ORIGINAL ARTICLE

Descriptive study of the epidemiological profile of deaths by suicide in the state of Roraima, Brazil, from 2014 to 2017

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ABSTRACT

Introduction: Suicide is one of the top three reasons of death worldwide for the 15- to 44-year age range. The Brazilian state of Roraima has shown indicators that draw attention when compared to national rates of suicide. In this sense, for the proposal of preventive measures appropriate to the state's reality, it is important to understand the local epidemiological particularities. **Objective:** to identify the epidemiological profile of deaths by suicide in the state of Roraima, Brazil, between 2014 and 2017. **Methods:** Descriptive, population-based documentary research. The source of information was the database from the Brazilian public health system (DATASUS). The analysis included deaths by residence caused by suicide from 2014 to 2017. Cut-outs were established according to the variables incidence by municipality, marital status, age, gender, color/race, place of occurrence and method of suicide. **Results:** 176 deaths were reported in the state of Roraima during the period studied. The average mortality coefficient was 8,6/100.000 inhabitants. Deaths were more frequent among men (73.9%), aged 20 to 29 years (31.2%), resident in the state capital (52.8%), brown (64.2%) or indigenous (25.6%) and single (69.9%). The main suicide method was hanging, strangulation and suffocation (87.5%), with the domicile being the most usual place (72.1%). **Conclusion:** The results imply the need to act on the problem, which grows in proportion and gains prominence in the national indicators. Suspicion of suicidal behavior in the face of consolidated data may reduce the incidence.

Keywords: suicide; epidemiology, descriptive; mortality.

INTRODUCTION

Suicide is among the top three causes of death between 15 and 44 years of age in the world[1]. Ideation, planning and evaluation of the possible impact caused on people are part of the suicidal behavior spectrum[2]. Such actions, in general, aim to resolve unbearable issues for the individual, starting from conception to the consummation of suicide, an act of intentional and self-harm with fatal outcome[2]. Suicide is also responsible for being one of the oldest themes related to individual and community health. In historical terms, it is studied with exclusion identified since Ancient Greece, today being a social phenomenon that is recurrently worked on[3]. It is a serious public health problem,

victimizing one million people a year (equivalent to one suicide every 45 seconds globally)[1].

Today, it is well documented that sex, age, culture and ethnicity are notorious for the epidemiology of suicide. The main risk factors for suicidal tendencies are problems of a biological, medical, environmental, psychiatric, psychological, philosophical-existential nature and social motivations[4]. In this sense, understanding how each factor presents itself in each society can help prevent unfavorable outcomes and lethality.

The suicide mortality coefficient represents the number of cases per 100,000 inhabitants in a given year. Generally speaking, the highest coefficients correspond to Eastern European countries and the lowest to Central and South American countries[1]. Among those with the highest rates are: Sri Lanka (46.5/100,000), Lithuania (23.9/100,000) and Russia (23.6/100,000)[5]. The rates of the United States, Western Europe and Asia are in the central range - Canada corresponds to the 15th global position (10.8/100,000) and the United States to the 34th (8.0/100,000)[6,7]. Brazil, in this sense, despite being among the eight nations that comprise the WHO with the highest absolute value of deaths from such cause, with approximately 24 daily cases, it has coefficients considered relatively low: it accounts for the 73rd overall position (oscillates between 4.8 and 5.5 cases per 100,000 people)[8,9]. In spite of this, because it is a populous country and because of its high absolute mortality, deaths resulting from suicide need an emphatic study and surveillance in the country.

It is worth noting that a national coefficient masks important regional variation. As demonstrated by Waiselfisz in his map of violence[10], between 2002 and 2012, the Brazilian states with the highest suicide rates in the general population were, in decreasing order, Rio Grande do Sul, Santa Catarina, Mato Grosso do Sul, Roraima and Piauí states. In addition, among the young population, Roraima presented the most alarming indicators, with a coefficient of 12.9/100,000 inhabitants, and it is also pointed out that, among young people, the capital of Roraima, Boa Vista led the ordering of the capitals. Following this reasoning, there is an important need to study suicide in Roraima.

