

# Factors associated with external causes in elderly attended by the mobile emergency care service

*Fatores associados às causas externas em idosos atendidos pelo serviço de atendimento móvel de urgência*

*Factores asociados a causas externas en ancianos atendidos por el servicio de atención móvil de urgencia*

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## ABSTRACT

**Objective:** To analyze the prevalence and factors associated with external causes in elderly people attended by the mobile emergency care service.

**Method:** Cross-sectional study with 1,972 pre-hospital care records of elderly victims of external causes from 2019 to 2020. A descriptive and bivariate analysis was performed, with a significance level of 5% ( $p < 0.05$ ).

**Results:** The prevalence of external causes in elderly people attended by the mobile emergency service was 12.2%. Falling was the most frequent occurrence. The associations of the occurrence of falls with age from 90 years old ( $OR = 29.31$ ;  $p < 0.001$ ) and female gender ( $OR = 5.38$ ;  $p < 0.001$ ) stood out, as well as the suspicion of ingestion of alcoholic beverages with occurrence of violence ( $OR = 4.17$ ;  $p < 0.001$ ) and traffic accidents ( $OR = 1.97$ ;  $p < 0.001$ ).

**Conclusion:** The study showed factors associated with injuries due to external causes in the elderly and may support the formulation of coping strategies for this problem.

**Descriptors:** Emergency medical services. Aged. External causes. Cross-sectional studies. Nursing.

## RESUMO

**Objetivo:** Analisar a prevalência e fatores associados a causas externas em idosos atendidos pelo serviço de atendimento móvel de urgência.

**Método:** Estudo transversal com 1.972 fichas de atendimento pré-hospitalar de idosos vítimas de causas externas no período de 2019 a 2020. Realizou-se análise descritiva e bivariada, com nível de significância de 5% ( $p < 0,05$ ).

**Resultados:** A prevalência de causas externas em idosos atendidos pelo serviço móvel de urgência foi de 12,2%. A queda foi a ocorrência mais frequente. Destacaram-se as associações da ocorrência de queda com a idade a partir de 90 anos ( $OR = 29,31$ ;  $p < 0,001$ ) e o sexo feminino ( $OR = 5,38$ ;  $p < 0,001$ ), bem como da suspeita de ingestão de bebida alcoólica com a ocorrência de violência ( $OR = 4,17$ ;  $p < 0,001$ ) e acidentes de trânsito ( $OR = 1,97$ ;  $p < 0,001$ ).

**Conclusão:** O estudo evidenciou fatores associados aos agravos por causas externas em idosos e poderá subsidiar formulação de estratégias de enfrentamento a essa problemática.

**Descritores:** Serviços médicos de emergência. Idoso. Causas externas. Estudos transversais. Enfermagem.

## RESUMEN

**Objetivo:** Analizar la prevalencia y los factores asociados a causas externas en ancianos atendidos por el servicio de atención móvil de urgencia.

**Método:** Estudio transversal con 1.972 registros de atención pre hospitalaria de ancianos víctimas de causas externas en el período de 2019 a 2020. Se realizó un análisis descriptivo y bivariado, con un nivel de significación del 5% ( $p < 0,05$ ).

**Resultados:** La prevalencia de causas externas en adultos mayores atendidos por el servicio de emergencia móvil fue de 12,2%. La caída fue la ocurrencia más frecuente. Se destacaron las asociaciones de la ocurrencia de caídas con la edad a partir de 90 años ( $OR = 29,31$ ;  $p < 0,001$ ) y el género femenino ( $OR = 5,38$ ;  $p < 0,001$ ), así como la sospecha de ingesta de bebidas alcohólicas con la ocurrencia de violencia ( $OR = 4,17$ ;  $p < 0,001$ ) y accidentes de tránsito ( $OR = 1,97$ ;  $p < 0,001$ ).

**Conclusión:** El estudio mostró factores asociados a las lesiones por causas externas en ancianos y puede apoyar la formulación de estrategias de enfrentamiento de este problema.

