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RESEARCH

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## Socio-demographic profile and health conditions of elderly people who have suffered falls

Perfil sociodemográfico e condições de saúde dos idosos que sofreram quedas

Perfil sociodemográfico y condiciones de mayor que sufrieron la salud recae

Ana Carolina Macri Gaspar;<sup>1</sup> Jeniffer Fernanda Gonçalves da Silva;<sup>2</sup> Priscila Aguiar Mendes;<sup>3</sup> Luana Vieira Coelho Ferreira;<sup>4</sup> Rosemeiry Capriata de Souza Azevedo;<sup>5</sup> Leandro Felipe Mufato<sup>6</sup>

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### ABSTRACT

**Objective:** The study's purpose has been to identify the socio-demographic profile and health conditions of the elderly who suffered falls. **Methods:** It is a descriptive and cross-sectional study with a quantitative approach, which had a sample of 220 elderly people who fell during the last year. The variables are as follows: socio-demographic characteristics, health conditions, assessment of fear of falling, and functional capacity. A data descriptive analysis was performed. **Results:** The elderly that suffered falls are the following categories: majority females, ranging within an age group from 70 to 79 years old, widow, with low schooling, living with two or more people, retired with income of up to 1 minimum wage, self-assessed their health as regular/poor, reported having two or more health problems, including cardiovascular problems, musculoskeletal problems, vision problems, and using medications regularly. They were also classified as functionally independent and afraid to fall. **Conclusion:** The socio-demographic profile and the health conditions found here regarding the elderly are important to guide the action of health professionals towards fall prevention.

**Descriptors:** Elderly, health profile, accidental falls.

1 Nursing Graduate by the *Universidade Federal de Mato Grosso (UFMT)*, MSc in Nursing by the *UFMT*, Employment relationship at the *Universidade do Estado de Mato Grosso (UNEMAT)*.

2 Nursing undergraduate student enrolled in the Nursing Graduation Course at *UNEMAT*.

3 Nursing Graduate by the *UNEMAT*, MSc in Nursing by the *UFMT*, Employment relationship at *UNEMAT*.

4 Nursing Graduate by the *Universidade de Guarulhos (UNG)*, Specialist's Degree in Audit of the Health Services and Nursing Profession by the *Faculdade das Águas Emendadas (FAE)*, Employment relationship at the *UNEMAT*.

5 Nursing Graduate by the *UFMT*, MSc in Nursing Care by the *Universidade Federal de Santa Catarina (UFSC)*, PhD in Nursing by the *UFSC*, Employment relationship at the *UFMT*.

6 Nursing Graduate by the *UFMT*, MSc in Nursing by the *UFMT*, Employment relationship at the *UNEMAT*.

## RESUMO

**Objetivo:** Identificar o perfil sociodemográfico e as condições de saúde dos idosos que sofreram quedas. **Método:** Estudo descritivo e transversal, com amostra de 220 idosos que caíram no último ano. As variáveis são características sociodemográficas, condições de saúde, avaliação do medo de cair e capacidade funcional. Foi realizada análise descritiva dos dados.

**Resultados:** A maioria dos idosos que caíram possui idade entre 70 e 79 anos, é do sexo feminino, viúvo, com baixa escolaridade, aposentado com renda de até 1 salário mínimo, autoavalia sua saúde como regular/ruim, autorreferiu problemas cardiovasculares, osteomusculares, problemas de visão, e utiliza medicamentos regularmente. Foram também classificados como independentes funcionalmente e com medo de cair. **Conclusão:** O perfil sociodemográfico e as condições de saúde encontradas nos idosos deste estudo são importantes para nortear a ação dos profissionais de saúde na prevenção das quedas.

**Descritores:** Idoso, Perfil de saúde, Acidentes por quedas.

## RESUMEN

**Meta:** Identificar las condiciones sociodemográficas y de salud de las personas mayores que han sufrido caídas. **Método:** Estudio descriptivo y transversal, con una muestra de 220 personas de edad avanzada que han caído en el último año. Las variables son características sociodemográficas, las condiciones de salud, la evaluación de miedo a caer y la capacidad funcional. Se realizó un análisis descriptivo. **Resultados:** La mayoría de las personas mayores que han caído ha envejecido 70-79 años, son de sexo femenino, viuda, con bajo nivel de educación, se retiró con un ingreso de hasta un salario mínimo, autoavalia su salud como problemas, justo/pobres autorreferiu cardiovasculares, musculoesquelético, problemas de visión, y las drogas usa con regularidad. También se clasificaron como funcionalmente independiente y el miedo a caer. **Conclusión:** Las condiciones socio-demográficas del perfil y de salud que se encuentran en los ancianos de este estudio son importantes para guiar las acciones de los profesionales de la salud en la prevención de caídas.

