

Beatriz Schuelter Trevisol¹
<https://orcid.org/0009-0004-6646-1886>

Bruna Camargo¹
<https://orcid.org/0009-0000-3101-3734>

Jaqueline Klein Simionato¹
<https://orcid.org/0009-0002-1017-5616>

Cibelle Ribeiro Magalhães Silva²
<https://orcid.org/0000-0002-5349-1072>

Gabriel Oscar Cremona Parma²
<http://orcid.org/0000-0001-9540-6908>

Eliane Traebert²
<https://orcid.org/0000-0001-9667-7216>

Jefferson Traebert²
<http://orcid.org/0000-0002-7389-985X>

Daisson José Trevisol²
<https://orcid.org/0000-0002-7053-9082>

Fabiana Schuelter-Trevisol²
<https://orcid.org/0000-0003-0997-1594>

Suicide and self-inflicted injury cases in the pre- and pandemic-related period of COVID-19 in Santa Catarina

Casos de suicídio e automutilação no período pré-pandêmico e durante a pandemia de COVID-19 em Santa Catarina

J Bras Psiquiatr. 2026;75:e20260002
<https://doi.org/10.1590/0047-2085-2026-0002>

ABSTRACT

Objectives: To analyze the temporal trend and spatial distribution of suicide and self-inflicted injury cases in Santa Catarina, comparing the pre-pandemic (2015–2019) and pandemic-related (2020–2024) periods. **Methods:** Mixed ecological and descriptive study of multiple groups with temporal trend analysis. Notifications of suicide and self-inflicted injuries from the Notifiable Diseases Information System were reviewed. **Results:** A total of 8,061 suicides and 60,709 self-inflicted injuries were recorded. When comparing the two periods, there was an average increase in both outcomes, and this difference was statistically significant. The linear trend showed an average growth of 35.5 suicide cases per year ($p < 0.01$) and 678 self-inflicted injuries per year ($p = 0.001$). Suicide was more prevalent among men, while self-inflicted injuries predominated among women. Hanging was the predominant method in suicide cases, with the highest incidence rates in the western region of the state. Poisoning was the most frequent method in self-inflicted injuries. The coastal region of Santa Catarina had the highest incidence rates of self-inflicted injuries. **Conclusions:** The pandemic may have contributed to the increase in suicide and self-inflicted injury cases among the population of Santa Catarina State.

KEYWORDS

Suicide, Suicide Attempt, Self-Destructive Behavior, COVID-19, Temporal Distribution.

RESUMO

Objetivos: Analisar a tendência temporal e distribuição espacial dos casos de suicídio e lesões autoprovocadas em Santa Catarina, comparando o período pré (2015-2019) e o período relacionado à pandemia (2020–2024). **Métodos:** Estudo ecológico misto, descritivo de múltiplos grupos com análise de tendência temporal. Foram revisadas as notificações de suicídio e lesões autoprovocadas do Sistema de Informação de Agravos de Notificação. **Resultados:** Houve 8.061 suicídios e 60.709 lesões autoprovocadas. Ao se comparar os dois períodos houve aumento médio nos dois desfechos, sendo essa diferença estatisticamente significativa. A tendência linear mostrou crescimento médio de 35,5 casos por ano no suicídio ($p\text{-valor} < 0,01$), e 678 lesões autoprovocadas por ano ($p\text{-valor} = 0,001$). O suicídio é mais prevalente em homens e as lesões autoprovocas em mulheres. O enforcamento foi o método predominante nos casos de suicídio, com as maiores taxas de incidência na região oeste do Estado. O envenenamento foi o método preferencial nas lesões autoprovocadas. A região litorânea de Santa Catarina teve as maiores taxas de incidência das lesões autoprovocadas. **Conclusões:** A pandemia pode ter contribuído para o aumento dos casos de suicídio e lesões autoprovocadas nos habitantes do Estado de Santa Catarina.

PALAVRAS-CHAVE

Suicídio, Tentativa de Suicídio, Comportamento Autodestrutivo, COVID-19, Distribuição Temporal.

Received: Jan/16/2026. Approved: Mar/27/2026.

¹ Curso de Medicina, Universidade do Sul de Santa Catarina, Tubarão, SC, Brazil.

² Programa de Pós-Graduação em Ciências da Saúde, Universidade do Sul de Santa Catarina, Tubarão, SC, Brazil.

Address for correspondence: Fabiana Schuelter-Trevisol. Universidade do Sul de Santa Catarina, Avenida José Acácio Moreira, 787, Bairro Dehon – 88704-900 – Tubarão, SC, Brazil. E-mail: fastrevisol@gmail.com



INTRODUCTION

Suicide is a global problem and ranks among the 20 leading causes of death worldwide, killing more people than breast cancer, and is classified as death from external causes. More than one in every 100 deaths in 2021 resulted from suicide¹. According to the World Health Organization (WHO), 720,000 people die by suicide each year².

