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BRIEF COMMUNICATION

The research output on child and adolescent suicide in Brazil: a systematic review of the literature

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Objective: Suicide is the third leading cause of death among Brazilians aged 10 to 24 years. We aimed to review and describe the research output on suicide in children and adolescents in Brazil and to identify strengths and gaps in this literature.
Methods: PubMed/MEDLINE was searched for studies on suicide of children and adolescents (aged 0-19 years) in Brazil, published from inception to December 31, 2017.
Results: Our search identified 1,061 records, of which 146 were included. A large proportion (134 studies; 90.4%) were original articles classified as observational epidemiological studies. Fifty-two articles (35.6%) used primary data. Of those, 18 (12.3%) evaluated prevalence of suicidal behaviors in population-based samples. Seventy studies (47.9%) addressed death by suicide, and the remainder reported other phenomena, such as ideation, planning, or suicide attempt. Only 37 publications (25.3%) studied children and/or adolescents exclusively. Most of the studies (53.5%) were conducted with samples from the South and Southeast regions of Brazil.
Conclusion: Our findings indicate that the body of evidence on suicide among children and adolescents in Brazil is limited. The scientific output is of low quality, and there is a complete lack of interventional studies specifically designed for the youth population.

Keywords: Child; adolescent; suicide; self-harm; Brazil

Introduction

Suicide is the second leading cause of death in youth (age 10-24 years) worldwide.[1] Brazil has relatively low suicide rates among young people, ranking 93rd out of 195 countries and territories covered by the Global Burden Study 2017 (GBD 2017).[2] Nevertheless, suicide is the third leading cause of death among Brazilian youth.[3] Furthermore, data from the Brazilian Ministry of Health indicate a 10.5% increase in the suicide rate reported between 2003 and 2013 among individuals aged 9 to 19 years.[3]

Previous reviews reported gaps in the current state of global scientific research on suicide-related phenomena, including the time course of suicidal ideation and behavior and the low incorporation of neurobiological measures.[4,5] Moreover, risk factors identified by research are still poor predictors of suicide, which points to an urgent need to establish new predictors, as well as to create and validate new algorithms to track behavior more clearly in different populations, including children and adolescents.[6] Although a growing body of evidence supports treatments and prevention strategies, no single intervention is clearly superior to others.[7]

Worldwide, reported rates of suicide are probably underestimated due to misclassification of deaths.[1] In Brazil, reporting of suicide attempts through the official Sistema de Informações de Agravos de Notificação (SINAN) became compulsory only in 2014. The first official report on suicide attempts, published in 2017, revealed gaps in reporting of self-harm in some cities, as well as inadequate and insufficient reporting by health professionals.[8] Moreover, there are no nationwide official statistics about other suicidal phenomena, such as ideation and planning. Thus, it is fundamental to understand how the scientific community has studied suicide among children and adolescents in Brazil in order to identify gaps in the current knowledge and priorities for future research.

The aim of this study is to systematically review and describe the scientific output on suicide in children and adolescents in Brazil, as well as to identify gaps and strengths in this literature.

Methods

Literature search

This review followed the recommendations of the Preferred Reporting Items for Systematic Reviews and

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Meta-Analyses (PRISMA)[9] statement. We searched PubMed/MEDLINE from the date of database inception to December 31, 2017. No restriction was placed on date or language for the search query. To identify studies of interest to this review, we used the search strategy provided in Appendix A1 (available as online-only supplementary material). Further details are reported in Figure 1.

Records were reviewed independently by JP and PM and selected when both investigators agreed that the abstract met the inclusion criteria. If the abstract did not provide enough information to support this decision, the full text was screened. When the inclusion criteria were unclear even after full-text analysis, we contacted the authors for more information. Disagreements were discussed with a third author (CK).

Inclusion criteria

The inclusion criteria were:

1. Sample including children (age 0 to 9 years) and/or adolescents (age 10-19 years – cutoff were based on the World Health Organization (WHO) classification[10]);
2. At least one term referring to self-harm and/or suicide;
3. Five or more Brazilian children and/or adolescents in the sample.

Data extraction and classification criteria

Data were extracted from full-text articles independently by JP and PM. Incomplete information and disagreements were addressed as for inclusion criteria analysis.

