Original Article

Characterization of suicide attempts and self-harm by adolescents and adults notified in Santa Catarina, Brazil, 2014-2018*

doi: 10.1590/S1679-49742021000400026

Thayse de Paula Pinheiro[1] – orcid.org/0000-0001-6487-2973
Deise Warmling[2] – orcid.org/0000-0001-9235-6271
Elza Berger Salema Coelho[3] – orcid.org/0000-0001-7407-6786

[1]Secretaria Municipal de Saúde, São José, SC, Brazil
[2]Secretaria de Estado da Saúde de Santa Catarina, Florianópolis, SC, Brazil
[3]Universidade Federal de Santa Catarina, Departamento de Saúde Pública, Florianópolis, SC, Brazil

Abstract

Objective: To characterize adolescent and adult suicide attempts and self-harm reported in Santa Catarina, Brazil, from 2014 to 2018. **Methods:** This was a cross-sectional descriptive study with data from the Notifiable Health Conditions Information System. The sociodemographic, clinical and type of self-inflicted violence characteristics among adolescents and adults were compared. **Results:** Among the 8,859 notifications analyzed, suicide attempts predominated in relation to self-mutilation; self-inflected violence was more frequent in females, those of white skin color and with mental disorders; it occurred more at home, in both age groups. Among adolescents, repeated self-mutilation (83.3%) stood out, while among adults, repeated suicide attempts (50.6%) and suspected alcohol use (18.3%) at the time of violence stood out. **Conclusion:** We identified high prevalence of attempted suicide among adolescents and adults; the characteristics of violence were similar between the age groups analyzed.

Keywords: Attempted Suicide; Self-mutilation; Self-injury; Self-aggression; Adolescents; Adults; Violence; Cross-sectional Studies.

*Article derived from the Academic Master's Degree dissertation entitled 'Suicide attempts and self-harm by adolescents and adults notified in Santa Catarina – Brazil', defended by Thayse de Paula Pinheiro at the Programa de Pós-Graduação em Saúde Coletiva, Universidade Federal de Santa Catarina, in December 2020.

Correspondence:
Thayse de Paula Pinheiro – Secretaria Municipal de Saúde, Av. Acioni Souza Filho, No. 403, 3º andar, Praia Comprida, São José, SC, Brasil. CEP: 88111-330
E-mail: thaysepinheiro@gmail.com

Introduction

Self-inflicted violence is when a person intentionally harms him/herself, and can be classified as 'suicidal behaviors' (suicidal ideation, attempted suicide and suicide) or 'self-mutilation' (self-harm, such as cutting, scratching and burning oneself).[1] Self-mutilation is done without the intent to die, whereas attempted suicide demonstrates clear intent to do so.[2]

> *Mental health problems are among the factors associated with suicide attempts and self-mutilation in both adolescents and adults. Self-mutilation may be an important risk factor for suicide, as it increases suicidal desire and ability.*

A study of Korean adolescents conducted in schools from 2007 to 2012 found that suicide attempt prevalence was 5.6% in females and 4.2% in males.[3] Among Canadian students, a study conducted from 2009 to 2013 identified 3% prevalence of suicide attempts for both sexes.[4] A study conducted with Taiwanese students found that prevalence of suicide attempt was 1.5% between 2008 and 2012.[5]

With regard to self-mutilation, according to another study with Taiwanese students, conducted between 2008 and 2010, prevalence of this form of self-inflicted violence was found to be 4.0%. However, prevalence of self-mutilation by adolescents shows quite marked variations across nations and cultures. Prevalence of self-mutilation among Jordanian adolescents, for example, was found to be 22.6%, according to a study published in 2015 and also conducted in schools.[5,6]

Among adults, prevalence of suicide attempts was 14% in Canadians, 3.9% in Koreans and 6.5% in North Americans.[7-9] Self-mutilation accounted for 4.3% of attendances in Canadian health services.[9] Among a sample of 231 US university students, 33.8% reported at least one incident of self-mutilation.[8]

In Brazil, the hospitalization rate for individuals aged nine years or older who attempted suicide was 5.6 per 100,000 inhabitants between 2000 and 2013.[10] The 2014 VIVA-Inquérito survey conducted in sentinel urgent care/emergency health services in Brazilian capitals and cities, to collect information on victims of violence, recorded 477 (9.5%) attendances resulting from self-inflicted violence, of which 18 (2.9%) were committed by children, 94 (18.8%) by adolescents, 348 (74.6%) by adults, and 16 (3.7%) by elderly people.[11] In Brazil, a cohort study of people seen at a psychiatric outpatient clinic, published in 2016, revealed that, of the individuals with self-mutilation behavior, 30% were younger than 18 years old and 85% were female.[12]

The literature lists mental health problems are among the factors associated with suicide attempts and self-mutilation in both adolescents and adults.[5] Self-mutilation may be an important risk factor for suicide, as it increases suicidal desire and ability;[13] among adolescents, it may be associated with factors such as family problems and problems at school,[14] while among adults, it has been found to be associated with a history of childhood abuse, anxiety disorders, major depressive disorder, aggressiveness and impulsiveness.[9]

In Brazil, notification of cases of self-inflicted violence has been compulsory since 2014, using the Individual Notification Form for Interpersonal/Self-Inflicted Violence. Obligatorily, case notification is the responsibility of the health professional or person responsible for the health care service that provides the first care to the individual.[15]

Suicide attempts must be reported immediately, in order to ensure timely preventive intervention and referral. Health professionals must therefore be alert and trained to identify and refer cases of self-inflicted violence.[15]

Given the context presented, the objective of this study was to characterize suicide attempts and self-harm by adolescents and adults, reported in the state of Santa Catarina, Brazil, between 2014 and 2018.