**Descritores:** Anciano, Perfil de salud, Acidentes por caída.

## INTRODUCTION

Population aging is a worldwide phenomenon. Nowadays, about 11.8% of the Brazilian population is made up of people with 60 years old or more, corresponding to approximately 23 million people.<sup>1</sup> Statistical projections indicate that in the year 2025 Brazil will occupy the 6<sup>th</sup> place in the world and we will be with approximately 1.2 billion people belonging to this age group.<sup>2</sup>

Concomitant to the demographic changes, the epidemiological profile of the elderly and elderly people has been altered in the last years.<sup>3</sup> Among the causes of death of citizens long-lived in Brazil, diseases of the circulatory, respiratory, endocrine, and neoplasm and external causes prevail, being considered, also the main causes of hospitalization.<sup>4</sup>

Among the external causes, the most predisposing factor for the elderly population to become ill and to die are falls, an event considered the second leading cause of death due to unintentional injury in the elderly, thus representing a public health issue.<sup>5</sup>

Each year about 30% of the elderly suffer accidents due to falls and this proportion tends to increase about 12%,

reaching 42% for people with 70 years old or older.<sup>6-7</sup> In 2012, the fall was one of the main external causes of death in the elderly. In Brazil, up to October 2016, approximately 88 thousand hospitalizations of elderly people were registered as a result of a fall.<sup>8-9</sup>

Falling is considered as an unintended accidental event that results in the individual's changing position to a lower level relative to their initial position with inability to timely correction and ground support with or without loss of consciousness, or even occurrence of injuries.<sup>6</sup> It has a multifactorial nature with intrinsic and extrinsic factors as determinants. The intrinsic factors are related to the physiological changes with advancing age and health conditions of the elderly, while the extrinsic ones include behavioral, environmental and social factors that offer risk of accidents due to falls to the elderly.<sup>3,6</sup>

The socio-demographic profile and the health conditions of the elderly are factors that may contribute to the occurrence of falls, since they can be considered as intrinsic factors of this event.<sup>3,6</sup>

Among the factors most used to characterize the profile of the elderly, we highlight the fundamental demographic factors (age – since it is entirely associated with the emergence and aggravation of health problems, gender, family arrangement and domicile situation); socio-economic factors, health self-assessment, health services utilization, chronic diseases, functional capacity and morbidity indicators, which are determinants that are directly related to the health of the elderly.<sup>10</sup>

There are few researches regarding the socio-demographic and health profile of the elderly who suffered falls in Brazil and especially in the Central-West region. A study was conducted in *Cuiabá* city with a cohort of elderly people.<sup>11</sup> Given the aforementioned context, it is necessary to carry out new researches in order to trace the socio-demographic and epidemiological profile of this population. Their results may redirect the practices of health professionals directed to the elderly with these characteristics in order to reduce the risk factors and the prevalence of falls, since this is considered a preventable phenomenon.

In this sense, this study aims to identify the socio-demographic profile and health conditions of the elderly who suffered falls.

## METHODS

It is a descriptive and cross-sectional study with a quantitative approach. The data from this study were obtained from a database with multiple variables, built in 2015 by a survey,<sup>12</sup> which was approved by the Research Ethics Committee from the *Hospital Júlio Muller* under the Legal Opinion No. 921.129/201. This research consisted of a cross-sectional study of a proportional stratified probabilistic sample of 557 elderly people from a population of 5,096 elderly people attended by the Family Health Units in *Tangará da Serra* city, *Mato Grosso* State.

For this study, though, only the data of elderly people that reported having suffered a fall during the last year, resulting in a final sample of 220 elderly, who were eligible as inclusion criteria.

Data collection was done by extracting information from the database in May 2016. The following variables of interest were collected, as socio-demographic characteristics: gender (male/female), age group (60-69 years old, 70-79 years old, 80 years old or more), marital status (married/common-law marriage, widow, divorced, single, years of study (did not study, from 1 to 3 years, 4 years or more), occupational status (retired, working, retired/working, does not work), family arrangement (alone, one person more, two people or more), individual income (up to 1 minimum wage [MW], from 1 to 2 MW, from 2 to 3 MW, more than 3 MW), and family income (up to 2 MW, more than 2 MW).

