

Epidemiological profile for notifications of self-inflicted violence from 2010 to 2019 in a state of southern Brazil*

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Objective: to describe the profile for the notifications of self-inflicted violence in the state of Rio Grande do Sul/Brazil in the period from 2010 to 2019. **Method:** a cross-sectional, observational and epidemiological study based on secondary data. Descriptive statistical analyses were carried out to study the distribution of cases according to sociodemographic variables and to those related to the event. **Results:** 43,390 cases of self-harm were reported, of which 67.9% were women. There was a higher proportion of notifications in the population aged 20-29, while the highest notification rates corresponded to the 15-19-year-old age group, with an expressive increase from 2017 to 2019. The residence was the predominant place for the occurrence of self-inflicted injuries, and 41% of the notifications were from people who had previously self-harmed or attempted suicide. **Conclusion:** there was predominance of notifications from women in the 20-29-year-old age group, and a significant increase in notification rates in the 15-19-year-old age group. It is pointed out that there is a need for further research to deepen the knowledge about self-inflicted violence, especially on the associated factors with suicidal intent in self-aggressive behavior among adolescents and young adults, in order to support prevention strategies.

Descriptors: Self-Injurious Behavior; Attempted Suicide; Disease Notification; Health Information Systems; Epidemiologic Surveillance.

* This article refers to the call "Self-inflicted violence: nonsuicidal self-injury and suicidal behavior".

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Perfil epidemiológico das notificações de violência autoprovocada de 2010 a 2019 em um estado do sul do Brasil

Objetivo: descrever o perfil das notificações de violência autoprovocada no estado do Rio Grande do Sul no período de 2010 a 2019. Método: estudo epidemiológico observacional descritivo transversal a partir de dados secundários. Foram realizadas análises estatísticas descritivas para estudar a distribuição dos casos segundo as variáveis sociodemográficas e aquelas relacionadas ao evento. Resultados: foram notificados 43.390 casos de lesão autoprovocada, dos quais 67,9% foram do sexo feminino. Verificou-se maior proporção de notificações de indivíduos na faixa etária de 20 a 29 anos, ao passo que as maiores taxas de notificação corresponderam à faixa etária de 15 a 19 anos de idade, com aumento expressivo de 2017 a 2019. A residência foi o local predominante de ocorrência das lesões autoprovocadas, e 41% das notificações eram de pessoas que já haviam se autoagredido ou tentado suicídio previamente. Conclusão: verificou-se predomínio de notificações de indivíduos do sexo feminino, na faixa etária de 20 a 29 anos, e aumento expressivo das taxas de notificação na faixa etária de 15 a 19 anos. Aponta-se a necessidade de aprofundamento sobre a violência autoprovocada, especialmente sobre fatores associados à intencionalidade suicida no comportamento autoagressivo entre adolescentes e adultos jovens, a fim de subsidiar estratégias de prevenção.

Descritores: Comportamento Autodestrutivo; Tentativa de Suicídio; Notificação de Doenças; Sistemas de Informação em Saúde; Vigilância Epidemiológica.

Perfil epidemiológico de las notificaciones de violencia autoinfligida entre 2010 y 2019 en un estado del sur de Brasil

Objetivo: describir el perfil de las notificaciones de violencia autoinfligida en el estado de Rio Grande do Sul en el período 2010-2019. Método: estudio epidemiológico observacional de corte transversal basado en datos secundarios. Se realizaron análisis estadísticos descriptivos para estudiar la distribución de casos según las variables sociodemográficas y las relacionadas con el evento. Resultados: 43.390 casos de autolesiones fueron reportados, de los cuales el 67,9% fueron mujeres. Hubo una mayor proporción de notificaciones en el grupo de edad de 20 a 29 años, mientras que las tasas de notificación más altas correspondieron al grupo de edad de 15 a 19 años, con un aumento expresivo de 2017 a 2019. La residencia era el lugar predominante para la autolesión, y el 41% de las notificaciones fueron de personas que se autolesionaron o intentaron suicidarse previamente. Conclusión: predominaron las notificaciones de mujeres del grupo de edad de 20 a 29 años, y un aumento significativo de las tasas de notificación en el grupo de edad de 15 a 19 años. Señalamos la necesidad de profundizar la violencia autoinfligida, especialmente en los factores asociados con la intención suicida en el comportamiento auto agresivo entre adolescentes y adultos jóvenes, con el fin de apoyar estrategias de prevención.