Methods

This is a cross-sectional descriptive study using secondary data on self-inflicted violence recorded on the Notifiable Health Conditions Information System (SINAN), relating to people resident in Santa Catarina, in the Southern region of Brazil, between 2014 and 2018.

Santa Catarina state is comprised of 295 municipalities. Its total estimated population in 2018 was 7,075,494 inhabitants, of whom 870,738 (12.3%) were adolescents and 4,211,439 (59.5%) were adults.

Among the Brazilian states, Santa Catarina is the state with the best quality of life and the lowest inequality index, the second lowest infant mortality rate (9.49 per 1,000 live births) and the highest life expectancy rate (78.7 years in 2015).[16]

The variables included in the study were retrieved from the Individual Notification Form for Interpersonal/Self-Inflicted Violence. Tabwin software was used to retrieve and export data from the SINAN databases, made available by the Santa Catarina State Health Department, Epidemiological Surveillance Directorate, Information Systems Sector: http://tabnet.dive.sc.gov.br/ (data retrieved on 31/10/2019).

The outcome variables of the study were the types of self-inflicted violence recorded on the notification form, namely: (i) suicide attempt and (ii) self-mutilation. Both variables were stratified by age into adolescents and adults. We considered notifications of violence self-inflicted by adolescents and adults living in Santa Catarina, for which the 'Other' option in field 56 of the notification form was duly filled out for the period covered by the study. When this option is filled out this enables the type of self-inflicted violence to be defined, classified as 'suicide attempt' (when there is intention to die) or 'self-mutilation' (when there is no intention to die). The instruction manual states that when filling out field 54 as '1- Yes' for self-inflicted violence, field 56 should be filled out as '1- Yes' in the 'Other' option, specifying whether the self-inflicted violence is self-mutilation or a suicide attempt.[1] Notifications were included in the study when the option 'Suicide attempt' or 'Self-mutilation' was duly filled out in the 'Other' option of field 56. Notifications were excluded when the 'Other' option of field 56 was left blank or was incorrectly filled out, without mentioning the type of self-inflicted violence.

The exposure variables related to the characteristics of the individuals who engaged in self-inflicted violence, as well as to the characteristics of this form of violence. The following personal characteristics were evaluated: sex (female; male); race/skin color (White; brown/Black; yellow/Indigenous); type of disability (physical; intellectual; vision; hearing) or disorder (mental; behavior); marital status (single; married or living in consensual union; separated; widowed); and schooling (no schooling; incomplete elementary education; complete elementary education; complete high school education; complete higher education).

The following variables were used to characterize suicide attempts and self-mutilation: the same form of violence had happened before (yes; no); means used to commit self-inflicted violence (poisoning; hanging; sharp object; blunt object; firearm); place of occurrence (home; school; collective housing; public thoroughfare; commerce; other); and suspected use of alcohol at the time violence occurred (yes; no). It should be noted that the information on the 'suspected use of alcohol' variable was collected while care was being provided to the individual who had suffered violence.

The data analysis was presented according to type of self-inflicted violence (suicide attempt; self-mutilation) and stratified according to the age groups corresponding to adolescents (10 to 19 years old) and adults (20 to 59 years old). When defining the age groups, we adopted as a criterion the inclusion of groups known to be more exposed to situations of self-inflicted violence, as addressed in the literature.[11] The characteristics of the individuals and the characteristics of self-inflicted violence were presented using descriptive statistics, in absolute and relative frequencies (%), with their respective 95% confidence intervals (95%CI). Statistical significance was checked using Pearson's chi-square ($\chi 2$) test: a p-value less than 0.05 ($p<0.05$) was considered statistically significant. The chi-square test was employed to compare the proportions of suicide attempt and self-mutilation between adolescents and adults. We used the Stata v.14.0 statistics program.

The study design was exempted from submission for assessment by a research ethics committee, since it used a secondary database of public access and that did not enable the individuals investigated to be identified.

Results

Among the 45,854 notifications of all types of violence that occurred in Santa Catarina between 2014 and 2018, we identified 17,387 (37.9%) that related to self-inflicted violence: 13,387 (77.0%) adult cases and 4,000 (23.0%) adolescent cases. Of the notifications involving adults, 6,934 (78.2%) met the inclusion criteria and were analyzed in this study, while 1,925 (21.8%) notifications of violence self-inflicted by adolescents were also included. We excluded 8,525 (49.0%) notifications that, although field 56 was filled in as 'Other', did not report the types of self-inflicted violence.

Among the notifications of violence self-inflicted by adolescents, 1,788 (92.8%) were suicide attempts and 137 (7.2%) were self-mutilations; while among adults there were 6,879 (99.2%) suicide attempts and 55 (0.8%) self-mutilations.