Globally, suicide is stigmatized, treated as a taboo and marked as "unspoken"[11]. Reporting death generates commotion and fraternity. However, when the cause of suicide is exposed, there is sometimes embarrassment and silence. The topic is avoided socially and, in general, the population tends to hide this serious action against the natural flow of life[11].

Thus, in order to build effective preventive strategies that are appropriate to the reality of the State of Roraima, once certain suicide indicators are perceived as leading national rates, it is important to study the local epidemiological particularities.

Given the above, the objective of this work is to describe the epidemiological profile of suicide mortality in the state of Roraima, Brazil. It is intended to collect and analyze data that supports future research in the field and serves as guidance in the construction of public policies to face this problem.

METHODS

Descriptive, population-based documentary research. As a source of information, the platform of the informatics of the Departamento de Informática do Sistema Único de Saúde (DATASUS) was used, in its Vital Statistics subtopic, General Mortality option. The analysis was made from data referring to the State of Roraima, comprising cases of deaths by residence caused by intentional self-harm (suicide), in the period from 2014 to 2017. Analytical cuttings were established according to the incidence by municipality, marital status, age group, sex, color/race, place of occurrence and method of suicide (this being understood by the corresponding category in the Tenth Review of the International Classification of Diseases (ICD-10) to the mechanism performed)[12]. According to the ICD-10 categorization, deaths were evaluated, including codes X60 to X84, which together comprise intentional self-harm.

Roraima is the least populous state in the country, located in the northern portion of the Northern Region, bordering on Guyana to the east, Venezuela to the north and northwest, Pará to the southeast and Amazonas to the southeast and west[13]. In 2018, it had an estimated population, made available by DATASUS, of 576,568 inhabitants, being white (20.9%), black (6.0%), yellow (1.0%), brown (60.9%) and indigenous (11.2%). As for sex, men account for 50.8% and women for 49.2% of the total. In addition, despite having 15 municipalities, approximately 64% of the population of Roraima is concentrated in the capital Boa Vista[13].

The Tabwin application, Version 4.14, made available by DATASUS, was used for the initial production of the tables and the Microsoft Excel 2013 software for organizing and editing the data, with a tabulation to calculate the percentages of the variables and for calculating the mortality coefficient. This coefficient was defined according to the resident population estimated by the Brazilian Institute of Geography and Statistics (IBGE) in the period studied, which is also available on DATASUS.

DATASUS offers its data for free consultation in an aggregated format, that is, there is no individualization or naming when obtaining information in the system. Thus, there is no promotion of any moral or physical damage to society and its members. Therefore, the present study complied with the principles contained in Resolution No. 466, of December 12, 2012, of the Brazilian National Health Council. In this way, the submission to the Research Ethics Committee was not necessary.

RESULTS

A total of 176 suicide deaths were reported in the State of Roraima during the period studied. The average coefficient of suicide mortality was 8.6/100,000 inhabitants, with the lowest coefficient recorded in 2014 (3.0/100,000) and the highest recorded in 2016 (11.5/100,000). In 2015 and 2017, the coefficients were 10.3/100,000 and 9.6/100,000, respectively. There was a 233.3% increase in the number of deaths from 2014 to 2017.

As for the municipality of occurrence (Table 1), the state capital, Boa Vista, emerged as the leader in the number of deaths (52.8% of cases). Considering the year 2016 only, 61.1% of deaths occurred in the capital, a period in which there was the greatest discrepancy in relation to other municipalities. In comparison, during all the years studied, the municipality of Amajari constituted 8.5% of the cases, followed by Bonfim, with 6.8% of the cases.

The most affected age group was 20 to 29 years old, which corresponded to 31.2% of deaths in the period. Following are the range of 15 to 19 years (21.0%) and 30 to 39 years (17.0%). Mortality among the elderly (60 years and over) represented 6.2% of the total (Table 2). As for color/race, there was a predominance of browns, which corresponded to 64.2% of deaths, followed by indigenous (25.6%) and white (5.7%) (Table 3).

The most used method to commit suicide was hanging, strangulation or suffocation, comprising 87.5% of the cases. Then comes self-intoxication and intentional exposure to unspecified chemicals and harmful substances, with 4.5% of cases. Other methods represented 7.9% of the total.

