O RISCO DE MORRER POR SUICÍDIO NO BRASIL: UM ESTUDO POR SEXO, IDADE E ETNIA INDÍGENA

THE RISK OF DYING OF SUICIDE IN BRAZIL: A STUDY CARRIED OUT ACCORDING TO SEX, AGE AND INDIGENOUS ETHNICTIY

Maria Elisa Diniz Bucci
Mestranda, Programa de Pós-Graduação em Meio Ambiente e Recursos Hídricos
Universidade Federal de Itajubá
maelisadiniz@gmail.com

Luiz Felipe Silva
Doutor em Saúde Pública pela Universidade de São Paulo, Professor, Instituto de Recursos Naturais
Universidade Federal de Itajubá
lfelipe.unifei@gmail.com

Gabryell Tavares de Barbosa
Mestrando, Mestrado em Desenvolvimento, Tecnologias e Sociedade (DTecS)
Universidade Federal de Itajubá
tavares.gbr@gmail.com

Camila de Fátima Neves Araújo
Mestrando, Mestrado em Desenvolvimento, Tecnologias e Sociedade (DTecS)
Universidade Federal de Itajubá
camilaasantos2@hotmail.com

Ana Caroline de Souza
Mestrando, Mestrado em Desenvolvimento, Tecnologias e Sociedade (DTecS)
Universidade Federal de Itajubá
caroldsouza16@gmail.com

José Bento Souza Vasconcellos dos Santos
Mestrando, Mestrado em Desenvolvimento, Tecnologias e Sociedade (DTecS)
Universidade Federal de Itajubá
jbsvs@hotmail.com

RESUMO

Objetivo: identificar as forças de morrer por suicídio nos municípios brasileiros, destacando sexo biológico, idade e etnia indígena. **Metodologia:** foi realizado um estudo ecológico por meio de levantamentos no banco de dados do Departamento de Informática do SUS a fim de obter o número de eventos relacionados a lesão autoprovocada voluntariamente e população residente nas variáveis de sexo, faixa etária entre jovens e idosos, e etnia indígena por município brasileiro, no período de 2003 a 2012. Foi utilizado o cálculo da Razão de Mortalidade Padronizada (RMP) para identificar os municípios onde a força de morrer por suicídio é maior, comparando-se com o padrão de todo o Brasil. **Resultados:** foi observado em todos os recortes analisados uma predominância dos estados de Mato Grosso do Sul (MS) e Rio Grande do Sul (RS), tendo destaque para o suicídio de idosos em RS e de indígenas em MS. **Conclusão:** o estudo realizado pôde identificar a distribuição dos eventos, de grande importância à saúde pública, subsidiando a formulações de hipóteses para que o fenômeno seja analisado de modo mais apropriado no país, de modo a discutir alguns agravantes sociais e políticas de prevenção que estejam vinculados ao suicídio.

Palavras-Chave: Epidemiologia. Saúde pública. DATASUS. Saúde mental. Depressão.

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ABSTRACT

Aims: to identify the causes of suicide in the Brazilian municipalities, pointing out biological sex, age and indigenous ethnicity. **Methodolgy:** it was an ecological study through gathering of data, according to SUS Informatics Department to obtain a number of events related to the willingly occasionated damage and the residing population in the variables of sex, age group between 10 and 29 years old and elderly, and indigenous ethnicity according to the Brazilian municipality, in the period between 2003 and 2012. The Standardized Mortality Ratio (SMR) was used to identify municipalities where the intensity of death by suicide is more significant, compared to all the Brazilian territory. **Results:** it was observed that in all the analyzed focused data there is a predominancy in the states of Mato Grosso do Sul (MS) and Rio Grande do Sul (RS), with emphasis on suicide among the elderly in RS and of indigenous in MS. **Conclusion:** this study could find the distribution of the events, which matters significantly to the public health, subsidizing the formulation of hypothesis so that the phenomenon is analyzed in an appropriated way in Brazil, discussing some social and political aggravating prevention factors which are linked to suicide.

Keywords: Epidemiology. Public health. DATASUS. Mental health. Depression.

INTRODUCTION

Durkheim (2000) describes suicide as “the act of despair of a man who no longer wants to live”, being done knowingly about the possible result generated, regardless of the reason for taking his own life. For that matter, suicide is comprehended as a major collective mental health issue. It’s estimated that in every 40 seconds someome commits suicide in the world, knowing that in 2020, approximately 1.53 million of people in the world will die by suicide (OMS, 2014). It indicates an extreme alarming increase, once it representes one case of death in every 20 seconds and an attempt of suicide after each 1 or 2 seconds (BERTOLOTE; FLEISHNANN, 2002).