Suicide is more prevalent among adolescents and young adults, especially in the second and third decades of life³. Completed suicides are three times more common in men than in women, unlike suicide attempts⁴. The most used methods are hanging, self-poisoning with pesticides, and the use of firearms. Drug intoxication and the use of sharp objects are also methods employed in suicide attempts and complete suicides. Suicide may also occur in disguised forms, such as excessive use of alcohol and drugs, engaging in sports or leisure activities that put one's life at risk, and neglecting one's own health^{5,6}.

The reasons for suicide are multifaceted, influenced by social, cultural, biological, psychological, and environmental factors throughout life. For every suicide, there are many more people who attempt suicide³. A previous suicide attempt is an important risk factor for suicide in the general population. Such a decision and act likely result from a combination of factors that include the presence of mental disorders, possible genetic predisposition, family history, impulsive personality traits, substance abuse, and a recent and insoluble event, often referred to as the "last straw." Most suicides worldwide are related to psychiatric disorders⁴⁻⁷.

The COVID-19 pandemic was declared at the beginning of 2020. Physical/social isolation included measures such as avoiding contact with family and friends, preferring home delivery of essential items, and reducing social interaction by maintaining a minimum distance of two meters between people⁸. Although social isolation was effective as a public health measure to contain viral spread, psychologically it triggered fear, uncertainty, and despair, which could have been the "last straw" for individuals with suicidal ideation^{9,10}.

Some studies found an overall increase in the prevalence rate of suicidal ideation and suicide attempts, as well as in the suicide mortality rate during the pandemic period compared to the pre-pandemic period. Conversely, others identified a downward trend, and some reported stability in such rates. However, these were systematic review studies conducted at the height of the pandemic (2020–2022), which highlighted the variability of findings and methodological issues¹⁰⁻¹².

Considering the relevance of the topic and the lack of detailed analyses of suicide and self-inflicted injury cases in the state of Santa Catarina, this study aims to analyze temporal trends, spatial distribution, and the potential impact of COVID-19 on suicide and self-inflicted injury cases between 2015 and 2024, comparing the pre-pandemic (2015–2019) and pandemic-related (2020–2024) periods.

METHODS

A mixed ecological, descriptive, multiple-group study was conducted, including temporal trend and spatial distribution analyses in the state of Santa Catarina.

Data on deaths by suicide occurring in the state were obtained from the TABNET Information System (available at tabnet.dive.sc.gov.br) through the website of the Epidemiological Surveillance Directorate of Santa Catarina (DIVE), between January 1, 2015, and December 31, 2024. On the same website, the Notifiable Diseases Information System (SINAN) was accessed, and cases of violence were selected, applying filters to identify variables of interest and selecting cases classified as "self-inflicted injury."

The period from 2020 to 2024 was considered a pandemic-related period, encompassing the acute phase of the COVID-19 pandemic as well as the subsequent period following the declaration of the end of the public health emergency by the World Health Organization in May 2023. This approach acknowledges the persistence of psychosocial impacts and health sequelae beyond the acute phase of the pandemic.

The state of Santa Catarina is divided into six mesoregions: Greater Florianópolis, Northern Santa Catarina, Western Santa Catarina, Serrana, Southern Santa Catarina, and Vale do Itajaí, comprising 295 municipalities. The state's population was estimated at 8,054,441 inhabitants in 2024, with a slight predominance of women (50.71%).

Study variables included sociodemographic data: sex, age group, skin color, marital status, and educational level (years of study); and occurrence data: year and month of notification, place and municipality of occurrence, method used, and nature of self-inflicted injury.

Data was obtained from the analysis of compulsory notification forms in the system and presented in aggregate form. They were organized and analyzed using Microsoft Office Excel. Qualitative variables were described by absolute and relative frequencies. Some categories were regrouped for graphical presentation.

To calculate the incidence rate, the total number of reported cases in each municipality of Santa Catarina was divided by the respective total population, using 2024 as the reference year, based on data from the Brazilian Institute of Geography and Statistics (IBGE). The result was expressed per 100,000 inhabitants. Data were subsequently grouped by mesoregion for analysis.

Mapping was performed using Geographic Information System (GIS) software Quantum GIS – QGIS and Microsoft Excel (Microsoft Corporation, 2023). Cartographic data consisted of shapefile maps in the official Brazilian cartographic system, representing cities and mesoregions, based on official IBGE data. Annual population data from IBGE, published in the Federal Official Gazette (DOU), were also used. Using QGIS, incidence rates per 100,000

inhabitants were calculated and represented in thematic maps, classified by Jenks' natural breaks.

