Characterization of victims of accidents and violence. Emergency Service of Alta Floresta - MT (Brazil)

Caracterização das vítimas de acidentes e violências atendidas em serviço de emergência. Município de Alta Floresta, MT (Brasil)

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Abstract

Introduction: Accidents and violence are important causes of hospital admissions and mortality in the municipality of Alta Floresta, especially among young people. However, in terms of outpatient services, the magnitude of this problem is not known.
Objective: To present the characterization of the victims of accidents and violence attended to by the emergency services in the municipality of Alta Floresta. **Methodology:** Descriptive study into the occurrence of emergencies resulting from accidents or violence, for a three-month period in 2006, by means of specific report forms for accidents and violence. **Results**: Out of 7,394 outpatients in the period, 583 (7.9%) were victims of accidents and violence; most of them male; between 20 and 39 years of age; white; and, with less than eight years of formal education. Accidents were predominant: 239 (41.0%) road accidents, most of them by motorcycle (64.9%); 153 falls (26.2%) and 167 (28.7%) others. Regarding violence, 16 (2.7%) were assaults and 8 (1.4%) suicide attempts. The suspicion of alcohol use was registered in 12% of accidents and violence victims, but this proportion was higher among assault victims (91.7%). An important relation was observed between other accidents and the "work" category. **Conclusion:** Adequate knowledge about the characteristics of victims of accidents and violence is essential to identify the effective measures to reduce such injuries.

Keywords: Accidents, violence, morbidity, emergency.

Resumo

Introdução: Em Alta Floresta - MT, embora os acidentes e violências sejam responsáveis por importante parcela da morbidade hospitalar e da mortalidade, principalmente entre a população jovem, não se conhecia o que tais agravos representam, em termos de morbidade ambulatorial. **Objetivo:** Apresentar a caracterização das vítimas de violências e acidentes em serviço de emergência no município de Alta Floresta – MT. **Material e Métodos:** Estudo descritivo dos registros de todos os atendimentos de emergência ocorridos em três meses de 2006, por meio de ficha de notificação específica para acidentes e violências. **Resultados:** Dos 7.394 atendimentos no período, 583 (7,9%) foram prestados às vítimas de acidentes e violências, a maioria do sexo masculino, com idade entre 20 e 39 anos, branca, e com escolaridade inferior a 8 anos. Dentre as ocorrências, predominaram os acidentes: foram 239 (41,0%) acidentes de transportes, destacando-se os de motocicleta; 153 quedas (26,2%) e 167 (28,7%) outros acidentes. Dentre os registros de violências, 16 (2,7%) foram agressões e 8 (1,4%) tentativas de suicídio. A suspeita de uso de álcool, entre maiores de 18 anos, foi registrada em 12,0% das vítimas de acidentes e violências. No entanto, entre as vítimas de agressões este percentual foi muito mais elevado (91,7%). Observou-se também importante relação dos acidentes com a categoria trabalho. **Conclusão:** O conhecimento adequado das características das vítimas dos acidentes e violências é imprescindível para o processo de deflagração de medidas efetivas que visem reduzir tais agravos.

Palavras-chave: Acidentes. Violência. Morbidade. Emergências.

Introduction

In recent years there has been an expressive rise in violence witnessed in Brazil and the rest of the world, making this a growing concern throughout society. Accidents and violence represent a significant portion of mortality in every country in the world, generally being amongst the top five causes of death[1-3].

In 2002, 126,657 people died due to accidents or violence in Brazil. This figure represents 12.5% of the total causes of death, with a factor of 71.6 deaths per 100,000 inhabitants[4]. The rise in violence has been maintained: there has been a 17% increase in relation to the 1980s and a 3.4% increase in relation to the 1990s. Amongst the external causes, aggression (homicides) and road accidents presented the highest factors in 2003: 28.9 and 19.0 per 100,000 inhabitants, respectively. These two subgroups account for 66.8% of all deaths by external causes[5].