Concepts and beliefs linked to suicide have a connection with the suicidal behavior. The shame, the stigma and the taboo quite often hinder people to ask for and offer help. It can be observed that the mortaility caused by suicide can be even bigger due to a underreporting resulting from the social stigma, which favors an omission of cases (MACHADO; SANTOS, 2015).

In compliance with Scavacini (2018), suicide is a complex phenomenon with is composed of a serious public health problem, mobilizing studies and prevention programs in the world, however, the taboo complicates the fact that suicide be treated openly by society, occasioning negative consequences.

It is important to mention that in the psychosocial approach of the studies related to suicide there is a classic scenario that individual events, viewed from the biological perspective, are not the only cause for such occurences, existing a connection among many different social, environmental and psychologial determining factors. In this way, the individual with a psychological distress should not only be viewed under the mental illness perspective, but, in its integrality, under the perspective of health as a health-illness process, in relation to life conditions and place occupied by each social individual (CASSORLA, 2005; AMARANTE, 2013).

Minayo and Cavalcante (2010) when analyzing studies carried out through sociopsychological autopsies, identified that the most frequent social reasons for triggering suicide in old people, are financial problems, relationship difficulties, family conflicts, social isolation and loneliness. Factors which can be merged to events like retirement and social support deprivation, such as associated to the preliminary depression diagnosis (CAVALCANTE; MINAYO; MANGAS, 2013).

Given the possible increasing of the occurency of grievances related to mental health, in scenarios of a close future (WATTS *et al.*, 2017) and a serious problem for the public health, it’s important the discussion related to the suicidal attempt. As Goldberg (1990) pointed out, there are factors which may affect directly the general susceptibility of the disease, emphasizing job and life style, socioeconomic determinants and the economic and social security level, events taken as disturbing in different social dimensions, such as death, unemployment, marriage etc. and the degree of access to health services. Thus, sex and age are, at the same rate, factors of differentiation, cultural and economic differentiation, so that the behavior is different in relation to the experiencing of the disease (GOLDBERG, 1990).

Maria Elisa Diniz Bucci
Luiz Felipe Silva
Gabryell Tavares de Barbosa
Camila de Fátima Neves Araújo
Ana Caroline de Souza
José Bento Souza Vasconcellos dos Santos

There is a severe public health issue related to suicide among young people between 15 and 29 years old (WHO, 2014) and the elderly (MINAYO; CAVALCANTE, 2010). The issue is also important among the indigenous ethnicity, which there is a high rate of suicide, mainly among young people, being this one of the highest in Brazil (MS, 2017).

In its last report, the Indigenist Missionary Council discussed the recurrent practice of suicide among Brazilian indigenous peoples, highlighting the considerable increase in cases in Mato Grosso do Sul (CIMI, 2018). There are several causes pointed out in this report, but the highlights are the limitation of land and the "neglect in the treatment of indigenous people" due to the lack of basic services and public policies specific to indigenous peoples.

Thus, the present study aimed to verify the distribution of occurrence and the "strength of dying" by suicide among Brazilians, by sex and age, emphasizing indigenous ethnicity and young and elderly populations.

METHODOLOGY

Data collected

This is an ecological study and covers the entire Brazilian territory. It aimed to characterize aspects of mortality caused by suicide, through secondary data linked to “voluntarily self-inflicted injury” obtained in the National Health System Informatics Department (DATASUS) in the historical time series from 2003 until 2012. Such events are presente in all categories between X70 and X84 of the Tenth Review of International Statistical Classisfication of Diseases and Related Health Problems (CID-10) existing in the Vital Statistics of Information about Health of the National Health System (TABNET).

For the numbers of suicide, coefficients of general mortality were considerated for each municipality of the country. For the population, it was taken into account the resident population according to the “census (1980, 1991, 2000 and 2010), counting (1996) and intercensat forecast (between 1981 and 2012), based on age group, sex and living place condition”.

Standardized Mortality Ratio (SMR)

In this way, the suicide mortality coefficients in the municipalities and units of the federation were calculated, considering sex, age (young and old) and ethnicity for the calculation of the Standardized Mortality Ratio (SMR), using the coefficients of the Brazilian reality as a reference. The aim of Standardized Mortality Ratio (SMR) calculation is to identify the municipalities where the ”strength of dying” because of suicide is higher and significative.

