








## SELF-INFLICTED VIOLENCE IN ESPÍRITO SANTO: AN ANALYSIS OF REPORTED CASES

### VIOLÊNCIA AUTOPROVOCADA NO ESPÍRITO SANTO: UMA ANÁLISE DOS CASOS NOTIFICADOS

### VIOLENCIA AUTOINFLIGIDA EN ESPÍRITO SANTO: UN ANÁLISIS DE LOS CASOS NOTIFICADOS

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#### ABSTRACT

**Objective:** to analyze the prevalence of reported cases of self-inflicted violence and associated factors in Espírito Santo between 2011 and 2018. **Method:** this is a cross-sectional study that used all reported cases of self-inflicted violence registered in the Sistema de Informação de Agravos de Notificação between 2011 and 2018, in the state of Espírito Santo. Multivariate analysis was performed using Poisson Regression. **Results:** the prevalence of self-inflicted violence was 25.1%. The 10 to 19-year-old group had a prevalence of approximately 19 times greater self-inflicted violence report, as did people of white race/color (PR: 1.26) and people with disabilities/disorders (PR: 2.85) showed a higher frequency of this problem. A higher prevalence was observed among those without suspected alcohol use (PR: 2.36), with an occurrence approximately four times higher in the home, and an increase in approximately 50% of non-repeating cases. **Conclusion:** reports of self-inflicted violence in Espírito Santo were high during the period studied and were associated with characteristics of the victim and the event. Health professionals are fundamental in the process of tracking this problem and consequently in the process of designing prevention and protection strategies for victims.

**Keywords:** Suicide, Attempted; Suicide; Self Mutilation; Violence; Notification.

#### RESUMO

**Objetivo:** analisar a prevalência de casos notificados de violência autoprovocada no Espírito Santo entre os anos de 2011 e 2018 e os fatores associados. **Método:** trata-se de um estudo transversal que utilizou todos os casos notificados de violência autoprovocada registrados no Sistema de Informação de Agravos de Notificação entre 2011 e 2018, no estado do Espírito Santo. A análise multivariada foi realizada pela Regressão de Poisson. **Resultados:** a prevalência da violência autoprovocada foi de 25,1%. O grupo de 10 a 19 anos de idade teve uma prevalência cerca de 19 vezes maior de notificação de violência autoprovocada, assim como pessoas de raça/cor branca (RP: 1,26) e com deficiência/transtornos (RP: 2,85) apresentaram maior frequência desse agravo. Foi observada maior prevalência entre aqueles sem suspeita de uso de álcool (RP: 2,36), com ocorrência cerca de quatro vezes maior na residência, e um aumento em cerca de 50% dos casos sem caráter de repetição. **Conclusão:** as notificações de violência autoprovocada no Espírito Santo foram elevadas no período estudado e estiveram associadas a características da vítima e do evento. Profissionais de saúde são fundamentais no processo de rastreamento desse agravo e consequentemente no processo de traçar estratégias de prevenção e proteção das vítimas.

**Palavras-chave:** Tentativa de suicídio; Suicídio; Automutilação; Violência; Notificação.

#### RESUMEN

**Objetivo:** analizar la prevalencia de casos notificados de violencia autoinfligida en Espírito Santo entre los años 2011 y 2018, así como los factores asociados. **Método:** se trata de un estudio transversal que utilizó todos los casos notificados de violencia autoinfligida registrados en el Sistema de Información de Agravos de Notificación entre 2011 y 2018 en el estado de Espírito Santo. El análisis multivariado se llevó a cabo mediante la Regresión de Poisson. **Resultados:** la prevalencia de la violencia autoinfligida fue del 25,1%. El grupo de 10 a 19 años de edad presentó una prevalencia aproximadamente 19 veces mayor de notificación de violencia autoinfligida. Asimismo, las personas de raza/color blanco (RP: 1,26) y con discapacidad/trastornos (RP: 2,85) mostraron una mayor frecuencia de este agravo. Se observó una mayor prevalencia entre aquellos sin sospecha de uso de alcohol (RP: 2,36), con una ocurrencia aproximadamente cuatro veces mayor en la residencia, y un aumento de alrededor del 50% en los casos sin carácter repetitivo. **Conclusión:** las notificaciones de violencia autoinfligida en Espírito Santo fueron elevadas en el período estudiado y se asociaron con características de la víctima y del evento. Los profesionales de la salud desempeñan un papel fundamental en el proceso de detección de este agravo y, consecuentemente, en el diseño de estrategias de prevención y protección de las víctimas.

