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Notifications, hospitalizations and deaths from self-harm in children in Brazil's national health systems

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Abstract *There are virtually no statistics on childhood suicidal behavior globally. This setting can be partly explained by the social representation of joy in this early phase of life. This paper aims to analyze information on self-harm reports, hospitalizations, and deaths among children aged 5-9 years in Brazil to know its magnitude and distribution from 2006 to 2017, based on data from national health information systems. The results show 58 deaths of Brazilian children with intentional self-harm, primarily male, white, and nine years old. Hanging was the most commonly used mechanism for children to kill themselves. A total of 1,994 hospitalizations were recorded for suicide attempts in children in the period 2006-2017, with a predominance of males in all regions. Regarding notifications, most refer to children between 8 and 9 years of age, black and female, emphasizing self-poisoning. Evidence that any suicidal behavior in childhood is strongly associated with attempted or completed suicide in adolescence and adulthood is one of the main indications of the need to prevent this behavior in the first decade of life.*
Key words *Child, Suicidal behavior, Suicide attempt, Suicide*

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Introduction

Hurting oneself, attempting to kill oneself, or ending one's life is unusual in childhood and is still an incipient theme in national and international literature. It is immersed in cultural taboos and surrounded by inquiries and ignorance, also among scholars and professionals working with children[1,2]. While rare in its magnitude, it is not an exceptional phenomenon, with underreporting of its occurrence due, in part, to the social representation of childhood itself, marked by playfulness and joy, where the desire to die or too much suffering seems to be incompatible with this stage of life[3].

There is great difficulty in conceptually delimiting self-harm and suicidal behavior, especially in childhood, due to the lack of evidence, in most cases, as to the intention of the act. From a broader conceptual perspective, the World Health Organization[4] calls self-inflicted injury as violence that people inflict against themselves and is classified as suicidal behavior and self-harm (includes scratches, cuts, bites in oneself, and limb amputation).

Suicidal behavior is characterized by every act by which the individual causes self-harm. It includes ideations, planning, and even attempts and consummated suicide[5]. Similarly, the International Statistical Classification of Diseases and Related Health Problems (ICD-10) considers self-harm the injuries and poisonings intentionally perpetrated by people on themselves and suicide attempts[6]. Therefore, the relief of suffering underlies this debate and is often the primary purpose of self-hurting or taking one's own life.

Another barrier to understanding the phenomenon in childhood is linked to the definition of the moment when the cognitive development of the concept of death takes place in the child, which tends to occur at around nine years of age, with differentiation due to living with death, the family life story and the elaboration process on the theme from stories, cartoons, and fairy tales[1,7]. There are limited ideas about death in earlier stages of child development, with the belief in reversibility and the fear of the mother's death, but not of oneself. The definition of suicidal behavior's prerequisite is the awareness of the finitude of life, including one's own[1]. However, Pedroso[2] clarifies that the child having a different concept of death from adults does not necessarily mean that he cannot attempt against his own life. Fensterseifer and Werlang[3] alert to the need to break with the myth of childhood, dispelling the conception that children are incapable of intentionally attempting against their own lives since they can hurt themselves, plan, and carry out a successful suicide. These authors further explain that approximately half of the accidents involving children may be masked suicide attempts.

There are practically no statistics on the phenomenon among children up to 9 years of age globally, and when they exist, they are usually underestimated. In the early 2000s, Beautrais[8] warned that international estimates suggested suicide rates for children aged 5-14 years of around 1-2 deaths per 100,000[9]. While low and well below adolescence, the suicide rate tends to increase in children under 15 years of age in several countries[10-12]. In 2015, the Centers for Disease Control and Prevention[13,14] showed that suicide was the sixth leading cause of death among children aged 5-12 years in the U.S., slightly increasing from 2013 to 2014 (about 16 %). In that country, suicide is the third leading cause of death among adolescents aged 10-14 years[15] and, globally and in Brazil, it still peaks among older adolescents[16].

The relevance of investigating self-inflicted injury in childhood is consolidated in the tendency of a continuum of severity throughout development, which can start with acts of hurting and progress to ideation, planning, and attempt to complete suicide[17,18], which does not mean that this route is always strictly followed. Injuring oneself without evidence of suicidal intent is a typical phenomenon in adolescence and tends to decrease in adulthood[19]. Suicidal ideation in preadolescents, in turn, has been consistently associated with attempts in adolescents[18-20]. Brent[21] warns of the need to understand suicidal behavior in younger age groups better, understanding the background and profiles of victims earlier and earlier so that it can be detected and intervened early.

