or occupation. The data describe the life of older adults seen in primary care centers in Ituiutaba, so they should not be generalized to the population. However, they can help to rethink health promotion and safety in relation to falls in this population.

CONCLUSION

The falls reported by the older adults were associated with factors inherent to biological aging. There was a predominance of women, retirees and/or pensioners, and older adults with low income and education. There were also extrinsic factors associated with the environment where they live.

CONFLICTS OF INTEREST

There were no conflicts of interest in this study.

CONTRIBUTIONS

Alexandre Azenha Alves de Rezende contributed to the study conception and design; and the writing and/or revision of the manuscript. Ériks Oliveira Silva and **Luciana Karen Calábria** contributed to the study conception and design; the acquisition, analysis and interpretation of data; and the writing and/or revision of the manuscript.

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