Descriptorios: Conducta Autodestructiva; Intento de Suicidio; Notificación de Enfermedades; Sistemas de Información en Salud; Vigilancia Epidemiológica.

Introduction

Violence is a complex and multi-factorial phenomenon, found throughout human history and in different cultures⁽¹⁻²⁾. As it affects individual and collective health, it becomes a public health problem, requiring the organization of the system for assistance and rehabilitation, as well as specific prevention policies⁽¹⁾. The World Health Organization⁽³⁾ defines three broad categories, considering the perpetrator of the violent act: the individuals themselves (self-provoked or self-inflicted), interpersonal (domestic and community), and collective (perpetrated by large groups or by the state; as a rule, having a structural nature).

Self-provoked violence comprises suicidal ideation, plan, attempt, and consummated suicide. It also includes other forms of self-harm, such as superficial self-harm⁽⁴⁻⁵⁾. Self-injurious behavior, in any degree, aims at the immediate relief of exacerbated suffering, often related to the occurrence of mental disorders⁽⁶⁻⁷⁾. Bearing in mind that suicide attempt (SA) is the main isolated risk factor for suicide⁽⁸⁻⁹⁾, the occurrence of self-harm can be indicative of latent suffering, sometimes predictive of future SAs⁽¹⁰⁻¹¹⁾.

In Brazil, the Violence and Accident Surveillance System (*Vigilância de Violências e Acidentes*, VIVA) was implemented in 2006, consisting of sentinel surveillance in urgent and emergency units (VIVA Inquiry) and of continuous surveillance of interpersonal and self-provoked violence (VIVA Continuous), which captures data through an individual notification form⁽⁵⁾. In the same year, Ordinance No. 1,876 of the Ministry of Health instituted national guidelines for preventing suicide, pointing out the need to notify SA cases. In 2009, the Individual Notification Form for Interpersonal/Self-Provoked Violence was inserted in the Information System of Notifiable Diseases (*Sistema de Informação de Agravos de Notificação*, SINAN), contributing to the expansion of VIVA and ensuring the sustainability of the notification. In the same year, the state of Rio Grande do Sul (RS) took part, through its capital Porto Alegre, in a pilot for the implementation of notification in the SINAN/Violence. In the following year, its expansion began to the entire territory of Rio Grande do Sul.

In 2011, with the publication of Ordinance No. 104 of the Ministry of Health⁽¹²⁾, violence became part of the National List of Diseases and Conditions of Compulsory Notification. Notification is mandatory for all the health professionals or those responsible for public and private health services, and any suspected or confirmed case of violence must be registered in the SINAN. In 2014, Ordinance No. 1,271 of the Ministry of Health⁽¹³⁾ made immediate (within 24 hours) the notification for cases of sexual violence and SA, in order to ensure timely intervention.

For reporting purposes, self-provoked violence is called self-provoked injury (SPI) and includes self-harm (such as self-mutilations, for example, without suicidal intent) and SA (when there is an intention to die)⁽⁵⁾. Although underreported^(4,14), SPI data are essential for planning effective suicide prevention actions⁽⁸⁾, based on the identification of vulnerable groups and the connection of patients to the health network, interrupting the violence cycle⁽¹⁵⁻¹⁶⁾. Thus, this study aimed to describe the epidemiological profile of the notifications of self-provoked violence in the state of Rio Grande do Sul in the period from 2010 to 2019.

