

Characterization of Victims Injured by Firearms Assisted by the Mobile Emergency Care Service in Campo Grande-MS

Caracterização das Vítimas de Ferimentos por Arma de Fogo, Atendidas pelo Serviço de Atendimento Móvel de Urgência em Campo Grande-MS

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Abstract

Violence has grown in an overwhelming way in Brazil, raising the indicators of morbidity and mortality by external causes. Many times, the use of firearms makes fatal victims or victims who may remain disabled. This fact has increased the State's onus regarding hospital costs and also the number of life years that the young population loses, as it forms the majority of the victims. The present study aimed to survey the victims of injuries caused by firearms, assisted by *Serviço de Atendimento Móvel de Urgência* (SAMU -Mobile Emergency Care Service) in the municipality of Campo Grande, state of Mato Grosso do Sul (MS), in the period from April 2005 to April 2007 - the first two years of operation after the implementation of the service in the capital of the state. A descriptive, retrospective and longitudinal study was carried out, based on a documental analysis of the information system of the SAMU of Campo Grande. In the study, 233 events were described. The results showed 213 male victims aged between 20 and 24 years. The head and neck were the most injured parts of the body and the South region of the city was the one that concentrated most events. It follows that violence caused by firearms in Campo Grande, MS, affects the economically active population and comes from regions characterized by poverty and social inequality. This justifies the implementation of a free service like SAMU, which has had an important impact on the community's health.

Keywords: Violence; Injuries; Firearms; Mobile Emergency Care Service.

Resumo

A violência, em todas as suas apresentações, tem crescido de forma avassaladora no país, elevando os indicadores de morbidade e mortalidade por causas externas. O uso das armas de fogo, muitas vezes, faz vítimas fatais ou que podem permanecer sequeladas. Tal fato tem aumentado o ônus do estado com internações hospitalares e acréscimo dos anos de vida perdidos da população jovem, que constitui a grande maioria dessas vítimas. Nesse sentido, o presente estudo objetivou fazer um levantamento das vítimas de ferimentos por arma de fogo, atendidas pelo Serviço de Atendimento Móvel de Urgência no município de Campo Grande-MS, no período de abril de 2005 a abril de 2007, nos dois primeiros anos de funcionamento, desde a implantação desse serviço na capital do Estado de Mato Grosso do Sul. Realizou-se estudo descritivo, baseado em análise documental do sistema de informação do SAMU do município de Campo Grande-MS. Foram descritos 233 atendimentos. Os resultados evidenciaram 213 vítimas do sexo masculino, a faixa etária mais acometida foi dos 20 aos 24 anos de idade, a cabeça e o pescoço foram as partes do corpo mais atingidas e a região Sul do município de Campo Grande foi a que concentrou maior número de atendimentos. Conclui-se que a violência por arma de fogo em Campo Grande-MS atinge a camada economicamente ativa da população e provém de regiões de bolsões de pobreza e desigualdade social, justificando a implantação de um serviço como o SAMU.

Palavras-chave: Violência; Ferimentos; Arma de fogo; Serviço de Atendimento Móvel de Urgência (SAMU).

Introduction

The exponential growth of violence in Brazil in the last decades has been occupying more and more space in the media and has become part of the daily life of the population. It has become the theme of many discussions even in the National Congress about firearms, the disarmament statute, impunity, more severe penalties, and reduction in the age of criminal responsibility (Peres and Santos, 2005).

In Brazil, violence is one of the main public health problems. It is more evident in capitals and large cities, predominantly among male youths who live in peripheral areas and who have low schooling (Minayo and Souza, 1999).

From the 1980s onwards, deaths by unnatural causes have gradually increased. They rank second in Brazil compared to all other causes of death and across all age groups, remaining behind cardiovascular diseases only (Mello Jorge and Koizumi, 2004).

When we consider the age group between 5 and 45 years, deaths by external causes, which are those caused by motor vehicle accidents, aggressions in general, firearm injuries, injuries caused by sharp or blunt objects, poisoning, venomous animals and suicides, rank first (Chesnaïs, 1999). Up to the 1960s, they ranked fourth (Minayo and Souza, 1999).

