ORIGINAL ARTICLE

Associations between the practice of bullying and individual and contextual variables from the aggressors' perspective[☆],[☆☆]

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Abstract

Objectives: To estimate the prevalence of bullying among Brazilian students from the aggressor's perspective and to analyze its association with individual and contextual variables.
Methods: This was a cross-sectional population-based study carried out with data from the National Survey on Student Health. A total of 109,104 students attending eight grade in public and private schools were included. Data were collected through a self-applied questionnaire. A model of association between bullying and variables in the following domains was tested: sociodemographics, risk behaviors, mental health, and family context. Univariate and multivariate analyses were also performed.
Results: The prevalence of aggressors in bullying situations was 20.8%. The following variables remained associated in the final multivariate model: male gender (OR: 1.87; 95% CI: 1.79−1.94), lower participation of 16-year-old students (OR: 0.66; 95% CI: 0.53−0.82), and students from private schools (OR: 1.33; 95% CI: 1.27−1.39). Most aggressors reported feeling lonely (OR: 1.22; 95% CI: 1.16−1.28), insomnia episodes (OR: 1.21; 95% CI: 1.14−1.29), and a high prevalence of physical violence in the family (OR: 1.97 95% CI: 1.87−2.08). Aggressors missed classes more frequently (OR: 1.45; 95% CI: 1.40−1.51), and they regularly consumed more tobacco (OR: 1.21;

95% CI: 1.12–1.31), alcohol (OR: 1.85; 95% CI: 1.77–1.92), and illegal drugs (OR: 1.91; 95% CI: 1.79–2.04); they also demonstrated increased sexual intercourse (OR: 1.49 95% CI: 1.43–1.55) and regular exercise (OR: 1.20; 95% CI: 1.16–1.25).

Conclusions: The data indicate that bullying is an important aspect that affects the learning-teaching process and the students' health.

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Associações entre a prática de bullying e variáveis individuais e de contexto na perspectiva dos agressores

Resumo

Objetivos: Estimar a prevalência de bullying, sob a perspectiva do agressor, em escolares brasileiros, e analisar sua associação com variáveis individuais e de contexto.

Métodos: Estudo transversal, de base populacional, com dados da Pesquisa Nacional de Saúde do Escolar. Participaram 109.104 estudantes do 9° ano do Ensino Fundamental de escolas públicas e privadas. A coleta de dados ocorreu por meio de um questionário autoaplicável. Foi testado modelo de associação entre o bullying e variáveis nos seguintes domínios: sociodemográfico, comportamentos de risco, saúde mental e contexto familiar, bem como realizadas analises uni e multivariada.

Resultados: A prevalência de agressores em situações de bullying foi de 20,8%. No modelo final multivariado permaneceram as seguintes variáveis associadas: sexo masculino (OR: 1,87; IC 95%: 1,79-1,94), menor participação de escolares de 16 anos (OR: 0,66; IC 95%: 0,53-0,82), estudantes de escola privada (OR 1,33 IC95% 1,27-1,39). A maioria dos agressores relatou se sentir solitário (OR: 1,22; IC 95%: 1,16-1,28), com episódios de insônia (OR: 1,21; IC 95%: 1,14-1,29) e alta prevalência de sofrer violência física familiar (OR: 1,97 IC 95%: 1,87-2,08). Os agressores faltam mais às aulas (OR: 1,45; IC 95%: 1,40-1,51), consomem regularmente mais tabaco (OR: 1,21; IC 95%: 1,12-1,31), álcool (OR: 1,85; IC 95%: 1,77-1,92) e drogas ilícitas (OR: 1,91; IC 95%: 1,79-2,04), tem relação sexual OR: 1,49 IC95% 1,43-1,55) e praticam atividade física regular (OR1,20 IC95% 1,16-1,25).

Conclusões: Os dados indicam que a prática do bullying é aspecto relevante que interfere no processo ensino-aprendizagem e na saúde dos escolares.

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Introduction

Bullying is a form of violence that occurs between peers at school, characterized by intentionality and repeatability in a relational context of power imbalance.[1] As it affects all members of the school community, bullying has a negative impact on the institutional environment, the teaching-learning process, and the development and health of school-aged children and adolescents. The increasing prevalence of bullying episodes in different cultures and its consequences for those involved have made it a public health problem.[2,3]

Bullying experiences also increase the adoption of health-risk behaviors by students, such as consumption of alcohol and other drugs, as well as early sexual intercourse, aspects that are broadly disclosed in the scientific literature.[4] It is recognized, however, that there have been few studies assessing specific issues associated to students identified as aggressors, rather than focusing on the victims and the consequences for this group of students. In this sense, several methodological approaches should be considered to better understand the variables associated with peer aggression practices, as well as the way they affect the healthy development of the aggressor students, in order to contribute to the creation of effective intervention programs that include different types of involvement in bullying practices.[1,3,4]