The variables of interest related to self-reported health conditions included: health self-assessment (great/good, regular/bad and poor); self-reported health problems (yes, no), amount of health problem (none, one problem, two or more problems); types of health problem (cardiovascular problems, musculoskeletal problems, diabetes, urinary incontinence, vision problems, hearing); regular use of medicines (yes, no), walking aid (yes, no), mobility difficulties (yes, no); and alcohol use (yes, no).

The health variables assessed were as follows: nutritional status (low weight, eutrophic, overweight), classified on the basis of the Health Ministry<sup>3</sup> fear of falling (yes, no), evaluated and classified according to the *Escala de Eficácia de Quedas (FIES I)*<sup>13</sup> [Falls Efficacy Scale], functional capacity (independent, dependent) assessed and classified according to the Barthel Index,<sup>14</sup> and depression (yes, no) that was evaluated using the Abbreviated Geriatric Depression Scale and classified according to the Health Ministry.<sup>3</sup>

The collected data were then organized in a new database through a statistical program and at the end the descriptive statistics for synthesizing and describing the results were applied, which were arranged in absolute and relative frequencies, in the form of tables.

This study did not require ethical appreciation, because it used secondary data from a primary research that was approved by the Ethics Committee, as well as, it did not have funding from development agencies.

## RESULTS AND DISCUSSION

The study's sample consisted of 220 elderly people attended by the Family Health Units that fell during the last year. A percentage of 45% are from 70 to 79 years old, the majority of them are female (68.2%), widow (51.8%), did not study (50.9%), are retired (73.6%) with own and family income of one (71.8%) and two minimum wages (73.2%), respectively. Considering the family arrangement, 50% of the elderly live with two or more people (Table 1).

**Table 1** - Distribution of the elderly people who suffered falls and were assisted by the Family Health Units according to socio-demographic characteristics (n=220). Tangará da Serra, Mato Grosso, 2015

Variable	Frequency (n)	Percentage (%)
<b>Sex</b>		
Female	150	68.2
Male	070	31.8
<b>Age group</b>		
60 - 69 years old	097	44.1
70 - 79 years old	099	45.0
80 years old or more	024	10.9
<b>Marital status</b>		
Married/Common-law marriage	003	1.4
Widow	114	51.8
Divorced	0022	10.0
Single	0081	36.8
<b>Years of study</b>		
Did not study	112	50.9
From 1 to 3 years of study	091	41.4
4 years or more	017	7.7
<b>Occupational status</b>		
Retired	162	73.6
Working	009	4.1
Retired/Working	010	4.6
Does not work	039	17.7
<b>Family arrangement</b>		
Alone	033	15.0
+ one person	077	35.0
Two persons or +	110	50.0
<b>Individual income</b>		
Does not have	007	3.2
Up to 1 minimum wage	158	71.8
From 1 to 2 minimum wages	047	21.4
From 2 to 3 minimum wages	004	1.8
More than 3 minimum wages	004	1.8
<b>Family income</b>		
Up to 2 minimum wages	059	26.8
More than 2 minimum wages	161	73.2
<b>Total</b>	<b>220</b>	<b>100.0</b>

Source: Database.<sup>12</sup>

Regarding the self-reported health conditions, most of the elderly who suffered falls self-evaluate their health as regular (42.7%), and most reported having two or more health problems (93.2%) and regularly use medications (88.2%). About the morbidities, 75.5% reported having cardiovascular problems, 73.2% musculoskeletal diseases, 27.3% urinary

incontinence, 25.5% reported having diabetes, 87.7% vision problems, 22.3% 28% presented mobility difficulties, 12.7% had walking aid, and 21.4% had reported drinking alcohol (Table 2).

**Table 2** - Distribution of the elderly people who suffered falls and were assisted by the Family Health Units according to the self-reported health conditions (n=220). Tangará da Serra, Mato Grosso, 2015