Mean comparisons were performed using Student's t-test. Temporal trend analysis was conducted through simple linear regression. The dependent variable was the total number of suicide or self-inflicted injury cases, and the independent variable was the observation year. The significance of the regression coefficient and intercept was assessed using analysis of variance (ANOVA). The regression coefficient indicated the average annual change in suicide or self-inflicted injury cases, while the intercept estimated the baseline number of cases. The model's explanatory power was evaluated using the coefficient of determination (R^2). A significance level of $\alpha = 0.05$ was adopted for statistical tests. All analyses were performed using Microsoft Excel MS365.

This study was reviewed and approved by the Research Ethics Committee of the University of Southern Santa Catarina, under opinion No. 7,308,161.

RESULTS

Between 2015 and 2024, a total of 8,061 suicide cases were reported in the state of Santa Catarina, with 3,613 cases in the pre-pandemic period (2015–2019) and 4,448 cases in the pandemic-related period (2020–2024). The overall average

suicide rate in Santa Catarina was 11.2 per 100,000 inhabitants. When comparing the two periods, the average number of suicide cases was higher in the pandemic-related period (889.6; SD = 81.5) than in the pre-pandemic period (722.6; SD = 61.3), with a p-value of 0.006.

During the same period, 60,749 cases of self-inflicted injuries were reported, with 23,274 in the pre-pandemic period and 37,567 in the pandemic-related period. A significant difference was also observed between the pre-pandemic (4,654.8; SD = 2,202.2) and pandemic-related period (7,513.4; SD = 1,523.2) periods for self-inflicted injuries ($p = 0.049$).

The regression analysis revealed that the number of suicides increased over the years, suggesting an average growth of approximately 35.5 cases per year, as indicated by the linear regression model ($R^2 = 0.94$), showing a statistically significant upward trend ($p < 0.001$). This trend was also observed for self-inflicted injuries, which showed a significant increase ($p = 0.001$) over time, with an average rise of 678 cases per year ($R^2 = 0.75$).

When analyzing the distribution of suicide cases by month, peaks were observed in January, March, and September, suggesting a possible seasonal pattern. In contrast, self-inflicted injury cases did not display clear seasonality, showing a homogeneous distribution throughout the year.

Table 1 presents the sociodemographic characteristics of the analyzed cases.

Table 1. Sociodemographic characteristics of suicide and self-inflicted injury cases in Santa Catarina, 2015–2024.

Sociodemographic characteristics	Suicide n (%)		p-value	Self-Inflicted Injury n (%)		p-value
	2015-2019	2020-2024		2015-2019	2020-2024	
Sex			0.310			0.002
Female	812 (22.47)	958 (21.54)		16,698 (67.48)	26,701 (68.41)	
Male	2,801 (77.53)	3,490 (78.46)		8,043 (32.50)	12,327 (31.59)	
Age group			<0.001			<0.001
0-19	227 (6.29)	199 (4.47)		5,610 (24.2)	10,156 (27.03)	
20-29	577 (15.97)	731 (16.43)		6,032 (26.02)	10,629 (28.29)	
30-39	629 (17.41)	845 (19.00)		4,818 (20.78)	7,274 (19.36)	
40-49	695 (19.24)	796 (17.90)		3,773 (16.28)	5,474 (14.57)	
50-59	751 (20.79)	813 (18.28)		1,995 (8.61)	2,655 (7.07)	
60-69	430 (11.90)	615 (13.83)		682 (2.94)	976 (2.60)	
≥70	304 (8.42)	443 (9.96)		272 (1.17)	403 (1.07)	
Skin color			0.090			<0.001
White	3,200 (88.57)	3,873 (87.84)		21,475 (86.80)	33,112 (84.83)	
Non white	376 (11.43)	536 (12.16)		2,722 (13.20)	5,562 (15.17)	
Marital status			<0.001			<0.001
Single	1,367 (37.84)	1,927 (43.32)		10,282 (44.35)	20,437 (54.40)	
Married	1,219 (33.74)	1,304 (29.32)		8,015 (34.57)	10,626 (28.29)	
Widow	179 (4.95)	239 (5.37)		338 (1.46)	413 (1.10)	
Divorced	352 (9.74)	465 (10.45)		1,535 (6.62)	2,157 (5.74)	
Schooling (years)			<0.001			<0.001
0-8	1,688 (46.72)	1,713 (38.83)		6,823 (27.58)	8,904 (22.81)	
>8	1,622 (44.89)	2,272 (51.50)		11,869 (47.97)	21,824 (55.91)	
Total	3,613	4,448		24,741	39,032	

Source: DIVE Santa Catarina

Approximately three-quarters of suicide cases occurred among men, whereas about two-thirds of self-inflicted injuries were among women. Similarly, suicide was more prevalent among adults and older adults, while self-inflicted injuries were more frequent among adults, followed by young people and adolescents. Most cases involved individuals with white skin color in both outcomes. Regarding marital status, when summing the categories of single, separated/divorced, and widowed, individuals without a cohabiting partner showed higher prevalence in both outcomes.

