Mortality by suicide in the 5th fronteira de Santa Catarina expert mesoregion

RESUMO | Objetivo: analisar o perfil dos óbitos por suicídio necropsiados pelo Instituto Geral de Perícias/Chapecó, entre janeiro 2007 e dezembro 2016. Método: estudo exploratório descritivo retrospectivo, obteve aprovação ética do Comitê de Ética em Pesquisa com Seres Humanos (CEP/UFFS) sob parecer nº 1.826.221. Dados obtidos nos registros de necropsia e declarações de óbito de mortes por suicídio, organizados em planilhas eletrônicas, analisados pelo teste qui quadrado, e discutidos com base na literatura. Resultados: analisados 335 óbitos. À análise estatística univariada, significância para sexo, faixa etária, escolaridade e situação conjugal. Análise de tendência temporal apontou incremento nas taxas entre 30-39 anos e acima de 60 anos. Conclusão: o fortalecimento de políticas públicas voltadas à saúde mental é necessário.
Descritores: Suicídio; Saúde mental; Epidemiologia; Enfermagem; Pesquisa sobre serviços de saúde.

ABSTRACT | Objective: to analyze the profile of deaths by suicide autopsied by the Instituto Geral de Perícias/Chapecó, between January 2007 and December 2016. Method: a retrospective descriptive exploratory study, which obtained ethical approval from the Ethics Committee for Research with Human Beings (CEP/UFFS) under opinion No. 1,826,221. Data obtained from autopsy records and death certificates of deaths by suicide, organized in electronic spreadsheets, analyzed by the chi-square test, and discussed based on the literature. Results: analyzed 335 deaths. Univariate statistical analysis revealed significance for sex, age group, education and marital status. Time trend analysis showed an increase in rates between 30-39 years and over 60 years. Conclusion: the strengthening of public policies aimed at mental health is necessary.
Keywords: Suicide; Mental health; Epidemiology; Nursing; Health services research.

RESUMEN | Objetivo: analizar el perfil de las muertes por suicidio autopsiadas por el Instituto Geral de Perícias/Chapecó, entre enero de 2007 y diciembre de 2016. Método: estudio exploratorio descriptivo retrospectivo, obtuvo aprobación ética del Comité de Ética en Investigación con Seres Humanos (CEP/ UFFS) bajo dictamen N° 1.826.221. Datos obtenidos de autopsias y certificados de defunción de muertes por suicidio, organizados en hojas de cálculo electrónicas, analizados por la prueba de chi-cuadrado y discutidos con base en la literatura. Resultados: se analizaron 335 defunciones. El análisis estadístico univariado reveló significancia para sexo, grupo de edad, educación y estado civil. El análisis de tendencia temporal mostró un aumento en las tasas entre 30-39 años y mayores de 60 años. Conclusión: es necesario el fortalecimiento de las políticas públicas dirigidas a la salud mental.
Palabras claves: Suicidio; Salud mental; Epidemiología; Enfermagem; Investigación en servicios de salud.

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INTRODUCTION

According to epidemiological data, there were more than 110,000 deaths from suicide, which represents a 43% increase in total deaths in Brazil between 2010 and 2019, making it the 15th leading cause of death in the general population and the second among young people aged 15 to 29. It is estimated that 800,000 people die by suicide every year and that for every adult who commits suicide, at least 20 more commit suicide attempts. [1] Suicide has become increasingly common, being considered a serious public health problem, which brings with it high expenses with health services, in addition to the important human loss. [2,3]

National data point to the problem of suicide in the State of Santa Catarina, which, despite representing 14% of the Brazilian population, accumulates 23% of national records of deaths from this cause. [4] The State is part of

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the Southern Region of Brazil, considered to have the highest suicide mortality rate in the national territory. [5] In this region, as in the rest of the country, the rates and profile of suicide mortality show significant regional variations, reaffirming the importance of granular analyzes to guide prevention measures, according to the observed realities. For administrative purposes, the Epidemiological Surveillance Board (DIVE - Diretoria de Vigilância Epidemiológica) of the Santa Catarina State Health Department (SES/SC) divides the Santa Catarina territory into sixteen health regions. However, the Instituto Geral de Perícias uses another division, totaling nine mesoregions and, within these, thirty nuclei. Chapecó hosts the 5th Mesoregional of Border Surveys, object of this study, which comprises 76 municipalities.