The analysis was performed using the TABWIN software, provided by the Ministry of Health, which helped in the calculation of the Standardized Mortality Ratio (SMR), in order to identify the municipalities where the “strength” of dying by suicide is greater and more significant when compared to the standard for the whole country, with reference values of SMR greater than 1.0 and with a 95% confidence interval, not passing through the unit. To calculate the SMR values, initially, it is necessary to calculate the incidence coefficient and the number of expected deaths using the equations:

$$MC_{i,Br} = \frac{D_{i,Br}}{TP_{i,Br}} \tag{1}$$

$$ED_{i,Br} = \left(\sum MC_{i,Br}\right) \cdot TP_{Br} \tag{2}$$

on what:

$MC_{i,Br}$: mortality coefficient in Brazilian municipalities in year i;

$D_{i,Br}$: number of deaths due to “voluntarily self-inflicted injury” in Brazilian municipalities in year i;

$TP_{i,Br}$: total population in Brazilian municipalities in year i;

$ED_{i,Br}$: number of deaths expected from “voluntarily self-inflicted injury” in Brazilian municipalities in year i.

Thus, the SMR was calculated by the ratio between observed and expected deaths, being duly expressed by Eq. (3) below:

$$SMR = \frac{D_{i,Br}}{ED_{i,Br}} \quad (3)$$

Finally, the results found were organized and presented in the form of tables, highlighting only the fifteen municipalities with the highest SMR and with 95% confidence intervals.

RESULTS AND DISCUSSIONS

Total suicide in Brazil

It was observed that, from 5.576 Brazilian municipalities, 855 have a higher SMR value if compared to the whole country, once the municippalities with significative results are located, mainly, in the federative units of Mato Grosso and Rio Grande do Sul (Table 1). Such result confirms the data gathering conducted by Silva *et al.* (2018), finding the highest rates of suicide per 100.000 inhabitants belonging to the states of Rio Grande do Sul, Santa Catarina and Mato Grosso do Sul.

Among the federative units with a higher “strengh to die of suicide, in the population, as a whole, were found 13 with significative results of SMR (Table 1), being some of them considered “neighbors”. This result was also presented by Silva *et al.* (2018) once he has shown an existing spatial autocorrelation related to the practice of suicide, classifying the municipalities of the South and Center-West regions as the ones with high rates of suicide.

Table 1 - Municipalities and federative units with a significative SMR value and 95% confidence interval (CI) in Brazil.

Municipality	SMR	CI (95%)	Federative Units	SMR	CI (95%)
Japorã/MS	20.8	16.0 - 26.3	Rio Grande do Sul	2.3	2.3 - 2.4
Forquetinha/RS	13.6	7.6 - 21.4	Mato Grosso do Sul	1.8	1.8 - 1.9
Cristal do Sul/RS	12.9	7.2 - 20.2	Roraima	1.8	1.6 - 2.0
Sério/RS	12.2	6.3 - 20.1	Santa Catarina	1.8	1.7 - 1.8
Tacuru/MS	12.0	8.9 - 15.7	Piauí	1.3	1.3 - 1.4
Nova Boa Vista/RS	11.9	5.7 - 20.4	Paraná	1.2	1.2 - 1.3
Paranhos/MS	11.9	8.9 - 15.2	Mato Grosso	1.2	1.1 - 1.3
Lagoa dos Três Cantos/RS	10.9	4.3 - 20.5	Tocantins	1.2	1.1 - 1.3
André da Rocha/RS	10.3	3.2 - 21.2	Amapá	1.1	1.0 - 1.3
Poço das Antas/RS	10.1	4.3 - 18.3	Ceará	1.1	1.1 - 1.2
Campina das Missões/RS	10.0	6.5 - 14.2	Minas Gerais	1.1	1.1 - 1.1
Pedro Teixeira/MG	9.4	3.7 - 17.7	Rio Grande do Norte	1.1	1.0 - 1.1
Boa Vista do Sul/RS	8.7	4.1 - 15.0	Goiás	1.1	1.0 - 1.1
Santo Antônio do Planalto/RS	8.5	3.4 - 16.0			
Princesa/SC	8.5	3.9 - 15.0			

Among the main causes of mortality by suicide, it's possible to mention the job, the unemployment and the social isolation as being crucial. Krieger (2001) pointed out stress, the inequality and the lack of social justice as determinant factors in the advent of diseases. That way, it's possible to say that poverty and the degree of ruralization are determining for the suicide (GONÇALVES; GONÇALVES; OLIVEIRA-JÚNIOR, 2011). In a study carried out in the state of Rio Grande do Sul, higher coefficients were observed for mortality by suicide among people who are linked to fishery or farming (MENEGHEL *et al.*, 2004).