Brazil occupies the second position in deaths caused by firearms among 57 countries investigated by UNESCO. Deaths by firearms registered in the country in the last ten years exceeded the number of victims of 26 armed conflicts in the world, like the Gulf War and the territorial dispute between Israel and Palestine, which made 125 thousand victims in 52 years of mutual attacks. In this period, 325,551 people died in Brazil victims of violence by firearm, an average of 32,555 deaths per year. From 1979 to 2003, 550 thousand people died in the country, representing 100 victims per day; a large part of them are children (Waiselfiz, 2005).

The rates of mortality due to firearms in Brazil (including homicides, accidents and deaths resulting from indeterminate intention) increased three times from 1979 to 1999: from 6 to 18 per 100 thousand inhabitants. Deaths deriving from injuries caused by firearms were responsible for 27% of the deaths by external causes in the overall population and for 42% in the male population between 15 and 19 years

of age. It is worth pointing out that, to each woman who died due to this injury, 13 men died in 1999 (Peres et al., 2004).

The largest part of the homicides that occur in the country is caused by firearms (Souza, 2005). In the state of São Paulo, in 2000, 90% of the total number of homicides were caused by firearm injuries (Peres and Santos, 2005).

Firearm injuries constitute the highest mortality rate among hospitalizations due to external causes, with approximately 10 deaths per 100 hospitalizations and with a 34% higher cost compared to the other types of aggressions (Souza, 2005).

According to *Instituto de Pesquisa Econômica e Aplicada* (IPEA - Applied and Economic Research Institute), the cost of violence in Brazil was, in 2004, more than 92 billion Reais, that is, 5% of the country's Gross Domestic Product (GDP) in the period (Cerqueira et al., 2007).

In 1997, in Brazil, approximately 7% of the total amount spent with hospitalizations by *Sistema Único de Saúde* (SUS - National Health System) were due to unnatural causes; among them, accidents by external causes, like motor vehicle accidents, injuries caused by sharp and blunt objects and firearm injuries (Feijó and Portela, 2001).

In 2000, in the country, 35% of the hospitalizations due to external causes occurred in the age group between 15 and 24 years and 37% between 25 and 39 years. The male sex composed 84% of these patients (Souza, 2005).

Injuries and deaths of adolescents and young adults caused by unnatural causes penalize the individual, leave their relatives unsupported, increase the number of potential years of life that are lost, reduce the social and economic productivity, and impose an onus on the country, affecting its economy and growth (Mello Jorge and Koizumi, 2004).

The epidemiological characteristic of violence in the state of Mato Grosso do Sul (MS) follows the country's reality. In 1998, 68% of the homicides were perpetrated by firearms. This figure increased to 70% in 2000, and 6% of the total number of deaths in the state, in this year, were caused by firearms (Nachif, 2006).

In the municipality of Campo Grande (MS), mortality by unnatural causes ranked second in the total number of deaths between 1997 and 2001, alternating

with cancers. Homicides committed by firearms have occupied, from the beginning of the decade of 2000 onwards, the second position in the total number of deaths, being responsible for 70% of the deaths by external causes. In 2004, 50% of the victims died in the crime scene and men constituted 94% of the total number of deaths caused by firearm injuries (Nachif, 2006).

It should be emphasized that firearm injuries may result in victims with irreversible lesions who cannot work or who need healthcare by means of hospitalization, use of medications, physical and mental rehabilitation. Thus, they cause an increase in the use of the Health and Social Security System, raising health costs and hindering the country's development (Carvalho et al., 2007).

Considering that the external causes are the second cause of death in Brazil and that they may be avoided when the individual receives adequate assistance, the Ministry of Health has implemented the *Serviço de Atendimento Móvel de Urgência* (SAMU - Mobile Emergency Care Service), aiming to improve the quality of the assistance provided for victims of traumas of any etiology, and also, to offer specialized assistance to people who suffer clinical emergencies in general. Thus, the health teams of the SAMU vehicles can provide quick and early assistance in the place where the emergency occurred.

The National Urgency and Emergency Policy

There is historical and epidemiological evidence that shows that accidents by external causes, firearm injuries among them, raise the causes of morbimortality, representing in 2000, in Brazil, more than 12% of the total number of deaths (Mello Jorge and Koizumi, 2004).