Method

This is a cross-sectional, observational and epidemiological study based on secondary data from the SINAN, managed by the State Health Secretariat of RS (*Secretaria de Estado da Saúde*, SES/RS). All the notifications of violence from 2010 to 2019 identified as "self-provoked injuries" of RS residents aged five years and older were considered. The SINAN data were extracted using the Tabnet tool on the SES/RS website on January 14th, 2020, and exported to the *Microsoft Excel 2017* software. Descriptive statistical analyses (frequencies and proportions) were carried out to study the distribution of cases according to the gender, age group, race/skin color, schooling, marital status, presence of disability/disorder, place of occurrence, and repetition (if violence had already occurred other times) variables. Notification rates were also calculated for the categories of the age group variable, using the resident population over five years of age as estimated by the Interagency Health Information Network (*Rede Interagencial de Informações para a Saúde*, RIPSAN)⁽¹⁷⁾ for each year of the historical series. The population for 2015, the last available year, was adopted as the denominator for the following years. For the race/skin color variable, it was used the 2010 population informed by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE)⁽¹⁸⁾, as it is the only one available for this variable.

Results

A total of 43,390 SPI cases of RS residents were reported between 2010 and 2019. Figure 1 shows the growth in the number of notifications over the period, reaching 10,793 in 2019. 2017 stands out, with a 70.5% increase over the previous year. As for the distribution according to gender, there is predominance of women. In 2019, women had 2.5 times more notifications than men, with 7,667 records.

Table 1 shows sociodemographic and characterization data of the event in the studied period. The female population comprised 67.9% of the total notifications. There was a higher proportion of notifications in the 20-29-year-old age group for both genders. The white race/skin color was attributed to 80.5% of the notifications. The notification rates, on the other hand, varied over the years, as shown in Table 2, with the highest rates among the white race followed by the black race.

Among the notifications with valid schooling data, individuals with up to eight incomplete years of formal education represented 42.5% of the cases. It is worth mentioning the high proportion of blank or unknown fields in this variable. Regarding marital status, notifications from single, separated or widowed individuals predominated for both genders. The presence

of any disability (physical, intellectual, visual or auditory, for example) or disorder (mental or behavioral) was recorded in 35.3% of the cases (Table 1).

The residence was the predominant place for the occurrence of the SPIs. In the total number of notifications in the studied period, it was verified that 44.3% of the women had previously self-harmed or attempted suicide, while the same occurred with 34.1% of the men. The high proportion of blank or unknown fields in this variable stands out (Table 1).

Regarding the notification rate by age group, the expressive increase among adolescents aged 15 to 19 years old in the last three years stands out (Figure 2). The 10-14-year-old age group also draws the attention, surpassing, in 2019, the notification rate for adults between 20 and 29 years old.

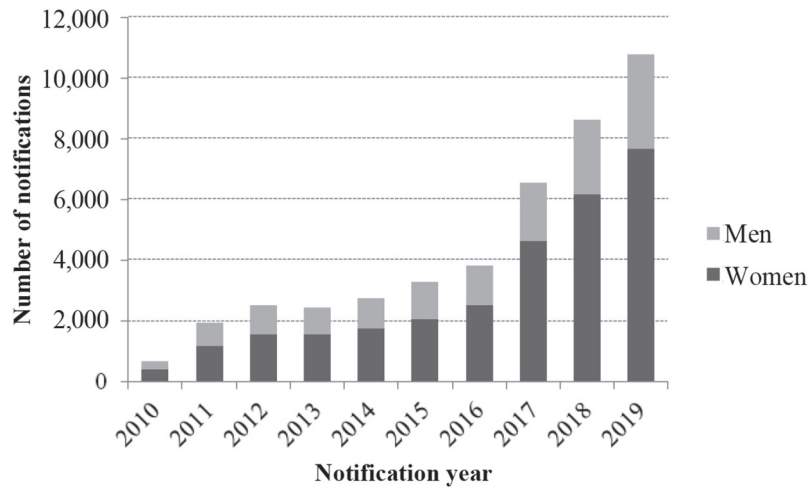


Figure 1 - Number of notifications of self-provoked injuries according to gender and by year of notification, RS, Brazil, 2010-2019

Table 1 - Distribution of self-harm notifications by gender, according to age group, race/skin color, schooling, marital status, disability/disorder, place of occurrence, and repetition, RS, Brazil, 2010-2019