Several factors are associated with the genesis of the event. In the 1980s, studying Australian children who attempted suicide, Kosky[22]concluded that most were male, used violent methods to try to die, had poor academic performance, and had been exposed to adverse family circumstances, including intra-family violence, parental separation, and divorce. Among the main risk factors traditionally associated with suicidal behavior in childhood are mood disorder, emotional deprivation, loss of significant people, physical abuse, parental abuse of alcohol and other drugs, family history of suicide, and access to methods used to

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commit suicide[23-25]. Impulsiveness is crucial for those at higher risk for suicide due to complex cognitive processing during the act[23]. Knowledge about self-harm in childhood is very scarce, and most of the works are based on case studies, non-representative samples, prioritizing adolescence, and addressing the problem in a wide age range of 5-14 years, which is inadequate given the significant developmental differences and hinders generalizations[20].

Although the absolute number of self-inflicted injuries may be quantitatively small compared to the size of the population, knowing its epidemiology certainly gives visibility to the event and supports knowledge about the characteristics of children who self-harm, attempt, or die in this way and, therefore, allows acting in the prevention and health sector decisions. This paper seeks to analyze the magnitude and distribution of notifications, hospitalizations, and deaths due to self-harm in Brazil's children aged 5-9 years from 2006 to 2017, based on data from national health information systems.

Methods

This is a cross-sectional study on self-harm in Brazilian children between 5 and 9 years of age from 2006 to 2017, using secondary data from three national health information systems.

For the analysis of **notifications of self-harm in children** from 2011 to 2017, the Information System for Notifiable Diseases (SINAN) was used for domestic, sexual, and other violence, whose data are obtained from the completion of the Interpersonal/Self-Inflicted Violence Notification Form for every suspected or confirmed case of violence treated in public and private health services in the country. This surveillance system consists of two components, but only the continuous SINAN/VIVA component is analyzed in this paper. It is a current system with weaknesses, as the notification of violence was only included in the mandatory notification events[26,27] in 2011. Also, until 2014, the information system did not allow the registration of self-inflicted injuries for people under 14 years.

The first stage of the analysis consisted of verifying the temporal evolution of violence notifications, without distinction of age and among children aged 5-9 years old, and the number of notifications classified as self-harm in children aged 5-9 years old from the ICD-10 codes (X60-X84) from 2011 to 2017. Codes X60-X84 refer to intentional self-harm by (X60) self-poisoning and intentional exposure to pharmacological substances (analgesics, antipyretics and antirheumatics, non-opiates, sedative anticonvulsant drugs, narcotics), alcohol, organic solvents, and pesticides; (X70) hanging, strangulation, suffocation, drowning and submersion, hand-held firearm firing, explosive devices, smoke, fire and flame, water vapor, gases, or hot objects, sharp or penetrating object, blunt object; and (X80) precipitation from an elevated place, precipitation or standing in front of a moving object, impact of a motor vehicle, and unspecified means[6]. Subsequently, bivariate analysis of the events was carried out according to some characteristics of the children (gender, age, skin color, place of occurrence, and means employed) notified from 2015 to 2017, which present more qualified data for the age group. For this second stage, the analyzed data consisted of notifications in which the option "yes" was checked in the "self-inflicted injury" field, and the ICD-10 codes X60 to X84 were used in the "circumstance of injury" field. Complementarily, data from the field "type of violence – others" (open field for entry) were also verified. In some situations (four cases), we observed that this field had been filled in with the following terms: "suicide", "suicide attempt" and "self-inflicted", but that the option "no" was indicated in the "self-inflicted injury". It was then considered that there was a filling error, and these cases were included in the analysis performed in the paper.

For assessing **admissions due to attempted suicide**, the Hospital Information System (SIH) served as the source of data. This system records information about morbidity through the Hospital Admission Authorization forms to pay for the procedures performed during admissions in public hospitals and associated with the Unified Health System. The negative points of this system are excess information on performing expensive procedures, charges for non-performed interventions, taking unnecessary tests, and not covering the care provided in urgent or emergency care rooms, preferred locations for the arrival of attempted suicide cases. The same ICD-10 codes used for notifications (X60-X84) were adopted to study suicide attempts in the SIH (DATASUS). Data were analyzed in two intervals: 2006-2011 and 2012-2017. The analytical description of hospitalization due to attempted suicide occurred by region and Federation Unit (UF) per the following variables: patient's gender, skin color, mean length of stay, and death. The

trend of hospitalization rates (per 100,000 inhabitants) was also calculated by region of the country and between genders from 2006 to 2017. For this calculation, the number of hospitalizations classified under ICD-10 codes X60 to X84 composed the numerator, and the Brazilian population for the 5-9 years age group (by gender and region) was the denominator. However, this is an approximate calculation since the number of admissions does not correspond to the number of people since one individual may have more than one admission in the period.