Most of the adolescents who attempted suicide were female (73.4%), of White race/skin color (90.0%), single (92.4%), and with incomplete or compete elementary education (80.8%). Among the adolescents who had a disability or disorder, 96.8% were characterized as having mental disorders. On the other hand, most of the adults who attempted suicide were predominantly female (68.1%), White (89.0%), married or living in consensual union (49.8%), and had complete high school education (37.9%). Mental disorders appeared in 98.5% of the adults (Table 1).

When comparing adolescents and adults who attempted suicide, the proportion of adolescents who were female (73.4%; p<0.001), single (92.4%; p<0.001), and had elementary school education (39.9%; p<0.001) was higher; in addition, 3.2% of these adolescents (p=0.005) had some form of disability (hearing, physical, intellectual, or visual). Mental disorders were more frequent in adults than in adolescents, with a statistically significant difference (p=0.005) (Table 1).

With regard to the characteristics of suicide attempts among adolescents, there was a predominance of notifications in which this type of violence had occurred only once (54.2%). The main method used – among adolescents – was poisoning (64%), and the main place of occurrence was at home (91.9%). Suspected use of alcohol occurred in 8.8% of adolescent suicide attempts. Among the characteristics of the suicide attempts by adults, the main method used was poisoning (64.4%) and, similarly to the adolescents, the home was the main place of occurrence (92.4%). 18.3% of adults who attempted suicide had suspected use of alcohol, a proportion twice as high as that of adolescents (Table 2).

Adults and adolescents showed statistically significant differences regarding suicide attempt characteristics, taking an estimated p<0.001 for the variables described below. Although poisoning was the most common means of harm in both groups, use of sharp objects was more frequent among adolescents (16.0%) compared to adults (9.0%); in adults, attempting suicide by hanging was the most frequent means (7.3%), higher than the percentage of the use of this means in attempts among adolescents (4.8%). Repeated suicide attempts predominated in adults (50.6%) compared to adolescents (45.8%) (Table 2).

When analyzing the characteristics of adolescents who mutilated themselves, we found a predominance of females (79.6%), adolescents of White race/skin color (85.4%), single or unmarried (98.2%) and who reported incomplete or complete elementary education (96.5%). Of those who had a disability/disorder, 99.0% had mental problems (Table 3).

The adults who mutilated themselves were also mostly female (68.5%) and White (73.1%). Of the adults with disabilities/disorders, 97% had mental disorders. Also, among those who practiced self-mutilation, there was a statistically significant (p<0.001) higher proportion of single adolescents (98.2%), in relation to single adults (51.0%). There were also differences with regard to schooling: complete elementary education was the most frequent level of education among adolescents (40.9%), while the majority of adults had complete high school education (52.5%) (p<0.001) (Table 3).

Sharp objects were the main means used by adolescents to mutilate themselves (92.7%), and their home was the main place of occurrence (91.9%). 83.3% of adolescents had previous occurrence of self-mutilation. At the time of self-mutilation, 9.5% of the adolescents were suspected to have used alcohol (Table 4).

Among adults, self-mutilation occurred repeatedly in 69.6% of cases; sharp objects were the main means used by them (72.2%), and the main place of occurrence was at home (92.4%). At the time of self-mutilation, 22.7% of adults were suspected to have used alcohol. Repeated self-mutilation (83.3% versus 69.6%; p=0.047) and self-injury by using a sharp object (92.7% versus 72.2%; p<0.001) were more frequent among adolescents compared to adults, while suspected use of alcohol at the time of violence was more frequent among adults compared to adolescents (22.7% versus 9.5%; p=0.031) (Table 4).

Discussion

This study showed that in Santa Catarina suicide attempts predominated among adolescents and adults, when compared to self-mutilations in the same age

Table 1 – Comparison of the sociodemographic and clinical characteristics of adolescent and adult (n=8,667) attempted suicide cases reported on SINAN,[a] in Santa Catarina, Brazil, 2014-2018

Adolescent and adult characteristics	Total	Adolescents		Adults		p-value[c]
	n (%)	n (%)	95%CI[b]	n (%)	95%CI[b]	
Sex						**<0.001**
Female	5,860 (69.2)	1,312 (73.4)	71.2;75.3	4.548 (68.1)	66.9;69.2	
Male	2,604 (30.8)	476 (26.6)	24.6;28.7	2.128 (31.9)	30.7;33.0	
Race/skin color						**0.343**
White	7,291 (89.2)	1,565 (90.0)	88.4;91.3	5.726 (89.0)	88.2;89.7	
Black/brown	840 (10.3)	164 (9.4)	8.1;10.8	676 (10.5)	9.7;11.2	
Yellow/Indigenous	39 (0.5)	10 (0.6)	0.3;0.10	29 (0.5)	0.3;0.6	
Type of disability or disorder						**0.005**
Mental disorders[d]	3,152 (98.3)	510 (96.8)	94.8;97.9	2,642 (98.5)	98.0;98.9	
General disabilities[e]	56 (1.7)	17 (3.2)	2.0;5.1	39 (1.5)	1.0;1.9	
Marital status						**<0.001**
Single	3,537 (49.9)	1,350 (92.4)	90.9;93.6	2,187 (38.8)	37.5;40.1	
Married/consensual union	2,905 (41.0)	104 (7.1)	5.9;8.5	2,801 (49.8)	48.4;51.0	
Separated	564 (7.9)	6 (0.4)	0.1;0.9	558 (9.9)	9.1;10.7	
Widowed	85 (1.2)	1 (0.1)	0.0;0.4	84 (1.5)	1.2;1.8	
Schooling						**<0.001**
No schooling	23 (0.4)	1 (0.1)	0.0;0.5	22 (0.5)	0.3;0.6	
Incomplete elementary education	1,921 (31.5)	505 (38.2)	35.3;40.8	1,416 (29.6)	28.3;30.9	
Complete elementary education	1,731 (28.4)	564 (42.6)	39.9;45.3	1,168 (24.5)	23.2;25.6	
Complete high school education	2,058 (33.7)	248 (18.8)	16.7;20.9	1,810 (37.9)	36.5;39.2	
Complete higher education	365 (6.0)	5 (0.3)	0.1;0.9	360 (7.5)	6.8;8.3	