The Ministry of Health instituted the national policy of attention to urgencies in September 29, 2003, through Directive no. 1863, in view of the high mortality indexes in the country, caused both by diseases of the circulatory system, which are the main cause of death in Brazil, and by traumas, which frequently derive from violence (Brasil, 2003a).

Attention to urgencies and emergencies, nationally instituted by Directive no. 1864, happens through SAMU, which can be called by the telephone number 192 (Brasil, 2003b).

Directive no. 2048 establishes the technical and financial resources referring to the installation and maintenance of SAMU in the municipalities, allocating one advanced support ambulance to every 400 to 450 thousand inhabitants and one basic support ambulance to every 100 to 150 thousand inhabitants (Brasil, 2002).

The ambulances called *Unidade de Suporte Avançado de Vida* (USA - Advanced Life Support Unit) function as a mobile Intensive Care Unit (ICU), as they are equipped with all the necessary materials to assist every type of victim, classified as low, medium and high complexity according to the injury. The crew of this kind of ambulance is composed of at least three members: one doctor, one nurse and one driver, who is qualified to be rescuer.

The Basic Life Support ambulances (*Unidade de Suporte Básico de Vida* - USB - Basic Life Support Unit) are equipped with basic materials to provide care for lower complexity victims and have a team that is usually composed of two members: one nursing assistant and one driver/rescuer. As they assist low complexity cases, they are more numerous and also have a higher number of events per vehicle. In addition, they can assist victims in serious conditions, aiding the Advanced Life Support vehicles.

This model of pre-hospital service guarantees assistance to all persons outside the hospital environment, dealing with the majority of emergencies and urgencies, either clinical or of traumatic origin, in the 24 hours of the day.

The telephone call to SAMU is free from any fixed or mobile phone. It is controlled by a regulation center constituted of *técnicos de atendimento em regulação médica* (TARMs - assistance technicians in medical regulation) and regulating doctors who take the calls and, according to the needs in each case, send to the place a Basic Life Support or Advanced Life Support ambulance.

The Mobile Emergency Care Service of Campo Grande - MS

The Mobile Emergency Care Service (SAMU) was implemented in the municipality of Campo Grande-MS on April 17, 2005, and it has an emergency care regulation center.

The initial fleet was constituted by 11 vehicles: nine Basic Support Units (USB), which stay in the 24-hour healthcare units of the municipality, substituting the traditional ambulances (fixed pre-hospital service); two Advanced Support Units (USA), placed in strategic points of the city so they can reach the requesting places quickly; one advanced support unit for psychiatric assistance, manned by one doctor, one nurse and one rescuer; and one *Veículo para Intervenção Rápida* (VIR - Rapid Intervention Vehicle), with one nurse and one driver.

In the first two years of implementation of SAMU in Campo Grande-MS, there was an average of 3,400 events per month, of which approximately 8% were assisted by the USA, as they were considered of high complexity, and the others, by the USB.

Now that a little more than two years have passed since the implementation, SAMU has become more and more known in the municipality of Campo Grande-MS, as there are more than one thousand daily calls for requests and questions.

During these two years, the number of events has gradually grown, raising the number of calls received by the number 192, as the population now knows more about the SAMU, which has increased its credibility and the trust in the service.

Methodology

It is a descriptive study that used the data provided by the Mobile Emergency Care Service of the municipality of Campo Grande-MS, in the period from April 2005 to April 2007 - the first two years of SAMU in this municipality.

In the study, 233 medical records of individuals assisted by the Advanced Support Units of SAMU Campo Grande-MS were analyzed. These individuals were victims of firearm injuries.

Data collection occurred in the administrative headquarters of SAMU. The medical assistance records were used.

The results were disposed in the form of descriptive statistics, with 95% confidence intervals for the produced estimates and charts.

The present study was submitted to the Ethics Committee for Research Involving Human Beings of Universidade Federal de Mato Grosso do Sul. It obtained a

favorable opinion through the protocol no. 925/2007. A document of commitment to use database information was signed, according to Resolution 196/96 of the National Health Council (Brasil, 1997).