**Palabras clave:** Intento de Suicidio; Suicidio; Automutilación; Violencia; Notificación.

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## INTRODUCTION

According to the World Health Organization (1983), self-inflicted violence can be understood as injuries or poisoning intentionally carried out by the person against himself or herself, as well as suicide attempts<sup>(1)</sup>. Suicidal ideation, suicidal behavior, and attempted suicide are among the forms of non-fatal suicidal behavior. Fatal suicidal behavior includes suicide, which is an action of conscious self-annihilation<sup>(1-3)</sup>. In the world, suicide is among the ten main causes of death<sup>(4)</sup>. In Brazil, suicide was responsible for 13,520 deaths in 2019 and 15,499 deaths in 2021. Therefore, the number of suicide cases is increasing every year in the country<sup>(5)</sup>.

There are also cases of self-inflicted injuries without suicidal intention, which correspond to acts in which the person inflicts self-harm without the conscious intention of committing suicide<sup>(6)</sup>. Examples of this type of injury are hitting themselves, pulling out their hair, biting (either in the mouth or on the lips), purposely scratching their skin, burning their skin with a cigarette or match, pinching themselves, scratching a wound, among many others<sup>(7)</sup>.

Self-inflicted violence culminates in numerous social and economic impacts<sup>(8)</sup>. In addition to the costs for criminal investigations, rescues, and assistance interventions in health services, the person who commits self-extermination actions abandons people close to them, who are affected emotionally and economically by the situation. Suicidal acts can cause several premature deaths and negatively impact the lives of countless people. Furthermore, in the case of unsuccessful acts, many people become incapacitated and completely dependent on intensive care<sup>(9)</sup>.

To prevent such suicidal actions, it is necessary to promote the early identification of risk and vulnerability situations that lead to greater exposure to the disease. This attitude is in most cases taken by health professionals. Given this, it is essential to train and qualify these professionals in the management of cases of self-inflicted violence, to offer the victim humanized care and monitoring through Primary Health Care and other services of the Care Network<sup>(9)</sup>.

Nursing can act in prevention, early identification, notification, referral for appropriate treatment of cases of self-inflicted violence, and monitoring of these cases. However, the contribution of Nursing is compromised when professionals do not have formal training to assist people who are victims of this type of violence. Some of them even report having professional experience in the subject but do not have enough knowledge to manage a

situation of self-inflicted violence<sup>(10)</sup>. Therefore, health policies are necessary to train professionals in the area and discuss the topic of self-inflicted violence even during the graduation of these workers since the prior knowledge increases the quality of care and helps to combat this problem<sup>(10-12)</sup>.

Given this scenario, the following research question arises: what is the prevalence of self-inflicted violence reports in Espírito Santo and what are the associated factors? Considering this problem to be a serious public health problem, the hypothesis is that the occurrence of this phenomenon is high in Espírito Santo and that it is associated with certain characteristics of the victim and the event. Therefore, the objective of this study was to analyze the prevalence of reported cases of self-inflicted violence in Espírito Santo and the associated factors between 2011 and 2018.

## METHODO

A cross-sectional epidemiological study was carried out, which included all reported cases of self-inflicted violence registered in the Sistema de Informação de Agravos de Notificação (Sinan) between 2011 and 2018, in the state of Espírito Santo. We chose to investigate the data from 2011 onwards. In that year, violence became an issue subject to mandatory notification by the Ministry of Health, being carried out compulsorily by health professionals. The data were provided by the Setor de Vigilância Epidemiológica de Acidentes e Violências da Secretaria de Estado da Saúde (Sesa). This sector provided spreadsheets in Microsoft Excel format, which were extracted directly from the Sinan program.