As regards hospital morbidity, data from the Hospital Information System (SIH/SUS) reveal that external causes were accountable for a significant portion of hospital admissions in Brazil in recent years[4]. Falls were the leading cause of hospital admissions in 2000, representing 42.8% of all admissions in Brazil[6]. Out of all hospital admissions, 58.5% were for fractures, especially of upper limbs (29.0%), followed by lower limbs (24.7%). The male sex presented a higher number of admissions diagnosed with fractures; however in relation specifically to fractures of the femur, the number of women hospitalized approaches that of men.

More recent Ministry of Health data, developed by Oliveira[7], show that in 2005, excluding births, roughly 9% of hospital admissions in Brazil (in the Unified Health System – SUS services) resulted from injuries and traumas by external causes (chapter XIX and chapter XX-ICD 10). Of these admissions, falls accounted for 41.8%, road accidents 15.8%, aggression 10.0% (including police interventions) and self-provoked injuries 7.8%.

Not only in Brazil, but also in other

countries, external causes are mainly studied based on mortality data, due to the ease of acquiring such data and the quality they present[8]. The data referring to hospital admissions and emergency service call-outs are not always so easily accessible, as they often hinge on specific studies[6]. As regards hospital admissions, the data available contemplate secondary diagnosis in the SIS/SUS since 1998. These records refer to the origin of the trauma, injury or poisoning which led to hospitalization, expressed as per chapter XX of ICD-10[9].

Some authors mention that hospital statistics allow one to outline an almost complete picture of the most serious cause of hospitalization amongst the population, whatever that may be[10,11]. Therefore, perfecting the data which covers the causes, extent and consequences of accidents and violence is key to guiding the policies which aim to prevent and reduce the rate of such injuries.

In Brazil, the Accidents and Violence Surveillance System is based on monitoring data from the Mortality Information System (SIM) and information on hospital admissions within the Unified Health System (SUS). These data, although important, do not allow one to measure the magnitude of the accidents and violence which require urgent and emergency services, as such incidents do not always result in hospital admission or death.

In 2006, the Ministry of Health, more specifically the Health Surveillance Department, in the technical area of surveillance, prevention and control of accidents and violence, considered the strategy of implanting a sentinel surveillance service as a feasible option, with the potential to generate quality information[12]. The implementation of the Accidents and Violence Surveillance took place in 2006[13], with the urgent and emergency services being prioritized in 39 municipalities of the 27 political subdivisions (including the two larger cities of Mato Grosso State: Cuiabá and Várzea Grande) and developing a specific data collection instrument. Within the Mato Grosso State Health Department it was also decided that the municipality of Alta Floresta would be included in the first stage of implementation.

This study aims to present the characterization of the victims of accidents and violence attended to by emergency services, in the municipality of Alta Floresta – MT.

Materials and Methodology

A cross-sectional study based on primary data of reported accidents and violence relative to public health emergency service call-outs performed in the municipality of Alta Floresta – MT. The clientele of this service consists of users of the SUS. The service has the largest structure and staff and is therefore the principal regional reference, serving all emergency demand in the towns which make up the micro-region of Alta Floresta. The base town is located in the north of Mato Grosso State, in an area belonging to the Legal Amazon, with an estimated population of 47,281 inhabitants in 2006[14].

The study population was composed of residents of the municipality, victims of accidents and/or violence, who requested attention of the referential health care services between 10 July and 10 October 2006. The study period covered that which was defined by the Ministry of Health (September 2006), and was extended to reduce the effects of casual variations, which are more likely when the number of events is reduced, which variations become even more evident in municipalities with small populations.

The Notification Forms of Accidents and Violence at Urgent and Emergency Units were used as the data collection instrument, as developed and tested by the Health Surveillance Department of the Ministry of Health. This form includes identification, demographic and social data of the victim; data related to the injury which includes the place of occurrence, specification of the accident or act of violence, lesion, evolution, activity performed at the time of the injury, suspicion of alcohol or drug use, and others.