	Male		Female		Total	
	n	%	n	%	N	%
Total	13,917	32.1	29,472	67.9	43,390	100
Age group (years old)						
5 to 9	73	0.5	51	0.2	124	0.3
10 to 14	669	4.8	3,099	10.5	3,768	8.7
15 to 19	2,184	15.7	5,856	19.9	8,041	18.5
20 to 29	3,549	25.5	6,557	22.2	10,106	23.3
30 to 39	2,630	18.9	5,589	19.0	8,219	18.9
40 to 49	2,034	14.6	4,503	15.3	6,537	15.1
50 to 59	1,419	10.2	2,603	8.8	4,022	9.3
60 to 69	738	5.3	798	2.7	1,536	3.5
70 to 79	426	3.1	296	1.0	722	1.7
80 and over	195	1.4	120	0.4	315	0.7

(to be continued...)

Table 1 – continuation

	Male		Female		Total	
	n	%	n	%	N	%
Race/Skin color						
White	11,204	80.5	23,706	80.4	34,911	80.5
Black	728	5.2	1,516	5.1	2,244	5.2
Asian	39	0.3	82	0.3	121	0.3
Brown	1,180	8.5	2,547	8.6	3,727	8.6
Indigenous	56	0.4	63	0.2	119	0.3
Unknown/Blank	710	5.1	1,558	5.3	2,268	5.2
Schooling						
Does not apply	24	0.2	30	0.1	54	0.1
Illiterate	152	1.1	155	0.5	307	0.7
Incomplete 1 st to 4 th grade of Elementary School	1,119	8.0	1,379	4.7	2,498	5.8
Complete 4 th grade of Elementary School	585	4.2	955	3.2	1,540	3.5
Incomplete 5 th to 8 th grade of Elementary School	2,408	17.3	5,657	19.2	8,065	18.6
Complete elementary school	1,368	9.8	3,045	10.3	4,413	10.2
Incomplete high school	1,280	9.2	3,322	11.3	4,603	10.6
Complete high school	1,489	10.7	3,946	13.4	5,435	12.5
Incomplete higher education	327	2.3	894	3.0	1,221	2.8
Complete higher education	244	1.8	797	2.7	1,041	2.4
Unknown/Blank	4,921	35.4	9,292	31.5	14,213	32.8
Marital status						
Single/Separated, Widow/Widower	8,222	59.1	16,042	54.4	24,265	55.9
Married/Consensual union	3,671	26.4	8,927	30.3	12,598	29.0
Does not apply	308	2.2	608	2.1	916	2.1
Unknown/Blank	1,716	12.3	3,895	13.2	5,611	12.9
Disability/Disorder						
Yes	4,790	34.4	10,532	35.7	15,322	35.3
No	6,414	46.1	13,917	47.2	20,332	46.9
Unknown/Blank	2,713	19.5	5,023	17.0	7,736	17.8
Place of occurrence						
Residence	11,146	80.2	25,994	88.3	37,141	85.7
Public road	977	7.0	892	3.0	1,869	4.3
Others	1,167	8.4	1,472	5.0	2,639	6.1
Unknown	607	4.4	1,086	3.7	1,693	3.9
Repetition						
Yes	4,748	34.1	13,062	44.3	17,811	41.0
No	6,090	43.8	10,477	35.5	16,567	38.2
Unknown/Blank	3,079	22.1	5,933	20.1	9,012	20.8

Source: Information System of Notifiable Diseases, 2020

Table 2 - Notification rate for self-provoked injuries according to self-declared race/skin color, RS, Brazil, 2010-2019 (rate per 100,000 inhabitants)

	Ethnicity				
	White	Black	Asian	Brown	Indigenous
2019	93.6	101.4	87.1	87.7	129.7
2018	76.4	88.1	75.9	64.1	72.4
2017	59.8	56.8	56.2	46.4	36.2
2016	35.0	34.9	36.5	30.0	39.2
2015	31.1	24.3	30.9	22.7	18.1
2014	26.1	21.1	5.6	19.4	30.2
2013	23.2	16.7	11.2	15.7	9.0
2012	23.4	19.4	14.0	19.2	6.0
2011	17.6	12.8	16.9	16.3	12.1
2010	6.1	6.3	5.6	6.1	6.0