The farming sector is also mentioned in studies performed in Mato Grosso do Sul. Pires, Caldas and Recena (2005) determined a smiliar situation in the microregion of Dourados and Campo Grande, in Mato Grosso do Sul, in which exists an association among the occurencies of attemps of suicide due to the ingestion of pesticides by the rural population, as well as the exposure of this population to the pesticides, related to the characteristics of the cotton cultivation, in the microregion of Dourados, characterized mainly by small properties, where is prevailing the pulverization of pesticides by tractors and backpack sprayers. Such workers have, usually, less access to the technical orientations and to information about these products, what enhances the risk of an inappropriate handling.

It's still possible to mention that the mining in the state of Minas Gerais can also be one of the sources of high rates of suicide. Souza, Minayo e Cavalcante (2006) also mentioned the dependance of the activity of mineral extraction and the employment instability of these activities as possible factors for the high rate of mortality by suicide in the city of Itabira, Minas Gerais.

Sex

The analysis according to sex was carried out based on municipality and federative unit, showing a higher rate of suicide among men and this result was also found by Lovisi *et al.* (2009), which also pointed out the highest occurency of suicides by strangulation, firearms and poisoning. Yet, Mello-Santos, Bertolote and Wang (2005) demonstrated that men commit from 2.3 until 4 times more suicides than women. Therefore, it was verified the importance of surveying an epidemiological profile performed by men and women, highlighting the main factors of interference and discussing the main correlated causes.

Meneghel *et al.* (2004) emphasized the main differences between suicide committed by men and women. In accordance with these authors, the prevalence of male suicides are due to the fact that men are more competitive, impulsive and have a broader access to lethal technologies about the "obligation" that some of them feel in the role of maintainer of the family, imposed by the Brazilian patriarchal society.

According to the results found, it was observed a higher number of municipalities with significative values of SMR related to male suicide, present in 772 municipalities against 298 related to female suicide. As the results found in Brazil, the data related to sex also presents a predominance of municipalities located in the federative units of Rio Grande do Sul and Mato Grosso do Sul, existing some few located in Santa Catarina (Table 2 and Table 3).

Although the number of male suicides in Santa Catarina presents a higher rate than female ones (MENEZES; PALOSQUI, 2011), the significative values of SMR related to female suicide in localities of this state was pointed out as one of the main results found in the present study (Table 2 and Table 3).

Female Sex

The results found per municipality show that Rio Grande do Sul, Santa Catarina and Mato Grosso do Sul are the only federative units which present high values of SMR related to the suicide committed by women. Such result is coherent to the one found per federative unit, once such states are leading examples among the nine that show SMR values related to suicide higher than to the country one (Table 2).

Table 2 - Municipalities and federal units with higher significative values of SMR and 95% confidence interval (CI) per suicide in Brazil, according to female sex.

Municipality	SMR	CI (95%)	Federative Units	SMR	CI (95%)
Japorã/MS	33.7	19.6 - 51.7	Rio Grande do Sul	2.2	2.1 - 2.3
Paranhos/MS	24.1	14.5 - 36.2	Roraima	2.2	1.7 - 2.8
Nova Boa Vista/RS	20.7	3.9 - 50.7	Mato Grosso do Sul	2.1	1.9 - 2.3
Coqueiro Baixo/RS	18.5	1.7 - 53.1	Santa Catarina	1.9	1.7 - 2.0
Linha Nova/RS	18.0	1.7 - 51.7	Piauí	1.5	1.4 - 1.7
Lagoa dos Três Cantos/RS	17.8	1.7 - 51.1	Tocantins	1.2	1.0 - 1.5
Princesa/SC	16.7	3.1 - 40.9	Paraná	1.2	1.1 - 1.3
Cunhataí/SC	16.7	1.6 - 47.8	Mato Grosso	1.2	1.1 - 1.4
São João de Iracema/SP	16.4	1.5 - 46.9	Minas Gerais	1.1	1.0 - 1.1
Tigrinhos/SC	16.0	1.5 - 45.8			
Boa Vista do Sul/RS	15.9	3.0 - 38.9			
Nova Candelária/RS	15.8	3.0 - 38.8			
Jardinópolis/SP	15.8	1.5 - 45.2			
Campina das Missões/RS	15.7	6.2 - 29.4			
Cristal do Sul/RS	15.5	2.9 - 38.0			

As ascertained, the feminine sex isn’t a significative social determinant in the period of 1998 until 2002 once the suicide rate among women is lower than men (GONÇALVES; GONÇALVES; OLIVEIRA-JÚNIOR, 2011). Depression and suicide ideation among women who suffer domestic violence is one of the realities that should be presented (ADEODATO *et al.*, 2005), knowing the victims this kind of violence presented a 5.7 times greater risk of suicide ideation (CECCON; MENEGHEL; HIRAKATA, 2014).

Violence against the woman is alarming in Brazil. As to the map of the Violence against Women (CDHM, 2018) has shown, it’s estimated that in every 17 minutes a woman suffers physical aggression and 33 women are murdered weekly by their old partners or current ones in the country.