As for sex, there was a greater number of notifications among men in the period studied. They accounted for 73.9% of deaths. The average mortality rate between men and women in the complete period was 2.8:1, with the greatest divergence recorded in 2014, with a ratio of 14:1 between men and women (Table 4).

The most recurrent place of occurrence among reported suicides was the home (72.1% of cases). In sequence, there are other unspecified locations (17.6%) and hospitals (5.7%). Regarding marital status, 69.9% of deaths occurred in single people. 10.8% were married, 1.7% were legally separated and 1.1% were widowed at the time of death.

Table 1: Deaths due to intentional self-harm in municipalities in the State of Roraima, Brazil, from 2014 to 2017, by residence.

Municipality	2014	2015	2016	2017	Total	%
Alto Alegre	-	3	3	3	9	5.1
Amajari	1	4	5	5	15	8.5
Boa Vista	7	26	36	24	93	52.8
Bonfim	4	4	-	4	12	6.8
Cantá	-	5	2	3	10	5.7
Caracaraí	-	3	4	-	7	3.9
Caroebe	-	-	1	-	1	0.6
Iracema	-	1	-	-	1	0.6
Mucajaí	1	-	-	4	5	2.8
Normandia	2	-	1	-	3	1.7
Pacaraima	-	1	-	2	3	1.7
Rorainópolis	-	2	1	1	4	2.3
São João da Baliza	-	1	1	-	2	1.1
São Luiz	-	1	-	2	3	1.7
Uiramutã	-	1	5	2	8	4.5

- Numeric data equal to zero, not resulting from rounding.

Table 3: Deaths due to intentional self-harm by color/race, by residence in the State of Roraima, Brazil, from 2014 to 2017.

Year of death	Color/race					
	White	Black	Mixed	Indigenous	Ignored	Total
2014	1	-	8	6	-	15
2015	1	1	40	9	1	52
2016	2	1	40	14	2	59
2017	6	2	25	16	1	50
Total	10	4	113	45	4	176

- Numeric data equal to zero, not resulting from rounding.

Table 4: Deaths by residence in the State of Roraima, Brazil, due to intentional self-harm by gender, from 2014 to 2017.

Year of death	Sex		
	Male	Female	Total
2014	14	1	15
2015	40	12	52
2016	41	18	59
2017	35	15	50
Total	130	46	176

Table 2: Deaths due to intentional self-harm by age group, by residence in the State of Roraima, Brazil, from 2014 to 2017.

Year of death	Age group (years)									
	10 to 14	15 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 or more	Total
2014	1	5	4	3	1	1	-	-	-	15
2015	6	8	23	5	5	2	3	-	-	52
2016	4	15	18	9	8	3	1	-	1	59
2017	3	9	10	13	6	3	3	3	-	50
Total	14	37	55	30	20	9	7	3	1	176

- Numeric data equal to zero, not resulting from rounding.

DISCUSSION

Suicide, being a serious public health problem, universally and in absolute values, causes more deaths than homicides and wars together[14]. In the State of Roraima, Brazil, the need to build public policies aimed at tackling the problem is increasingly marked. The State, despite corresponding to the lower demographic density of the federation, presents alarming indicators[13].

The literature shows that suicide mortality rates are underestimated, thus making it difficult to obtain a more accurate measure to avoid this type of death[6]. When analyzing a study on suicide, data underreporting is one of the most critical aspects and, therefore, requires more attention. It can be caused by factors such as incorrect filling in of the death certificate, clandestine cemeteries, family requests to change the cause of death, in addition to general inaccuracies in the records[6,11]. This fact is a possible explanation for the fact that, between 2002 and 2012, the Northern Brazilian Region as a whole registered an increase of 77.7% in cases of suicides[10], while in the present study, in comparison, Roraima witnessed a growth of more than three times this percentage only between 2014 and 2017.

The sex most affected in the state was male, with high divergences in relation to the female, especially in 2014. In other studies on suicide in Brazil, the male prevalence was also observed[15-18]. This fact corroborates the perception that the sociodemographic factors linked to a higher risk of suicide include being male[15]. Again, however, underreporting in cases of death in women cannot fail to be considered in the interpretation of the reasons obtained, given the remarkable imbalance found.