Specifically in relation to the injury itself, the Notification Form considers the nature of the lesion (fracture, sprain, burn, etc.) and the part of the body afflicted; for the first variable the report allows registration of only the main injury, while for the second, several parts of the body afflicted may be registered for each victim.

Data collection was performed by professional nurses from the service, following due training. The regular shifts were maintained in order to involve all the shift workers in the data collection. To avoid missing cases, an active search was made of the entries in the patient records from the registration book. Any mistakes in the completed notification forms were corrected against the patient records. The software EPI-INFO, version 3.3.2, was used for data entry and processing. The training, supervision, active searching, and coding of data from the notification form were performed by the first author of this study.

The accidents and acts of violence were classified, processed and analysed as they appear on the Notification Form: a) Accidents, broken down into road accidents, falls and other accidents (including all accidents apart from the first two); b) Violence, broken down into suicide attempts and acts of aggression. It should be underlined that the list, order and classification of injuries stated in this form were extracted from the International Classification of Diseases (ICD-10)[9], referential to codes V01 to Y09 of Chapter 10. The breakdown applied is also used in several studies concerning the theme of external causes[6,7,15,16,17].

Using prevalence ratios and proportions, the accidents and acts of violence were analysed in relation to the following variables: gender, age group, race/colour, education, work and suspicion of alcohol consumption. It should be made clear that the variable "work" was generated based on information about the activity being performed at the time of the injury (whether while working or on the way to work) and not with any distinction as regards the kind of work or professional occupation. As regards the suspicion of alcohol consumption, this variable was applied only to patients over 18 years of age, as minors under 18 years old are prohibited from consuming alcoholic beverages, which may affect the quality of the information provided for that age group.

The project was approved by the Committee of Research Ethics of the Júlio Müller University Hospital (protocol number 254/CEP-HUJM/06).

Results

Of the 7,394 emergency service call-outs attended in Alta Floresta in the three-month period studied, 583 (7.9%) were for victims of accidents and violence. Out of those events, 559 (95.9%) resulted from accidents and 24 (4.1%) from violence. Road accidents represented 41.0%, falls 26.2% and all other accidents 28.7%; acts of aggression accounted for 2.7% and suicide attempts, 1.4%.

The main characteristics of the victims are summarised as follows: male sex (70.3%), white (52.9%), schooling up to or below completed elementary education (59.8%), aged between 20 and 39 (44.3%) and living in an urban area (79.4%). Some of these percentages (gender, age) differ from those verified for the overall population of the municipality (Table 1).

The period studies (10/07/2008 to 10/10/2008), when split into three 30-day segments, revealed a very even distribution (190, 200 and 193) and similarities in the percentages of falls, other accidents and suicides. Road accidents were predominant in the first period (47.3%) and acts of aggression prevail in the second (5.0%). When the data were grouped per month, it could be observed that in August and September, the two full months, there were 175 and 200 cases of accidents and violence, but the percentages of road accidents, falls, other accidents and suicides were very similar. Meanwhile, the number (9) and percentage (5.1%) of acts of aggression were higher in the month of August. July and October were considered partially, but the high percen-

Table 1. Distribution of victims of accidents and violence, according to some categories. Alta Floresta emergency services, 2006.