The Mortality Information System (SIM), whose cause of death is certified by the physician in the death certificate (DATASUS), analyzed **death by suicide** in the 5-9 years age group. Also, the ICD-10 X60-X84 (intentional self-harm) codes were used. The variable circumstance of death was used in selecting the deaths to be analyzed, which indicates the probable circumstance of unnatural death, with the following codes as a possible answer: 1 - accident; 2 - suicide; 3 - homicide; 4 - other; and 9 - unknown. Mortality was analyzed from the description of the distribution of deaths by suicide per the child's gender for the following variables: year, age, skin color, schooling, place of death, Federation Unit (UF), Region, means employed (ICD-10 category), and information source. Absolute and relative frequencies were used to the detriment of rates due to the low counts for the event under analysis.

Results

Table 1 shows the evolution of violence **notifications** in all age groups, showing those that occur among children aged 5-9 years who arrived at health services from 2011 to 2017, highlighting the frequency of self-harm in the age group studied. As can be seen, notifications have grown significantly over the years, whether for all forms of violence or self-harm. A total of 196 notifications of self-harm in children aged 5-9 years were recorded from 2011 to 2017. It is essential to highlight that, although there are records, until 2014, the system did not allow the attribution of self-harm to children under 14 years of age.

Table 2 shows the characteristics of children aged 5-9 years notified for self-harm in the continuous SINAN/VIVA. It is important to remember that this number of notifications was reached from the concomitant use of two variables available in the notification form, namely: (1) self-harm ("yes") and circumstance of the injury (codes X60 to X84). To these, four cases were added in which the option "no" was checked for self-harm, but this was interpreted as a filling error since in the field, "type of violence – other" pointed out that it was a suicide or attempted suicide.

From 2015 to 2017, the profile of 78 notifications of children attended by health services for self-harm shows that most (56.4%) occurred in 2017. These children are aged eight and nine (62.8%), white (46.2%) and brown/black (39.7%) (only one was indigenous), and female. Regarding the place of occurrence, 80.8% occurred at home, and most of the event was caused by self-poisoning (54%), followed by a blunt, sharp or penetrating object (24.3%) and decreasingly by hanging, precipitation from an elevated place, impact of a motor vehicle, and other specified means.

Data referring to **hospitalizations due to suicide attempts** can be seen in Table 3. A total of 1,199 hospitalizations due to attempted suicide in children, predominantly in the North and Southeast regions, were recorded from 2006 and 2011. We highlight Pará, Paraíba, Minas Gerais, and São Paulo data among the UFs. We identified a predominance of admissions of male individuals in all regions in the period studied.

We highlight white skin color in the Southeast and South regions and brown skin color in the North, Northeast, and Midwest regions. The cases generated short hospital stays, with a maximum of six days, except for the state of Sergipe, where the mean hospital unit stay was 14.3 days. Eight deaths were reported among the 1,199 hospitalizations analyzed.

Seven hundred ninety-five hospitalizations were identified in the following period (2012-2017), again with a male predominance. However, hospitalizations were higher among females in Acre, Rio de Janeiro, Paraná, Mato Grosso, and the Federal District. Skin color showed the same result found in the previous period. The mean stay ranged from 1.0 to 4.2 days, except for Acre (18.7 days) and Pernambuco (22.6 days), and eight patients died.

Graph 1 shows the temporal trend of hospitalizations for attempted suicide in children for the 2006-2017 period, by gender. The time series evaluation shows higher rates for boys and declining rates for both genders over the years. It appears that the rate peaked in 2008, with approximately 1.9 admissions/100,000 inhabitants among boys. Graph 2 shows the temporal trend of admissions for attempted suicide according

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Table 1. Distribution of notifications for violence and self-harm in children aged 5 to 9 years old (continuous SINAN/VIVA), 2011-2017, Brazil.