**Descriptor:** Servicios médicos de urgencia. Anciano. Causas Externas. Estudios transversales. Enfermería.

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## ■ INTRODUCTION

Morbidity and mortality from external causes represents the sixth cause of death among the elderly population and, despite it does not constitute the group with the highest number of deaths from external causes, the elderly have shown a significant increase in mortality from these conditions over the years. External causes are an important public health issue, with the capacity to cause major losses and other comorbidities among elderly people, such as motor disability, early institutionalization, depression, increased length of stay and costs for the healthcare system<sup>(1-3)</sup>.

The increase in injuries due to external causes in the elderly population is confirmed by data from the Department of Informatics of the Unified Health System (*Departamento de Informática do Sistema Único de Saúde – DATASUS*). In 2009, 141,058 hospital admissions of elderly people due to external causes were recorded, while in 2019 there were 267,886, which represents an increase of almost 90% in the number of hospitalizations in 11 years in Brazil<sup>(4)</sup>.

International studies indicate that the elderly are the demographic group most likely to use emergency services. It is estimated that older patients will represent around 25% of all emergency room visits by 2030. Moreover, care provided to older people in urgent and emergency units is more expensive than that provided to younger adults because require more intensive diagnostic tests and procedures, consume more team time, longer hospitalizations and higher risk of mortality<sup>(5,6)</sup>.

Given the relevance of these events in elderly individuals and the importance of early assistance to state a good prognosis, it is imperative to learn about the health-related demands of the elderly population and create strategies to cope with their morbidity and mortality profile. The majority of care provided to victims of external causes occurs in urgent and emergency services, with emphasis on the care provided by ambulances from the Mobile Emergency Care Service (*Serviço de Atendimento Móvel de Urgência – SAMU*), whose basic principle is the immediate assistance of victims and their referral to fixed or hospital pre-hospital service with the aim of reducing the severity and mortality of acute conditions<sup>(7,8)</sup>.

Thus, SAMU aims to organize the assistance flow; enable early health care and adequate, rapid and resolute transport for people in need of urgent assistance of any nature; reduce the number of deaths, the length of hospital stay, as well as the consequences arising from the lack of early care in emergency cases. Consisting of a healthcare team comprising physicians, nurses, nursing technicians and first-aid drivers,

the access can be obtained free of charge, via telephone call to 192<sup>(9)</sup>.

For the multiprofessional team, which includes nursing, epidemiological studies on external causes in the elderly can contribute with information for planning, care strategies and continuing education. Overall, the nursing team is the first to provide care to elderly patients suffering from external causes, therefore, policies for qualification, based on scientific evidence, can contribute to the reduction of complications and temporary or permanent sequelae<sup>(10,11)</sup>.

When considering the increase in the number of external causes in the elderly population as a complex phenomenon capable of generating numerous health consequences, it is necessary to broaden the understanding of pre-hospital care for elderly victims, as well as identifying factors related to these occurrences becomes crucial in guiding interventions to improve the prognosis of elderly individuals.

Given the above, the following research question was developed: what is the prevalence and factors associated with external causes in elderly people attended by the mobile emergency care service? In this context, the present study aimed to analyze the prevalence and factors associated with external causes among elderly people attended by the mobile emergency care service.

## ■ METHOD

This is a cross-sectional study<sup>(12)</sup>, descriptive and analytical conducted from records of the Mobile Emergency Care Service (*Serviço de Atendimento Móvel de Urgência – SAMU*) in the city of Teresina-PI. Data collection took place in the Statistics department located at the service headquarters, upon consultation of the digitized records made in each occurrence by the service teams in the individual form entitled "Pre-hospital Care Record".

The study population consisted of 16,053 pre-hospital care records for the elderly carried out by SAMU from January 2019 to December 2020. Of these, 1,972 were care for the elderly due to external causes. The inclusion criteria were: records of pre-hospital care for external causes in the SAMU for people aged 60 or over. Records of pre-hospital care for external causes in the SAMU were excluded, where the essential information contained in the data collection forms were not filled out or were filled out illegibly or incompletely. This data refers to the patient's age and the type of occurrence attended. In total, 448 service records were excluded, 423 records because they did not have a record of the patient's age or the information was illegible, and 25 records because they did not have a description of the type of occurrence.