This study brings an innovative contribution to the scientific literature, as it includes identification of the prevalence of Brazilian students who reported practicing bullying in schools, focusing on the specific characteristics of this group of students. Thus, the objective was to verify the presence of associations between the practice of bullying with sociodemographic variables (age, gender, ethnicity/self-declared skin color, and type of school – public or private), as well as mental health (feeling of loneliness, insomnia, and lack of friends), family context variables (experiences domestic violence and family supervision), and health-risk behaviors (physical inactivity, tobacco use, consumption of alcohol and/or illicit drugs, and sexual intercourse).

Method

This was a cross-sectional, population-based study of data obtained from the National Survey on Schoolchildren's

Health (Pesquisa Nacional de Saúde do Escolar- PeNSE), from April to September 2012. The sample consisted of students attending eighth grade of elementary school during the day in public and private schools located in urban and rural areas, in a number of municipalities across the country. The choice of the eighth grade of elementary school was justified as representing the minimal schooling deemed necessary to answer the self-administered questionnaire used in data collection.

The information for sample calculation was obtained from the 2010 School Census. The probabilistic sampling process was used and the sampling plan consisted of schools (primary sampling units) and schools classes (secondary sampling units). A total of 134,310 students were enrolled in the eighth grade in the selected classes. Of these, 132,123 students were considered regularly attending students and 110,873 were present in the classroom on the day of the interview. The only criterion for inclusion in the sample was to be present on the day of data collection and voluntarily accept to participate. The final sample included 109,104 students, representing 83% of those considered eligible for the study.[5] In this sample, 86% of students were aged between 13 and 15 years, 47.8% were males and 52.2% females, with 17.2% students attending private and 82.8% public schools.[5]

Data were collected through smartphone devices, into which structured, self-administered questionnaires were entered, divided into thematic modules with a varied number of questions. The collection tool was an epidemiological survey that has not been validated, created in partnership with professionals from different institutions and with diverse backgrounds. The collection was carried out by agents of the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística [IBGE]), adequately trained for this purpose, in schools during the school period.

The sociodemographic characteristics that were collected and considered for this study were age, gender, ethnicity/self-declared skin color, and type of school (public or private). The variable bullying was obtained through the question: ''IN THE LAST 30 DAYS, have you verbally abused, ridiculed, teased, intimidated, or made fun of any of your classmates at school so that he or she was hurt, upset, offended, or humiliated?''. The responses were categorized as NO (never, rarely, sometimes) and YES (most of the time, always).

Mental health variables (feelings of loneliness, insomnia, and lack of friends), family context (domestic violence and family supervision – monitoring of activities, knowledge about students' activities in their free time, school attendance control and performance) and health-risk behaviors (missing classes, tobacco and alcohol use, illicit drugs, and sexual intercourse) were investigated by means of occurrence and frequency. Data were measured in scales in accordance to the questions, which varied according to the frequency and by the YES and NO category.

At the data analysis, weighted frequencies and respective 95% confidence intervals (95% CI) were initially estimated for sociodemographic characteristics, practice of bullying, and other assessed variables. Subsequently, all variables were dichotomized for purposes of comparison with the practice of bullying. Logistic regression analysis was performed, calculating the estimated odds ratios and their respective 95%

CIs. These analyses were performed using SPSS software, version 20, using the procedures of the Complex Samples Module, adequate for analysis of data obtained by complex sampling.[6]

PeNSE was approved by the Research Ethics Committee of the Ministry of Health, Edict No. 192/2012, pertaining to registry No. 16805 of CONEP/MS. Additionally, students who volunteered to participate in the survey agreed to the informed consent displayed on the first page of the smartphone used for data collection.

Results

The results show that involvement in bullying situations as aggressors was reported by 20.8% of assessed students ($n = 22,694$). The sociodemographic characteristics of this group of students are depicted in Table 1.

School bullies were more often aged 15 years (OR: 1.34; 95% CI: 1.12–1.61) and 14 years (OR 1.25, 95% CI: 1.04–1.49). The boys practiced more bullying in comparison to girls, a proportion nearly two times higher (OR: 1.86; 95% CI: 1.81–1.92). Regarding the ethnic factor of the sample (ethnicity), the ethnic distribution of the aggressors was similar, but with a higher prevalence of black students (OR: 1.14; 95% CI: 1.09–1.19) and Asians (OR: 1.10; 95% CI: 1.02–1.19) and lower prevalence of mixed-race students (OR: 0.92; 95% CI: 0.89–0.95). Additionally, practice of bullying was associated with studying in a private school (OR: 1.22; 95% CI: 1.17–1.26). Table 2 shows the distribution of aggressors students according to health-risk behaviors.