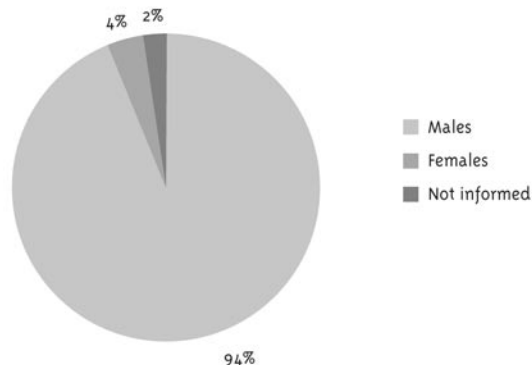
Results

In these two years during which SAMU has been in operation in Campo Grande-MS (April 2005-April 2007), the advanced support units (USA) provided assistance for 6,008 individuals, an average of 3,004 events per year and 250 per month. The majority of these events were clinical, that is, people who did not suffer traumas of any etiology.

The victims who suffered firearm injuries corresponded to 3.9% (3.4% - 4.4% CI 95%) of the individuals assisted by the advanced support units, or 233 people, an average of 116.5 people per year, approximately 10 people per month.

Of the 233 people assisted by SAMU Campo Grande-MS, 94% (90.9% - 97.0% CI 95%) were males, 3.9% (1.4% - 6.3% CI 95%) were females and 2% did not have the sex description registered in the form. The data reveal an average of 109.5 men suffering from firearm injuries per year, and 4.5 women, as illustrated by Figure 1 in the Appendix.

Figure 1 - Distribution of the victims of firearm accidents according to sex, assisted by the Mobile Emergency Care Service (SAMU), Campo Grande-MS – April 2005/ April 2007 (n=233).



Similarly to what occurs in the other metropolitan regions of Brazil, as shown by a research study conducted by FUNASA (2002), men are more affected than women, also corresponding to 94% of the victims in the year 2002.

In Brazil, the male-female ratio concerning deaths caused by firearms was 13.4 in 1999. In the assistance provided by SAMU at Campo Grande-MS, this ratio was 24.3, almost twice the national average (Peres et al., 2004).

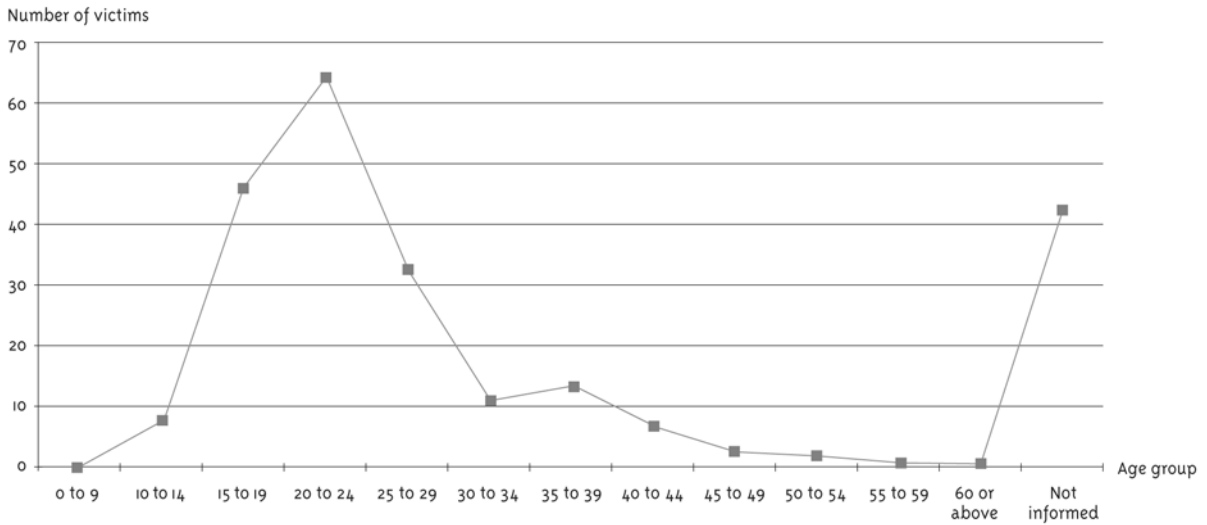
Of the overall number of people assisted, 22 victims died during the assistance provided by the SAMU teams, that is, 9.4% (5.7% - 13.2% CI 95%) of the people injured by firearms died as a result of this type of violence.