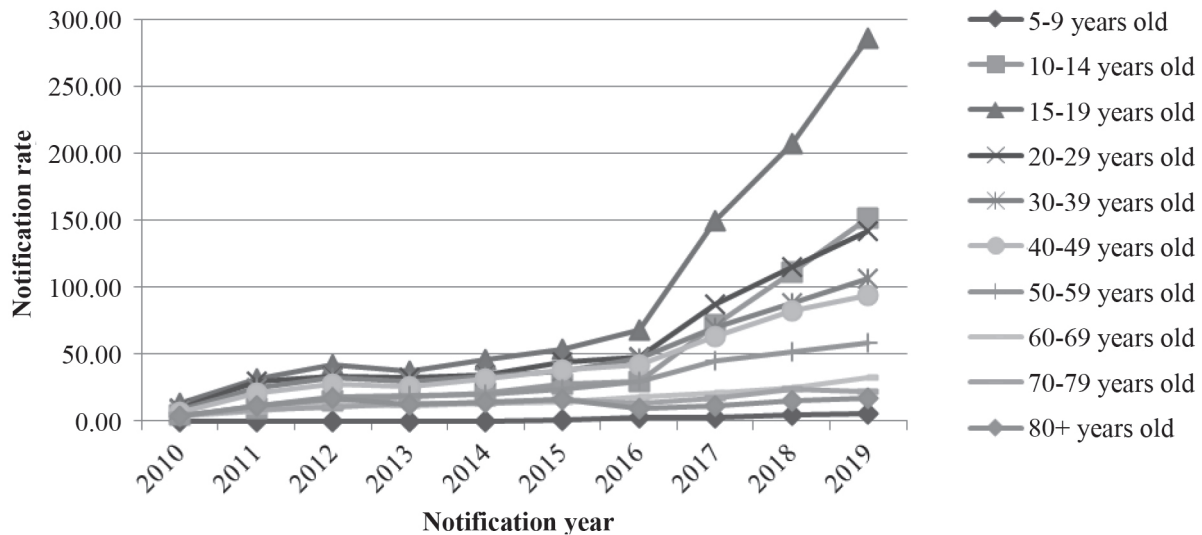


Figure 2 - Notification rate for self-provoked injuries according to age group by year of notification, RS, Brazil, 2010-2019 (rate per 100,000 inhabitants)

Discussion

The notable increase in the number of notifications over the analyzed period does not necessarily reflect a higher occurrence of SPI, but results from the process of implementing VIVA in the state of RS⁽¹⁵⁾, insofar as the service network is sensitized and trained to identify and report situations of violence⁽¹⁹⁾. In December 2016, through Decree No. 53,361, the State Committee for Life Promotion and Suicide Prevention was established, coordinated by the SES/RS and having as one of its powers the strengthening of the epidemiological surveillance of SA⁽²⁰⁾, which can partly explain the more than 70% growth in the number of SPI notifications in 2017.

Among the results of this study, the highest SPI occurrence among women meets the standard observed in the rest of Brazil⁽¹⁶⁾ and in the world⁽⁸⁾. In the period from 2011 to 2016, approximately 66% of the SPI notifications in Brazil corresponded to women⁽¹⁶⁾. There is a marked difference between the gender in relation to SA and consummated suicides described in the literature: while the first is more frequent in women, the second affects men more, and this pattern is described as the "gender paradox" of suicidal behavior^(7,21-22).

In addition, the results show that, among men, more than 34% of the SPIs were repetitive, while in women this proportion reached 44.3%. In Brazil, data from 2011 to 2016 also revealed differences between the genders: 25.3% versus 33.1%, respectively⁽¹⁶⁾. It is probable that the greater repetition of SAs among women is due to the frequent use of non-violent and less lethal means, such as abuse of controlled drugs and superficial cuts, for example⁽⁷⁾. In addition, the ritualistic character of self-mutilation (without suicidal

intent) favors the maintenance of the behavior among adolescent girls^(10,23-24).