It was also verified that most aggressors reported feeling lonely (OR: 1.27; 95% CI: 1.22–1.32), having insomnia (OR: 1.45; 95% CI: 1.39–1.52), and not having friends (OR: 1.10; 95% CI: 1.02–1.19); in addition, a high prevalence of them suffered domestic violence (OR: 2.54; 95% CI: 2.44–2.65). Being an aggressor was inversely associated with family supervision (OR: 0.55; 95% CI: 0.53–0.56). The aggressors missed almost twice as much class (OR: 1.83; 95% CI: 1.78–1.89). Table 3 shows the behaviors associated with licit and illicit drug experimentation by aggressors, as well as the practice of sexual intercourse and physical activity.

The aggressors used tobacco three times more regularly (OR: 2.92; 95% CI: 2.77–3.09); reported more than twice the regular alcohol consumption (OR: 2.40; 95% CI: 2.33–2.48), and more than three times the use of illicit drugs (OR: 3.22; 95% CI: 3.07–3.38). Sexual intercourse was also more frequent (OR: 2.22; 95% CI: 2.16–2.29), as well as the practice of physical activity (OR: 1.37; 95% CI: 1.33–1.42). Table 4 shows the results obtained after adjustment for all model variables.

Most of the variables remained significantly associated, although at a different scale. The variable age 14–15 years lost its significance in the final model, with the age of 16 years remaining with the lowest chance (OR 0.66, 95% CI: 0.53–0.82); also, the variable ethnicity/skin color lost its association, as well as family supervision. Male gender; private school; feeling lonely; having insomnia; domestic violence; missing classes; regular use of tobacco, alcohol, and drugs; experimenting with drugs; having sexual intercourse; and practice of physical activity remained associated with higher OR.

Table 1 Socio-demographic characteristics of students identified as aggressors.

Variable	%	95% CI		OR	95% CI		*p<0,05
		Lower	Upper		Lower	Upper	
Age							
<13	17.7	15.2	20.5	1.00			
13	19.4	18.6	20.2	1.12	0.93	1.34	0.225
14	21.1	20.4	21.9	1.25	1.04	1.49	**0.015**
15	22.4	21.5	23.3	1.34	1.12	1.61	**0.001**
16 and older	20.4	19.7	21.1	1.19	0.99	1.43	0.058
Gender							
Male	26.2	25.6	26.7	1.86	1.81	1.92	**<0.001**
Female	16.0	15.7	16.3	1.00			
Ethnicity							
White	21.0	20.6	21.4	1.00			
Black	23.2	22.4	24.0	1.14	1.09	1.19	**<0.001**
Asian	22.6	21.3	23.9	1.10	1.02	1.19	**0.012**
Mixed-race	19.7	19.2	20.2	0.92	0.89	0.95	**<0.001**
Native Brazilian	22.1	20.7	23.5	1.07	0.99	1.16	0.111
School							
Private	23.6	22.9	24.3	1.22	1.17	1.26	**<0.001**
Public	20.3	20.0	20.5				

Discussion

This study found a prevalence of one-fifth of all students who reported practicing bullying against classmates. There was a predominance of male students, who studied in private schools. The aggressors reported more insomnia, loneliness, and lack of friends. In the family and school context, there was a high prevalence of adolescents who suffer domestic violence from family members and frequently miss classes. All variables related to health-risk behaviors demonstrated statistical significance (smoking, alcohol consumption, illicit drugs, early sexual intercourse), as well as the practice of regular physical activity. These results allow understanding of the factors associated with

Table 2 Mental health and family context variables of the aggressors.

Variable	%	95% CI		OR	95% CI		*p<0,05
		Lower	Upper		Lower	Upper	
Feels lonely							
No	20.2	19.9	20.4	1.00			
Yes	24.3	23.6	24.9	1.27	1.22	1.32	**<0.001**
Has insomnia							
No	20.2	19.9	20.4	1.00			
Yes	26.9	26.0	27.7	1.45	1.39	1.52	**<0.001**
Friends							
One or more	20.8	20.5	21.0	1.00			
Does not have	22.4	21.1	23.8	1.10	1.02	1.19	**0.013**
Domestic violence							
No	18.9	18.7	19.1	1.00			
Yes	37.2	36.2	38.2	2.54	2.44	2.65	**<0.001**
Family supervision							
No	26.8	26.4	27.2	1.00			
Yes	16.6	16.2	17.0	0.55	0.53	0.56	**<0.001**
Misses classes							
No	18.08	17.82	18.34	1.00			
Yes	28.82	28.18	29.47	1.83	1.78	1.89	**<0.001**

Table 3   Aggressors' health-risk behaviors.