Variable	Frequency (n)	Percentage (%)
<b>Health self-assessment</b>		
Great/Good	091	41.4
Regular	94	42.7
Bad/Poor	035	15.9
<b>Self-reported health problems</b>		
Yes	216	98.2
No	004	1.8
<b>Number of health problems</b>		
None	001	1.4
1 problem	012	5.5
2 or + problems	205	93.2
<b>Uses medicines regularly</b>		
Does use	194	88.2
Does not use	026	11.8
<b>Cardiovascular problem</b>		
Yes	166	75.5
No	054	24.6
<b>Osteomuscular diseases</b>		
Yes	161	73.2
No	059	26.8
<b>Urinary incontinence</b>		
Yes	060	27.3
No	160	72.7
<b>Diabetes</b>		
Yes	056	25.5
No	164	74.6
<b>Vision problem</b>		
Yes	193	87.7
No	027	12.3
<b>Hearing problem</b>		
Yes	049	22.3
No	171	77.7
<b>Difficulty of mobility</b>		
Yes	061	27.7
No	159	72.3
<b>Needs help to walk</b>		
Yes	028	12.7
No	192	87.3
<b>Uses alcohol</b>		
Yes	047	21.4
No	173	78.6
<b>Total</b>	<b>220</b>	<b>100.0</b>

Source: Database.<sup>12</sup>

Observing the assessed health conditions, the majority of elderly people who fell are nutritionally classified as overweight (48.2%), have no depression (70.4%) and are functionally independent (66.8%). In addition, almost all elderly who fell were afraid of falling (98.6%) (Table 3).

**Table 3** - Distribution of the elderly people who suffered falls and were assisted by the Family Health Units according to the assessed health conditions (n=220). Tangará da Serra, Mato Grosso, 2015

Variable	Frequency (n)	Percentage (%)
<b>Nutritional condition</b>		
Low weight	019	8.6
Eutrophic	095	43.2
Overweight	106	48.2
<b>Fear of falling</b>		
Yes	217	98.6
No	003	1.4
<b>Depression</b>		
Yes	065	29.6
No	155	70.4
<b>Functional capacity</b>		
Independent	147	66.8
Dependent	073	33.2
<b>Total</b>	<b>220</b>	<b>100.0</b>

Source: Database.<sup>12</sup>

The socio-demographic profile and the health conditions of elderly people that suffered falls were also described in other studies.<sup>11,15-6</sup> This can be explained by the similar characteristics of the populations studied, since the researches were carried out with the elderly either from the community or attended by the Family Health Units.

In this study, the majority of the elderly who suffered falls are females, a similar result found in other developed studies.<sup>11,15-6</sup> The most frequent occurrence of falls in elderly women can be explained by the fact that they have a smaller amount of lean mass and muscular strength relative to men of the same age, this is due to the reduction of estrogen (the main cause of osteoporosis), and also a higher prevalence of chronic diseases and use of medications, which were considered as falls predictor factors.<sup>6,17</sup> Moreover, women are more exposed to the risk of falls because they perform household chores and live alone.<sup>6,15,18</sup>

Considering the age, the results showed that the majority of the elderly that suffered falls were from 70 to 79 years old, similar to the results of one study<sup>11</sup> and different from others.<sup>16,19</sup> Advanced age is related to a greater decrease in functionality, the presence of chronic diseases, polypharmacy, reduction of muscle strength and disturbances in gait and balance, conditions that predispose the elderly to fall.<sup>19-20</sup>

Most of the elderly in this study did not go to school, have low income and are retired. In the literature, low schooling is considered a factor associated with falls.<sup>16,21</sup> Usually, the elderly with lower education and lower income reside in places that

provide greater risk for falls, such as sidewalks and inadequate lighting, as well as having homes with improper architectures, which consequently exposes them to environmental risks for falls.<sup>6</sup>

The highest prevalence of the elderly who suffered falls in this study lives with two or more people, similar to the results of another study.<sup>19</sup> This finding is in contrast to the literature that indicates that elderly people living alone are at greater risk for falls, once exposed to more activities, being they either domestic or those carried out outside the home.<sup>22</sup>

Concerning the health conditions, negative self-assessment of health, as assessed by the majority of the elderly in this study, has been frequently associated with falls.<sup>19,23</sup> Negative self-assessment is related to the presence of chronic diseases, depressive symptoms, reduction of the elderly life quality.<sup>24-5</sup>

The majority of the elderly in this study reported having health problems, among these cardiovascular diseases and using medications regularly, similar findings in the studies.<sup>11,19,23</sup> Elderly patients suffering from morbidities, especially chronic diseases, become more susceptible to weakness, and loss of functional capacity, and are generally taken into regular and concomitant ingestion of more than one drug, which greatly increases the likelihood of falls.<sup>26-27</sup> It is also noted that falls among elderly patients with cardiovascular problems generally associate the occurrence of postural hypotension, loss of consciousness and syncope.<sup>28</sup>