Year	Total notifications for violence in all age groups	Total notifications for violence among children aged 5-9 years		Events classified under self-harm codes (X60-X84) – 5-9 years
		N	%	
2011	107,530	7,048	6.6	15
2012	157,033	10,292	9.6	20
2013	188,728	11,227	10.4	23
2014	201,044	11,673	10.9	15
2015	227,852	12,561	11.7	35
2016	243,192	13,741	12.8	26
2017	307,307	16,039	14.9	62

Source: Sistema de Informação de Agravos de Notificação (SINAN), Ministério da Saúde.

Table 2. Characteristics of children aged 5 to 9 years with notifications of self-harm (continuous SINAN/VIVA) by gender, 2015-2017, Brazil (n = 78).

Variable	Female (n = 40)		Male (n = 38)		Total	
	n	%	n	%	n	%
Age						
5	5	12.5	4	10.5	9	11.5
6	5	12.5	3	7.9	8	10.3
7	4	10.0	8	21.1	12	15.4
8	9	22.5	11	28.9	20	25.6
9	17	42.5	12	31.6	29	37.2
Skin color						
White	17	42.5	19	50.0	36	46.2
Black	2	5.0	1	2.6	3	3.8
Brown	12	30.0	16	42.1	28	35.9
Indigenous	1	2.5	0	0.0	1	1.3
Unknown	8	20.0	2	5.3	10	12.8
Place of occurrence						
Residence	34	85.0	29	76.3	63	80.8
Collective housing	0	0.0	2	5.3	2	2.6
School	3	7.5	4	10.5	7	9.0
Other	1	2.5	1	2.6	2	2.6
Unknown	2	5.0	2	5.3	4	5.1
Method employed						
X60	0	0.0	1	2.6	1	1.3
X61	4	10.0	0	0.0	4	5.1
X62	14	35.0	4	10.5	18	23.1
X64	1	2.5	0	0.0	1	1.3
X66	5	12.5	7	18.4	12	15.4
X68	2	5.0	0	0.0	2	2.6
X69	1	2.5	3	7.9	4	5.1
X70	1	2.5	10	26.3	11	14.1
X78	0	0.0	1	2.6	1	1.3
X79	1	2.5	0	0.0	1	1.3
X80	10	25.0	8	21.1	18	23.1
X82	1	2.5	0	0.0	1	1.3
X83	0	0.0	4	10.5	4	5.1

Source: Sistema de Informação de Agravos de Notificação (SINAN), Ministério da Saúde.

Table 3. Admissions for suicide attempts among children aged 5-9 years, 2006-2017, Brazil.

Region/UF	Period 2006-2011								Period 2012-2017							
	Gender		Skin color*				mean hospitalization days	deaths	Gender		Skin color*				mean hospitalization days	deaths
	Male	Female	white	black/ brown	yellow/ indigenous	SI			Male	Female	white	black/ brown	yellow/ indigenous	SI		
North	220	100	2	187	1	26	2,9	0	33	29	0	45	1	16	4,1	0
Rondônia	6	3	0	3	0	3	3,0	0	9	6	0	12	0	3	1,6	0
Acre	8	5	0	3	0	3	5,0	0	2	4	0	5	0	1	18,7	0
Amazonas	2	3	0	0	0	3	2,6	0	2	1	0	3	0	0	1,7	0
Roraima	7	1	0	0	0	4	3,4	0	2		0	1	0	1	2,5	0
Pará	180	83	1	162	1	12	2,8	0	17	17	0	24	1	9	3,1	0
Amapá	1	0	0	0	0	1	3,0	0	0	1	0	0	0	1	3,0	0
Tocantins	16	5	1	19	0	0	7,7	0	1	0	0	0	0	1	1,0	0
Northeast	189	110	12	102	0	76	3,4	2	96	57	11	84	1	57	4,2	4
Maranhão	10	5	0	4	0	10	4,3	0	18	11	0	6	1	22	3,5	0
Piauí	14	15	1	23	0	2	2,7	0	11	6	3	14	0	0	2,8	1
Ceará	27	15	0	7	0	24	5,4	2	8	6	1	8	0	5	3,8	2
Rio Grande do Norte	5	6	0	0	0	5	6,5	0	0	0	0	0	0	0		0
Paraíba	82	34	7	38	0	3	2,2	0	3	2	0	3	0	2	2,4	1
Pernambuco	5	8	2	50	5	2,9	0		6	3	2	4	0	3	22,6	0
Alagoas	11	6	0	8	0	8	4,2	0	2	1	0	3	0	0	3,3	0
Sergipe	3	2	0	1	0	2	14,3	0	1	1	0	0	0	2	1,0	0
Bahia	32	19	2	16	0	17	3,6	0	47	27	5	46	0	23	3,0	0
Southeast	198	164	94	66	2	58	3,3	2	259	182	177	165	4	95	2,5	1
Minas Gerais	59	44	16	27	0	20	2,9	1	99	69	45	78	3	42	2,7	0
Espírito Santo	27	25	5	4	0	14	3,9	0	20	15	13	15	0	7	2,2	0
Rio de Janeiro	13	7	10	2	0	0	3,6	0	13	14	9	13	0	5	2,4	0
São Paulo	99	88	63	33	2	24	3,2	1	127	84	110	59	1	41	2,4	1