a) SINAN: Notifiable Health Conditions Information System; b) 95%CI: 95% confidence interval; c) P-value using Pearson's chi-square test for heterogeneity; d) Grouped together: behavior disorders and mental disorders; e) Grouped together: hearing disability, physical disability, intellectual disability and vision disability.

Table 2 – Comparisons of the characteristics of adolescent and adult suicide attempts (n=8,667) reported on SINAN,[a] in Santa Catarina, Brazil, 2014-2018

Characteristics of the suicide attempt	Total	Adolescents		Adults		p-value[c]
	n (%)	n (%)	95%CI[b]	n (%)	95%CI[b]	
Happened previously						**<0.001**
Yes	3,401 (49.5)	702 (45.8)	43.2;48.2	2,699 (50.6)	49.2;51.9	
No	3,466 (50.5)	832 (54.2)	51.7;56.7	2,634 (49.4)	48.0;50.7	
Means of aggression[d]						
Poisoning	5,431 (64.2)	1,141 (64.0)	61.7;66.2	4,290 (64.4)	63.2;65.5	0.746
Hanging	572 (6.8)	86 (4.8)	3.9;5.9	486 (7.3)	6.7;7.9	<0.001
Sharp object	887 (10.5)	286 (16.0)	14.3;17.8	601 (9.0)	8.3;9.7	<0.001
Blunt object	38 (0.4)	11 (0.6)	0.3;1.1	27 (0.4)	0.2;0.5)	0.238
Firearm	30 (0.4)	4 (0.2)	0.0;0.5	26 (0.3)	0.3;0.5	0.256

a) SINAN: Notifiable Health Conditions Information System; b) 95%CI: 95% confidence interval; c) P-value using Pearson's chi-square test for heterogeneity; d) More than one option can be chosen for the question on means of aggression. The table shows the positive answers to each variable and the p-value of each of them.

To be continue

Continuation

Table 2 – Comparisons of the characteristics of adolescent and adult suicide attempts (n=8,667) reported on SINAN,[a] in Santa Catarina, Brazil, 2014-2018

Characteristics of the suicide attempt	Total	Adolescents		Adults		p-value[c]
	n (%)	n (%)	95%CI[b]	n (%)	95%CI[b]	
Place of occurrence						**<0,001**
Home	7,689 (92.4)	1,619 (91.9)	90.6;93.1	6,070 (92.4)	91.7;92.9	
School	32 (0.3)	29 (1.6)	1.1;2.3	3 (0.0)	0.0;0.1	
Collective housing	52 (0.6)	22 (1.2)	0.8;1.8	30 (0.5)	0.3;0.6	
Public thoroughfare	274 (3.3)	39 (2.2)	1.6;3.0	235 (3.6)	3.1;4.0	
Commerce	52 (0.6)	10 (0.5)	0.3;1.0	42 (0.6)	0.4;0.8	
Other	232 (2.8)	41 (2.3)	1.7;3.1	191 (2.9)	2.5;3.3	
Suspected use of alcohol						**<0,001**
Yes	1,130 (16.2)	135 (8.8)	7.4;10.3	995 (18.3)	17.3;19.3	
No	5,836 (83.8)	1,396 (91.2)	89.6;92.5	4,440 (81.7)	80.6;82.6	

a) SINAN: Notifiable Health Conditions Information System; b) 95%CI: 95% confidence interval; c) P-value using Pearson's chi-square test for heterogeneity; d) More than one option can be chosen for the question on means of aggression. The table shows the positive answers to each variable and the p-value of each of them.

