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RESEARCH

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## Mortality due to external causes in youth in state of Bahia

Mortalidade por causas externas em jovens no estado da Bahia

Mortalidad por causas externas en la juventud en estado de Bahía

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### ABSTRACT

**Objective:** To describe mortality due to external causes in the State of Bahia, from 2000 to 2011, according to socio-demographic data of victims, types of causes and mortality rates. **Methods:** this is a time series descriptive study (2000 to 2011), with individuals in the age groups of 15 to 19 and 20 to 29 years and living in the state of Bahia. Data were obtained from the Mortality Information System (SIM). **Results:** 44536 deaths were recorded due to external causes, specifically to injury (3.6 %), mostly are males (90.7 %), and 2010 was the year with the highest record (CM 134.7). **Conclusion:** there is the importance of preventive measures and health promotion, through public policies and health education, to reduce morbidity and mortality from these diseases.

**Descriptors:** External Causes, Mortality, Young.

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## RESUMO

**Objetivo:** descrever a mortalidade por causas externas no Estado da Bahia, no período de 2000 a 2011, segundo dados sociodemográficos das vítimas, tipos de causas e taxas de mortalidade. **Métodos:** trata-se de um estudo descritivo de série temporal (2000 a 2011), com indivíduos nas faixas etárias de 15 a 19 anos e 20 a 29 anos e residentes no estado da Bahia. Os dados foram obtidos a partir do Sistema de Informações sobre Mortalidade (SIM). **Resultados:** foram registrados 44.536 óbitos por causas externas, especificamente devido a agressões (53,6%), sendo em sua maioria indivíduos do sexo masculino (90,7%), no qual 2010 foi o ano com maior registro (CM 134,7). **Conclusão:** destaca-se a importância de medidas preventivas e de promoção da saúde por meio de políticas públicas e de educação em saúde para redução da morbimortalidade por estes agravos.

**Descritores:** Causas Externas, Mortalidade, Jovens.

## RESUMEN

**Objetivo:** Describir la mortalidad por causas externas en el Estado de Bahía, de 2000 a 2011, según los datos sociodemográficos de las víctimas, los tipos de causas y las tasas de mortalidad. **Métodos:** se trata de un estudio descriptivo equipo de serie (2000 a 2011), con los individuos en los grupos de edad de 15 a 19 y de 20 a 29 años y que viven en el estado de Bahía. Los datos fueron obtenidos del Sistema de Informaciones sobre Mortalidad (SIM). **Resultados:** se registraron 44536 muertes por causas externas, especificamente debido a lesiones (53,6 %) son en su mayoría hombres (90,7 %), en los que 2010 fue el año con el registro más alto (CM 134,7). **Conclusión:** no es la importancia de las medidas de promoción de la salud y de prevención, a través de políticas públicas y educación para la salud, para reducir la morbilidad y la mortalidad por estas enfermedades.

**Descritores:** Causas Externas, La Mortalidad, Joven.

## INTRODUCTION

External causes are considered to be a major public health problem and the increase in its incidence has influenced the organization of the Unified Health System (SUS) in Brazil, and generated high expenses for the health service.<sup>1</sup> External causes according to the International Statistical Classification of Diseases and Related Health Problems - 10th Revision (ICD-10) are traumas or injuries caused by accidental or intentional causes. The types of accidental external causes are traffic accidents, work accidents, falls, burns and drownings, and the intentional ones are aggressions and self-harm, such as poisonings and suicides.<sup>2,3</sup>

Accidents and violence are estimated to account for more than 5 million deaths each year in the world, generating dozens of hospitalizations, hundreds of emergency care and thousands of outpatient visits, with young people, blacks and poor people being the most reached.<sup>4</sup> Violence has become increasingly prominent on the national scene due to its magnitude, severity, social impact and the capacity to make victims and their families vulnerable. Children, adolescents and young people are the most victimized by violence.<sup>5</sup>

Numerous people die from external causes every day in Brazil, representing the third cause of death in

the general population and the second in males. Racial inequalities seem to be associated with mortality, since, especially in large urban centers, external causes reach predominantly young blacks, at the height of reproductive life and greater economic production.<sup>6-7</sup> Ethnicity is not considered a risk factor, but the adverse social insertion of an ethnic group is a characteristic of vulnerability.<sup>8</sup> Ethnic differences are associated with social inequalities and condition the way of living and dying of population groups.<sup>9</sup>