Accidents + Violence Variables	Road Accidents		Falls		Other Accidents		Aggression		Suicide attempts		IBGE
	Nº	%	Nº	%	Nº	%	Nº	%	Nº	%	%*
Age											
0 – 9 y.o	17	7.1	38	24.8	21	12.6	-	-	-	-	21.3
10 - 19 y.o	51	21.3	35	22.9	32	19.2	4	25.0	4	50.0	20.8
20 - 39 y.o	128	53.6	32	20.9	87	52.1	9	56.3	3	37.5	35.6
40 - 59 y.o	38	15.9	27	17.6	24	14.4	3	18.7	1	12.5	16.7
60 +	5	2.1	21	13.7	3	1.8	-	-	-	-	5.6
Gender											
Male	165	69.0	88	57.5	141	84.4	13	81.3	3	37.5	51.7
Female	74	31.0	65	42.5	26	15.6	3	18.7	5	62.5	48.3
Race/Colour**											
White	135	56.5	90	58.8	93	56.0	5	31.3	3	37.5	53.0
Black	103	43.1	62	40.5	73	44.0	11	68.7	5	62.5	45.7
Others	1	0.4	01	0.7	-	-	-	-	-		1.3
Education											
≤ Elementary Schooling	149	62.3	123	80.4	134	80.2	15	93.8	7	87.5	72.0
> Elementary Schooling	90	37.7	30	19.6	33	19.8	1	6.2	1	12.5	28.0
Zone											
Urban	198	82.8	128	83.7	147	88.0	15	93.8	8	100	79.4
Rural	41	17.2	25	16.3	20	12.0	1	6.2	-	-	20.6
Total	239	41.0	153	26.2	167	28.7	16	2.7	8	1.4	100

Source: Accidents and violence notification forms
Note: * Proportional distribution of Alta Floresta population; ** One case was excluded (other accidents), due to lack of information.

tage of road accidents in the former month (48.2%) stood out.

Road Accidents Of the 239 victims of this kind of accident, 75% occurred amongst youths and young adults, aged 20 to 39. Road accidents represented 41.0% of all accidents and acts of violence. The male sex predominated in this kind of injury, at a ratio of 2.1:1 (Table 1).

In order of frequency, the victims of road accidents were distributed as follows: 155 motorcycle drivers or passengers (64.9%), 40 cyclists (16.7$) and 20 in cars (8.4%). Of the 24 (10.0%) victims who used other means of locomotion, 10 were pedestrians (8.4%). The majority of motorcycle accident victims (63.3%) were young male adults.

Road accidents caused some kind of injury to 96.7% of the victims (Table 2), with the most frequent injuries being fractures (31.4%), followed by cuts/punctures/ lacerations (20.1%) and sprains/dislocations (15.1%). The most afflicted body parts were the lower limbs (49.4%), the upper limbs (45.2%) and the head (22.6%).

Falls: Accidental falls featured amongst emergency call-outs, with 153 cases, accounting for 47.8% of the set of accidents not related to transport. The dominant characteristics of the victims were as follows (Table 1): male sex (57.5%), under 20 years of age (47.7%), white (58.8%), schooling

up to or below completed elementary education (80.4%), and living in an urban area (83.7%). Falls were the most common causes of injury amongst children (24.8%) and the elderly (13.7%). However, in the elderly population, falls represented 72.4% of all accidents, including road accidents. Falls occurred in distinct forms, namely same level falls (71.2%), and falls from other heights (15.7%), the latter being mainly falls from trees.

The main activity leading to falls was recreation/leisure. Accidental falls resulted mainly in fractures (35.9%), affecting mostly upper limbs (46.4%). As a consequence of falls, 11.8% of the victims were admitted to hospital.

Other Accidents: In this group of accidents, which includes various causes, the victims were predominantly male (84.4%, gender ratio of 5.4:1), white (56.0%), young adults (52.1%), with schooling up to or below completed elementary education (80.2%), and mostly residents in the urban area of the municipality (Table 1).

The most frequent kinds of accidents in this group were those involving the use of cutting/piercing instruments with the most common lesions being cuts, punctures or lacerations (56.9%) and fractures (17.3%). As was the case for road accidents (Table 2), this set of accidents mainly afflicted lower limbs (49.7%), while upper limbs and the head were less afflicted (31.1% and 11.4%, respectively).

Acts of Aggression: Of all the victims of aggression, over half (56.3%) were aged between 20 and 39 years old, and 25.0% were teenagers between 14 and 19 years old (Table 1). This kind of violence was more frequent amongst black individuals (68.7%), exceeding the proportion of this racial group in the local population (45.7%). Most victims were male (81.3%, with a gender ratio of

Table 2. Distribution of accident victims, by lesion and body part affected. Alta Floresta emergency services, 2006.