Table 2 presents the characteristics related to the method employed in suicide and self-inflicted injuries, as well as the place of occurrence.

Hanging was the most prevalent method in suicide cases. Moreover, most incidents occurred at home or in

places offering greater privacy and accessibility. Regarding self-inflicted injuries, poisoning and the use of sharp objects were the most frequent methods.

Figure 1 shows the spatial distribution of cases by mesoregion in the state of Santa Catarina, comparing both outcomes between the pre-pandemic (2015–2019) and pandemic-related (2020–2024) periods.

There was a predominance of suicide cases in four regions of the state during the pre-pandemic period, which became more pronounced in the Greater West and Mid-West regions in the pandemic-related period. In contrast, self-inflicted injuries were more concentrated in coastal regions, with a notable increase in the southern region of Santa Catarina during the pandemic-related period.

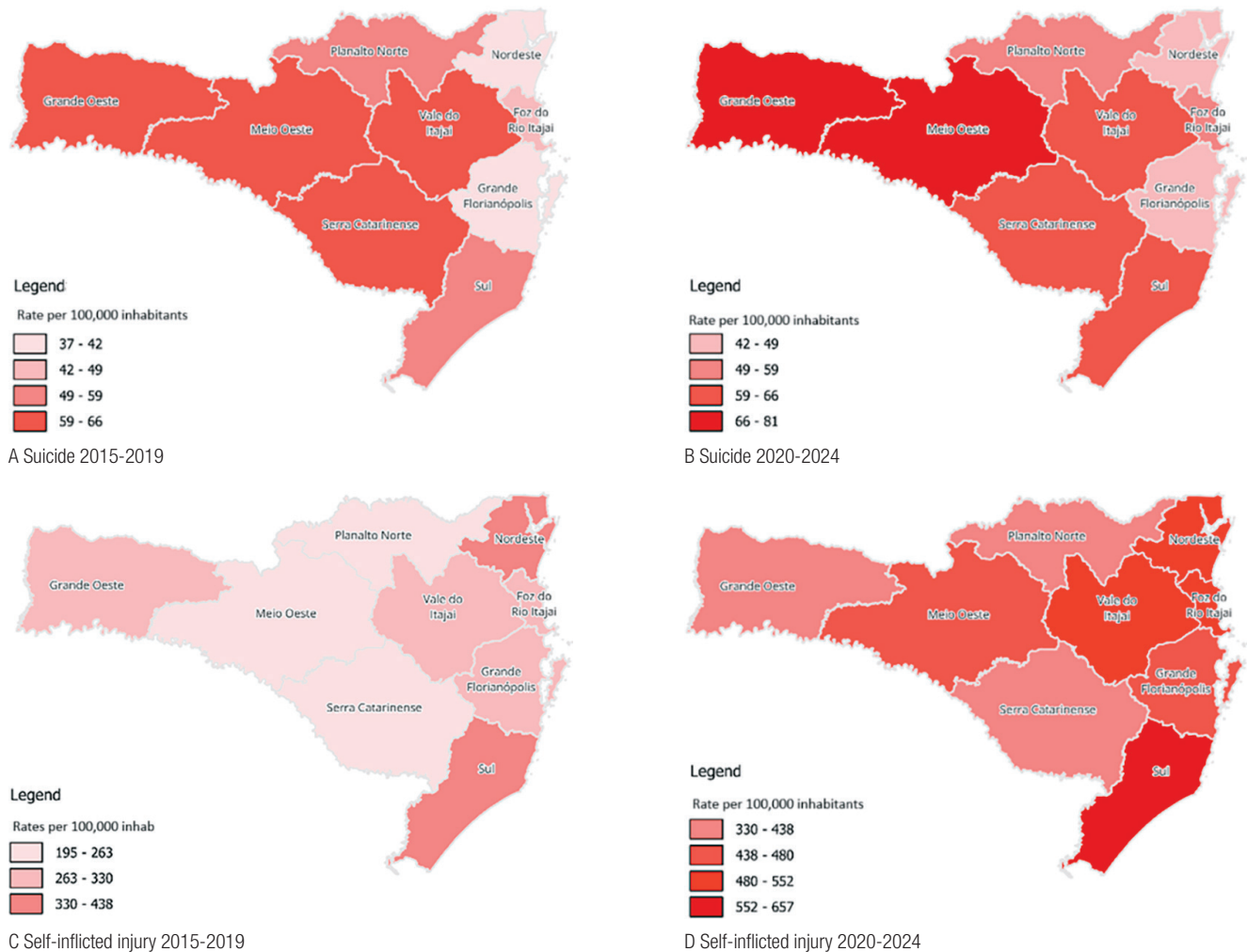
Table 2. Characteristics related to suicide or self-inflicted injury in Santa Catarina, 2015–2024.