Variable	Practices bullying						
	%	95% CI		OR	95% CI		*p<0,05
		Lower	Upper		Lower	Upper	
Regular tobacco consumption							
No	19.7	19.5	20.0	1.00			
Yes	41.8	40.5	43.2	2.92	2.77	3.09	**<0.001**
Regular alcohol consumption							
No	16.7	16.5	17.0	1.00			
Yes	32.5	31.9	33.2	2.40	2.33	2.48	**<0.001**
Illicit drugs							
No	19.1	18.9	19.4	1.00			
Yes	43.2	42.1	44.4	3.22	3.07	3.38	**<0.001**
Sexual intercourse							
No	16.8	16.5	17.1	1.00			
Yes	31.0	30.3	31.6	2.22	2.16	2.29	**<0.001**
Practices physical activity							
No	19.7	19.5	20.0	1.00			
Yes	25.3	24.6	25.9	1.37	1.33	1.42	**<0.001**

aggressive behaviors of Brazilian students in relation to classmates.

The identification of male students as those who most often practice bullying is also supported by other studies. This can be explained by the depiction of power and domination that the role of aggressor may represent, which is socially expected in contemporary culture.[3,4,7] The studies also indicate that deficits in social skills, more frequently observed in boys than in girls, can cause them to become directly involved with bullying or situations that can be identified as such.[8,9]

Studies indicate that the aggressors are usually older, in higher grades, and male.[1,3,10] These findings were confirmed in a study carried out in Portugal, which found that differently from the victims, the aggressors tended to be older – between 13 and 15 years – and in higher grades.[10] Specifically in Brazil, a recent study found that older students (13 and 14 years) were more likely to be aggressive toward younger students.[3]

The current study found no association with age; however, when adjusting for all model variables, students older than 16 years were less likely to practice bullying. The ethnicity/skin color was also not associated with bullying, being a modulation factor only for the victims, associated with discrimination and prejudice.[8,11]

The association with private schools, maintained in the final model, differs from the social imagery that associates violence in schools to socially and economically vulnerable communities. In this sense, a study performed in Argentina showed that bullying is more prevalent in private schools. The study involved the participation of 1690 students from 93 public and private schools. In private schools, 28.3% of the students reported being the target of cruelty or discriminatory actions, whereas in public schools this rate was 17.2%.[12]

The association between feelings of loneliness and insomnia reported by aggressors points to the possibility of a psychological disease status, but is divergent from studies[13,14] indicating that victims have the highest rates of social isolation, anxiety, depression, and low self-esteem. These data explicitly warn about the development of psychological distress pictures that have an impact on quality of life, health, and development of students identified as bullies.[15] These findings suggest that both the victim and the aggressor have feelings of mental distress.

These data are added to the predominant report made by aggressor students of lack of friends, an aspect confirmed by Brazilian studies that showed that the aggressors are not necessarily popular students.[16,17] Internationally, studies usually associate the aggressive behavior to popularity, a positive opinion of oneself, little empathy toward others, and a sense of superiority,[8,9,18] characteristics that stand out amidst the group of peers, resulting in more classmates being drawn to individual.

The data related to the likelihood of the aggressor suffering physical violence in the family environment and having little family supervision were similar to those found in other studies.[19–21] In general, domestic violence, abuse, and maltreatment situations are predictors of involvement in bullying situations as aggressors.[22] It is inferred that the experience of violence in the family environment encourages children and adolescents to display aggressive behavior at school.

The results that associated aggressors and school absenteeism have also been confirmed by other studies. Generally, these students' school performance is low and they have a negative attitude toward school, teachers, and the teaching-learning process.[23] In contrast, school failure and the imposition of rules have been explanatory factors for violence at schools; the construction of a positive and

Table 4 Final multivariate model of the association between mental health and family variables and health risk behaviors in adolescent aggressors.