It is noteworthy that in four (0.2%) occurrences the patient's age was not filled out on the form, but it was possible to observe that it was care provided to an elderly person due to the observation field indicating that the patient attended was an elderly individual. Other information was not deemed mandatory and was identified as "ignored" in this research, when left unfilled.

The data were extracted from the SAMU form entitled "Pre-Hospital Care Record" filled out in each occurrence performed by the service teams, namely: gender (female or male), age group (60-69 years, 70 to 79 years, 80 to 89 years old, 90 years old or over), suspected ingestion of alcoholic beverages (yes or no), type of incident due to external causes (falls, traffic accidents, violence or other less frequent causes), ambulance (basic or advanced life support), shift of occurrence (morning, afternoon, night or dawn), area (urban or rural), administrative region of the city (center-north, east, southeast, south or rural), need for removal (yes or no), destination healthcare service (public or private) and conditions of entry (improved, worsened or unchanged), if the patient has been removed; and outcome: death (yes or no).

The period defined for this study comes from records of pre-hospital care for external causes for elderly people from January 2019 to December 2020. The period analyzed was based on the interest of including the most recent occurrences with the population studied, in addition to the situation of the COVID-19 pandemic, as the health agencies adopted restrictive guidelines regarding the use of spaces for data collection, which was promptly followed by the researchers participating in the study, therefore, only one researcher could conduct data collection at a time, in addition to attending the sectors on days and times previously advised by the agencies in order to avoid crowding in the sector.

The selected data were organized and typed, in double entry into the Microsoft Excel software, to correct possible inconsistencies and then imported into the Statistical Package for the Social Sciences – SPSS for Windows, version 20.0 software to perform analytical statistics. As the data set is consisted of categorical variables, a descriptive analysis of the data was made based on the calculation of simple absolute and relative frequencies.

To verify the associations between type of occurrence and other variables (gender, age group, suspected ingestion of alcoholic beverages, ambulance, shift of occurrence, area, administrative region of the city, need for removal, destination healthcare service and conditions of entry and death) bivariate analysis was performed using Pearson's Chi-square

test and, when its assumptions were violated, Fisher's Exact test was employed. The significance level adopted was 5% ( $p < 0.05$ ). Furthermore, crude Odds Ratio (OR) and respective 95% confidence intervals (CI) were calculated to verify the strength of association.

The study was approved by the Research Ethics Committee of the Municipal Health Foundation (*Fundação Municipal de Saúde – FMS*) of Teresina-PI for data collection authorization and subsequently by the Research Ethics Committee of the *Universidade Federal do Piauí* under opinion number 4,659,163. As this is research with secondary data, the Informed Consent Form was waived by the ethics committee.

## ■ RESULTS

From January 2019 to December 2020, 16,053 records of care for elderly people by SAMU in the city of Teresina were identified. From these, 1,972 were motivated by external causes. Thus, the prevalence of external causes among the elderly population attended by SAMU was 12.2% (Figure 1).