With regard to deaths and serious injuries caused by traffic accidents in Brazil, it is estimated that more than 150 thousand people were affected and costs represented 28 billion reais, generating a great burden on the health system.<sup>10</sup>

Despite the magnitude of external causes, the analysis of epidemiological characterization is still scarce, which limits the use of health information as a tool for formulating and implementing policies.<sup>11</sup>

Data on deaths at local, regional and national levels can be obtained through the Mortality Information System (SIM), developed by the Ministry of Health. Such a system is a product of data unification, having variables that allow, from the cause Mortis, construct indicators and process epidemiological analyzes in order to contribute to the efficiency of health management.<sup>12</sup>

Thus, due to the scarcity of national data on the subject, especially in the State of Bahia, and mainly due to external causes, it has reached predominantly young people reducing their potential years of life, this study aims to describe the mortality due to external causes in the State of Bahia in the period of 2000 To 2011 according to the sociodemographic data of the victims, types of causes and mortality rates.

## METHODS

This is a descriptive, time-series study (2000 to 2011) on the mortality of young men and women in the State of Bahia, based on data from the Mortality Information System (SIM) of the Ministry of Health and made available electronically through the Department of Informatics of the Unified Health System (DATASUS).

Data on deaths from external causes occurred between 2000 and 2011, involving individuals aged 15 to 19 years and 20 to 29 years of age and living in the state of Bahia, were selected.

The variables studied were sociodemographic characteristics (gender, age, marital status, race/color) and injury (place of occurrence and type of external causes). The types of accidents and violence were classified according to the chapter XX of CID: transport accidents (V01-V99), aggressions (X85-Y09), intentional self-inflicted injury (X60-X84), undetermined events (Y10-Y34), other external causes of accidental injury

(W00-X59) and other deaths (Y35-Y98) were included in the “other causes of death” group. Gross mortality rates (number of deaths/population × 100,000) were calculated, which were standardized by the direct method, according to the age range, with the population between 15 and 29 years old in Bahia, in 2010, as a standard. The most recent census data between the years studied.

The spreadsheets generated by DATASUS were exported to the Microsoft Office Excel Program, allowing the descriptive analysis of the data (absolute and relative frequencies), calculations of gross and standardized mortality coefficients, as well as the construction of tables and figures.

## RESULTS AND DISCUSSION

A total of 44,536 deaths from external causes were recorded in Bahia, involving young people aged 15 to 29 years, during the study period. It was observed a growth in the number of deaths throughout the historical series, with a peak in 2010, 11.9% (n = 5,306) and slightly declining in 2011 (table 1).

According to the calculations of the standardized mortality coefficients (table 1), in 2000, out of every 100,000 Bahian youths, 63.2 died due to accidents and violence. This figure rose to 124.5 deaths per 100,000 in the last year studied.

**Table 1** – Distribution of the number of deaths due to external causes in young people in Bahia and gross and standardized mortality coefficients, from 2000 to 2011. Bahia, Brazil, 2011.

YEARS	N	%	Gross MC	Standardized MC
2000	2389	5.4%	60.9	63.2
2001	2434	5.5%	61.4	63.6
2002	2853	6.4%	71.3	73.9
2003	2982	6.7%	73.9	76.8
2004	3020	6.8%	74.2	77.2
2005	3136	7.0%	75.5	78.9
2006	3440	7.7%	82.0	85.2
2007	4029	9.0%	95.9	95.5
2008	4714	10.6%	110.7	110.1
2009	5297	11.9%	125.4	125.0
2010	5306	11.9%	134.6	134.7
2011	4936	11.1%	124.5	124.5

Source: SIM/DATASUS/Ministry of Health, 2014.