it continues

Table 3. Admissions for suicide attempts among children aged 5-9 years, 2006-2017, Brazil.

Region/UF	Period 2006-2011							Period 2012-2017						
	Gender		Skin color*				mean hospitalization days	deaths	Gender		Skin color*				mean hospitalization days	deaths
	Male	Female	white	black/ brown	yellow/ indigenous	SI			Male	Female	white	black/ brown	yellow/ indigenous	SI		
South	81	53	59	11	1	39	2,1	0	52	35	62	8	0	17	2,9	0
Paraná	51	24	29	5	0	33	1,9	0	17	18	22	3	0	10	2,8	0
Santa catarina	14	14	15	2	1	2	2,9	0	21	7	25	3	0	0	3,2	0
Rio Grande do Sul	16	15	15	4	0	4	2,2	0	14	10	15	2	0	7	2,8	0
Midwest	44	40	8	10	0	50	3,2	0	25	27	5	16	2	29	2,1	0
Mato Grosso do Sul	4	5	2	1	0	2	2,5	0	4		0	3	1	0	1,8	0
Mato Grosso	11	8	0	2	0	16	3,9	0	11	15	3	12	0	11	2,4	0
Goiás	18	13	6	6	0	14	2,7	0	6	4	2	1	0	7	2,0	0
Distrito federal	11	14	0	1	0	18	3,4	0	4	8	0	0	1	11	1,8	0

*data not available for 2006/2007.

Source: Sistema de Informações Hospitalares (SIH), Ministério da Saúde.

to regions of the country. The North stands out when in 2008, it reached a rate of around seven admissions/100,000. Declining rates were observed over the years, indicating an increase in 2015 in the Southeast and Midwest.

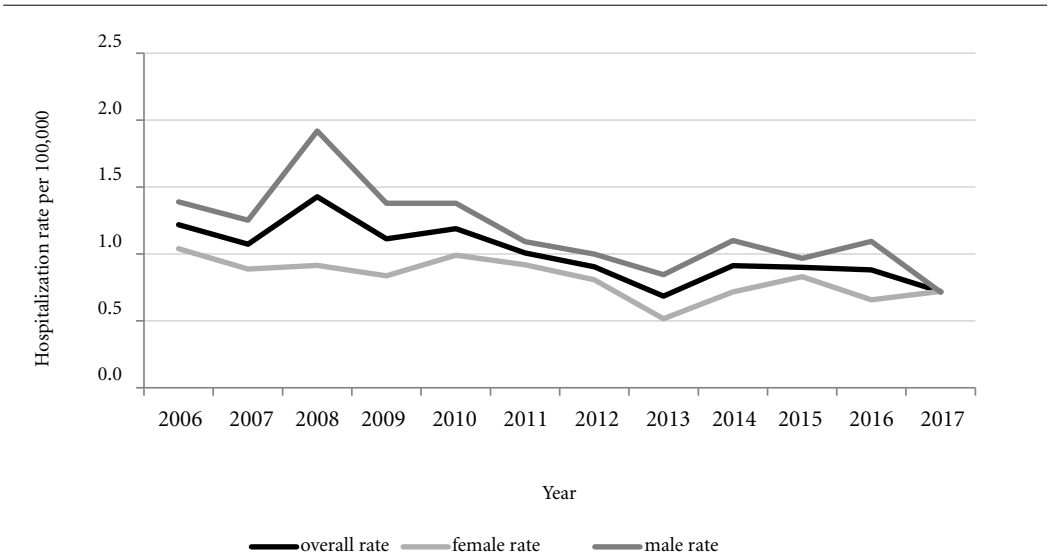
Regarding mortality data (SIM), 58 deaths of Brazilian children resulted from intentional self-harm (X60-X84 of the ICD-10) from 2006 to 2017. However, despite this filling, more cases were identified in the variable probable circumstance of unnatural death: 11 classified as accidents, 34 as suicides, and 13 as unknown. Aiming at greater rigor in the analysis, only deaths whose circumstance was reiterated as suicide were selected, whose distribution by gender and other variables is shown in Table 4.