The data showed that 47% (40.8% - 53.6% CI 95%) of the victims are in the age group 15-24 years, coinciding with the results of the research carried out by FUNASA (2002), which also found 47% of the overall number of deaths caused by firearm injuries in this same age group. While 19% (13.9% - 23.9% CI 95%) of the victims in the present study belong to the age group 25-34 years, in the research conducted by FUNASA (2002), 31% of the deaths occurred in this age group, as illustrated by Figure 2 in the Appendix.

In the present investigation, 72% (66% - 78% CI 95%) of the victims are adolescents and young adults, with ages ranging between 15 and 39 years, encompassing the great majority of assistances. These data are similar to those of national metropolises, as revealed by the study conducted by FUNASA (2002), with 78% of the total deaths caused by firearm injuries, and are slightly below the national profile of 90% of people injured by firearms, as found by Peres and collaborators (2004).

In the study, 43 people who suffered firearm injuries, or 18.5% (13.5% - 23.4% CI 95%) of the total number of victims, did not have their ages registered in the forms due to the fact that the forms had been insufficiently filled in and/or many victims did not have their documents with them when the event occurred, did not have acquaintances or relatives in the place of the occurrence and were not in good physical and/or mental condition to inform their age. This fact negatively affected the data tabulation and the correct analysis of the incidence of firearm injuries according to the age group, as it is a large number of people.

Figure 2 - Distribution of the victims of firearm accidents according to age group, assisted by the Mobile Emergency Care Service (SAMU), Campo Grande-MS – April 2005/April 2007 (n=233).

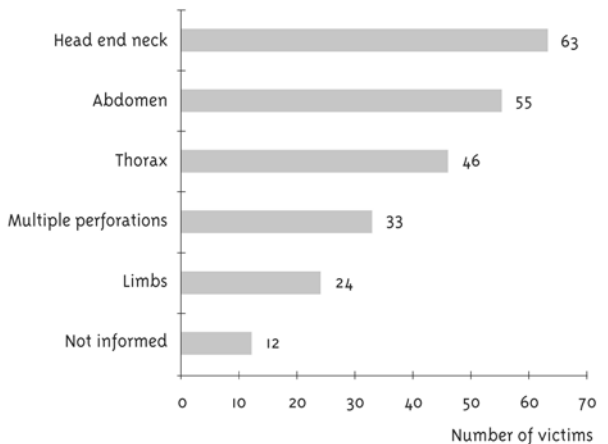


The most injured parts of the body were: head (face and skull) and neck, with 27.1% (21.3% - 32.7% CI 95%) of injured people; anterior and posterior abdomen, with 23.6% (18.2% - 29.1% CI 95%), and anterior and posterior thorax, with 19.8% (14.6% - 24.9% CI 95%). The frequency of victims with multiple injuries, wounded by more than one perforation by firearm, was lower: 14.2% (9.7% - 18.6% CI 95%), as well as the frequency of people injured in the limbs: 10.3% (6.4% - 14.2% CI 95%). These findings are similar to the study carried out by Nachif (2006) from February to June 2004, in which the deaths caused by firearms occurred mainly due to injuries in the thorax and abdomen (35.7%) and in the skull (24.3%), as illustrated by Figure 3 in the Appendix.

It is important to emphasize that the victims assisted by the teams of the Advanced Life Support Units of SAMU are those who have the most serious injuries, according to the evaluation made by the doctor of the regulation center.

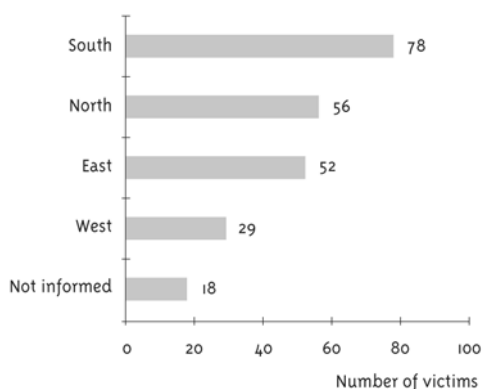
Of the assisted individuals, 5.2% (2.3% - 8.0% CI 95%) did not have the part of the body in which they were injured described in the forms, which negatively affected the information and the database feeding.