According to the Overview of Violence against Women in Brazil (2018), Mato Grosso do Sul is one of the states with high rates of report of violence, grievances related to interpersonal violence against women and decisions providing measures to protect under urgency. Santa Catarina owns an elevated rate of reports of occurencies about violent acts and criminal prosecutions and execution in domestic violence.

Male Sex

As for the cases of female suicide, higher rates of SMR were verified in the male sex group, in the states of Rio Grande od Sul, Mato Grosso do Sul and Santa Catarina. However, it was observed a higher frequency of federative units with SMR linked to the male suicide, in a total of 13 pointed out states (Table 3).

Table 3 - Municipalities and federal units with higher significative values of SMR and 95% confidence interval (CI) per suicide in Brazil, according to male sex.

Municipality	SMR	CI (95%)	Federative Units	SMR	CI (95%)
Japorã/MS	17.4	12.7 - 22.8	Rio Grande do Sul	2.4	2.3 - 2.4
Forquetinha/RS	14.2	7.5 - 23.0	Mato Grosso do Sul	1.8	1.7 - 1.9
Sério/RS	14.1	7.2 - 23.2	Santa Catarina	1.7	1.7 - 1.8
Poço das Antas/RS	11.9	5.1 - 21.5	Roraima	1.6	1.4 - 1.9
Cristal do Sul/RS	11.8	6.1 - 19.4	Piauí	1.3	1.2 - 1.3
Tacuru/MS	11.5	8.2 - 15.4	Paraná	1.2	1.2 - 1.3
Santo Antônio do Planalto/RS	10.3	4.1 - 19.4	Ceará	1.2	1.1 - 1.2
Nova Boa Vista/RS	9.8	3.9 - 18.5	Mato Grosso	1.1	1.1 - 1.2
Lagoa dos Três Cantos/RS	9.4	3.0 - 19.4	Minas Gerais	1.1	1.1 - 1.1
André da Rocha/RS	9.4	2.4 - 20.8	Amapá	1.1	1.0 - 1.3
Paranhos/MS	9.1	6.3 - 12.3	Tocantins	1.1	1.0 - 1.2
Pedro Teixeira/MG	9.0	3.2 - 17.6	Rio Grande do Norte	1.1	1.0 - 1.2
Marques de Souza/RS	8.9	4.7 - 14.3	Goiás	1.1	1.0 - 1.1
Campina das Missões/RS	8.6	5.2 - 13.0			
Sinimbu/RS	8.5	5.7 - 11.8			

Beyond all causes related to work in rural areas and the exposure to pesticides, the intake of alcohol is displayed in some carried out studies as a factor of interference in suicide committed by many people of the male sex (PONCE *et al.*, 2008; RIBEIRO *et al.*, 2016). The World Health Organization (WHO, 2018) estimated the alcohol intake brings about 3 million annual victims in all the world, being the most affected population the one considerated vulnerable and underprivileged.

Age

The outlined analysis for age identified that 323 brazilian municipalities had high values of SMR for the young population, meanwhile, for the elderly, there were 318. The data revealed, still, some prevalence of municipalities with significative values of SMR located in the states of Mato Grosso do Sul (for the young population) and Rio Grande do Sul (for the elderly) (Table 4 and Table 5).

Such values may be related to the suicide of young Guarani/Kaiowá indigenous population in Mato Grosso do Sul (GRUBITS; FREIRE; NORIEGA, 2011) and to climate and sociocultural factors in the Southern region of Brazil, as found by Cabral and Pendloski (2016), who identified Rio Grande do Sul as the federative unit with the highest rate of self-harm among the elderly in the south of Brazil in the last 10 years (Table 4 and Table 5).

Young Population

It was verified that among 26 federative units, 14 of them presented values of SMR related to suicide among the young population as superior to that found in all Brazil (Table 4). The high rate of suicide

among young people is compatible with the study carried out by Waiselfisz (2014), which shows a rise of 15.3% of suicides among young people (between 15 and 29 years) between the years of 2002 and 2012, going over from 2,515 to 2,900 cases of suicide. The suicide rate, in this population, went over, in this same period, from 5.1/100,000 to 5.6/100,000 young people, placing Brazil in the 60th position in the global rank. The same author still points out that, in Brazil, suicide is responsible for 3.7% of deaths in the young population (individuals in an age between 15 and 29 years).

Table 4 - Municipalities and federal units with higher significative values of SMR and 95% confidence interval (CI) per suicide in Brazil, to the age group of young population.