The analysis of data released by SES/SC for the year 2019 [4] allows us to see that deaths by suicide in the cities served by the 5th Mesoregional of the IGP add up to 56.4%, which represents the highest rate in the state of Santa Catarina.

Given that timely recording and regular monitoring of suicide deaths are primary resources for effective prevention strategies (6), identifying specific groups at risk is critical. In this sense, the use of disaggregated data, such as age groups, is indicated, in order to guide interventions that meet the needs of specific populations and regions.

Despite the scenario, few studies have been carried out in the region, whose findings can describe the phenomenon, whether in the epidemiological or social aspect. In this sense, this work seeks to analyze the profile of deaths by suicide necropsied by the Instituto Geral de Perícias/Chapecó, between January 2007 and December 2016.

It is believed that the results can guide the elaboration and or the strengthening of public policies related to mental health, as well as rescuing the role and performance of nursing in suicide prevention.

METHOD

This is a descriptive exploratory epidemiological study, with a retrospective quantitative character, carried out from data on deaths by suicide necropsied by the General Institute of Forensics of Santa Catarina, 5th Mesoregional Management of Border Experts, Chapecó/SC nucleus.

The state of Santa Catarina Santa Catarina is characterized by being a state of moderate territorial extension, with an estimated population of 7,164,788 inhabitants in 2019. With 295 municipalities, it is the 11th most populous federation unit in Brazil and 3rd in the national ranking of the best HDI (0.774). (7)

Data were collected through direct analysis of the necropsy records of death certificates (DC) of the institution, for the period from January 1, 2007 to December 31, 2016, previous statements and after this period were excluded from the study.

During collection, data were recorded in an Excel spreadsheet. In this tool, only the report number and the initials of the case name were used. Data were collected from all autopsy reports of deaths by suicide attended by the service, in the period, totaling 335 cases.

Data were collected referring to: initials of the victim's name, date of death, time of death, age, sex, education, profession, marital status, place of occurrence, place of death, cause of death, observations/fact details, medical examiner's name, assistant's name, toxicological and blood alcohol tests. The information regarding the place of occurrence of the fact, absent in the DC, was retrieved in the Occurrence Bulletin (OB) of the case. Information related to the year 2007 was collected in the municipal epidemiological surveillance sector.

Data analysis had as an initial approach the descriptive statistics with the distribution of simple and relative frequencies. To compare the proportions between the categories of the same variable (Univariate Analysis), the chi-square test was used, taking into account the theoretical distribution of homogeneity between the categories compared.

Standardized suicide mortality rates by age group (per 100,000 inhabitants) were analyzed. The rates were adjusted by the direct method, taking the population residing in the state of Santa Catarina in 2012 according to each age group, as a standard. The trend of suicide rates across age groups (14-19 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years and 60 years and over) was analyzed using a linear regression model, considering as dependent variables the suicide mortality rates of each age group and, as an independent variable, the time/years of the study period. An increase in temporal trend was considered when Beta greater than zero ($\beta>0$) was statistically significant (p-value< 0.05); trend decrease when Beta is less than zero ($\beta < 0$) statistically significant (p-value <0.05) and stable temporal trend when Beta (β) value was not statistically significant (p-value > 0.05).

The data received statistical treatment using the Statistical Package to Social Sciences for Windows software. For decision criteria, a significance level (α) of 5% was adopted.

The study followed all ethical recommendations from the National Health Council and obtained ethical approval from the Ethics Committee for Research with Human Beings (CEP/UFFS) under opinion nº 1,826,221.

RESULTS

335 suicide cases were analyzed. Regarding the socioeconomic profile (Table 1), there is a higher prevalence and significantly greater differences in males (79.8%) (χ2calc=131.037; p<0.001), in married individuals (42.7%) (χ2calc=245.685; p<0.001) and with incomplete elementary education (47.5) (χ2calc=413.251; p<0.001). The analysis by age group pointed to the groups over 50 years old with a significantly higher number of suicides when compared to the other age groups (χ2calc=98.024; p<0.001). The distribution of deaths by suicide according to the method used concentrated a higher frequency in the method of hanging (77.9). Still on the type of occurrence of suicides, we sought to identify the causes of the accident according to the different days of the week. However, due to the high prevalence of mechanical asphyxia, this method remained prominent. Thus, there is evidence that the significant prevalence of asphyxia was statistically similar on all days of the week (χ2calc=12.461; p=0.650). The absence of a statistically significant difference was maintained when comparing the cause of death and the years

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(χ2calc=9.833; p=0.466).