Figure 3 - Distribution of the victims of firearm accidents according to injured part of the body, assisted by the Mobile Emergency Care Service (SAMU), Campo Grande-MS – April 2005/April 2007 (n=233).



Regarding the region of the municipality in which the highest number of victims of firearm injuries were assisted, the study pointed to the South region, with 33.5% (27.4% - 39.5% CI 95%) of the cases; the North region, with 24.1% (18.5% -29.5% CI 95%) of the cases; and the East region, with 22.4% (17.0% - 27.7% CI 95%). The West region presented the lowest frequency, with 12.5% (8.2% -16.7% CI 95%) of the cases, as illustrated by Figure 4, in the Appendix.

Figure 4 - Distribution of the victims of firearm accidents according to region of occurrence (district), assisted by the Mobile Emergency Care Service (SAMU), Campo Grande-MS – April 2005/April 2007 (n=233).



It was verified that 7.8% (4.3% - 11.2% CI 95%) of the victims did not have in their forms the address or the neighborhood in which they were assisted.

According to a socioeconomic study conducted in the municipality by the Department of Urban Planning (PLANURB) (Sauer et al., 2005), neighborhoods like Jardim Centro-Oeste and Los Angeles, both in the South region, are among the six neighborhoods of highest social exclusion, highest poverty index among breadwinners, lowest literacy index, lowest number of years of schooling of the population and constitute the lowest family income of the municipality, around R\$ 315.00 per family. These neighborhoods are classified as places of extreme poverty.

Other neighborhoods of the North Region, like Jardim Noroeste, Veraneio, Mata do Segredo and Nova Lima, located in the second most violent region of the municipality of Campo Grande-MS, also have discoura-

ging indexes, and the six neighborhoods of this region, with the highest social exclusion of the municipality, are among the 15 neighborhoods with lowest family income and schooling rates.

Final Remarks

In the municipality of Campo Grande-MS, the majority of the victims of firearm injuries assisted by the Advanced Life Support Vehicles of SAMU are young males aged 15-24 years, mainly in the age group of 20-24 years. This leads us to believe that there is a negative impact on the labor market and on family organization. In addition, health expenses probably increase, due to hospitalizations and rehabilitation treatments. Besides, many of these youths will carry with them permanent sequels, will no longer be economically active and will not contribute to the country's economic growth. If they depend financially on retirement or disability benefits, they will burden the State even more.

The study revealed that the victims' affected body parts were the head, neck, thorax and abdomen. This may determine, at least in these cases, the shooter's real intention of committing the homicide, and it certainly hinders these people's rehabilitation.

Concerning the regions of Campo Grande where most victims were assisted, they coincided with the neighborhoods of extreme poverty, family income below R\$ 500.00 and population with lower literacy indexes and lower number of schooling years, revealing the impact that education and socio-economic situation may generate on the population, regarding violence growth.

The population of the present study represents part of the violence in the municipality of Campo Grande, as the care provided by the Basic Support Units (USB) was not analyzed by the study, and the victims assisted by the other services that deal with traumas were also not included in this research.

The implementation of SAMU in Campo Grande-MS meets the population's needs. SAMU strengthens pre-hospital assistance, promotes integral health assistance, offers high-quality care and ensures emergency care. However, the recording of the data proved to be a weakness that must be overcome, in view of the forms not properly filled in or containing information without reference.

The study revealed that the discussion about violence is fundamental, mainly violence caused by firearms, as the number of injuries of this nature has been increasing over the years.

Finally, it should be emphasized that not only the municipality, but also the country needs policies that favor the economic growth, the reduction in social exclusion, the incentive to education and professionalization and that are against violence as a constant practice, aiming to combat it and to avoid that it continues to rank first among the causes of death that affect the young population of Brazil.

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