Sociodemographic characteristics	Suicide n (%)		p-value
	2015-2019	2020-2024	
Method used in suicide			<0.001
Hanging, strangulation or suffocation	2,692 (74.51)	3,371 (75.79)	
Firearm	253 (7.00)	315 (7.08)	
Drug or medication poisoning	228 (6.31)	276 (6.21)	
Fall from a height	111 (3.07)	157 (3.53)	
Drowning/submersion	84 (2.32)	78 (1.75)	
Pesticide poisoning	82 (2.27)	39 (0.88)	
Sharp or penetrating object	40 (1.11)	60 (1.35)	
Smoke, fire, and flames	32 (0.89)	39 (0.88)	
Poisoning by other chemical substances	28 (0.77)	30 (0.67)	
Other specified means	63 (1.74)	83 (1.87)	
Place of occurrence of suicide			0.207
Home/residence	2,391 (66.18)	2,876 (64.66)	
Hospital or healthcare facility	401 (11.10)	506 (11.38)	
Public road	197 (5.45)	289 (6.50)	
Other*	621 (17.19)	774 (17.40)	
Unknown	3 (0.08)	3 (0.07)	
Total	3,613	4,448	
	Self-inflicted injury n (%)		p-value
	2015-2019	2020-2024	
Method used in self-inflicted injury**			<0.001
Poisoning	13,067 (52.45)	23,629 (59.35)	
Sharp object	3,744 (15.03)	6,887 (17.30)	
Hanging	2,364 (9.49)	3,425 (8.60)	
Body force	306 (1.23)	378 (0.95)	
Blunt object	226 (0.91)	564 (1.42)	
Threat	210 (0.84)	239 (0.60)	
Hot object	152 (0.61)	208 (0.52)	
Firearm	142 (0.57)	162 (0.41)	
Other	4,701 (18.87)	4,324 (10.86)	
Total	24,912	39,816	

*Collective housing, school, sports facility, bar or similar, commercial/service establishment, industry/construction.

**In some cases, more than one method was used.

Source: DIVE Santa Catarina



Source: DIVE Santa Catarina

Figure 1. Distribution of suicide incidence rates per 100,000 inhabitants for the periods 2015–2019 (A) and 2020–2024 (B), and self-inflicted injury incidence rates per 100,000 inhabitants for the periods 2015–2019 (C) and 2020–2024 (D), by mesoregion of occurrence in the state of Santa Catarina.

DISCUSSION

This study showed a significant increase in suicide and self-inflicted injury cases in Santa Catarina after the COVID-19 pandemic. Tardesh et al. emphasized that the pandemic may have caused job instability, poverty, and crises of anxiety and depression, which could explain the rise in suicide and suicide attempt cases¹¹. This increase may be related to social isolation, unemployment, bereavement, and limited access to psychological support. Melo et al., analyzing national suicide mortality data in Brazil between 2000 and 2022, also found a significant increase with the onset of the COVID-19 pandemic, although the rate was lower than the global average and than that observed in the present study¹³. In addition to the sociocultural differences among the different Brazilian regions, in the present study we used data from the state-level system, which are more up to date and precede the consolidation of data in the Mortality Information

System, available through DATASUS, from which Melo et al. extracted their data; this may help explain the differences in the findings.

Previous studies have indicated that health and economic crises can negatively affect the population's mental health, increasing the prevalence of suicidal and self-harming behaviors^{1,9,14,15}. More than 90% of suicide cases and attempts are related to mental disorders such as depression, anxiety, post-traumatic stress disorder, and sleep disturbances — conditions also detected in long COVID cases¹⁶.

In the present study, no clear seasonality was observed for self-inflicted injuries. However, suicide cases showed peaks in January, March, and September. The literature suggests that seasonal factors, such as variations in photoperiod — especially in southern Brazil, where variation is greater — may influence suicide incidence¹⁷. In addition, during awareness campaign months such as *White January* and *Yellow September*, an increase in reported cases is often

observed, possibly due to greater awareness and media exposure, which may trigger the so-called “Werther Effect,” as identified in systematic reviews^{12,18}. This effect refers to the increase in suicides following extensive media coverage of suicide cases.