Espírito Santo is a Brazilian state in the Southeast Region, with an area of approximately 46,089.390 km<sup>2</sup>, which is divided into 78 municipalities and four health regions. It has an estimated population of approximately 4,064,052 inhabitants in 2020. Of these inhabitants, in the 2010 Census, 1,731,218 (49.25%) were men and 1,783,734 (50.75%) were women. Its Human Development Index (HDI) is around 0.740, its average per capita income is 1,347 reais, and its nominal Gross Domestic Product (GDP) in 2016 was 133.3 billion reais<sup>(13)</sup>.

The Interpersonal and Self-Inflicted Violence Notification/Investigation Form is used in all health services to report violence. It can be completed by the health professional when a case of violence is suspected or when the case is confirmed. This form is organized into ten subdivisions, which seek to identify the profile of the victim, the profile of the aggressor, the characteristics of the violence,

and whether referrals were made, among other points. Furthermore, the form belongs to the Sistema de Vigilância de Violências e Acidentes (Viva), which was created in 2006 by the Ministry of Health, to monitor events of this kind that affect the population<sup>(14)</sup>.

In this study, we included all registered notifications regardless of gender and age group. Those duplicated or not identified with the type of violence suffered were excluded. The outcome variable was self-inflicted violence (yes/no). The characteristics of the victim and the event were examined as independent variables. As for the victim, the variables are gender (male or female), age group (0 to 9 years old; 10 to 19 years old; 20 to 29 years old; 30 to 39 years old; 40 to 49 years old; 50 to 59 years old; 60 years old or more), race/skin color (white or black/brown), disabilities/disorders (yes/no), area of residence (urban or peri-urban/rural) and suspected alcohol use (yes/no). Regarding the characteristics of the event, the variables are place of occurrence (residence; public road; others), history of repetition (yes/no), and referrals to other services (yes/no). Blank or ignored data were not considered in the analyses, so the total number of cases evaluated may vary.

Before the analyses, the database qualification process was carried out, aiming to minimize possible errors and inconsistencies (for example, self-inflicted violence indicated in the "Other types of violence" field and blank or ignored in the specific field).

The database provided in Excel was exported and analyzed using the statistical program Stata® version 14.1. The results were expressed as absolute and relative frequencies, as well as 95% confidence intervals (95% CI). For bivariate analysis, Pearson's chi-square test was

performed. In the multivariate analysis, the crude and adjusted Prevalence Ratios (PR) and their 95% CI were calculated to obtain the association between cases of self-inflicted violence and the exposure variables, according to the Poisson regression model with robust variance. In this last analysis, variables that presented  $p < 0.20$  in the bivariate analysis were included and those with a value of  $p < 0.05$  were maintained.

This study was approved by the *Comitê de Ética em Pesquisa da Universidade Federal do Espírito Santo*, identified by registration CAAE nº 88138618.0.0000.5060.

## RESULTS

Of the total violence reported between 2011 and 2018, 9,115 were self-inflicted injuries, which corresponds to a prevalence of 25.1% (95% CI: 24.6-25.5). Regarding the profile of the victims, most were women (75.3%), aged between 20 and 59 years old (69.65%), black/brown (63.1%), without disabilities or disorders (65, 7%), living in urban areas (90.7%) and without suspected alcohol use at the time of the event (79.8%). It is also noted that this phenomenon occurred mainly at home (88.9%), with a repeat nature in (53.5%), and in around 80% of cases there was a referral to other services (Table 1).

In the bivariate analysis, self-inflicted violence was related to the variables: age group, race/ skin color, disability/disorder, suspected alcohol use, place of occurrence, and referral (Table 2).