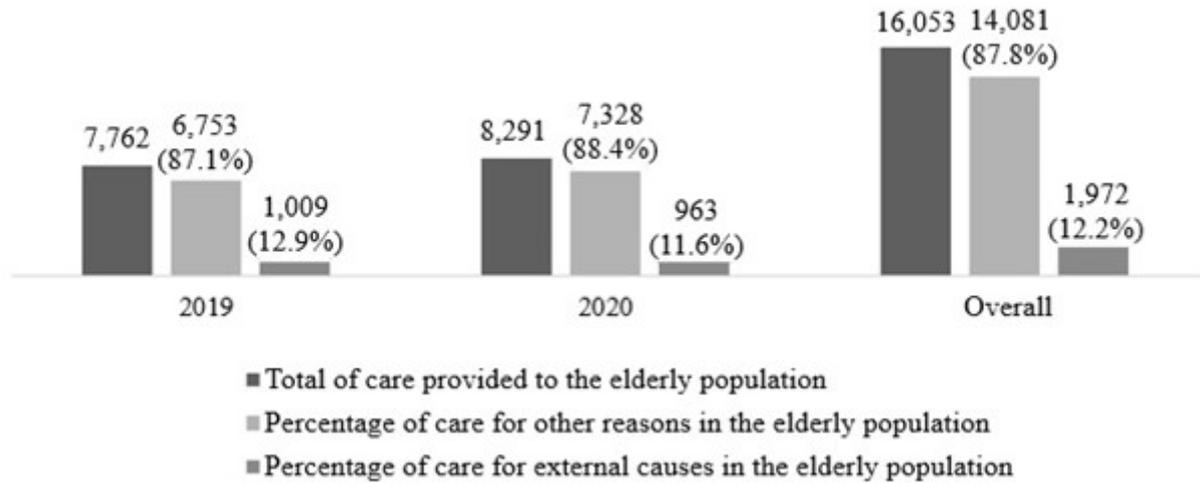
Table 1 presents the characteristics of the elderly population victims of external causes treated by SAMU, from 2019 to 2020. There was a predominance of females and the majority were in the age group of 60 to 69 years old, with a mean age of  $73.8 \pm 10.4$  years. Approximately 2/3 of the elderly individuals treated were not suspected of drinking alcoholic beverages.

Regarding care provided, it was found that the Basic Life Support Units (BLS) were the most frequently used and that the largest portion of requests occurred in the morning, in the urban area and southern region of the city. Falls were the main types of occurrences, and the victims were removed to public services with no change in clinical condition in most cases. Moreover, only five patients passed away during care provided by SAMU (Table 2).

Table 3 shows the analysis of the strength of association, using odds ratios, of the individual variables with the type of occurrence attended. A statistically significant association of characteristics of elderly people with falls, traffic accidents and violence is observed.

There was an association between the female gender and the occurrence of falls, since it is estimated that women are 5.38 times more likely to suffer a fall compared to men. However, there was an indication of a protective association between the female gender and the occurrence of traffic accidents and violence.

**Figure 1** – Prevalence of care for external causes and other causes among elderly people provided by SAMU. Teresina, Piauí, Brazil, 2021



Source: SAMU, Teresina, 2021.

**Table 1** – Elderly population attended for external causes, regarding gender, age group and suspected ingestion of alcoholic beverages. Teresina, Piauí, Brazil, 2021

Variables	N (%)
<b>Gender</b>	
Male	956 (48.4%)
Female	1015 (51.5%)
Ignored	1 (0.1%)
<b>Age group</b>	
	73.8 ± 10.4*
60 to 69 years old	836 (42.4%)
70 to 79 years old	528 (26.8%)
80 to 89 years old	438 (22.2%)
90 years old or more	166 (8.4%)
Ignored	4 (0.2%)
<b>Suspected ingestion of alcoholic beverages</b>	
Yes	175 (8.9%)
No	1275 (64.6%)
Ignored	522 (26.5%)

Source: SAMU Teresina, 2021.

\*Mean ± Standard Deviation

**Table 2** – Care for external causes in the elderly population, according to ambulance, shift of occurrence, area, administrative region, type of occurrence, removal, destination healthcare service, conditions of entry and death. Teresina, Piauí, Brazil, 2021

Variables	N(%)
<b>Ambulance</b>	
Basic Life Support	1833(93%)
Advanced Life Support	139(7%)
<b>Shift of occurrence</b>	
Morning	722(36.6%)
Afternoon	642(32.5%)
Night	471(23.9%)
Dawn	109(5.5%)
Ignored	28(1.5%)
<b>Area</b>	
Urban	1830(92.8%)
Rural	67(3.4%)
Ignored	75(3.8%)
<b>Administrative Region</b>	
Central-North	605(30.7%)
East	323(16.4%)
Southeast	288(14.6%)
South	614(31.1%)
Rural	67(3.4%)
Ignored	75(3.8%)
<b>Type of occurrence</b>	
Falls	1315(66.7%)
Traffic accidents	550(27.9%)
Violence	76(3.8%)
Other causes	31(1.6%)

**Table 2 – Cont.**

Variables	N(%)
<b>Removed</b>	
Yes	1917(97.2%)
No	53(2.7%)
Ignored	2(0.1%)
<b>Destination healthcare service</b>	
Public	1633(82.8%)
Private	276(14%)
Ignored	10(0.5%)
Not applicable	53(2.7%)
<b>Conditions of entry</b>	
Improving	68(3.5%)
Worsening	20(1%)
Unchanged	1154(58.5%)
Ignored	677(34.3%)
Not applicable	53(2.7%)
<b>Death</b>	
Yes	5(0.2%)
No	1966(99.7%)
Ignored	1(0.1%)

Source: SAMU Teresina, 2021.