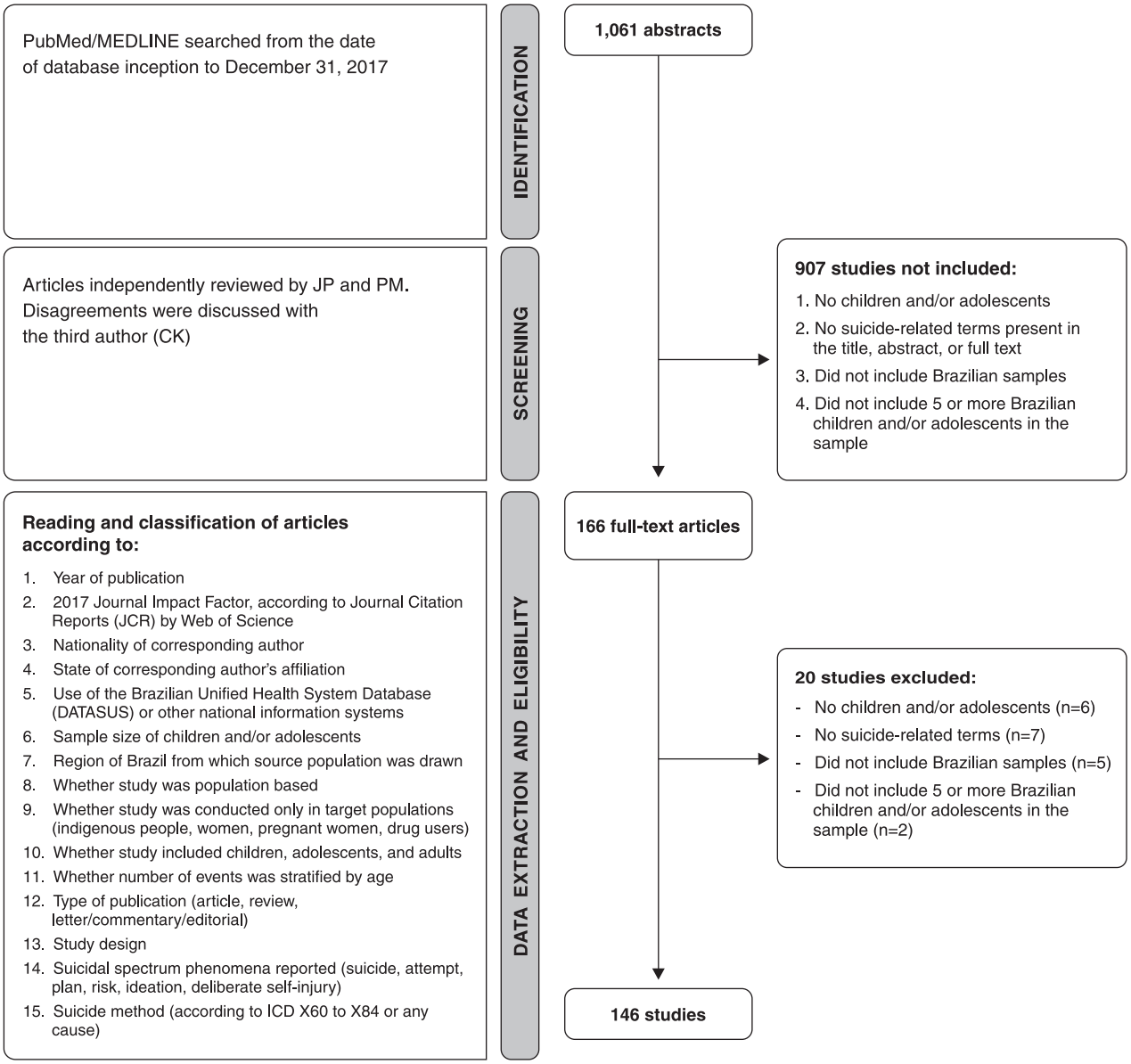

Figure 1 Flowchart of review process and study selection.

Studies were classified according to the criteria described in Figure 1. Further details about data extraction and classification of studies are reported in Tables S1 to S3, available as online-only supplementary material.