It was observed that most suicide cases occurred among men, while self-inflicted injuries were more frequent among women, consistent with previous studies¹⁹. This may be explained by the fact that women tend to seek help more often, whereas men tend to use more lethal methods. Such behavior may be related to social norms that discourage men from expressing emotional vulnerability, making early prevention more difficult^{4,7,20}. Regarding age groups, adults were the most affected in both outcomes. However, the second most affected group for suicides was the elderly, while children and adolescents had a higher incidence of self-inflicted injuries. Studies indicate that elderly individuals have higher suicide rates due to factors such as isolation, grief, and chronic illness, whereas among children and adolescents, the main factors are family conflict and socialization difficulties^{21,22} — often as a way of expressing suffering rather than an actual suicidal intent^{2,6,23}. Suicide among the elderly is particularly concerning; the WHO highlights that older adults are among the most vulnerable groups, and when they attempt suicide, such attempts are usually more lethal^{2,3}.

Marital status was also relevant, as individuals living alone — such as single, widowed, or divorced persons — showed higher rates in both outcomes. This may be attributed to the lack of adequate emotional and social support^{4,12}. Higher educational level was associated with both outcomes, especially in the pandemic-related period. The literature suggests that education may be linked to socioeconomic factors influencing mental health, serving as an indirect indicator^{1,7}.

The higher incidence among White individuals in this study reflects the ethnic composition of the state where the research was conducted. However, studies from other regions of Brazil have shown that Black and Brown populations have higher suicide mortality rates, due to the challenges they face related to discrimination and socioeconomic inequalities^{6,12,19,20}. Although economic inequality is often cited as a determinant of mental health outcomes, recent meta-analytical evidence suggests that its effects are not universal and may be confined to socioeconomically disadvantaged or economically unstable contexts. This reinforces the importance of considering contextual and cultural mediators when interpreting suicide and self-harm trends²⁴.

Among the methods used, hanging was the most prevalent, suggesting its lethality and accessibility, followed by the use of firearms and poisoning — both less accessible. For self-inflicted injuries, poisoning and the use of sharp objects were predominant. This reflects access to less lethal

methods and to more easily available materials, especially among women. Studies have shown that the choice of method varies and may be influenced by cultural factors, availability, and lethality intent^{5,6,24,25}.

Spatial analysis revealed a predominance of suicide cases in the Greater West and Mid-West regions. Previous studies have identified Santa Catarina as one of the states with the highest suicide and self-inflicted injury rates in Brazil, second only to Rio Grande do Sul^{26,27}. Both states share similar characteristics, including European colonization and a predominantly rural workforce. In Santa Catarina — a state with a strong historical presence of European immigrant descendants, particularly of German and Italian origin — socio-cultural factors may shape community attitudes toward emotional expression, vulnerability, and the use of support services. Previous literature has shown that cultural norms and ethno-cultural identity can influence suicidal behaviours and help-seeking patterns in immigrant and minority populations, suggesting that cultural heritage and community context may be relevant in understanding suicide risk. Moreover, socio-cultural determinants of suicidality have been identified as important drivers of variability across populations, underscoring the need to contextualize suicide epidemiology within local cultural frameworks^{28,29}. Men of European descent, often shaped by hegemonic masculinity and ethnic privilege, may be less prepared to deal with life's vulnerabilities and frustrations. Moreover, in rural areas, access to or search for healthcare services — particularly mental health services — may be limited due to stigma or shame. With technological advances, family farming has become less attractive, and living conditions have been worsened by labor difficulties and recurring natural disasters in Santa Catarina, such as alternating heavy rains, floods, droughts, and significant temperature variation²⁶. There is also evidence that organophosphate exposure may have a causal relationship with mental disorders and suicide²⁷.

Self-inflicted injuries were more concentrated in the southern region of the state, as also evidenced in previous studies^{26,27}. The economy of southern Santa Catarina is driven by the clothing, disposable plastics, coal mining, and ceramic industries, and the region was primarily colonized by Italians. However, this region is also heavily affected by natural and environmental disasters — such as floods, landslides, and heavy rains — which can severely impact quality of life, well-being, and mental health.

This study presents some limitations. Given its ecological design, it was not possible to analyze individual-level data. Moreover, the database may contain inconsistencies related to notification and reporting. Contact with the Epidemiological Surveillance Directorate of Santa Catarina was required to obtain some spreadsheets due to missing data, as the violence reporting form often contains

incomplete records. It is also important to note that cases are likely underreported. Despite these limitations, the topic addressed is of great relevance, given the growing concern about mental health-related conditions and the worsening of these indicators during and after the pandemic period. Ecological studies encompass large numbers of cases and wide geographic areas, allowing hypotheses to be generated about the phenomenon.