Furthermore, age groups over 70 years old showed a significant association with falls among the elderly population. Elderly people between 70 and 79 years old were 3.68 more likely to suffer a fall, while those aged 80 to 89 years old and 90 or older were 12.49 and 29.31 more likely, respectively. Regarding traffic accidents and violence, the increase in age groups emerged as a protective factor.

Regarding suspected ingestion of alcoholic beverages, there was a protective association with the occurrence of falls in the elderly population, however the possibility of alcohol consumption increased situations of violence by 4.17 times and the occurrence of traffic accident by 1.97 times among the elderly.

**Table 3** – Association between the type of occurrence due to external causes in the elderly population and gender, age group and suspected ingestion of alcoholic beverages. Teresina, Piauí, Brazil, 2021

Variables	Falls		Traffic accidents		Violence		Other causes	
	OR(95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
<b>Gender</b>		<0.001		<0.001		<0.001		0.156
Male	1		1		1		1	
Female	5.38 (4.36 – 6.62)		0.20 (0.16 – 0.25)		0.30 (0.18 – 0.51)		0.59 (0.28 – 1.22)	
<b>Age group</b>		<0.001		<0.001		0.005		0.442
60 to 69 years old	1		1		1		1	
70 to 79 years old	3.68 (2.90 – 4.67)		0.29 (0.22 – 0.37)		0.59 (0.34 – 1.03)		0.43 (0.16 – 1.17)	
80 to 89 years old	12.49 (8.81 – 17.72)		0.061 (0.04 – 0.09)		0.35 (0.17 – 0.72)		0.84 (0.36 – 1.96)	
90 years old or more	29.31 (13.58 – 63.25)		0.03 (0.01 – 0.08)		0.21 (0.05 – 0.85)		-	
<b>Suspected alcohol ingestion</b>		<0.001		<0.001		<0.001		
Yes	0.41 (0.30 – 0.57)		1.97 (1.42 – 2.74)		4.17 (2.22 – 7.83)			
No	1		1		1			

Source: SAMU Teresina, 2021.

## ■ DISCUSSION

The present study found that the prevalence of external causes in elderly people attended by SAMU was 12.2%. A research conducted in the United States with the objective of analyzing the characteristics of care provided to elderly people by Emergency Medical Services (EMS) showed a similar prevalence, since 11.2% of care provided was for external causes<sup>(13)</sup>.

A research conducted in Jequié, Bahia, outlined the profile of care provided to elderly people by SAMU and found that 13.5% of incidents corresponded to calls for external causes<sup>(11)</sup>. An epidemiological analysis of SAMU occurrences conducted in a city in the northwest of Paraná detected that 24.5% of the population treated for external causes were elderly individuals<sup>(14)</sup>.

Studies show an increase in occurrences by external causes in the elderly population. Population aging, which has a tendency for continuous growth on a global scale, tends to result in a decline in physical functions and the emergence of comorbidities, which makes the elderly more dependent on medical resources<sup>(15)</sup>. In this context, SAMU plays a prominent role due to its difference in identifying life-threatening situations and providing care to the victim even at the scene of the incident<sup>(11)</sup>.

However, despite the increase in the number of occurrences due to external causes in the elderly people has been highlighted in research, the present study showed a decrease in the years evaluated, which may be related to the COVID-19 pandemic declared in March 2020, when more restrictive measures for the circulation of people have been adopted.