Results

The search strategy retrieved 1,061 records. Of those, 166 (15.6%) were selected after title and abstract screening for eligibility. A further 20 studies were excluded at the full-text screening stage. Reasons for exclusion at this step are shown in Figure 1. The 146 (13.8%) included studies were published between 1966 and 2017 (47.3% published since 2010). Only three (2.1%) of the included studies were published in a journal with an impact factor higher than 5, and 60% had 10 or fewer citations according to the 2017 Journal Citation Reports (JCR). The highest number of citations recorded was 168, for Devries et al.[11] The list of reviewed references is available in Appendix A2 as online-only supplementary material.

Most publications (n=134, 90.4%) were original articles; a minority consisted of reviews and letters/editorials/commentaries (n=6, 4.8% each). All original articles were classified as observational epidemiological studies. The most commonly reported study design was ecological (n=66, 45.2%), followed by cross-sectional (n=44, 30.1%). There were no interventional studies among the 146 publications included. Eighty-two articles (56.1%) used secondary data obtained from medical records and/or official databases such as poison control centers (Centro de Informações Toxicológicas [CIT]), state medical examiner's offices (Instituto Médico Legal [IML]), epidemiological surveillance, and the DATASUS Mortality Information System (Sistema de Informação sobre Mortalidade [SIM]). Of the 52 (35.6%) articles that used primary data, 18 (12.3%) evaluated prevalence of suicidal behaviors in population-based samples (Table 1) and 34 (23.3%) used selected clinical samples, such as outpatient samples of depressed adolescents.

Regarding suicide spectrum phenomena reported by the original articles, 65 (48.5%) assessed suicide attempt, 27 (20.1%) assessed suicide ideation, and 11 (8.2%) assessed suicide plans. Nine studies (6.7%) reported suicide risk as the outcome, and 70 studies (52.2%) reported data related to death by suicide.

Only 99 studies (67.8%) reported data extraction specific to our age group of interest. Fourteen studies (9.5%) had samples consisting exclusively of children and adolescents. Twenty-two studies (15.1%) included only adolescents, and only one was limited to children. In terms of specific populations, five studies (2.73%) analyzed solely indigenous community samples, one focused on subjects with substance use disorders, and 17 (11.6%) studied females exclusively, of which 11 (7.5%) were limited to pregnancy.

Regarding the geographic distribution of studies (as expressed by the corresponding author's state of residence as a surrogate), the state of São Paulo corresponded to a plurality of studies (31.5%), followed by Rio Grande do Sul (13.7%), Rio de Janeiro (8.9%), and Minas Gerais (8.9%). When the included studies were stratified by region of Brazil, the South and Southeast accounted for 53.5% of publications; conversely, only 3.9% of studies were conducted with samples from the Northern region. Twenty-eight studies (19.9%) evaluated data from more than one region of Brazil.

Discussion

This study aimed to better understand the scientific output on suicide in children and adolescents in Brazil. Our findings demonstrated that the body of evidence on this topic is still limited, despite a clear increase in publications from 2010-2017.

A large number of studies (56.1%) were found to use secondary mortality data, especially from DATASUS. Although this provides important insights for a baseline understanding of the magnitude of the problem, death by suicide is usually underreported worldwide, and other (nonfatal) suicide-related phenomena are also relevant.[12] Ideally, an official database on the risk and prevalence of suicidal ideation and planning would help authorities better identify individuals at risk (much like the CDC High School Youth Risk Behavior Survey[13]). Currently, the mental health section of the Brazilian National Survey on Student Health does not include questions about suicidality.[14]

Considering the relevance of the topic, it is concerning that no interventional studies were identified in our review. Previous studies in other countries[15,16] have suggested strategies to reduce suicidal ideation and suicide attempts in young populations. Nevertheless, a prior review suggested that health care providers in low- and middle-income countries are more likely to change their clinical practice when influenced by local research.[17] Therefore, future research is needed to test interventional strategies suited for the Brazilian context.