CONCLUSIONS

The study showed a significant increase in suicide and self-inflicted injury cases in Santa Catarina in the pandemic-related period, with differences across sociodemographic profiles. A higher incidence of suicide was observed among men and older adults, while self-inflicted injuries were more frequent among women and adolescents. Hanging was the most lethal and common method used in suicides, whereas poisoning and the use of sharp objects predominated in self-inflicted injuries. Individual-level studies are needed to confirm the impact on mental health and to guide preventive measures.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support this study are available from the authors upon request.

INDIVIDUAL CONTRIBUTIONS

BST, BC and **JKS** - Conceptualization, Data curation and Writing – original draft; **CRMS** – Validation and Writing – original draft; **GOCP** - Formal Analysis; **ET, JT** and **DJT** - Writing – review & editing; **FST** - Project administration and Writing – review & editing.

Handling Editor: Mauro Mendlowicz

REFERENCES

- Lovero KL, Dos Santos PF, Come AX, Wainberg ML, Oquendo MA. Suicide in Global Mental Health. *Curr Psychiatry Rep.* 2023 Jun;25(6):255–262. doi: 10.1007/s11920-023-01423-x.
- World Health Organization. Suicide worldwide in 2019: global health estimates. Geneva: WHO; 2021. Disponível em: <https://www.who.int/publications/i/item/9789240026643>. Acesso em 23 Ago 2024.
- World Health Organization. Fact Sheets – Suicide. Disponível em: <https://www.who.int/news-room/fact-sheets/detail/suicide/>. Acesso em 1 Mai 2025.
- McClelland H, Cleare S, O'Connor RC. Suicide Risk in Personality Disorders: A Systematic Review. *Curr Psychiatry Rep.* 2023 Sep;25(9):405–417. doi: 10.1007/s11920-023-01440-w.
- Persett PS, Ekeberg Ø, Jacobsen D, Bjørnaas MA, Myhren H. Higher Suicide Intent in Patients Attempting Suicide With Violent Methods Versus Self-Poisoning. *Crisis.* 2022 May;43(3):220–227. doi: 10.1027/0227-5910/a000773.
- Jaen-Varas DC, Mari JJ, Asevedo E, Borschmann R, Diniz E, Ziebold C, Gadelha A. A 10-year ecological study of the methods of suicide used by Brazilian adolescents. *Cad Saude Publica.* 2020 Sep 2;36(8):e00104619.
- Sher L, Oquendo MA. Suicide: An Overview for Clinicians. *Med Clin North Am.* 2023 Jan;107(1):119–130. doi: 10.1016/j.mcna.2022.03.008.
- Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents.* 2020; 55 (3), 105924.
- Both LM, Zoratto G, Calegari VC, Ramos-Lima LF, Negretto BL, Hauck S, et al. COVID-19 pandemic and social distancing: economic, psychological, family, and technological effects. *Trends Psychiatry Psychother.* 2021 Apr-Jun;43(2):85–91. doi: 10.47626/2237-6089-2020-0085.
- Yan Y, Hou J, Li Q, Yu NX. Suicide before and during the COVID-19 Pandemic: A Systematic Review with Meta-Analysis. *Int J Environ Res Public Health.* 2023 Feb 14;20(4):3346. doi: 10.3390/ijerph20043346.
- Tardeh S, Adibi A, Mozafari AA. Prevalence of Suicide Ideation and Attempt during COVID-19 Pandemic: A Systematic Review and Meta-Analysis. *Int J Prev Med.* 2023 Jan 25;14:9. doi: 10.4103/ijpvm.ijpvm_507_21.
- da Cunha Varella AP, Griffin E, Khashan A, Kabir Z. Suicide rates before and during the COVID-19 pandemic: a systematic review and meta-analysis. *Soc Psychiatry Psychiatr Epidemiol.* 2024 Feb 14. doi: 10.1007/s00127-024-02617-1. Epub ahead of print. Erratum in: *Soc Psychiatry Psychiatr Epidemiol.* 2024 Mar 13. doi: 10.1007/s00127-024-02651-z.
- O'Connor RC, Wetherall K, Cleare S, McClelland H, Melson AJ, Niedzwiedz CL, et al. Mental health and well-being during the COVID-19 pandemic: longitudinal analyses of adults in the UK COVID-19 Mental Health & Wellbeing study. *Br J Psychiatry.* 2021 Mar;218(6):326–333. doi: 10.1192/bjp.2020.212.
- Melo MS, Martins TA, de Amorim RFB, Raiol T, Ribeiro CJN, Dos Santos AD. Impact of the COVID-19 pandemic on suicide mortality in Brazil: an interrupted time series analysis. *Trends Psychiatry Psychother.* 2025 Apr 14. doi: 10.47626/2237-6089-2024-0952.
- Gunnell D, Appleby L, Arensman E, Hawton K, John A, Kapur N, et al. Suicide risk and prevention during the COVID-19 pandemic. *Lancet Psychiatry.* 2020 Jun;7(6):468–471. doi: 10.1016/S2215-0366(20)30171-1.
- Sher L. Long COVID-19 and Suicide. *Adv Exp Med Biol.* 2024;1458:51–57. doi: 10.1007/978-3-031-61943-4_4.
- Reis DJ, Yen P, Tizenberg B, Gottipati A, Postolache SY, De Riggs D, et al. Longitude-based time zone partitions and rates of suicide. *J Affect Disord.* 2023 Oct 15;339:933–942. doi: 10.1016/j.jad.2023.07.080.
- Calvo S, Carrasco JP, Conde-Pumpido C, Esteve J, Aguilar EJ. Does suicide contagion (Werther effect) take place in response to social media? A systematic review. *Span J Psychiatry Ment Health.* 2024 Jun 5;S2950-2853(24)00032-2. doi: 10.1016/j.sjpmh.2024.05.003.
- Oliveira Alves FJ, Fialho E, Paiva de Araújo JA, Naslund JA, Barreto ML, Patel V, et al. The rising trends of self-harm in Brazil: an ecological analysis of notifications, hospitalisations, and mortality between 2011 and 2022. *Lancet Reg Health Am.* 2024 Feb 15;31:100691. doi: 10.1016/j.lana.2024.100691.
- Fox KR, Millner AJ, Mukerji CE, Esposito EC, Mackin DM, Zuromski KL, et al. Examining the role of sex in self-injurious thoughts and behaviors. *Clin Psychol Rev.* 2021 Nov;87:102030. doi: 10.1016/j.cpr.2021.102030.
- Hughes JL, Horowitz LM, Ackerman JP, Adrian MC, Campo JV, Bridge JA. Suicide in young people: screening, risk assessment, and intervention. *BMJ.* 2023 Apr 24;381:e070630. doi: 10.1136/bmj-2022-070630.
- Zhu X, Griffiths H, Eisner M, Hepp U, Ribeaud D, Murray AL. Developmental associations between bullying victimization and suicidal ideation and direct self-injurious behavior in adolescence and emerging adulthood. *J Child Psychol Psychiatry.* 2022 Jul;63(7):820–828. doi: 10.1111/jcpp.13529.