Another predominant factor in relation to individuals who committed suicide is that, in all the years of study, the majority were residents of Boa Vista. This is explained by the capital's characteristic of concentrating almost two thirds of the population of Roraima, being the main urban center of the State[13].

Regarding age, the most observed age groups (from 20 to 29 and from 15 to 19 years old) coincide with other studies and literature, which refer to greater involvement in the 15-year-old age groups[14,15,18,19]. It is documented that suicide, as it mainly affects young people and young adults, impacts on the socioeconomic, family, and community fields. Until adolescence, abuses of all kinds and issues such as sexual orientation are important triggers, and difficulties in relationships with family members, partners and isolation are also relevant[4].

Roraima recorded, in line with other states in national studies[18,20], during the period evaluated, that the main mechanism for committing suicide was hanging, strangulation or suffocation. The use of hanging as a method is a challenge to prevention, as it is a highly lethal mechanism and can be carried out with homemade materials[21]. Nevertheless, several evidences point to the preventive efficiency of the restriction of access to firearms and toxic compounds[1,21] methods that also appear in those observed in this study, in lower frequencies.

The percentage of suicides in terms of skin color, in Roraima, predominated among browns. There are divergent data in a study in a municipality in southern Brazil[15], which found a death rate of 86.6% for white individuals, but the brown portion of the population was also a majority in a study in the State of Pará[18]. This, in principle, could be explained by the ethnic composition of the States, according to the greater or lesser predominance of brown people, but it is also important to consider that they can corroborate the low socioeconomic power and social exclusion for the situation. In Brazil, black and brown individuals retain the lowest levels of income and education[3], and such factors may translate into greater vulnerability to the suicidal spectrum for this portion of the population.

Indigenous people, being one of the most vulnerable groups to suicide in the country[17], represented the second color/race most affected in Roraima. It is worth noting that the State has the highest concentration of indigenous population in Brazil, and that there is evidence in several places in the world indicating a pattern of vulnerability to suicide in native peoples[13]. In addition, because the literature points out that suicide deaths are especially underreported among indigenous people[22], it is possible to assume even higher values than what was found. There is much to study about risk factors that induce suicide among indigenous people, in their different ethnicities, cultural and organizational aspects[4]. It is then the proposal to conduct targeted studies, with ways to investigate the association between suicide and the indigenous population of Roraima.

The most common place of death in Roraima was home. Other national studies have described similar results[18,20,23]. This again corroborates the relationship with the most common method in Roraima (hanging, strangulation and suffocation), which causes high lethality in a short period of time and demands materials common to the domestic environment[21,24].

In terms of marital status, single people died in greater proportion, similar to other national studies[18,20,23]. In a survey conducted in Teresina, Piauí, Brazil, it was shown that social isolation is an important risk factor for suicidal practice, with a percentage of 54.9% of deaths among singles[25], while in a study conducted in Santa Catarina it was found 26.5%[25,26]. The relationship between a higher risk of suicide among single, widowed and divorced people is documented[27,28], and these factors are recognized as triggers of dissatisfaction and stress[23].

The understanding of the peculiarities and indicators related to suicide in Roraima should guide the prevention of mortality from such cause in the State. The observed results indicate the need to act in face of the problem, which both grows in proportion and gains prominence in the face of regional and national indicators. There is, in view of the data, the perception of remarkable characteristics of the suicide profile in Roraima: they are more frequent among men, young people, residents in urbanized areas,

browns or indigenous people and singles. Victims generally opt for methods with high lethality and immediacy - hanging, strangulation and suffocation, with the place of the execution at home. Such factors hinder the intervention and performance of health services. It is imperative, therefore, to carry out targeted and efficient prevention.

For that, it is important to have detailed knowledge of risk factors on the part of health professionals and the community. Suspecting suicidal behavior in the face of local epidemiology can reduce new cases, given that suicide has no single reason, but results from a complex interplay of factors, making it difficult to establish conducts when the evidence is unknown.

It is believed that it is necessary to deepen the study in order to expand knowledge, in order to achieve the prevention dimension. Thus, it will be possible to structure care for people who exhibit risky behaviors, as well as to plan strategies that can minimize situations or experiences of risky experience, highlighting prevention efforts, treating cases of depression in general health services and reducing the risk of suicide.

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