It is important to note that only a portion of the studies (28.1%) were specifically designed for children and/or teenagers. In addition, 40% of the studies with adults only differentiated age ranges from age 19 years onward. The literature points to distinct lifespan suicidality trajectories for children as compared with adolescents and adults who later died by suicide.[18]

The geographical distribution of publications included in this review was skewed toward centralization. Approximately one-third of the studies were published in São Paulo, and more than half used data sources from the Southeast and South regions of Brazil. This contrasts with the fact that the Southeast region has the lowest suicide rate in the age range of interest (0.8/100.000).[3] While the North of Brazil has the highest rate (1.7/100.000),[3] only 3.9% of the studies were conducted in this region. Previous studies indicate that socioeconomic, cultural, and demographic variations play an important role in these differences and promote distinct risk factors for suicidality.[19] It has been argued that the currently known risk factors for suicide are poor predictors of outcome,[6] which highlights the importance of nationwide studies to elucidate which factors are associated with differences in suicide rates among regions.[20]

Table 1 Results from studies on prevalence of suicidal behavior (references available as online-only supplementary material, Appendix A2)

Study	Source population	Sample (age of participants)	Assessment tool	Prevalence estimate (%)
Anteghini 2001	Public- and private-school students	2,059 (13-17 years)	Washington State Survey of Adolescent Health Behaviors	Ideation: 27.1 Attempts: 9.9
Baggio 2009, Bittencourt 2009, Vieira 2008	Students	1,170 (12-18 years)*	GSHS	Plans: 6.3 Ideation: 10.8
Barbosa 2014	Urban population sample	469 (14-20 years)	MINI	Suicide risk: 10.3
Botega 2005, Botega 2009, Stefanello 2008	Urban cluster sample	157 (14-29 years)*†	EPSIS	Ideation: 16.0
Carlini-Cotrim 2000	Students	1,675 (12-18 years)	Adapted YRBSS questionnaire	Attempts: 7.1
Carlini-Marlatt 2003	Students	1,655 (12-18 years)	Adapted YRBSS questionnaire	Attempts: 7.1
Carvalho 2011	Public-school students	4,127 (14-19 years)	GSHS	Plans: 7.8
Castro 2011	Public-school students	699 (10-19 years)*	"In the past year, did you attempt suicide"	Attempts: 8.6
Feijo 1997	Public-school students	126 (13-20 years)	DIS	Ideation: 19.0 Attempts: 8.7
Golfeto 2004	Students	2,867 (7-14 years)	CDI	Ideation: 24.2 Plans: 2.0
Silva 2014	Students	2,207 (17-17 years)	Instrument designed specifically for the study	Ideation: 14.0 Plans: 9.5 Attempts: 5.9
Simioni 2017	Students	2,508 (6-14 years)	DAWBA	Deliberate self-harm: 2.2
Souza 2010	Urban population sample	1,039 (11-15 years)	CDI	Ideation: 14.1
Veras 2016	Public-school students	1,379 (10-17 years)	MINI	Suicide risk: 29.6 Attempts: 6.9

CDI = Child Depression Inventory; DAWBA = Development and Well-Being Assessment; DIS = Diagnostic Interview Schedule; EPSIS = European Parasuicide Study Interview Schedule; GSHS = Global School-based Student Health Survey; MINI = Mini International Neuropsychiatric Interview; YRBSS = Youth Risk Behavior Surveillance System.
* Sample used by two or more studies.
† No stratification according to 10-to-19-year-old cutoff based on the WHO classification.

Our results should be considered in the light of their limitations. We searched only the PubMed/MEDLINE database. Although most relevant publications in the field of mental health are MEDLINE-indexed, it is possible that studies meeting our inclusion criteria are indexed only in regional databases, such as SciELO or LILACS. Furthermore, due to the limitations and heterogeneity of the reviewed studies, we could not perform statistical analyses to summarize their findings; only a qualitative description was feasible.

Although the literature on suicide in children and adolescents in Brazil has expanded in recent years, major gaps remain. There is a predominance of exploratory and descriptive studies using secondary information, the data sources are geographically concentrated in the South and Southeast regions of Brazil, and little is known about the epidemiology of suicidal spectrum phenomena. There is a complete lack of evidence regarding which strategies work to reduce self-harm or prevent suicide among youth in Brazil. Acknowledging these gaps is essential to prompting innovative and promising directions, with the ultimate goal of reducing the burden of suicide and related phenomena among children and adolescents in Brazil.

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Disclosure

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