Table 3 – Comparison of the sociodemographic and clinical characteristics of adolescent and adult (n=192) self-mutilation cases reported on SINAN,[a] in Santa Catarina, Brazil, 2014-2018

Adolescent and adult characteristics	Total	Adolescents		Adults		p-value[c]
	n (%)	n (%)	95%CI[b]	n (%)	95%CI[b]	
Sex						**0.105**
Female	146 (76.4)	109 (79.6)	71.8;85.5	37 (68.5)	54.5;79.7	
Male	45 (23.6)	28 (20.4)	14.4;28.1	17 (31.5)	20.2;45.4	
Race/skin color						**0.031**
White	143 (81.8)	105 (85.4)	77.8;90.6	38 (73.1)	59.0;83.6	
Black/brown	30 (17.1)	18 (14.6)	9.3;22.1	12 (23.1)	13.3;36.8	
Yellow/Indigenous	2 (1.1)	–	–	2 (3.8)	0.9;14.7	
Type of disability or disorder						**0.168**
Mental disorders[d]	95 (99.0)	63 (100.0)	–	32 (97.0)	80.2;99.6	
General disabilities[e]	1 (1.0)	–	–	1 (3.0)	0.3;19.7	
Marital status						**<0.001**
Single	138 (83.6)	112 (98.2)	93.1;99.5	26 (51.0)	37.0;64.7	
Married/consensual union	23(14.0)	2 (1.8)	1.2;6.8	21 (41.1)	28.2;55.4	
Separated	3 (1.8)	–	–	3 (5.9)	1.8;17.2	
Widowed	1 (0.6)	–	–	1 (2.0)	0.2;13.4	
Schooling						**<0.001**
No schooling	–	–	–	–	–	
Incomplete elementary education	72 (46.5)	64 (55.6)	46.3;64.5	8 (20.0)	10.0;35.9	
Complete elementary education	56 (36.1)	47 (40.9)	32.1;50.2	9 (22.5)	11.7;38.6	
Complete high school education	25 (16.1)	4 (3.5)	1.2;9.0	21 (52.5)	36.6;67.8	
Complete higher education	2 (1.3)	–	–	2 (5.0)	1.1;18.8	

a) SINAN: Notifiable Health Conditions Information System; b) 95%CI: 95% confidence interval; c) P-value using Pearson's chi-square test for heterogeneity; d) Grouped together: behavior disorders and mental disorders; e) Grouped together: hearing disability, physical disability, intellectual disability and vision disability.

Table 4 – Comparison of adolescent and adult (n=192) self-mutilation characteristics reported on SINAN,[a] in Santa Catarina, Brazil, 2014-2018

Self-mutilation characteristics	Total	Adolescents		Adults		p-value[c]
	n (%)	n (%)	95%CI[b]	n (%)	95%CI[b]	
Happened previously						**0.047**
Yes	126 (73.3)	105 (83.3)	75.6;88.9	32 (69.6)	54.3;81.4	
No	46 (26.7)	21 (16.6)	11.0;24.3	14 (30.4)	18.5;45.6	
Means of aggression[d]						
Sharp object	166 (86.4)	127 (92.7)	86.8;96.0	39 (72.2)	58.4;82.7	<0.001
Blunt object	6 (4.4)	6 (4.3)	1.9;9.4	–	–	0.118
Place of occurrence						**0.082**
Home	174 (92.1)	125 (91.9)	85.8;95.4	49 (92.4)	81.0;97.2	
School	5 (2.6)	5 (3.7)	1.5;8.6	–	–	
Collective housing	6 (3.2)	5 (3.7)	1.5;8.6	1 (1.9)	0.2;12.9	
Other	4 (2.1)	1 (0.7)	0.1;5.0	3 (5.7)	1.7;16.6	
Suspected use of alcohol						**0.031**
Yes	20 (10.4)	10 (9.5)	5.1;16.9	10 (22.7)	12.3;37.9	
No	129 (67.1)	95 (90.5)	83.0;94.8	34 (77.3)	62.0;87.6	

a) SINAN: Notifiable Health Conditions Information System; b) 95%CI: 95% confidence interval; c) P-value using Pearson's chi-square test for heterogeneity; d) More than one option can be chosen for the question on means of aggression. The table shows the positive answers to each variable and the p-value of each of them.

groups. Although its frequency was lower, self-mutilation was relevant in adolescents. Common characteristics were found for suicide attempts and self-mutilations among adolescents and adults: being female, of White race/skin color, presence of mental disorder, and home as the main place of occurrence. However, some characteristics presented themselves differently according to the ages considered: (i) most adolescents who attempted suicide were single, while most adults were married or living in consensual union; (ii) the schooling level of adolescents who attempted suicide or committed self-mutilation was lower than that of adults; and (iii) frequency of repetitive self-mutilation was considerable among adolescents.

Despite its low percentage when compared to suicide attempts, self-mutilation was more frequent among adolescents, this being a result that requires attention. Self-mutilation in adolescents is a factor associated with suicide attempts and also with psychiatric disorders.[17] Furthermore, caution is needed when relating self-mutilation to a natural stage of adolescence, i.e., as a phase characterized by lack of limits, disrespect for rules and hormonal imposition. Presuming this relationship implies merely bureaucratic referrals and thus reduces the importance of the phenomenon in the field of health.[18]

The predominance of suicide attempts in females is corroborated by a Brazilian study conducted in 2011 in hospitals in Arapiraca, in Alagoas State, where 55% of people who attempted suicide were also female.[19] There is an understanding that females attempt suicide the most because, most of the time, they use less effective methods, unlike males, among whom suicide deaths are more prevalent.[20] In addition, females tend to be more prone to mental health problems, which causes greater vulnerability to self-inflicted violence.[11]

With regard to the findings in relation to race/skin color, there was a higher proportion of suicide attempts and self-mutilation among individuals classified as White. This result can be justified by the ethnic composition of Santa Catarina State: while in Brazil as a whole, 47.7% of the population self reports being of White race/skin color, in Santa Catarina this percentage rises to 83.9%, according to data from the Brazilian Institute of Geography and Statistics.[16] Another study, conducted in 24 Brazilian state capitals

in 2014, found a predominance of individuals of Black/brown race/skin color in suicide attempts, accounting for 62.4% of the cases attended to.[11] It is to be expected that this result is faithful to the ethnic composition of Brazilian society in general.