In the multivariate analysis, we observed that the group aged 10 to 19 years old had a prevalence of approximately 19 times greater self-inflicted violence reports. In the same sense, people of white race/skin color had

Table 1 – General characteristics of self-inflicted violence in the state of *Espírito Santo* between 2011 and 2018. *Espírito Santo*, Brazil, 2022 (N = 9,115)

Variables	N	%	CI 95%
<b>Gender (N = 9.115)</b>			
Male	2249	24,7	23,8-25,6
Female	6866	75,3	74,4-76,2
<b>Age group (N = 9.115)</b>			
0 to 9 years old	37	0,4	0,3-0,6
10 to 19 years old	2460	27,0	26,1-27,9
20 to 59 years old	6341	69,6	68,6-70,5
60 years old or more	277	3,0	2,7-3,4
<b>Race/skin color (N = 7.562)</b>			
White	2787	36,9	35,8-38,0
Black/brown	4775	63,1	62,1-64,2

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Table 1 – General characteristics of self-inflicted violence in the state of *Espírito Santo* between 2011 and 2018. *Espírito Santo*, Brazil, 2022 (N = 9,115)

Variables	N	%	CI 95%
<b>Disabilities/disorders (N = 6.865)</b>			
No	4507	65,7	64,5-66,8
Yes	2358	34,3	33,2-35,5
<b>Residence area (N = 8.964)</b>			
Urban/peri-urban	4507	65,7	64,5-66,8
Rural	2358	34,3	33,2-35,5
<b>Suspected alcohol use (N = 6.057)</b>			
No	4507	65,7	64,5-66,8
Yes	2358	34,3	33,2-35,5
<b>Place of occurrence (N = 8.135)</b>			
Residence	7235	88,9	88,2-89,6
Public highway	415	5,1	4,6-5,6
Other	485	6,0	5,5-6,5
<b>Repeated violence (N = 6.868)</b>			
No	3195	46,5	45,3-47,7
Yes	3673	53,5	52,3-54,7
<b>Referrals (N = 8.586)</b>			
No	1705	19,9	19,0-20,7
Yes	6881	80,1	79,3-81,0

Source: Production by the author himself.

N: absolute frequency.

%: relative frequency.

95% CI: 95% confidence interval.

Table 2 – Bivariate analysis of cases of self-inflicted violence in the state of Espírito Santo between 2011 and 2018. *Espírito Santo*, Brazil, 2022 (N = 9,115)

Variables	N	%	IC 95%
<b>Gender (N = 9.115)</b>			
Male	2249	24,8	23,9-25,7
Female	6866	25,1	24,6-25,7
<b>Age group (N = 9.115)</b>			
0 to 9 years old	37	1,2	0,9-1,7
10 to 19 years old	2460	27,9	27,0-28,9
20 to 59 years old	6341	28,1	27,6-28,7
60 years old or more	277	14,2	12,7-15,8
<b>Race/skin color (N = 7.562)</b>			
White	2787	28,7	27,9-29,7
Black/brown	4775	22,0	21,5-22,6
<b>Disabilities/disorders (N = 6.865)</b>			
No	4507	17,4	17,0-17,9
Yes	2358	51,8	50,4-53,3

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Table 2 – Bivariate analysis of cases of self-inflicted violence in the state of Espírito Santo between 2011 and 2018. Espírito Santo, Brazil, 2022 (N = 9,115)

Variables	N	%	IC 95%	
<b>Residence area (N = 8.964)</b>				
Residence area (N = 8.964)	8131	25,2	24,7-25,7	0,217
Urban/peri-urban	833	24,2	22,8-25,7	
<b>Suspected alcohol use (N = 6.057)</b>				
No	4831	34,5	33,7-35,3	<0,001
Yes	1226	13,8	13,1-14,6	
<b>Place of occurrence (N = 8.135)</b>				
Residence	7235	31,3	30,7-31,9	<0,001
Public highway	415	7,5	6,8-8,2	
Other	485	14,7	13,5-15,9	
<b>Repeated violence (N = 6.868)</b>				
No	3195	25,3	24,5-26,0	0,160
Yes	3673	24,5	23,9-25,2	
<b>Referrals (N = 8.586)</b>				
No	1705	30,4	29,2-31,6	<0,001
Yes	6881	23,9	23,4-24,4	

Source: Production by the author himself.

N: relative frequency.

%: relative frequency.

95% CI: 95% confidence interval.

a 26% higher prevalence of notification of this condition. People with disabilities/disorders and those who did not use alcohol during self-inflicted violence have a 185% and 136% higher frequency of notifications of this event. Reported cases of self-inflicted violence occurred around four times more often in the home, and an increase was noted: in around 50% of reported cases,

there was a non-repetition nature. When comparing with the values from the crude analysis, it is possible to verify that, in general, the strength of the association was reduced, although maintaining statistical significance, and the variable on repetition history became associated after controlling for confounding variables (Table 3).