In the univariate analysis to compare the proportions, there was no statistically significant difference between the months of the year (χ2calc=10,748; p=0,465), indicating a similar distribution of suicide occurrences throughout these (Table 2).

In the annual distribution, there was an increase in 2016 (13.6) compared to 2007 (3.0), with the highest number of cases occurring in 2014 (13.9). Comparing the proportions observed year by year, there was a statistically significant difference (χ2calc=38.682; p<0.001), indicating that the number of suicide cases was significantly higher in the years 2016, 2014, 2012 and 2011, when compared to the years 2007, 2008, 2010 and 2015.

Regarding the day of the week, the highlights were for Sunday, Saturday and Monday, which were significantly higher than the number of cases detected from Tuesday to Friday (χ2calc=21.455; p=0.011). As for the shift, in 31.3% of the deaths by suicide the fact occurred in the afternoon, followed by the morning shift (25.7%). Such proportions were significantly higher (χ2calc=19.229; p=0.026) than the numbers observed in the night and morning shifts.

Considering the total number of cases, there was statistical evidence to support the hypothesis that the trend in suicide mortality is increasing, mean annual increases of 0.5 and 1 cases were observed for every 100,000 people in the age groups between 30-39 years and 60 years and over, respectively (Table 3).

DISCUSSION

The findings reinforce the male population as predominant in suicide deaths, consistent with what was observed in other studies at the national, state and municipal levels. (4,8,9) A recent survey carried out from the individual notification of interpersonal/self-inflicted violence in the period from 2012 to 2017 showed, for Santa Catarina, the predominance of males corresponding to 77%. [4]

Still, with regard to the method used to commit suicide, hanging prevailed among men and women, as observed in other studies. [8] Despite the predominance of the use of this method, the differences observed between the sexes should be highlighted. While females resort to drowning (5%) and exogenous intoxication (3.3%), males do so in proportions of 1.2% and 0.75%, respecti-

Table 1 – Socioeconomic profile of deaths by suicide necropsied in the mesoregion of the 5th Mesoregional Management of Border Forensics/Chapecó nucleus, Santa Catarina, Brazil, 2017.

Socioeconomic variable	N(%)	χ^2calc	p-value*
Gender		131,037	< 0,001
Male	267 (79,7)		
Female	60 (17,9)		
NI	8 (2,4)		
Age group		98,024	< 0,001
14-19 y/o	22 (6,6)		
20-29 y/o	56 (16,7)		
30-39 y/o	48 (14,3)		
40-49 y/o	61 (18,2)		
50-59 y/o	71 (21,2)		
60 + y/o	73 (21,8)		
NI	4 (1,2)		
Education		413,251	< 0,001
Illiterate	16 (4,8)		
Incomplete Elementary School	158 (47,2)		
Complete Elementary School	55 (16,4)		
Complete High School	48 (14,3)		
Complete Superior Education	15 (4,5)		
NI	43 (12,8)		
Marital Status		245,685	< 0,001
Married	175 (52,1)		
Single	95 (28,4)		
Divorced	27 (8,1)		
Widower	15 (4,5)		
NI	23 (6,9)		
Used method		12,461	0,650
Drowning	6 (1,8)		
Cold weapon	4 (1,2)		
Firearm	26 (7,8)		
Hanging	261 (77,9)		
Poisoning	12 (3,6)		
Fire	2 (0,6)		
Level drop	6 (1,8)		
NI	18 (5,4)		
Total	335 (100,0)		

*chi-square univariate analysis
Source: Prepared by the authors (2022)

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vely.

A fact that calls attention is the marital status, because, while other national studies [10,11] point to greater vulnerability of married, widowed or divorced people to suicide, this study identifies a greater proportion among married people. Thus, most of the deaths by suicide were significantly married (42.7%) and single (28.5%) (χ2calc=245.685; p<0.001) and with incomplete primary education (47.5%) (χ2calc=413.251; p<0.001).