Elderly women represented the majority of SAMU calls due to external causes and it is believed that this can be explained by the process of feminization of aging, that is, by the predominance of women among the elderly population. According to IBGE data, the female contingent over 60 years old increased from 2.2% in 1940 to 4.7% in 2000; and 6% in 2010<sup>(16)</sup>. This greater female longevity may be related to several factors, including the fact that women have more self-care and seek healthcare services more and, therefore, are less susceptible to situations that lead to death, such as accidents and violence<sup>(17)</sup>.

The majority of elderly individuals were between 60 and 69 years old, a group that generally has social and economic characteristics similar to those they had when they were part of the adult group<sup>(18)</sup>. They play an active role in society, family, and work, so they are more exposed to external causes when compared to elderly people aged 80 or more. Furthermore, stands out the fact that the longest-lived elderly

people represent a smaller portion of the population when compared to young elderly people.

Most of the studied population showed no signs of drinking alcoholic beverages. However, it is important to reflect on the social role of this practice for the elderly. A study conducted among Swedish elderly people showed that alcohol consumption is in a social context, with social integration being a predictor of continued consumption patterns. On the other hand, alcoholism can also prove to be a way of dealing with exclusion and loneliness<sup>(19)</sup>. Stands out that the service analyzed in the present study only raises the suspicion of alcohol consumption, without diagnostic confirmation.

Regarding the type of support provided to the elderly, BLS was the most used, which can be explained by the fact that the city has more basic life support units in the structure of pre-hospital mobile care. In this context, the type of support provided to the patient, basic or advanced, is set by the severity of the event and the victim's clinical condition. Thus, generally, hemodynamically stable patients without urgent signs of loss of function or serious injury receive basic care<sup>(20)</sup>.

Regarding the shift of occurrence, the highest number occurred in the morning. In this way, a possible relationship between falls and the elderly person's first activities of the day is inferred, such as getting out of bed, bathing, and moving over short distances. Regarding transport accidents, these can be influenced both by high traffic flow times and by the mental and emotional stress that elderly individuals are exposed to in traffic<sup>(2)</sup>.

More than 90% of the events took place in the urban area, which can be explained by the location area, as urban life and its intense pace can promote preventable injuries among the elderly. Thus, the effort to keep active and independent places them in risky places such as chaotic traffic, accelerated routines and in physical environments that are poorly adapted for their physical condition, with slippery floors and limited accessibility<sup>(21)</sup>. It is also noteworthy that most services occurred in the south and central-north regions of the city of Teresina, which correspond to the regions with the largest territorial areas and the largest number of population residing in the capital of Piauí<sup>(22)</sup>.

The main type of incident attended by the pre-hospital service was falls (66.7%), followed by traffic accidents (27.9%). A study conducted in Minas Gerais with 6,040 trauma care records from SAMU corroborates the present study by showing that 80.8% of elderly people were victims of falls<sup>(10)</sup>.

The predominance of falls can be explained by intrinsic factors, including polypharmacy, comorbidities, and structural and functional changes associated by aging itself. Added

to this are extrinsic factors such as poorly lit environments, loose rugs, stairs without handrails, slippery floors and inadequate footwear, which creates unsafe and dangerous environments for the elderly. Furthermore, the adoption of a healthier and more active lifestyle by the elderly population is notable, which consequently increases their exposure to external factors<sup>(23)</sup>.

The vulnerability of elderly people to the occurrence of traffic-related injuries deserves attention. A study from Minas Gerais showed that 6.1% of traumatic care for the elderly corresponded to being run over and 6.6% to other accidents involving a car, motorcycle or bicycle<sup>(10)</sup>. These events may also be related to the disorderly growth of Brazilian cities with a consequent increase in traffic complexity.

Violence was the third most frequent type of incident, at 3.9%. An Indian study conducted with 246 elderly people showed that 25.6% were victims of some type of violence, with 7.7% suffering physical violence<sup>(24)</sup>. It is noteworthy that the frequency of cases of violence detected in this study may be below the local reality, as there is the possibility of a reduction in demand for the service due to the elderly individual's fear of reporting their aggressor, who often lives in the same environment.

Most patients were removed to healthcare services, mainly to public hospitals due to the ease and availability of specialized treatment, while the Unified Health System (*Sistema Único de Saúde – SUS*) is seen as the main gateway to urgencies and emergencies<sup>(25)</sup>.