Variable	OR	95% CI		*p<0,05
		Lower	Upper	
Age				
<13	1.00			
13	1.00	0.81	1.25	0.975
14	1.01	0.82	1.26	0.897
15	0.85	0.69	1.06	0.155
16 and older	0.66	0.53	0.82	**<0.001**
Gender				
Male	1.87	1.79	1.94	**<0.001**
Female	1.00			
School				
Private	1.33	1.27	1.39	**<0.001**
Public	1.00			
Feels lonely				
No	1.00			
Yes	1.22	1.16	1.28	**<0.001**
Has insomnia				
No	1.00			
Yes	1.21	1.14	1.29	**<0.001**
Domestic violence				
No	1.00			
Yes	1.97	1.87	2.08	**<0.001**
Misses classes				
No	1.00			
Yes	1.45	1.40	1.51	**<0.001**
Regular tobacco consumption				
No	1.00			
Yes	1.21	1.12	1.31	**<0.001**
Regular alcohol consumption				
No	1.00			
Yes	1.85	1.77	1.92	**<0.001**
Illicit drugs				
No	1.00			
Yes	1.91	1.79	2.04	**<0.001**
Sexual intercourse				
No	1.00			
Yes	1.49	1.43	1.55	**<0.001**
Practices physical activity				
No	1.00			
Yes	1.20	1.16	1.25	**<0.001**

sustainable school environment can promote changes in the students' behavior and in the development process. However, school performance, failure, and abandonment were not specific objects of this investigation.

Other health-risk behaviors associated with bullying are also observed in the literature. Studies indicate that aggressors have antisocial behavior, in which disregard for social rules and norms prevail, and even conflicts with the law, as well as use of alcohol and other drugs. These behavior problems may worsen over time and develop into situations of crime and violence.[1,4] In the United States, a cross-sectional study identified a higher probability of alcohol use among students involved in bullying, when compared to students who were not involved.[4] Another study conducted in Barcelona verified this type of behavior or alcohol and/or drug use among students identified as bullies.[24] These data are justified by the perspective that students who practice bullying more intensely violate social rules, showing adverse

behavior.[23] These students may also initiate their sexual life earlier in adolescence or more often practice unprotected sex,[23] as also verified by this study.

Regarding physical activity, it was verified that it was associated with the aggression process. This result differs from that of other studies; for instance, a US study evaluating the effect of physical activity programs on school environment found that bullying was associated with fewer days and hours of physical activity practice. Several studies have shown the benefits of health promotion programs focusing on physical exercise and how they can contribute to decrease episodes of this phenomenon.[25] Other studies must be developed to confirm these findings among Brazilian students, aiming to understand these mechanisms. Programs for the inclusion of adolescents are important to reduce violence.[25]

It was concluded that students identified as bullies are more likely to develop behaviors that make them vulnerable to health risks.[26,27] In addition, at the basis of the bullying practice are cultural issues that reinforce intolerance to diversity, lack of respect, and a continuing system of hierarchy and power in social relations. These characteristics have favored the banalization, trivialization, and increase of this kind of violence that affects children and adolescents in different socio-cultural contexts. This is verified when observing the use of violence within the family as a predictor for the development of aggressive behaviors at school, for instance. These experiences in an important setting of development culminate by modulating the way these students connect socially and how they respond to different demands in life.

Overall, the data indicate that students who practice bullying in Brazil may have emotional difficulties, problematic relationship with peers, difficulties in adapting to the school environment, and higher consumption of alcohol and other drugs, which are aspects that can interfere with the teaching-learning process and the students' health. Given the wide range of social aspects and risk behaviors associated with students identified as bullies, which influence not only the individual development of students and their health, but also the context in which they and the other members of the school community live, approaches are needed that encompass all these aspects, thus contributing to the development of a society and culture of non-violence, in defense of life and of individual and collective health.

Some limitations of this study should be noted. The overall study covered a wide range of topics related to students' health and detailed information about the practice of bullying was not obtained. This is a typical characteristic of studies with population-based designs, which allow mapping general aspects and indicate prospects for research, interventions, and health practices. The study also was based exclusively on the students' self-reports, which can result in socially expected responses and different interpretations about the practice of bullying. Furthermore, the tool used for data collection did not include questions that differentiated the types of bullying behaviors, which may have hindered the identification of more subtle practices. Additionally, the analyzed data are of cross-sectional origin and therefore do not indicate causal associations or direct influences of variables included in the study. Finally, although bullying is a global phenomenon, the results of this study cannot be generalized to other sociocultural contexts besides that of Brazil.

It is noteworthy that studies on bullying are a recent development in Brazil. The importance of knowing how this phenomenon occurs among Brazilian students, so that the proposed interventions will be effective, has been demonstrated. Therefore, studies with different designs are necessary to understand the phenomenon, mainly from the health and education contexts, and to provide substantial evidence for intervention plans and models. These studies can broadly delineate multidisciplinary performance, as well as individual and contextual factors that can contribute to the development of violent and health-risk behaviors.

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Conflicts of interest

The authors declare no conflicts of interest.

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