Kind of accident	RoadAccidents		Falls		OtherAccidents	
	Nº	%	Nº	%	Nº	%
Injury						
No injury	8	3.3	2	1.3	3	1.8
Fracture	75	31.4	55	35.9	29	17.3
Sprain/Dislocation	36	15.1	23	15.0	6	3.6
Cut/Puncture/Laceration	48	20.1	24	15.7	95	56.9
Bruise	20	8.4	39	25.5	11	6.6
Burn	-	-	1	0.7	6	3.6
Cranial cerebral trauma	9	3.8	4	2.6	1	0.6
Abdominal internal organs	2	0.8	1	0.7	1	0.6
Intoxication	-	-	-	-	4	2.4
Amputation	-	-	-	-	2	1.2
Others	41	17.2	4	2.6	9	5.4
Main sites of injury*						
Upper limbs	108	45.2	71	46.4	52	31.1
Lower limbs	118	49.4	55	35.9	83	49.7
Head	54	22.6	24	15.7	19	11.4
Total victims	239		153		167	

Source: Accidents and violence notification forms
Note: * Several accidents had more than one body part affected

4.3:1), also exceeding the relative frequency of this gender in the whole population (51.7%). Most acts of aggressions (68.7%) were caused by cutting/piercing instruments, with prominence also for physical aggression without the use of any weapon (31.3%). Acts of aggression stood out as the mode of violence which most afflicts multiple body parts. 62.5% afflicted the head, 31.3% upper limbs, 18.8% the neck, 18.8% the chest, 12.5% lower limbs and 12.5% the abdomen.

Suicide attempts: During the three-month study period there were 8 suicide attempts, all by poisoning/intoxication. The predominant characteristics of the victims were: female (62.5%), aged between 10 and 19 years old (50.0%), black (62.5%), schooling below completed elementary education (87.5%), all resident in urban areas (Table 1).

Suspected use of alcohol: Of all the victims of accidents and violence, 409 were of legal age, for whom information was available regarding the suspected use of alcohol. This suspicion was positive in 12.0% of the cases (Table 3). Amongst accident victims the proportion was 9.5%, but significantly higher amongst victims of road accidents (13.4%). Compared to victims of accidents unrelated to transport, suspected alcohol use was 152% greater amongst the victims of road accidents.

Alcohol consumption was suspected in almost all (91.7%) of the victims of acts of aggression (and predominantly amongst males). Furthermore, the prevalence of the suspected use of alcohol amongst victims of aggression was 9.6 times greater than that observed amongst victims of all the other causes.

Work-related: Of the total number of accident victims, 395 were of legal age, amongst whom an association was identified between the specific kind of accidents and work. Altogether, other accidents (58 caused by cutting/piercing instruments and 64 by other causes) occurred mainly on the way to work or at the work place (84.4%), a much higher proportion than the corresponding figures for falls (37.6%) and road accidents (41.5%). The highest percentage was observed amongst accidents caused by cutting and piercing instruments, in which a relation to work was 130% greater than that for victims of falls (Table 4). The majority of the victims of accidents with cutting/piercing instruments worked at the same company, and the accident occurred at that work place.

In relation to the evolution of all the victims of accidents and violence (583), 486 (84.4%) were discharged following attention in the emergency unit, 90 (15.4%) were admitted to hospital, 5 (0.9%) remained under observation and two (0.3%) died.

Table 3. Distribution of victims of accidents and violence, of legal age, by suspicion of alcohol use. Alta Floresta emergency services, 2006.

Kind of Accident/Violence	Suspected use of alcohol				RP (IC 95%)
	YES		NO		
	Nº	%	Nº	%	
Road Accident	25	13.4	161	86.6	2.52 (IC: 1.28-5.0)
Accidents not transport-related	11	5.3	196	94.7	RP=1
Total Accidents	36	9.5	357	90.5	
Acts of Aggression**	11	91.7	1	8.3	9.58 (IC: 6.77-13.55)
Accidents* + Suicide Attempts	38	9.6	359	90.4	RP=1
Total Accidents and Violence	49	12.0	360	88.0	

Source: Accidents and violence notification forms
Note: * Two cases were excluded, due to lack of information on suspected alcohol use; ** One case was excluded, for which suspicion of alcohol use was ignored.