**Table 2** – Sociodemographic characteristics of individuals who died due to external causes in the state of Bahia, from 2000 to 2011. Bahia, Brazil, 2011

SOCIODEMOGRAPHIC CHARACTERISTICS	N	%
<b>Gender</b>		
Male	40397	90.7
Female	4134	9.3
Ignored	5	0.0
<b>Age group</b>		
15 to 19 years	11732	26.3
20 to 29 years	32804	73.7
<b>Ethnicity (race/color)</b>		
White	3506	8.0
Black	5105	11.4
Yellow	45	0.1
Brown	31873	71.5
Indigenous	43	0.1
Ignored	3964	8.9
<b>Marital Status</b>		
Single	38494	86.4
Married	1973	4.4
Widow	46	0.1
Judicially separated	96	0.2
Others	126	0.3
Ignored	3801	8.6
<b>Education</b>		
none	1808	4.1
1 to 3 years	10082	22.6
4 to 7 years	15817	35.5
8 to 11 years	5856	13.1
12 years or more	879	2.0
Ignored	10094	22.7
<b>TOTAL</b>	<b>44536</b>	<b>100.0</b>

Source: SIM/DATASUS/Ministry of Health, 2014.

## Socio-demographic characteristics of victims

The majority of deaths occurred in young males, 90.7% (n = 40397), while females accounted for 9.3% (n = 4134) of deaths recorded throughout the period (table 2).

As to the ethnicity (race/color) of the victims, 71.5% (n = 31873) were brown, followed by black individuals, 11.4% (n = 5105), and 8.9% (n = 3964) of the cases, this information was ignored.

The civil status of victims of external causes was also analyzed, in which 86.4% (n = 38494) were single. In 8.6% of the records (n = 3801) this information was ignored.

When analyzing the schooling of the victims, it was observed that the majority had between 4 and 7 years of study 35.5% (n = 15817), this information sometimes being ignored 22.7% (n = 10094).

## Characteristics of deaths

When considering the total number of deaths from each type of external causes, it was found that 53.6% of deaths during this period were due to aggression (n = 23877); 16.9% (n = 7541) due to indeterminate external causes; 16.2% (n = 7201) related to transportation accidents; 10.4% (n = 4640) due to other accidental external causes and 2.9% (n = 1277) were classified as cases of voluntary self-harm, as shown in figure 1.

It was observed that, in relation to the place of occurrence, 40.8% (n = 18166) was on the public highway; 34% (n = 15142) in the hospital; 15% (n = 6681) elsewhere; 7.5 (n = 3342) at home; 1% (n = 6681) in another health establishment, with 1.7% (n = 747) of the registries being ignored.

According to the data presented by the Health Surveillance Secretariat of the Ministry of Health (SVS / MS), in 2007 there were 131,032 violent deaths in the country, and the aggressions represented 47,700, and traffic accidents 38,419. In 2009, 881,686 hospitalizations were recorded for traffic accidents and violence, generating an expense of approximately 858 million for the health system.<sup>13</sup>

In 2009, in Brazil, 1,103,088 deaths were recorded, of which 138,697 were due to external causes. The

aggressions (murders) represented 36.8% of the deaths and the first cause between the age group of 15 and 39 years. Traffic accidents corresponded to 26.5%, with emphasis on the age group from 10 to 14 years of age, and from 40 to 59 years old, and among other age groups, they were second only to the number of deaths. For the elderly, falls are the main cause of death and, among children, drownings and burns are the main causes. In relation to self-induced lesions, between 10 and 59 years, presents the fifth place and for children and the elderly the sixth.<sup>14</sup>

In relation to deaths in the state of Bahia, external causes represent the second place, with a total of 10.6% in 2000 and 16% in 2009.<sup>12</sup>

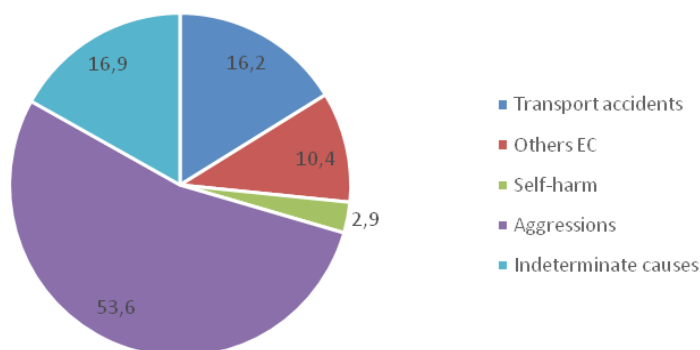
The findings indicate a high mortality from external causes in men living in Bahia state throughout the study. The data confirm the higher risk of death from these causes among men, corroborating with studies that report that these are four times more subject to external causes than women.<sup>3,15,16</sup> Disparity according to sex can be attributed to both biological factors (bone-muscular, hormonal, fat distribution, among others) and to behavioral factors, developed from the social roles played.<sup>17</sup>