We identified 29 deaths in males and five in females (Table 4). As for the temporal distribution, a decline is observed from 2012 and an increase in 2016 and 2017. Most deaths were of 9-year-old children (21 deaths), starting at seven years of age, primarily white (for both genders) and brown (only among boys). It is interesting to note that of the five suicide deaths in girls, two were indigenous. The home was the place of occurrence for 55.9% of deaths. As for the region, 11 deaths stand out in the North and 10 in the Northeast. Breaking down by federation unit (UF), it appears that Amazonas, Pará, Ceará, Rio Grande do Sul, and Mato Grosso do Sul stand out for boys. Among girls, there was only one death in each of the following UFs: Acre, Amazonas, Maranhão, Minas Gerais, and Santa Catarina. Hanging was most commonly used by children to kill themselves. The source of information was not filled in 12 records and was based on the police report in 12 cases.

Discussion

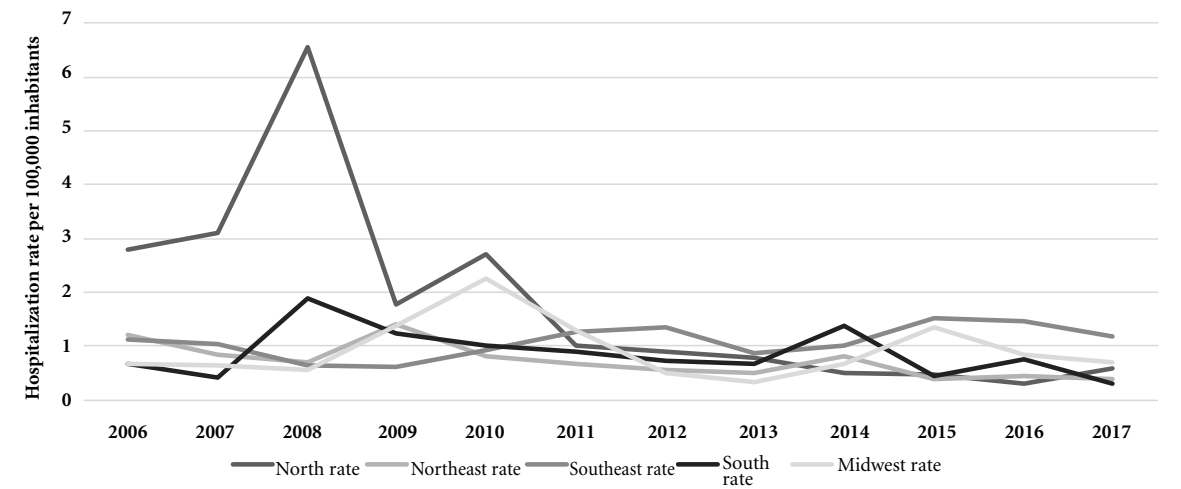
The descriptive nature presented in this paper seems to be the only way to approach a theme that is still hardly investigated in the country, characterized by its originality and by removing from invisibility a still poorly known topic. The findings should be disseminated and serve as a warning sign for health and school professionals, given the severity of the problem and its underreporting.

There are almost no official figures for suicidal behavior in childhood globally, hindering comparisons with other countries. In the United States, the National Center for Injury Prevention and Control[14] showed that, in 2003, suicide in



Graph 1. Temporal evolution of hospitalization rates for attempted suicide in children aged 5 to 9 years for the 2006-2017 period, per gender.

Source: Sistema de Informações Hospitalares (SIH), Ministério da Saúde.



Graph 2. Temporal evolution of hospitalization rates for attempted suicide in children aged 5 to 9 years for the 2006-2017 period, per region.

Source: Sistema de Informações Hospitalares (SIH), Ministério da Saúde.

this age group was responsible for 68 deaths of children under 12 years of age, most by suffocation (including hanging or strangulation) and little less by firearm.

Making a parallel with suicide in adolescence, while its rates are plummeting globally, the rate among Brazilian adolescents increased 24% among those living in some large cities in Brazil

Table 4. Deaths from suicide in the Brazilian population from 5-9 years, 2006-2017.