Table 3 – Multivariate analysis of cases of self-inflicted violence in the state of Espírito Santo between 2011 and 2018. Espírito Santo, Brazil, 2022 (N = 9,115)

Variables	Raw analysis			Adjusted analysis		
	PR	CI 95%	p-value	PR	CI 95%	p-value <sup>w</sup>
<b>Age group</b>						
0 to 9 years old	1,0		<0,001	1,0		<0,001
10 to 19 years old	23,38	16,94-32,26		18,74	13,12-26,77	
20 to 59 years old	23,56	17,09-32,47		16,83	11,80-24,01	
60 years old or more	11,86	8,46-16,63		7,95	5,45-11,59	
<b>Race/color</b>						
White	1,31	1,26-1,36	<0,001	1,26	1,21-1,31	<0,001
Black/brown	1,0			1,0		

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Table 3 – Multivariate analysis of cases of self-inflicted violence in the state of Espírito Santo between 2011 and 2018. Espírito Santo, Brazil, 2022 (N = 9,115)

Variables	Raw analysis			Adjusted analysis		
	PR	CI 95%	p-value	PR	CI 95%	p-value
<b>Disabilities/disorders</b>						
No	1,0		<0,001	1,0		<0,001
Yes	2,98	2,86-3,09		2,85	2,74-2,96	
<b>Suspected alcohol use</b>						
No	2,50	2,36-2,64	<0,001	2,36	2,20-2,53	<0,001
Yes	1,0			1,0		
<b>Place of occurrence</b>						
Residence	4,18	3,80-4,60	<0,001	3,88	3,38-4,45	<0,001
Public highway	1,0			1,0		
Outros	1,96	1,73-2,21		1,96	1,65-2,32	
<b>Repeated violence</b>						
No	1,03	0,99-1,07	0,159	1,51	1,43-1,58	<0,001
Yes	1,0			1,0		

Fonte: Produção do(a) próprio(a) autor(a).

RP: razão de prevalência.

IC 95%: intervalo de confiança de 95%.

## DISCUSSION

This study identified that on average 1 in 4 notifications made in Espírito Santo in the period from 2011 to 2018 was self-inflicted violence. The frequency in Brazil between 2011 and 2016 was lower compared to the data found (15.0%), however, data from DATASUS from 2020 demonstrate the increase in self-inflicted violence reports over the years in Brazilian states, specifically Espírito Santo, going from 68 cases in 2011 to 3,240 in 2018(15-16). This observed increase is expected, given that, as of 2011, notification by health professionals became compulsory by Ordinance 104<sup>(17)</sup>.

Regarding the characteristics of the victims, the highest prevalence of the event among adolescents is noted. In the period from 2009 to 2016, 33,541 cases of self-inflicted violence by this public were reported in the country<sup>(18)</sup>. In the United States, in 2019 about 1 in 5 young people had seriously considered attempting suicide; 1 in 6 had made a suicide plan; 1 in 11 had attempted; and 1 in 40 made a suicide attempt that required medical treatment<sup>(19)</sup>. Several factors can explain the increase in this problem in young people, such as a family history of suicide and genetic factors, but the lack of planning and maturity stands out in this age group, often leading to

the search for immediate rewards to alleviate feelings of emptiness and indifference<sup>(20)</sup>.

Another finding was the higher prevalence of cases of self-inflicted violence among those self-declared to be white. In Brazil, the highest frequency was found among brown people; however, when stratified by the geographic regions of the country, it is observed that more notifications in the Southeast and South Regions among white people, while in the North, Northeast, and Central-West Regions the black/brown color has a higher occurrence(16,21). This finding is similar to a recent study by Maronezi et al.<sup>(22)</sup>, carried out with notifications from throughout Rio Grande do Sul, from 2013 to 2017. The authors found a higher occurrence of self-inflicted violence among men and women of skin color white.