Such results may reflect a certain period or be associated with financial factors, such as economic crisis and unemployment of individuals who provide resources for the family, which can lead to alcohol and drug use, family problems and depressive symptoms.[12] Conditions such as these are favorable to a higher prevalence of mental disorders, suicidal ideation and practices, commonly associated with economically disadvantaged individuals, with low education, lower socioeconomic status, predictors of worse living conditions and mental health. [13])

The western region of Santa Catarina, in which the present study was developed, has a predominance of agricultural production in small and large properties, which requires the use of pesticides, as well as periods in which financing needs negotiation. Such a situation can be an aggravating factor in the occurrence of suicide, as it generates suffering and a feeling of powerlessness. Research carried out in the south of the country showed that the suffering caused by financial losses, work and religion were decisive for the occurrence of suicide in farmers of German origin. [14]

Although state data indicate high rates of suicide among seniors over the age of 60[4], this study alerts to the trend of increase in the rates observed in this and in the young adult population between 30-39 years old, over the years analyzed. Although the highest average rate for the period was observed among men over 60 years of age (2.0 suicides/100,000 inhabitants), the largest increase (166%) in the period

Table 2 – Characterization of deaths by suicide necropsied in the mesoregion of the 5th Mesoregional Management of Border Forensics/Chapecó nucleus, Santa Catarina, Brazil, 2017.

Suicide Occurrence	N(%)	χ^2calc	p-value*
Year		38,682	> 0,001
2007	10 (3,0)		
2008	20 (6,0)		
2009	36 (10,7)		
2010	29 (8,7)		
2011	41 (12,2)		
2012	40 (12,0)		
2013	37 (11,0)		
2014	47 (14,0)		
2015	29 (8,7)		
2016	46 (13,7)		
Month		10,748	0,465
January	24 (7,2)		
February	27 (8,1)		
March	20 (6,0)		
April	19 (5,7)		
May	33 (9,8)		
June	32 (9,6)		
July	23 (6,9)		
August	33 (9,8)		
September	31 (9,2)		
October	32 (9,6)		
November	30 (8,9)		
December	31 (9,2)		
Day of the week		21,455	0,011
Monday	54 (16,1)		
Tuesday	35 (10,5)		
Wednesday	43 (12,8)		
Thursday	51 (15,2)		
Friday	40 (11,9)		
Saturday	55 (16,4)		
Sunday	57 (17,1)		
Period		19,229	0,026
Morning	86 (25,7)		
Afternoon	105 (31,3)		
Night	74 (22,1)		
Dawn	61 (18,2)		
NI	9 (2,7)		
Total	335 (100)		

Source: Prepared by the authors (2022)

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occurred among men aged 30-39 years (0.6 in 2007 to 1.6 in 2016). The suicide rates observed in this region under study converge and corroborate the state indices, placing the state of Santa Catarina in the national ranking [1,15] of suicide deaths.

The predominance of male individuals, aged over 50 years and with low education among suicides converges with other studies. [10,11]

Another striking element can be seen in these studies: the growth of cases year after year. In the bulletin released, from the initial period of analysis (2012) to the final year (2017), there was a variation of 0.5/100 thousand inhabitants, rising from 8.5 to 10.4 per 100,000 inhab. in general average. [4] The same occurred in the data of the present study, but in a different period, corresponding to 3.0% in 2007 and 13.6% in 2016. Likewise, in an analysis from 2000 to 2013, the year 2013 showed a significant increase in suicides. According to the authors, the Southeast region had the highest percentage of a total of 10,000 cases, representing 36%, followed by the Midwest and North with 16.7%, Northeast and South with 23.7% and 23.3% . It should be noted that from Ordinance No. 1,876 established by the Government on August 14, 2006, the user began to have better care and reception in the Unified Health System at all levels of care. [16]

The State of Santa Catarina is in second place in the national ranking of deaths by suicide [16], second only to the much more populous Southeast States. Mortality by suicide in SC seems to group different characteristics, according to the regions of Santa Catarina. Despite its small territorial extension, the state has a wide ethnic and cultural variation between its regions, which may explain the heterogeneity of indicators related to suicide found between the coastal, central and inland regions, represented by the West and extreme west of Santa Catarina. With regard to suicides, the distribution of rates between regions in SC is also not homogeneous. Based on the division used by DIVE, it is possible to observe that the regions with the highest suicide mortality rates are opposite in terms of geolocation and cultural differences. In this sense, Alto Uruguai Catarinense stands out with a rate of 20.4 deaths/100 thousand inhab., the Extremo Sul Catarinense with 19.6/100 thousand inhab. and Alto Vale do Itajaí, with 16 deaths/100 thousand inhab. [4]

Table 3 – Analysis of trends in standardized* suicide mortality rates, according to age group. 5th Mesoregional Management of Border Forensics/Chapecó Center, Santa Catarina, Brazil, 2017.