Municipality	SMR	CI (95%)	Federative Units	SMR	CI (95%)
Japorã/MS	54.4	40.9 - 69.9	Roraima	2.9	2.5 - 3.4
Tacuru/MS	30.9	22.3 - 40.9	Mato Grosso do Sul	2.7	2.5 - 2.9
Paranhos/MS	26.4	18.9 - 35.1	Amapá	1.8	1.5 - 2.1
Amambaí/MS	18.4	14.6 - 22.6	Rio Grande do Sul	1.8	1.7 - 1.9
São Gabriel da Cachoeira/AM	15.3	12.2 - 18.9	Amazonas	1.6	1.5 - 1.7
Coronel Sapucaia/MS	13.4	8.7 - 19.0	Santa Catarina	1.4	1.3 - 1.5
Pirapó/RS	12.7	3.3 - 28.1	Acre	1.4	1.2 - 1.6
Juti/MS	11.9	5.1 - 21.6	Piauí	1.4	1.2 - 1.5
Benjamin Constant do Sul/RS	10.3	1.9 - 25.3	Tocantins	1.4	1.2 - 1.5
Bonfim/RR	10.2	5.8 - 15.8	Paraná	1.3	1.3 - 1.4
Amajari/RR	10.2	4.8 - 17.4	Mato Grosso	1.3	1.2 - 1.4
Tabatinga/AM	9.7	7.5 - 12.1	Ceará	1.2	1.1 - 1.3
Campos Verdes/GO	9.5	3.0 - 19.6	Goiás	1.1	1.1 - 1.2
Rodolfo Fernandes/RN	9.1	2.9 - 18.8	Minas Gerais	1.1	1.1 - 1.2
Nova Alvorada/RS	8.8	1.7 - 21.6			

Moreira and Bastos (2015), based on many studies and analized by them, related the factors linked to the suicidal ideation in adolescence are multifaceted, emphasizing the following factores as triggers to the execution of a suicide: mental disorders (depression, behavioral problems of the own young individual or friends, personal characteristics and relatives), loneliness, hopelessness, anxiety, low self-esteem, aggresion from parents and friends, little communication with parents, physical abuse at school and the consumption of substances/drugs.

As Souza *et al.* (2010) quoted, the reduced education of the young individual, the alcohol intake and of other substances, sedentary lifestyle and the agressive behavior have a significative relation with the suicidal ideation. Such study demonstrates adolescentes whose mothers have a low education level also tend to have suicidal ideations.

Ribeiro e Moreira (2018) show the phenomenon of suicide among young individuals should not be dissociated from the general mortality of the country, being possible to consider the rise of general mortality in Brazil may have a direct link, being possible to consider that the growth of general mortality in Brazil – a country in an intense and fast process of urbanization – has an association with mortality

by suicide among young people owing to the distribution of oportunities and resources, mainly to the young individuals.

The authors mentioned above suggest, still, the discussion about the social reasons in the process of health and sickness are of extreme importance and produce recent elements of analysis from the development of varied ways of social protection networks, mainly about the growing vulnerability of suicide among adolescents and young individuals in Brazil.

Elderly Population

The arrival of old age is a social determinant described by Goldberg (1990), whereas the elderly face many difficulties if compared to the other age groups, becoming their behavior towards the disease in a different way from the others. Besides, the social exclusion and the ocurrence of events considered stressful may be accounted as social determinants which interfere in the mental health of the population (ALVES; RODRIGUES, 2010).

The present study revealed the SMR among the population constituted of elder people is also in ascension, being predominant in 10 Brazilian federative units with expressive results, mainly, in the Southern region of Brazil (Table 5). Such results are compatible with the found results of Waiselfisz (2014), Cook *et al.* (2002) e Salib e Grenn (2003). Waiselfisz (2014) releaved that, in Brazil, the rate of suicide rose to 215.7% among people over 60 years old in the period of 1980 and 2012. Whereas Cook *et al.* (2002) e Salib e Grenn (2003) revealed suicide among the elderly has shown to grow along the last years, maybe being linked to previous psychiatric morbidity or not, once these pathologies may function as unleashing triggers of episodes of suicide.

Table 5 - Municipalities and federal units with higher significative values of SMR and 95% confidence interval (CI) per suicide in Brazil, to the age group of elderly population.