Espírito Santo is part of the Southeast Region, and this finding is consistent with the existing literature, even though black skin color (black and brown) is predominant in the state (approximately 64.3%), while white people constitute 35.2% of the population, unlike Rio Grande do Sul, where around 80% of people are white<sup>(23)</sup>. Furthermore, differences in help-seeking behavior, institutional racism, and access to health services can influence the notification, referral, and care processes<sup>(24,25)</sup>.

Self-inflicted violence was associated with the presence of disabilities/disorders. It is important to consider that the presence of a mental disorder can increase the risk of an episode of self-harm by 10 times<sup>(26)</sup>. People with disabilities have numerous coexisting conditions, and their limitations can provide feelings of continuous insecurity, lack of protection, and hopelessness. This reality makes these people more vulnerable to self-harm actions, requiring greater attention to their mental health<sup>(27)</sup>.

The residence was the most prevalent place for self-inflicted violence to occur. In the study carried out by Andrade et al.<sup>(28)</sup>, 71.3% of cases of self-inflicted violence occurred at home. This result may be a reflection of the greater ease of access to the means that facilitate this act, such as poisoning by medicines and rodenticides, in the case of a suicide attempt<sup>(3)</sup>. The isolation caused by people who remain in their homes can also be a contributing factor in the illness process and the increase in self-extermination practices<sup>(29)</sup>.

In most notifications, there was no suspicion of alcohol use during the event (PR = 2.36; 95% CI: 2.20-2.53), which is in line with Brazilian research that showed a lower prevalence of alcohol use among reports of self-harm<sup>(30)</sup>. In any case, it is known that the use of alcohol, by promoting depressing actions on the central nervous system, as well as euphoria, can drive dependence due to its consumption, causing social, emotional, and family problems for the individual and increasing the chances the practice of attempting suicide<sup>(31)</sup>.

Regarding the non-recurrence nature of the event, despite being a subject still little explored, certain factors may be associated with the recurrence of the event. The adolescent age group and the history of previous suicidal ideation stand out, that is, those who have already attempted suicide or self-mutilation and were unsuccessful have a high chance of repeating the behavior<sup>(24,32)</sup>.

The results presented here are useful for teaching, research, and outreach actions that involve the qualification of professionals from different areas for planning and acting in both health and social assistance services with the objective of screening, identification, intervention, monitoring, and referral of cases<sup>(33)</sup>. Studies like this are essential in promoting actions to prevent and combat this type of violence, given its characteristics in different life cycles and its lethal and morbid potential on the lives of victims. In this way, the health sector has a leading role in dealing with this problem, playing an important role not only in identifying but also in managing cases<sup>(34)</sup>. To this end, Nursing professionals, as well as other health professionals, need to know the scenario in which people

in situations of self-inflicted violence are involved to better understand the phenomenon, strengthen bonds, and ensure adherence to care institutions<sup>(34)</sup>.

The main limitation of the study was that the data were from reported cases of self-inflicted violence registered on Sinan, that is, only victims who sought a health service, where the health professional then carried out the notification, were included in the study, not being representative of the entire state of Espírito Santo. However, these are very important findings, which contribute to broadening the view of more vulnerable groups and emphasizing the importance of debating a topic that is still little discussed in the literature. Considering the importance of the topic, we suggest new studies to be developed to better understand self-inflicted violence and its victims.

## CONCLUSION

The Reports of self-inflicted violence in Espírito Santo were high during the period studied, being more prevalent among adolescents, white people, people without suspected alcohol use, and people with disabilities. The place of greatest occurrence was the victim's residence, and most of the notifications were not repeatable.

The results presented here indicate groups that are more vulnerable to self-inflicted violence, being useful for the construction of public policies aimed at the area and for raising people's awareness about self-inflicted violence, especially health professionals, who need to know to identify a situation of self-harm. This is because they are the ones who report violence through the Interpersonal and Self-Inflicted Violence Notification form, and they can minimize underreporting. It is also known that trained health professionals are capable of establishing qualified reception and listening to guarantee the prevention of this health problem.

Self-inflicted violence must be discussed in different scenarios to promote greater information about the phenomenon and, therefore, greater opportunities to combat it.

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