Suicide attempts and self-mutilations predominated in adolescents who were single and at the elementary education level, respectively. These findings are associated with the Brazilian cultural characteristics of each life cycle analyzed. In addition, we highlight that attending school may be a protective factor against suicide attempts and self-mutilations, in the case of adolescents. On April 26, 2019, Law No. 13,819 was sanctioned,[21] bringing into force the National Policy on Prevention of Self-Mutilation and Suicide. The Law recommends that public and private teaching establishments should inform and train professionals working in these institutions on the procedures for reporting self-inflicted violence.

In contrast to our study, which identified a higher proportion of suicide attempts in adults with complete high school education, international studies have found significantly higher rates of suicide attempts among individuals with lower incomes, less schooling and who were unemployed.[7] In South Korea, for example, association between low formal education and increased suicide risk was identified, suggesting the need to pay more attention to individuals with suicidal ideation who have low or no schooling.[22]

When one considers that the main place of occurrence of suicide attempts and self-injury was at home, a fact we found for more than 90% of cases, this emphasizes the importance of the family and social network for the individual, especially with regard to support, monitoring and prevention of recurring acts of self-inflicted violence. Positive interaction in personal relationships can be helpful, in the sense of maintaining emotional well-being and minimizing the effect of stressors; that is, provoking a positive effect on mental health, regardless of the stressors involved. Conversely, absence of trusting relationships between individuals and their families or communities may increase the risk of suicide attempts.[23]

Repeated self-inflicted violence requires equal attention, in particular self-mutilation among adolescents. A qualitative study conducted in 2018, with Brazilian adults cared for at a mental health service, identified that suicide attempts were practiced with the aim of relieving suffering, and that surviving them was deeply painful. Suicide attempts were motivated mainly by the desire to cause one's own death, eliminate pain or change situations that were being experienced.[24] It is worth noting that many suicide attempts may not reach the health services because they are of low complexity, making it difficult to identify their occurrence or recurrence and, consequently, their notification.

An international study found that repeated self-mutilation often emerges as a habitual response to intrapersonal and interpersonal distress, while attempted suicide may gradually become a method in the repertoire of strategies in response to recurrent self-mutilations.[2] Repeated episodes of self-mutilation may also result in individuals becoming accustomed to the fear and pain associated with engaging in suicide attempts.[14] Repeated suicide attempts indicate increased risk of suicide.[25]

In line with this study, which identified poisoning as the main means used in suicide attempts, a national study based on data retrieved from the Brazilian National Health System Hospital Information System for the period 2002-2013, identified self-poisoning with medication and biological substances as the main means used for self-inflicted violence that led to hospitalization.[10] Exogenous poisoning is responsible for approximately 70% of suicide attempt cases reported in Brazil. Possible easy access to these pharmaceutical products has been revealed, which possibly contributes to a higher occurrence of suicide attempts by poisoning.[20]

Sharp objects were the main means used by adolescents and adults to mutilate themselves. Sharp objects are usually accessible, as shown in a survey with Brazilian adolescents about some of the means used for self-mutilation: hands, nails, knives, stilettos, teeth, glass, stones, scarf, pens, staples and toothbrushes.[12] Our study also found a high frequency of disabilities or disorders among adolescents who attempted suicide. The mental health of individuals can also influence the means chosen for suicide attempts: those with a diagnosed disorder usually have access to medication prescribed by a physician for this type of disorder. As a form of prevention the Ministry of Health recommends avoiding a person at risk of suicide

having access to means such as weapons, knives, ropes and medication.[26]

Of the adolescents that attempted suicide, 8.8% had consumed alcohol; among adults, this percentage was 18.3%. Alcohol can facilitate the entire suicide process (ideation, selected method, etc.).[27] National estimates show that for every ten suicide attempts, more than two are related to use of alcohol.[28] 9.5% of the adolescents who mutilated themselves had suspected use of alcohol. Among adults, this data drew our attention: almost a quarter of them had suspected use of alcohol at the time of self-mutilation. According to an international study, people who mutilate themselves are also more likely to have alcohol and drug use disorders compared to those who do not mutilate themselves.[9]

Analyzing self-inflicted violence by type using SINAN data proved to be a challenge. The record field referring to attempted suicide or self-mutilation is an open field, that is, the health professional must write in full the type of self-inflicted violence. Therefore, it is suggested that, in a future update of the Individual Notification Form for Interpersonal/Self-Inflicted Violence, closed fields be included for the types of self-inflicted violence, with an option for 'Attempted suicide' and 'Self-mutilation', so that this relevant information can be recorded.