The use of medicines, especially those acting directly on the central nervous system, tends to cause innumerable alterations, mainly in the mechanisms of balance, gait and the capacity to recognize obstacles, frequent urination and decrease in reaction time, elements that contribute to the falls occurrence.<sup>6</sup>

Furthermore, musculoskeletal diseases were also highly prevalent in the studied population, a finding similar to other studies.<sup>11,19</sup> Other investigations carried out in Brazil indicate that recurrent fall or a fall is associated with the presence of skeletal muscle dysfunctions.<sup>22,27, 29</sup>

In this study, the majority of the elderly patients who suffered falls had mobility difficulties and needed walking aid, a similar finding of other studies.<sup>29,30-1</sup> A systematic review of the literature concluded that mobility limitations represent one of the main reasons of falls in an internal environment.<sup>32</sup> The need for walking aid is related to the fall to be inferred in the impairment of the gait pattern and in the mechanisms of postural control, making the elderly person more fragile and vulnerable to falls.<sup>6</sup>

Few elderly people have urinary incontinence and hearing problems. These health conditions may also increase the risk of the elderly falling, since they are considered as risk factors for the occurrence of falls in the elderly.<sup>6,20</sup>

The higher prevalence of elderly people with visual changes who suffered falls is a finding of this and other studies.<sup>11,15,30</sup> Visual impairment causes changes in gait, postural control and the balance of the elderly, which consequently predisposes the occurrence of the event.<sup>6</sup>

Among the elderly who suffered falls, only 21.4% reported alcohol intake. The study points out that elderly people who drink alcohol are the ones that suffer the most falls.<sup>33</sup> Excessive use of alcohol is an important behavioral risk factor for falls in the elderly population. The most plausible explanation for the association is the fact that alcoholic drink intake causes postural instability, and consequently leads to changes in balance and gait making the individual more susceptible to the event.<sup>6</sup>

Nutritionally classified as overweight were more prevalent in this study. There are investigations that have demonstrated obesity as an important predictor of falls in the elderly.<sup>34-5</sup> The extremes of classification of body mass index, be it low weight or obesity, are closely related to the greater risk of falls, since the increased weight compromises the balance by greater physical condition, increasing considerably the risk from falling.<sup>36</sup>

The prevalence of independent elderly was also verified in this and other studies.<sup>30,37</sup> The autonomous elderly do not need help or supervision from third parties to perform their routine activities, thus exposing themselves more to the risk factors for the event.<sup>20</sup>

Regarding the fear of falling, the results are similar to other studies.<sup>11,34</sup> This factor experienced by an elderly person causes behavioral changes, causing him to restrict his activities and to stay longer sitting because of the loss of self-confidence in walking, Produce muscle weakness, limb weakness, postural instability, and further decline in functional capacity, leading to an increased risk of falls.<sup>38</sup>

This study's results are relevant since they make it possible to know the health characteristics of the elderly who suffer falls, a prevalent event in this population and that brings several impacts both for the elderly, the family and even for the health services. These findings contribute to the planning of actions for the prevention of falls, which should be attentive to the elderly who present the characteristics described in this study, especially for the professionals of the Family Health Units, a place of coverage of the studied population.

This study has limitations, because some relevant data information, as characteristics of the falls, were not described since they are variables that did not contemplate in the database of the primary research. Their results also point to the need for new research related to this matter.

## CONCLUSION

Herein, the elderly that suffered falls are the following categories: majority females, ranging within an age group from 70 to 79 years old, widow, with low schooling, living with two or more people, retired with income of up to 1 minimum wage, self-assessed their health as regular/poor, reported having two or more health problems, including cardiovascular problems, musculoskeletal problems, vision problems, and using medications regularly. It must be emphasized that the elderly in this study are mostly independent, are afraid of

falling and are classified nutritionally into overweight. This profile of the elderly was also found in other studies.

The results of this study made it possible to know the importance of looking at the elderly individual in its totality, since several factors can contribute to either the fall or other health problems. Furthermore, it contributes to increase the quality of care towards the elderly population aiming to meet all their specific health specificities and needs, as well as supporting the formulation of policies regarding the elderly population.

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**Corresponding Author:**

Ana Carolina Macri Gaspar

Rua 19A, Quadra 26, Lote 06, S/N

Bairro Jardim Itália, Tangará da Serra, Mato Grosso

ZIP CODE: 78.300-000

E-mail: <anacarolinamacri@hotmail.com>