Table 4. Distribution of accident victims, of legal age, according to work relation. Alta Floresta emergency services, 2006.

Kind of accident	Work-related				RP(IC95%)
	YES		NO		
	Nº	%	Nº	%	
Road Accident	78	41.5	110	58.5	1.10 (0.80 – 1.52
Falls	32	37.6	53	62.4	RP=1
Other accidents (with cutting/ piercing instrument)	50	86.2	8	13.8	2.29 (1.71 – 3.07)
Other accidents (all others)	53	82.8	11	17.2	2.20 (1.64 – 2.96)
Total Accidents	213	53.9	182	46.1	

Source: Accidents and violence notification forms

Discussion

Acquiring the knowledge about who is vulnerable and to which kind of accidents or violence has been a stiff challenge for the health care services, especially when the injuries are not fatal or do not result in hospital admission. The data available on the Information Systems on Mortality and Hospital Admissions, although useful, do not consider the majority of victims of accidents and violence. Therefore, they fail to provide adequate support for the planning of care for such injuries. This limitation is one of the arguments which promote the implementation of a Accidents and Violence Surveillance System capable of accessing the victim and gathering information relative to the victim and to the injury at any stage of his/her course through the health system. As the emergency services are the main point of access to the system for accidents and violence, they represent privileged locations for discovering the magnitude and root cause of this growing problem in public health.

In Alta Floresta, accidents and violence have accounted for 8.0% of urgent and emergency service events, almost 6.0% of all hospital admissions and over 10.0% of deaths in recent years[18]. As regards hospital mortality and morbidity caused by accidents and violence, the rates in Alta Floresta are close to those cited by other authors[5,7,17] and found for Brazil[4]. In this municipality, amongst the external causes, accidents featured in all levels of health care, with a more striking presence as from 1995, being the main cause of death, of hospital admissions and of urgent and emergency service call-outs[18].

Specifically in relation to emergency services, the victims of accidents and violence in Alta Floresta are mainly characterized as: young, white males with schooling up to or below elementary education and residents of the urban area. These findings are similar to those found in the state capital, Cuiabá[7], in terms of gender and age, however they differ as regards race/colour, as the majority of the victims in the capital (64.6%) were reported as black (black + mixed race). However, it should be taken into consideration that at the last census, 53.0% of the population of Alta Floresta declared themselves as white, while inversely, in Cuiabá 57.0% declared themselves as mixed race or black.

The fact that the emergency services attended to accident victims (95.9%) far more than victims of violence (4.1%) suggests at least three hypotheses: a) in view of the variable which differentiates these injuries – the intention[3] – it can be considered that acts of violence often carry an intention to cause death, and when this is successfully fulfilled the victim is not included in the outpatient and/or hospital statistics, but only in those regarding mortality; b) many

victims of violence, especially domestic violence, never report such acts, either due to fear, embarrassment and/or lack of information, alleging to have suffered accidents[19]; c) the aid given to victims of violence may have been less effective, thus reducing the chance of the emergency services being actioned[20].

Motorcyclists or motorcycle passengers were the main victims of road accidents. Numerous studies have produced similar results in relation to motorcyclists[7,21,22]. What can be taken from all the data is that, without a doubt, these individuals represent the segment which, due to their greater exposure and vulnerability, should be prioritized in policies or initiatives which aim to act against road accidents.

The second large group of accidents consists of falls and all other accidents. The latter are mainly in the form of cuts, punctures and lacerations, resulting from domestic or occupational accidents. This distribution was very similar to that revealed in Cuiabá[7]. One striking element of the group of other accidents provoked by piercing or cutting instruments was its relation to work, as 86.2% of the victims reported having been at the work place when the accident occurred. As the majority of these victims worked at the same company, this has exemplified the very real possibility of intervention, made possible by an accident and violence surveillance system.