Faced with the worrying situation revealed by men's health indicators, the National Policy for Comprehensive Health Care for Man (PNAISH) was formulated. According to the Ministry of Health, the diagnosis of human health in order to subsidize the policy reveals that the causes of mortality in the male population of 15-59 years is due to external causes; Secondly, are diseases of the circulatory system; In the third, the tumors (cancer); fourth, diseases of the digestive system; and finally, fifth, diseases of the respiratory system.<sup>18</sup>

Thus, the aim of PNAISH is to promote improvements in the health conditions of men, in the age group from 20 to 59 years old, contributing to the reduction of male morbidity and mortality, mainly due to preventable causes.

The results also showed that there are differences in mortality due to external causes according to race/color of the skin in the state of Bahia. The browns had

Figure 1 – Deaths due to external causes of the Large Group ICD 10 in young people aged 15 to 29 years in the period of 2000 to 2011 in the state of Bahia.



a higher mortality rate. The marital status of the victims was mostly single - perhaps this is justified by the age range selected for this study, which was that of 15-29 year olds. In relation to the analysis of schooling, the individuals most affected are those with incomplete elementary education, which may be contributing to the fact that accidents and violence in their association with socioeconomic conditions have a greater incidence in relation to external causes.<sup>17</sup>

Of the total number of deaths studied, attention was drawn to the percentage of deaths due to aggression, an event that corroborates several studies, especially regarding the higher incidence in males with young age. Differences observed in the occurrence of aggression, especially in males may be elucidated due to the search for power, which is usually one of the attributes estimated in certain societies and this may be associated with violence, since it can be seen as an instrument for gaining power or for resistance to it between male segments and also due to hypermasculinity.<sup>3,15,16</sup>

The transport accidents obtained a percentage very close to the one of aggressions, this is due to this type of external causes to grow as an important cause of mortality and morbidity in young men.<sup>19</sup> This finding corroborates with those found in the literature that point to transportation accidents followed by aggressions as a major cause of emergency room and hospitalization.<sup>19</sup>

In addition to corroborating with several studies that indicated this type of injury as the most frequent<sup>15,19</sup>, the risk behavior for traffic accidents is determined in part by the pressure exerted by a group, by immaturity, by the feeling of omnipotence, by excessive alcohol, high speed and recklessness of the driver.<sup>15</sup> Alcohol abuse and disrespect to traffic laws can be pointed out as factors directly related to this type of accident. The most prominent place was the public thoroughfare, followed by hospitals.

The epidemiological profile of deaths due to external causes in the state of Bahia is similar to that of Brazil: most of the deaths result from aggression, in which the most affected are males, of color or brown breed in the juvenile phase. External causes are a multifactorial problem, and it is necessary to work to prevent external causes to avoid early deaths, reducing the economic impact of hospitalization costs and productive life losses.

## CONCLUSION

With this study, it was possible to trace the profile of victims aged 15-29 years who died due to external causes from 2000 to 2011 in the state of Bahia, as well as the type of external causes suffered by these victims.

The high number of deaths in youth and adults revealed to the vulnerability of these groups to such an aggravation, mainly due to aggressions. In characterizing the mortality

from external causes in the State of Bahia, the study sought to contribute information to subsidize the adoption of preventive measures of accidents and violence, since these types of injuries are preventable.

The involvement of young people in this problem has a great impact under the country's health indicators, such as the potential years of life lost. This indicator translates to the number of years a person, who died prematurely, could have lived.

The control of deaths due to external causes proves to be of great importance in the fight for the reduction of early deaths, especially in the case of individuals with ever shorter age groups. Preventive and health promotion measures can be developed and adopted in order to contribute to the reduction of not only mortality rates but also morbidity due to external causes, as well as avoiding the emotional and social consequences generated by the family members.

Finding that some information is still neglected, there is a need and importance of completing the notification instruments in order to provide increasingly accurate information on such diseases, so as to collaborate in order to better understand the pattern of causes and therefore, subsidize the elaboration and implementation of public health policies.

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