23. Beghi M, Butera E, Cerri CG, Cornaggia CM, Febbo F, Mollica A, et al. Suicidal behaviour in older age: A systematic review of risk factors associated to suicide attempts and completed suicides. *Neurosci Biobehav Rev*. 2021 Aug;127:193-211. doi: 10.1016/j.neubiorev.2021.04.011. .
24. Sommet N, Fillon AA, Rudmann O, Cunha ARS, Ehsan A. No meta-analytical effect of economic inequality on well-being or mental health. *Nature*. 2026 Jan;649(8098):926-937. doi: 10.1038/s41586-025-09797-z.
25. Ajdacic-Gross V, Weiss MG, Ring M, Hepp U, Bopp M, Gutzwiller F, et al. Methods of suicide: international suicide patterns derived from the WHO mortality database. *Bull World Health Organ*. 2008 Sep;86(9):726-732. doi: 10.2471/BLT.07.043489.
26. Benetti IC, Molina LR, Korn A. Características do suicídio em Santa Catarina: um estudo do período de 2007 a 2016. *Estud. psicol. (Natal)* 2018;23(4):404-15. doi: 10.22491/1678-4669.20180038.
27. Cararo Confortin S, Coelho L, Vitória Grasso AC, Santos EV, Iribarrem Avena Miranda V. Mortalidade por suicídio em adultos no Estado de Santa Catarina e Macrorregiões: Tendência temporal 2011 a 2020. *Psicod Debate* 2025;11(1):992-1005.
28. Clark LH, Hudson JL, Rapee RM, Grasby KL. Investigating the impact of masculinity on the relationship between anxiety specific mental health literacy and mental health help-seeking in adolescent males. *J Anxiety Disord*. 2020 Dec;76:102292. doi: 10.1016/j.janxdis.2020.102292.
29. Küey L. Cultural Factors of Suicidality. *Eur Psychiatry*. 2022 Sep 1;65(Suppl 1):S30–1. doi: 10.1192/j.eurpsy.2022.109.