Variable	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Death occurrence years						
2006	5	17.2	2	40.0	7	20.6
2007	1	3.4	0	0.0	1	2.9
2008	4	13.8	0	0.0	4	11.8
2009	5	17.2	0	0.0	5	14.7
2010	2	6.9	1	20.0	3	8.8
2012	1	3.4	1	20.0	2	5.9
2013	0	0.0	1	20.0	1	2.9
2014	1	3.4	0	0.0	1	2.9
2015	2	6.9	0	0.0	2	5.9
2016	3	10.3	0	0.0	3	8.8
2017	5	17.2	0	0.0	5	14.7
Age in years						
7.00	5	17.2	0	0.0	5	14.7
8.00	7	24.1	1	20.0	8	23.5
9.00	17	58.6	4	80.0	21	61.8
Skin color						
White	10	34.5	3	60.0	13	38.2
Black	1	3.4	0	0.0	1	2.9
Yellow	0	0.0	0	0.0	0	0.0
Brown	12	41.4	0	0.0	12	35.3
Indigenous	4	13.8	2	40.0	6	17.6
Unknown	2	6.9	0	0.0	2	5.9
Schooling						
Illiterate	0	0.0	0	0.0	0	0.0
1-3 years	12	41.4	1	20.0	13	38.2
4-7 years	4	13.8	2	40.0	6	17.6
8-11 years	0	0.0	0	0.0	0	0.0
12 and over	0	0.0	0	0.0	0	0.0
Unknown	13	44.8	2	40.0	15	44.1
Place of occurrence						0.0
Hospital	12	41.4	1	20.0	13	38.2
Other health establishment	0	0.0	0	0.0	0	0.0
Home	15	51.7	4	80.0	19	55.9
Public roads	1	3.4	0	0.0	1	2.9
Others	1	3.4	0	0.0	1	2.9
Unknown	0	0.0	0	0.0	0	0.0

it continues

from 2006 to 2015, emphasizing the capitals of the Southeast[28]. This setting seems to dialogue with a possible upward trend in hospitalization rates for self-harm among children in the Southeast and Midwest from 2013 onwards. There is also a higher number of notifications for this cause from 2015 to 2017. Among the explanations for the increase in suicidal behavior in any age group are local characteristics, social changes in the country, and the lack of public policies to address the issue. Asevedo et al.[29] explain that local factors such as unemployment protection policies, social support, population distribution by gender, and urban or rural areas are essential moderators for suicidal behavior. For children, these aspects are highly mediated by their impact

Table 4. Deaths from suicide in the Brazilian population from 5-9 years, 2006-2017.

Variable	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
UF of occurrence						
Acre	1	3.4	1	20.0	2	5.9
Amazonas	4	13.8	1	20.0	5	14.7
Pará	4	13.8	0	0.0	4	11.8
Maranhão	1	3.4	1	20.0	2	5.9
Piauí	1	3.4	0	0.0	1	2.9
Ceará	3	10.3	0	0.0	3	8.8
Alagoas	2	6.9	0	0.0	2	5.9
Bahia	2	6.9	0	0.0	2	5.9
Minas Gerais	0	0.0	1	20.0	1	2.9
São Paulo	2	6.9	0	0.0	2	5.9
Paraná	2	6.9	0	0.0	2	5.9
Santa Catarina	0	0.0	1	20.0	1	2.9
Rio Grande do Sul	3	10.3	0	0.0	3	8.8
Mato Grosso do Sul	3	10.3	0	0.0	3	8.8
Mato Grosso	1	3.4	0	0.0	1	2.9
Region of occurrence						
North	9	31.0	2	40.0	11	32.4
Northeast	9	31.0	1	20.0	10	29.4
Southeast	2	6.9	1	20.0	3	8.8
South	5	17.2	1	20.0	6	17.6
Midwest	4	13.8	0	0.0	4	11.8
Method employed (ICD Category)						
Intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (X64)	1	3.4	0	0.0	1	2.9
Intentional self-poisoning by and exposure to pesticides (X68)	0	0.0	1	20.0	1	2.9
Intentional self-harm by smoke, fire, and flames (X76)	1	3.4	0	0.0	1	2.9
Intentional self-harm by other and unspecified firearm gun discharge (X74)	1	3.4	0	0.0	1	2.9
Intentional self-harm by hanging, strangulation, and suffocation (X70)	26	89.7	4	80.0	30	88.2
Information source						
Police report	11	37.9	1	20.0	12	35.3
Hospital	7	24.1	0	0.0	7	20.6
Family	0	0.0	2	40.0	2	5.9
Other	1	3.4	0	0.0	1	2.9
Unknown	10	34.5	2	40.0	12	35.3

Source: Sistema de Informação sobre Mortalidade (SIM), Ministério da Saúde.

on their families, their caregivers, and their daily lives.