Municipality	SMR	CI (95%)	Federative Units	SMR	CI (95%)
Forquetinha/RS	24.0	10.9 - 42.2	Rio Grande do Sul	2.9	2.8 - 3.0
Sério/RS	19.5	6.1 - 40.3	Santa Catarina	2.3	2.1 - 2.4
Linha Nova/RS	19.1	5.0 - 42.4	Mato Grosso do Sul	1.5	1.3 - 1.8
Cristal do Sul/RS	18.4	5.8 - 38.0	Piauí	1.5	1.3 - 1.7
Chiapetta/RS	16.7	6.0 - 32.7	Mato Grosso	1.4	1.2 - 1.6
Nova Boa Vista/RS	16.2	4.2 - 36.0	Rio Grande do Norte	1.3	1.1 - 1.5
Lagoa dos Três Cantos/RS	15.9	3.0 - 39.1	Tocantins	1.3	1.0 - 1.6
Águas Frias/SC	15.7	3.0 - 38.4	Goiás	1.2	1.1 - 1.4
Unistalda/RS	15.6	4.1 - 34.6	Paraná	1.1	1.0 - 1.2
Westfália/RS	14.8	4.7 - 30.5	Ceará	1.1	1.0 - 1.2
Amparo/SP	13.3	1.3 - 38.2			
Cunhataí/SC	12.8	1.2 - 36.5			
Coqueiros do Sul/RS	12.5	3.3 - 27.8			
Vargeão/SC	12.4	2.3 - 30.3			
Vale Real/RS	12.2	3.2 - 27.2			

Besides this, Minayo, Figueiredo e Maga (2019), while carrying out a study of the scientific publications between 2002 and 2017, identified a high number of suicidal ideation, suicide attempts and self-neglect among the hospitalized elderly in long stay institutions, justified mainly for their social isolation, depression, sickness and pain, complicated and traumatic mourning, anxiety, precarious life conditions, familiar conflicts and relative or close friends' death. Researchers identified among the performed studies some factors of protection against suicide, pointed out as: religiosity, optimistic style of life, life satisfaction, enforcement in autonomy and access to and use of medicines for mental and depressive disorders.

Minayo e Cavalcante (2015) reinforce the existence of different patterns of sex in the attempts of suicide among the elderly, pointing out that the risks tend to rise with the age for men, who normally are the predictors of depression, anxiety and social problems; and it reduces for women, who try to take their lives for problems originated of social disturbances and great physical disability, such as osteoarticular and cardiovascular diseases. However, even if elder women have a higher suicidal ideation, men are the ones who most consummate. This data is also highlighted bz Cabral and Pendloski (2016) while analyzing the SMR of the elderly in the Southern region of Brazil.

Minayo e Cavalcante (2015), while carrying out a literature review about the theme, have shown there isn't consent among the authors about the evidence of the relevance of each factor in the outcome of the attempts, reinforcing the absence of a specific cause or a multitude of causes defined for these episodes. Nevertheless, the same authors have shown the necessity of emergency of identifying factors before the suicide act in this population, especially for the reason to exist a series of ideations and failed attempts before the final act, being this a public health issue, and, thus, needing specific measures by professionals and relatives who live and accompany this individual.

Ethnicity: suicide among indigenous people

In Brazil, suicide has shown to be an alarming grievance of health, growing in determined indigenous populations. The results found reveal that 49 municipalities presented significative SMR values (Table 6). According to the Report of Violence Against the Indigenous Populations (CIMI, 2018), there was a rise in the suicide cases in Mato Grosso do Sul, where according to the document "the levels of violence are scary, once the cases of murder and the suicide are close to ordinary".

Even so, it was observed a reduction in the number of federative units which presented a focus for the suicide among the indigenous population. According to what is observed in the presented results per municipality, the states with a greater "force" of indigenous people to commit suicide, if compared to the rest of Brazil, are: Mato Grosso do Sul, Roraima and Amazonas (Table 6).

Data collected in a large part of these populations show this is not a generalized phenomenon, but actually located in specific communities and ethnicities (SESAI, 2017). This is what indicated the study of Staliano, Mondardo and Lopes (2019), which adresses the suicide of the Guarani and Kaiowá people in Mato Grosso do Sul, showing the high violence present in the indigenous villages and the elevated rates of suicide of male indigenous young adults (between 12 and 22 years) in indigenous villages of Dourados and Amambai. Such results may have been presented before, once the municipalities of Japorã, Tacuru, Paranhos, Amambaí, São Gabriel da Cachoeira, Coronel Sapucaia, Juti, Bonfim, Amajari and Tabatinga presented elevated values of SMR related to the suicide of young people and, simultaneously, according to SESAI (2017), elevated rates linked to indigenous suicide.

For the indigenous people it's possible, in general, to locate culturally the notion of childhood. However, the term – also the concept – of teenager aren't so commonly used. Normally once the puberty is over – a crucial moment marked usually by a rite of "passage" – the individual starts to be considered an adult in its community, being able to constitute a family (UNICEF, 2014). Grubits, Freire e Noriega (2011) suggest suicide of young indigenous people may also be related to the loss of tradition of the initiation rite for the passage to the adulthood.