Completeness of data on notification forms is extremely important for analyzing factors associated with violence. In this sense, it is important to draw attention and raise awareness among health professionals about the relevance of notifications, and to promote their continuing training in this regard. Qualified information brings elements to inform the design and implementation of actions, programs and public health policies, contributing to preventing and addressing the issue in question.

The limitations of this study include the underreporting of cases of self-inflicted violence. According to the World Health Organization, there is evidence that only 25% of people who attempt suicide contact hospitals; it is also estimated that there is underreporting of these cases in countries with good information systems.[11] Lack of information about the type of self-inflicted violence, which was evident in a considerable percentage of the notification forms, as well as health professionals with difficulty in filling out this information, were also limitations for the study, although they do not invalidate its findings. Thus, caution is required with the results presented, given the possibility that they may be underestimated.

Among the strengths of this study is the relevance of the information on violence self-inflicted by adolescents and adults in Santa Catarina. This information, which is notified in health services and input to the SINAN database, allows recognition of the types of self-inflicted violence and the characteristics of the people who inflict it on themselves.

Regarding the type of self-inflicted violence, suicide attempts were more frequent in both age groups analyzed. Self-mutilation predominated among adolescents. Being female, of White race/skin color, having mental disorders and occurrence at home were predominant for both outcomes and stratifications adopted. The differences between the two age groups are concentrated in schooling and marital status, as expected, considering the different stages of their life course and their specific characteristics. Repeated self-mutilation was more predominant in adolescents, while repeated suicide attempts were more predominant in adults.

We conclude that this study, by highlighting the characteristics of self-inflicted violence by type – suicide attempt and self-mutilation – and age group – adolescents and adults – can contribute to the planning of actions for preventing and addressing each type of violence observed in these age groups in Santa Catarina.

Authors´ contributions

Pinheiro TP and Coelho EBS contributed to the design of the research, data analysis, reviewing the text and drafting the preliminary version of the manuscript. Warmling D contributed to data analysis and interpretation, took part in drafting the manuscript and undertook an important review of its intellectual content. All the authors have approved the final version of the article and are responsible for all the contents thereof, including the guarantee of its accuracy.

References

1. Ministério da Saúde (BR). Instrutivo de preenchimento da ficha de notificação/ investigação individual de violência interpessoal/ autoprovocada. Brasília, DF: MS; 2015.
2. You J, Lin M-P. Predicting suicide attempts by time-varying frequency of nonsuicidal self-injury among Chinese community adolescents. J Consult Clin Psychol. 2015;83(3):524-33. doi: https://doi.org/10.1037/a0039055.
3. Chin YR, Choi K. Suicide attempts and associated factors in male and female korean adolescents a population-based cross-sectional survey. Community Mental Health J. 2015;51(7):862-6. doi: https://doi.org/10.1007/s10597-015-9856-6.
4. Sampasa-Kanyinga H, Dupuis LC, Ray R. Prevalence and correlates of suicidal ideation and attempts among children and adolescents. Int J Adolesc Med Health. 2017 Apr 1;29(2):20150053. doi: https://doi.org/10.1515/ijamh-2015-0053.
5. Huang Y-H, Liu H-C, Sun F-J, Tsai F-J, Huang K-Y, Chen T-C, et al. Relationship between predictors of incident deliberate self-harm and suicide attempts among adolescents. J Adolesc Health. 2017;60(5):612-8. doi: https://doi.org/10.1016/j.jadohealth.2016.12.005.
6. Hanania JW, Heath NL, Emery AA, Toste JR, Daoud FA. Non-suicidal self-injury among adolescents in Amman, Jordan. Arch Suicide Res. 2015;19(2):260-74. doi: https://doi.org/10.1080/13811118.2014.915778.
7. Kim JL, Kim JM, Choi Y, Lee T-H, Park E-C. Effect of socioeconomic status on the linkage between suicidal ideation and suicide attempts. Suicide Life Threat Behav. 2016;46(5):588-97. doi: https://doi.org/10.1111/sltb.12242.
8. Burke TA, Hamilton JL, Cohen JN, Stange JP, Alloy LB. Identifying a physical indicator of suicide risk: non-suicidal self-injury scars predict suicidal ideation and suicide attempts. Compr Psychiatry. 2016;65:79-87. doi: https://doi.org/10.1016/j.comppsych.2015.10.008.
9. Chartrand H, Bhaskaran J, Sareen J, Katz LY, Bolton JM. Correlates of nonsuicidal self-injury and suicide attempts among tertiary care, emergency department patients. Can J Psychiatry. 2015;60(6):276-83. doi: https://doi.org/10.1177/070674371506000606.
10. Monteiro RA, Bahia CA, Paiva EA, Sá NNB, Minayo MCS. Hospitalizations due to self-inflicted injuries, Brazil, 2002 to 2013. Cienc Saude Colet. 2015;20(3):689-99. doi: https://doi.org/10.1590/1413-81232015203.16282014.
11. Bahia CA, Avanci JQ, Pinto LW, Minayo MCS. Self-harm throughout all life cycles: profile of victims using urgent and emergency care services in Brazilian state capitals. Cienc Saude Colet. 2017;22(9):2841-50. doi: https://doi.org/10.1590/1413-81232017229.12242017.
12. Vieira MG, Pires MHR, Pires OC. Self-mutilation: pain intensity, triggering and rewarding factors. Rev Dor. 2016;17(4):257-60. doi: https:// doi.org/10.5935/1806-0013.20160084.
13. Hamza CA, Willoughby T. Nonsuicidal self-injury and suicidal risk among emerging adults. J Adolesc Health. 2016;59(4):411-5. doi: https:// doi.org/10.1016/j.jadohealth.2016.05.019.
14. Garcia-Nieto R, Blasco-Fontecilla H, León-Martinez V, Baca-García E. Clinical features associated with suicide attempts versus suicide gestures in an inpatient sample. Arch Suicide Res. 2014;18(4):419-31. doi: https://doi.org/10.1080/13811118.2013.845122.
15. Ministério da Saúde (BR). Nota informativa n. 7/2019. Notificação de autoagressão e tentativa de suicídio na ficha de violência interpessoal/autoprovocada do SINAN: versão 5.1. Brasília, DF: MS; 2019.
16. Instituto Brasileiro de Geografia e Estatística, Sistema de Recuperação Automática. Tabela 3175: população residente, por cor ou raça, segundo a situação do domicílio, o sexo e a idade. Brasília, DF: IBGE: 2020 [acesso 29 jul. 2020]. Disponível em https://sidra.ibge.gov.br/Tabela/3175#resultado.
17. Gulbas LE, Hausmann-Stabile C, De Luca SM, Tyler TR, Zayas LH. An exploratory study of nonsuicidal self-injury and suicidal behaviors in adolescent Latinas. Am J Orthopsychiatry. 2015;85(4):302-14. doi: https://doi.org/10.1037/ort0000073.
18. Cantão L, Botti NCL. Suicidal behavior among drug addicts. Rev Bras Enferm. 2016;69(2):366-73. doi: https://doi.org/10.1590/0034-7167.2016690224i.
19. Magalhães APN, Alves VM, Comassetto I, Lima PC, Faro ACM, Nardi AE. Atendimento a tentativas de suicídio por serviço de atenção pré-hospitalar. J Bras Psiquiatr. 2014;63(1):16-22. doi: https:// doi.org/10.1590/0047-2085000000003