Falls were the most common cause of injury amongst children and teenagers. Furthermore, they were the main cause of outpatient attention provided to the elderly. In Londrina-PR, amongst under 15-year-olds, falls were also the main motive for emergency service call-outs by external causes, accounting for 33.9%[16] of the total. In the emergency services of the USA, falls are also a frequent cause of injuries, constituting the main aetiology of accidental death amongst people aged over 65, according to Fuller, cited in FABRICIO et al.[23]

Violence (represented by acts of aggression and suicide attempts) was much less frequent, in terms of victims who requested emergency service response in Alta Floresta. In Cuiabá[7], the percentage of aggressions was much higher (8.7%), but the percentage of suicide attempts was very similar (1.7%). It is likely that the lifestyle, population density and social pressures determine such differences between the two towns of Mato Grosso state.

As regards the use of alcohol, the data from this study support other researches, in that this is a factor which influences the occurrence of road accidents and especially acts of aggression. Research conducted in São Paulo-SP[24] has shown that 28.9% of the victims of external causes presented positive blood alcohol levels. International literature indicates frequencies of 6.0% to 34.0% of positive blood alcohol levels amongst non-fatal victims of different external causes admitted to emergency services[25]. The overall values in Alta Floresta (12.0%), although relative to the suspected use of alcohol and not actual blood alcohol levels, are within that range, but were below those in São Paulo. However, the variation from 5.3% (for all accidents apart from transport-related) to 91.7% (aggressions) was close to the São Paulo study results.

The suspected use of alcohol was strongly associated to acts of aggression, when compared to all the other causes, either violent or accidental (RP=9.58; IC: 6.77-13.55). Evaluating the prevalence of positive blood alcohol concentration in São Paulo-SP[24] for each type of external cause, a statistically significant difference was also found between the categories, with the greatest prevalence verified amongst victims of aggression (46.2%), which prevalence is below that of Alta Floresta. The findings in Cuiabá revealed that 36.3% of the victims of aggression were under the influence of alcohol[7].

This study shows that most accidents and acts of violence suffered by people who sought the Alta Floresta emergency services did not cause serious injuries, bearing in mind the high proportion of call-outs with subsequent discharge. Nonetheless, it is relevant to inform the number of call-outs

which are potentially avoidable by means of preventive measures, which would imply reduced health care expenses, and also less concern and trouble amongst the victims and their families.

The limitations of this study are related to the population coverage and quality of the data. The emergency services investigated are public and the data collection may not have accounted for a portion of victims. This portion is believed to be minimal, given the absence of any private emergency service in the municipality. The study also fails to account for victims of accidents and violence who, due to the severity of the injury, or other motives, did not seek attention. Although the data collection work was strictly supervised, there were some errors in the completion of the notification forms, however these are not deemed to have compromised the results and analysis of the data.

It is concluded that accidents and violence, as generators of a significant demand for emergency services, are problems of great magnitude and relevance. For the health care sector, a surveillance system of these causes of injury, not restricted to hospital admissions and deaths, could at the least represent the chance to provide knowledge about both the profiles of the victims and the factors which can determine or influence their occurrence, in population strata, thus enabling quick and effective intervention.

In relation to the latter aspect, specifically in Alta Floresta, the results prompt some interventions which, if made feasible, would significantly improve the outlook presented: 1) the adoption of occupational safety measures[26,27], especially at the company where a significant group of accidents occurred; 2) education/awareness actions amongst youngsters, and especially the elderly, regarding the prevention of falls[15]; 3) the implementation, in conjunction with the Regional Traffic Department (CIRETRAN), of road safety measures, especially aimed at motorcyclists[28,29]; 4) strict upholding of the law concerning alcohol consumption, as per the Traffic Laws, and the adoption of consumption-restricting measures of proven effectiveness, such as the definition of closing times of bars of nightclubs[30,31,32].

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