Table 6 - Municipalities and federal units with higher significative values of SMR and 95% confidence interval (CI) per suicide in Brazil, according to the indigenous ethnicity.

Municipality	SMR	CI (95%)	Federative Units	SMR	CI (95%)
Japorã/MS	1646.7	1229.6 - 2124.7	Mato Grosso do Sul	40.8	36.9 - 44.8
Tacuru/MS	985.5	706.9 - 1310.3	Roraima	36.9	28.5 - 46.4
Paranhos/MS	869.4	626.4 - 1152.3	Amazonas	15.7	13.7 - 17.8
São Gabriel da Cachoeira/AM	628.1	509.9 - 758.6			
Amambaí/MS	559.3	442.7 - 689.4			
Coronel Sapucaia/MS	423.5	273.7 - 605.7			
Juti/MS	355.1	151.7 - 643.8			
Tabatinga/AM	308.5	236.5 - 390.0			
Antônio João/MS	289.1	137.7 - 496.0			
Amajari/RR	281.4	127.6 - 495.3			
Caarapó/MS	252.4	161.5 - 363.5			
Bonfim/RR	242.4	124.6 - 398.9			
Normandia/RR	237.8	94.2 - 446.5			
Douradina/PR	235.4	74.3 - 487.0			
Uiramutã/RR	192.7	69.3 - 377.7			

The territory for the originary inhabitants is fundamental for the health and cultural re-elaboration of their ways to be, in the relationship among nature, culture and about relations of power/resistance, living or dying is linked to the territoriality in the struggle for land (STALIANO *et al.*, 2019). In terms of complex societies and the relations among communitarism, share capital and beneficial effects in health and which reflect the dominant agenda in public health, many connections can be identified.

Other events related to the mental suffering and the high occurency of suicides in the indigenous ethnicities may be linked to the difficulties lived about the disintegration and cultural destruction, leading to an ethnic identity absence that were related to ancestral origins, the compulsory confinement in small areas which restricts the practice of traditional ways of life, just like for the conflict for the land before the violent action of the agribusiness (FERREIRA; MATSUO; SOUZA, 2011; GRUBITS; FREIRE; NORIEGA, 2011; SOUZA, 2019).

Prevention policies

Whereas suicide is a serious public health problem, it becomes important to mention possible prevention policies which can be tied to the decrease of mortaility by suicide. Consistent with the focus given by the World Health Organization (2014), the promotion of awareness from the population, of the health systems and society is imperative for the prevention of suicide.

Moreover, the creation of policies which favor everyone, as well as the existence of a social and environmental fairness are marked factors by Krieger (2011) as preponderant for health. Therefore, it's essential that exists economical policies which may meet the needs of the working class, once the unemployment is a determining social stress factor for health (GOLDBERG, 1990) and may interfere in the practice of suicide, especially from that population considered as more vulnerable (MENEGHEL *et al.*, 2004).

There are some public policies which may prevent suicide, such as: the creation of a national plan of awareness to society about suicide, investing in access policies to mental health professionals and therapists and the enhance of information systems concerning suicide (GONÇALVES; GONÇALVES; OLIVEIRA-JÚNIOR, 2011). Still according to the authors above, it's necessary not only a raise in the

existence of campaigns linked to appreciation for life and mental issues, but also to a regulation about the use of pesticides, once many rural workers take their own lives due to the contact with some of these materials.

FINAL CONSIDERATIONS

Among the main results found, an alarming reality was observed about the occurence of suicide in the federative units of Mato Grosso do Sul and Rio Grande do Sul, containing municipalities with significant values of "force" of dying by suicide. It was also noticed that male suicide occurs more than female suicide. Besides, it's worrying the high rate of suicide among the young, elderly and the indigenous population, being a shocking reality in Brazil.

Other social determinants were also analyzed and that can be related to suicide, being highlighted: work, the use of pesticides, the degree of ruralization, domestic violence, the intake of legal and illegal substances, loneliness, stress and social and cultural factors. It's important to stress that such determinants interfere in the mental health, serving as a trigger to the practice of suicide.

Besides, even if in Brazil exist some suicide prevention policies, it was still important to mention and work on this theme, identifying other variables which contribute to avoid the premature loss for suicide. In this way, the prevention against suicide by the public health should incorporate socio-cultural reflections, designing intersectoral actions that involve public policies capable of contemplating all aspects that shape the immense spectrum that shapes Brazilian society

Grievances related to the mental health are a worldwide reality, thus, it is important just as the scientific community can contribute significantly by carrying out new studies which are able to enhance the mental quality of life and the individual well-being as the State can invest and provide a better access for the population in public health systems.

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