20. Brixner B, Koch CL, Marth MP, Freitas AP, Garske CCD, Giehl VM, et al. Formas utilizadas para tentativa de suicídio e características sociodemográficas de pacientes atendidos no serviço de emergência de um hospital de ensino. Scientia Medica. 2016;26(4):ID24467. doi: https://doi.org/10.15448/1980-6108.2016.4.24467.

21. Brasil. Lei n. 13.819, de 26 de abril de 2019. Institui a política nacional de prevenção da automutilação e do suicídio, a ser implementada pela união, em cooperação com os estados, o distrito federal e os municípios; e altera a Lei n. 9.656, de 3 de junho de 1998 [acesso 3 nov. 2020]. Disponível em http://www.planalto.gov.br/ccivil_03/_Ato2019-2022/2019/Lei/L13819.htm

22. Choi SB, Lee W, Yoon J-H, Won J-U, Kim DW. Risk factors of suicide attempt among people with suicidal ideation in South Korea: a cross-sectional study. BMC Public Health. 2017 Jun 15;17(1):579. doi: https://doi.org/10.1186/s12889-017-4491-5.

23. Akkaya-Kalayci T, Kapusta ND, Winkler D, Kothgassner OD, Popow C, Özlü-Erkilic Z. Triggers for attempted suicide in Istanbul youth, with special reference to their socio-demographic background. Int J Psychiatry Clinical Pract. 2017;22(2):95-100. doi: https://doi.org/10.1080/13651501.2017.1376100.

24. Alves AC, Silva AC, Vedana KGG. A experiência da tentativa de suicídio na perspectiva de adultos. SMAD Rev Eletron Saude Mental Alcool Drog. 2020;16(4):49-57. doi: https://dx.doi.org/10.11606/issn.1806-6976.smad.2020.168837.

25. Vidal CEL, Gontijo ED. Tentativas de suicídio e o acolhimento nos serviços de urgência: a percepção de quem tenta. Cad Saude Colet. 2013;21(2):108-14. https://doi.org/10.1590/S1414-462X2013000200002.

26. Ministério da Saúde (BR). Prevenção do suicídio: manual dirigido a profissionais das equipes de saúde mental. Brasília, DF: [s.n.]; 2006.

27. Fresán A, González-Castro TB, Peralta-Giménez Y, Juárez-Rojop I, Pool-García S, Velázquez-Sánchez MP, et al. Gender differences in socio-demographic, clinical characteristics and psychiatric diagnosis in/of suicide attempters in a Mexican population. Acta Neuropsychiatr. 2015;27(03):182-8. doi: https://doi.org/10.1017/neu.2015.6.

28. Gabriel IM, Costa LCR, Campeiz AB, Salim NR, Silva MAI, Carlos DM. Autolesão não suicida entre adolescentes: significados para profissionais da educação e da atenção básica à saúde. Esc Anna Nery. 2020;24(4):e20200050. doi: https://doi.org/10.1590/2177-9465-EAN-2020-0050.

Received on 30/04/2021
Approved on 05/10/2021

Associate Editor: Thaynã Ramos Flores – orcid.org/0000-0003-0098-1681