Regarding the condition of the patient's entry into the destination hospital, the majority presented an unchanged clinical condition upon admission to the destination hospital, with only five (0.2%) of the elderly individuals dying during care or transport provided by SAMU. In this scenario, the health condition at the time of admission to the destination hospital represents an important means of assessing the patient's evolution during transport and their response to interventions performed by the pre-hospital service team<sup>(26)</sup>.

There was a statistically significant association between occurrences of falls and age over 70 years old and female gender, which corroborates an epidemiological study carried out with 1,406 elderly victims of external causes treated at an Emergency Hospital in Sergipe<sup>(2)</sup>. Furthermore, research conducted about the risk of falling in a sample of 400 elderly people in the community of Juiz de Fora detected that women had a higher risk of falling<sup>(27)</sup>.

This finding can be attributed to physiological changes intrinsic to women, such as less lean mass and muscle

strength compared to men of the same age, greater loss of bone mass due to estrogen reduction, greater occurrence of chronic diseases and greater expectation of life<sup>(27)</sup>.

On the other hand, it was observed that being female was a protective factor against the occurrence of traffic accidents and violence. This result can be attributed to the multiple tasks that women perform at home, in addition to the marked physiological changes as they advance in life, which make them more exposed to episodes of falls when compared to their exposure to transport accidents and other violence<sup>(2)</sup>.

The fall was significantly associated with elderly people aged 70 or more, with a higher risk in the elderly population aged 90 or more, who were 29.31 times more likely to have this type of incident. A Chinese study conducted with 82,694 elderly victims of falls treated in emergency medical services showed that those aged between 80 and 100 years were more likely to need medical care due to falls<sup>(28)</sup>.

Thus, the relationship between age and falls is directly proportional, as biological aging occurs, functional decline occurs but is involved in maintaining mobility, which modify the elderly individual's interaction with the external environment and their social relationships<sup>(27)</sup>. In this context, it is important to highlight that mortality caused by injuries resulting from falls in the elderly is also higher among the oldest individuals<sup>(29)</sup>.

On the other hand, aging appeared as a protective factor against traffic accidents and violence, which may be related to the reduction in exposure of these elderly people to environments and situations at risk for these injuries.

Another point worth highlighting is that suspicion of ingestion of alcoholic beverages was associated with the occurrence of violence (4.17-fold increase) and traffic accidents (1.97-fold increase). The literature shows that the severity of injuries resulting from traffic accidents is significantly greater when involving elderly people and alcohol consumption, along with a greater likelihood of causing disabilities<sup>(30)</sup>.

This study had limitations including the absence of records and illegible writing in some forms, which, in part, made it difficult to obtain information. Another important point was the use of secondary data, which did not allow to evaluate the health conditions, pathologies or medications that may have contributed to the occurrences found, as well as the impact of the occurrences attended to on the prognosis and quality of life of the elderly individual after the incidents due to external causes.

## ■ CONCLUSION

The study showed a prevalence of 12.2% of external causes in the elderly population served by SAMU, with a predominance of falls. The victims were mostly female, aged between 60 and 69 years old and with no suspicion of alcohol consumption. There was a statistically significant association between the occurrence of falls and the female gender and the age groups over 70 years old, as well as the occurrence of violence and traffic accidents with suspicion of alcohol consumption.

Moreover, it was observed that the female gender and advanced age appeared as protective factors against the occurrence of traffic accidents and violence in the elderly population, while the suspicion of alcohol consumption by the elderly showed a protective association with the occurrence of falls.

It is believed that this study can contribute to expanding knowledge about mobile pre-hospital care for elderly victims of incidents due to external causes, while alerting the nursing and multiprofessional team that works in SAMU and other healthcare devices about the need to pay attention to the main risk factors that make the elderly population vulnerable to external causes incidents.

In view of the above, it is expected that the presented results, in addition to guiding improvements in the quality of care for elderly victims, can stimulate and support future research in this area, since the continuation of studies addressing this topic will contribute to the formulation of strategies and prevention policies and combating external causes in the elderly population.

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