Sexual violence is seen as an important risk factor for SPIs, as well as other types of violence suffered mainly by women in the home environment⁽⁴⁾. In RS, as of 2016, there is an increase in SPI notifications among women, reaching 2.5 times more than among men in 2019. Such increase was marked in the 15-19-year-old age group in the period. The high SPI incidence among childhood sexual abuse victims is identified in the literature, even in comparison with other types of violence⁽⁶⁾. In this sense, the results found converge with the main population at risk for sexual violence, namely, children and adolescents, especially girls. Most aggressors are relatives and people close to the family⁽²⁵⁻²⁶⁾. Intimately related to sexual violence, psychological trauma also generates other repercussions, such as feelings of guilt, shame, and self-loathing, which can lead to self-harm⁽²⁷⁾.

Regarding the age group, most SPI notifications in RS were concentrated among individuals aged 20 to 29 years old. On the other hand, it is noteworthy that, since the implementation of the program, the notification rates among adolescents aged 15 to 19 years old have always been higher compared to other age groups, and have increased significantly since 2016. In a meta-analysis⁽²⁸⁾, the heterogeneity of the results for different studies found in the scientific literature was identified in relation to the population that would have the highest SPI incidence: adolescents or young adults. In any case, it is indisputable that there is a continuum between the age groups described above, and both have suicide as the second leading cause of death⁽¹⁹⁾, a fact that highlights the need for greater understanding of the variables intrinsic to

this moment in the life cycle. For this being a multi-factorial phenomenon, it is necessary to investigate which universal and regional socio-cultural variables are related to this trend.

However, it must be considered that the developmental phase between mid-adolescence and the beginning of adulthood, both in biological and social terms, causes greater psychological distress in individuals with precarious coping mechanisms and emotional regulation^(6,29-30). Due to the expressive increase, in the last years, of the notification rates between the 15-19-year-old and 20-29-year-old age groups, the hypothesis of using social networks in the propagation, normalization, and contagion of self-injurious behaviors through the Internet must also be considered⁽³¹⁾.

Among the most frequently described SPI motivations in young people, suicidal intent⁽⁶⁾ is not always present; there is evidence of self-harm related to feelings of self-punishment and relief of psychological distress in girls, contrasting with more frequency of SA in boys⁽⁴⁻²³⁾. Comparing SPI occurrence among Australian adolescents and young adults, a study found a decrease in the young adult age, and greater maintenance of self-injurious behavior in women in relation to men, as well as it emphasizes that the presence of mental disorders, especially depression and anxiety, predict maintenance of self-injurious behavior in young adulthood⁽³²⁾. Most of the cases resolve spontaneously during adolescence; however, early detection and treatment measures can be crucial for more severe cases, in terms of effective mental health interventions^(8,32).

In a British ecological study on the variables (at the individual and territorial level) related to the repetition of self-injurious behavior, a relevant datum about race and environment was found: the computed frequency of SPI repetition in the white race was lower in neighborhoods where white-skinned individuals are majority among the residents⁽³³⁾. The authors interpret the datum from a contrast perspective: the risk for SPI repetition increases as the size of the racial population where the individual is inserted is in a minority in relation to its context, due to a possible stressful relationship. However, individual variables (such as SPI history and marital status, for example) were more relevant in the total sample, with the risk of repetition of self-injurious behavior being more frequent in the white-skinned population⁽³³⁻³⁴⁾. Such hypotheses may help in understanding the results found in RS; however, there is a lack of studies with greater cultural and geographical proximity that delve deeper into racial issues and SPI.

Although the majority of SPI notifications are from self-declared white-skinned people, it is clear from the rates by race/skin color that there is little

proportional difference in relation to white- and black-skinned individuals. Thus, it is evident that individual variables can be more relevant in identifying an increased SPI risk profile⁽³³⁻³⁴⁾, and that, in relation to RS, race/skin color is not essentially conclusive. It is noted that the high rates between the indigenous and Asian races are overestimated due to small self-declared populations (less than 100,000 inhabitants).