Age group	R^2	Model	p-value**	Tendency
14-19 y/o	0,27	Y=1,00 + 0,36 year	> 0,05	Stable
20-29 y/o	0,28	Y=2,36 + 0,45 year	> 0,05	Stable
30-39 y/o	0,72	Y=2,19 + 0,47 year	≤ 0,01	Increase
40-49 y/o	0,17	Y=4,68 + 0,36 year	> 0,05	Stable
50-59 y/o	0,03	Y=9,15 + 0,27 year	> 0,05	Stable
60 e + y/o	0,42	Y=4,87 + 1,01 year	< 0,05	Increase
Total		Y = 0,37 + 0,05 year	< 0,05	Increase

* Standardized by the population of the respective age group, residing in Santa Catarina 2012.
** descriptive level of the β1 coefficient of Linear Regression
Source: Prepared by the authors (2022)

Although not addressed in this study, characteristics related to culture and individual positions such as religiosity can interfere and influence suicide mortality rates, raising a topic of interest in public health and object of future investigations and discussions.

Suicidal behavior in adult life is usually presented in situations of personal, work or family failure, social exclusion, lack of support networks, depression and negative prognosis of diseases. [17] According to the World Health Organization, mental disorders represent one of the most significant risk factors for suicide and about 90% of suicides are committed by people with a disorder. [6]

The psychiatric reform created in 2001, in the form of Law No. 10,216, repositioned mental health nursing care for communities, supporting the creation of the National Mental Health Policy, which has guidelines that deinstitutionalize, expand and consolidate the Psychosocial Care Centers (CAPS), including health promotion activities in primary care and other measures implemented with the approval of Ordinance 3088 that constitutes the Psychosocial Care Network for people with mental disorders. [18]

In this way, nursing reception has undergone innovative changes, adapting to globally accepted standards, based on scientific evidence that respects the human being in all its biases, in a biopsychosocial way, because mental health nursing care needs qualified listening that involves knowing how to listen and therapeutically use silence: being interested in what is said or not said and acceptance, distancing oneself from the therapy that was once widely used, physical restraint to patients considered aggressive, disobedient, agitated, etc. [18]

Therefore, it is essential for the nursing team to assume a posture that results in the construction of commitment, intimacy and a relationship of trust, breaking with cultures prior to the psychiatric reform, because the figure of the nurse is seen as an important agent of change in the psychosocial way, as long as he is aware of his

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transforming and political role, which require knowledge of work instruments that aim to rescue the condition of subject-citizen of people with psychological suffering. We also aim that multidisciplinary work requires collective definition of goals, integrating all those involved in the actions, as well as providing a change in the understanding of the user and his life. [18]

Study limitations

Considering that this is secondary data, the information is subject to imprecision and inconsistencies in the records of data of interest to the research. Such limitations arising from the records themselves reinforce the importance of retrospective studies.

Contribution of study to practice

The study makes an important contribution to current nursing by explaining in numerical data cases of suicide in a region of Santa Catarina, a state that ranks second in the national ranking in deaths from this cause. Especially in the current moment experienced by the whole world as a result of the CoVid-19 pandemic, mental health deserves to be highlighted in debates, public policies and in the training of students, not only in the health area.

CONCLUSION

This study made it possible to trace the epidemiological profile of deaths by suicide attended by a core of expertise of the IGP/SC.

The findings of this study are in line with the various studies already published that indicate that SC has one of the highest national coefficients of deaths by suicide, in this particular the west and extreme west regions are highlighted compared to other regions of the state.

The epidemiological characteristics recorded here point to a high incidence in men, of a higher age group, with a low level of education and with hanging as the most used method, as well as in other Brazilian regions.

With regard to the quality of the DCs, it is necessary to stimulate the awareness of all professionals/teams involved in this service, regarding the importance of their role in filling out the DC for the health situation of the population, because it's not just about technical issues. The correct and complete filling of the DC is essential for epidemiological data to be reliable, as it is from them that decisions in all areas, such as public safety and health, are made. Therefore, it is essential that the filling is done by a qualified and legally authorized professional.

It is known that the problems related to this theme are not easy to solve, as they are intertwined with various situations, such as human behavior. It is necessary to think about interventions in all fields of society, not only in the area of health, and the strengthening of public policies on mental health.

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