Despite improved Brazilian health information systems in recent years, especially regarding notifications of violence, the data reveal the incipient magnitude of suicidal behaviors in children who come to health services, and a fundamental counterpoint is the fragility of records. A significant number of cases may not even have been categorized as the cause studied for difficulties because they are children, in which acts against their own life are denied or even hidden by the

family due to feelings of guilt or shame. Sociocultural, moral, and religious barriers hinder the accurate identification of the problem, interfering with the quality of information, masking the problem a lot[30].

It is interesting to note that some profiles are very similar to those found among adolescents with suicidal behavior, which shows a certain coherence in the continuum of this behavior from childhood to adolescence. For notifications, attempts, and deaths, the highest occurrence prevails among older children, whites for both genders, and black/brown among boys in the North and Northeast of the country, and the home as the place of greatest occurrence[4,5]. Joe, Banks, and Belue[25] explain that few conclusions explain the ethnic-racial differences in suicide, despite recent studies[31,32] showing higher rates in black children and adolescents. Furthermore, it is worth noting that the leadership of the problem in the North and Midwest may be linked, among other issues, to its more significant occurrence among indigenous peoples, which has been explained by the loss of traditional cultural values, the high consumption of alcohol in families, the high rate of depression, the lack of life prospects, and unemployment[8]. In the official data presented, indigenous children aged 5-9 years are tenuously manifested, differing from another study for the 10-14 age group, which shows that the suicide mortality rate among Brazilian indigenous children is 18.5 times greater than that observed among non-indigenous people[33]. In this line of thought, studying adolescents, Jaen-Varas[28] also warns that most of the variation in suicide rates is related to local risk factors in the places of residence and cities.

The literature indicates that, as in adolescence, boys die more by suicide, and girls have more self-harm reports. These findings dialogue with the means children choose to die: in suicide, especially among boys, suffocation is the most used means, while in notifications, in general, girls use less harmful means such as self-poisoning by ingestion of medication and intentional self-harm with a sharp or penetrating object[28,30-35]. Contrary to the literature, it is interesting to note that boys lead in hospitalizations due to suicide attempts, suggesting the choice for more harmful methods that need more attention by the health service. The means used by children in attempts and suicide show their notion of what can lead to death.

The findings dialogue with the traditional gender issues related to the theme, where boys seek more violent and lethal methods in suicide attempts, which seems to be mainly based on male socialization that values competitiveness and aggressiveness, greater exposure to situations of risk and greater vulnerability of care and affection directed towards them. In turn, girls tend to receive more support and, when depressed, seek more help[5].

Among the study's limitations, we should consider the weaknesses of statistics in health information systems. First, existing data investigate a fraction of the problem, failing to address suicidal ideation and planning. Another factor is that the VIVA system does not yet have national coverage and is very recent concerning self-harm. Cases that reach health services are already more severe. In the general population, it is estimated that only one in every three attempts is seen in an emergency medical service. Stigma vis-à-vis suicidal behavior and fear of criminalizing the act are the main reasons for the lack of registration of the episode in health systems[36-38]. Second, data are underreported due to classification errors by health professionals[30]. Furthermore, the data practically only cover the public health network.

Finally, this study shows the scenario of suicidal behavior in childhood in Brazil in recent years, which is very similar to that of adolescents. The evidence that any suicidal behavior in childhood is strongly associated with attempted or completed suicide in adolescence and adulthood is one of the main indications of the need to prevent this behavior in the first decade of life. Thus, the public health network must be qualified to address suicidal behavior from the first stage of life, where it is often difficult to delimit the intention of the act, but where qualified listening, hospitalization (when necessary), and monitoring should be care guidelines. Also, it is necessary to give effect to the National Policy for the Prevention of Self-Mutilation and Suicide[39] and develop official protocols that include a police inquiry, psychological autopsy, and postvention[40]. Employing a preventive model to identify children who may be at risk is more successful in reducing the suicide rate than focusing on limiting access to methods. Thus, understanding and identifying factors that put prepubescent at risk is a long-term prevention strategy and into adulthood.

Collaborations

JQ Avanci worked on the design and writing, LW Pinto on the methodological design and data analysis, and SG Assis on the design and final writing.

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