One of the most fragile variables of the notifications, identified in other Brazilian epidemiological studies^(16,35), is schooling, a field that is often left as blank or unknown. This is also a relevant limitation in the results of this study: 32.8% make up the knowledge gap about the population's years of formal school education, making it impossible to generalize the data. Thus, the importance is highlighted of qualifying the data through the proper filling of all fields of the notification form⁽¹⁶⁾.

Among the notifications with valid schooling data, individuals with up to eight incomplete years of formal education represented 42.5% of the cases. It is worth mentioning that the low level of schooling found is also due to the high concentration of young people in the analyzed population. Even so, it is emphasized that low schooling is an indication of vulnerability to self-injurious behaviors, which can be related to situations of harassment and intimidation by peers during childhood and adolescence (bullying), inducing academic failure and dropping out⁽³⁶⁾, as well as fewer opportunities for work or unemployment, which result in lower socioeconomic levels and in a shortage of future prospects, for example^(6,10,33).

The results referring to the marital status in the SPI notifications indicate the predominance of single, separated, and widowed individuals – a fact which coincides with one of the most prevalent risk factors in SA history: social isolation⁽³⁷⁻³⁸⁾. The absence of a stable relationship, as well as that of close friends; dissatisfaction with life, and feelings of loneliness, in general, correlate with negative emotions, such as anxiety, depression and aggression, low self-esteem, and guilt-related feelings^(6,37). It should be noted that the highest proportion of notifications from single individuals is due to the age group of the population studied (predominantly adolescents and young adults).

Finally, the indication of disability/disorder accounts for more than 35% of the total notifications. The presence of mental disorder is, perhaps, the variable that most permeates all the others mentioned and discussed above. However, this is a field on the complex analysis notification form, since the types of disabilities are varied and the disorders are not better specified than two general categories: mental or behavioral. Many studies are exhaustive in presenting the main symptoms of mental disorders related to SPI, with

anxiety, depression, borderline personality disorder, eating disorders, and substance abuse being the most frequently described^(6,10,38). On the other hand, specific data on disabilities, whether physical or intellectual, are incipient in the researched literature.

As a limitation of this study, the large proportion of blank or unknown fields is pointed out, the same problem evidenced in epidemiological bulletins published by the Ministry of Health (2017⁽¹⁶⁾ and 2019⁽¹⁹⁾). It is also worth mentioning the use of the population for the year 2015 in calculating the rates for 2016, 2017, 2018, and 2019, which should increase the rates displayed in the recent years to some degree. Finally, the underreporting of situations of violence is recognized and, especially, of self-harm, both due to the associated stigma and to the weaknesses of the health surveillance system^(16,19). The development and implementation of prevention programs require recognition of the limitations of the available data and a commitment to their qualification, in order to adequately reflect the effectiveness of the interventions^(8,39-40). Even so, the available set of information allows for the identification of risk factors and of the most vulnerable groups, as well as the analysis of the behavior of the phenomenon⁽¹⁾.

Conclusion

The growth in the number of notifications over the 10 years of VIVA in the state was identified, with emphasis on the last three years of the historical series (2017 to 2019). There was a higher proportion of notifications from women and in the 20-29-year-old age group, while the highest notification rates corresponded to the 15-19-year-old age group, with a significant increase in the last three years for the analyzed period. There was a higher proportion of notifications of individuals of white race/skin color, with low schooling, single, and without the presence of any disability/disorder. The residence was the predominant place for SPI occurrence, and 41% of the notifications were from people who had previously self-harmed or attempted suicide. This study points to the need for research studies that deepen the knowledge about self-provoked violence, especially about the factors associated with the absence or presence of suicidal intent in self-aggressive behavior among adolescents and young adults, in order to support specific prevention strategies.

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Author's Contribution


Study concept and design: Nathalia Fattah and Milenne Souza de Lima. Obtaining data: Nathalia Fattah. Data analysis and interpretation: Nathalia Fattah and Milenne Souza de Lima. Statistical analysis: Nathalia Fattah. Drafting the manuscript: Nathalia Fattah and Milenne Souza de Lima. Critical review of the manuscript as to its relevant intellectual content: Nathalia Fattah and Milenne Souza de Lima.

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