



ORIGINAL ARTICLE

Effects of sexual orientation-based bullying on feelings of loneliness and sleeping difficulty among Brazilian middle school students[☆]



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Abstract

Objective: To investigate the extent to which sexual orientation-based bullying relates to self-reported feelings of loneliness and sleeping difficulty among Brazilian middle school students. **Method:** This is a cross-sectional study using data from the 2015 PeNSE (Pesquisa Nacional de Saúde do Escolar), a survey designed to monitor the health of children and adolescents enrolled in the ninth grade in public and private Brazilian schools. Multiple linear regressions stratified by sex were used on a sample of 101,646 students, considering as reference students who had not experienced bullying, as well as students who had experienced other causes of bullying; a significance level of $p < 0.05$ was accepted.

Results: When the reference group was composed of students who had not experienced bullying, the associations between sexual orientation-based bullying and feelings of loneliness and between sexual orientation-based bullying and sleeping difficulty were positive ($p < 0.05$) for both male and female students, with magnitudes about twice as large as those found among those who reported having experienced other causes of bullying. However, when the reference group was composed of students who had experienced other causes of bullying, only the association between sexual orientation-based bullying and feelings of loneliness was positive ($p < 0.05$) for both male and female students.

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Conclusion: This study highlights that sexual orientation-based bullying is a predictor of feelings of loneliness.

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Introduction

Bullying between students is found in most schools, regardless of students' social, cultural, and economic characteristics. Research conducted among schoolchildren in more than 40 countries has showed that reports of suffering bullying in the past two months vary across countries, with estimates ranging from 8.6% to 45.2% among boys, and from 4.8% to 35.8% among girls.¹ In Brazil, in particular, the report of suffering bullying in the past 30 days by students of the 9th year of school increased from 5.4% in 2009, to 7.2% in 2012, reaching 7.4% in 2015, the year in which the prevalences were similar between both sexes.²

Although there are no sexual orientation-based bullying estimates for Brazilian students, the prevalence of sexual orientation-based bullying in schools appears to be high in other countries. In the United States 45% of gay men and 20% of lesbians have experienced physical and verbal abuse from other students due to their sexual orientation, and 28% of those harassed eventually drop out of the educational system.³ In the United Kingdom, a study showed that 65% of lesbian, gay, bisexual, or transgender students have been victims of direct orientation-based sexual bullying and that over 95% have been exposed to homophobic verbal aggression.⁴ In Portugal, a study showed that 42% of students said they had already been bullied, insulted, or beaten at school for being homosexual or bisexual, or for someone who believed they were homosexual or bisexual. In addition, the majority of students (67%) reported seeing other people as victims of sexual orientation-based bullying, with 40% of the victims being students who were or could be viewed as homosexual or bisexual. The most common place where students said these situations occurred was within the school (28%).⁵

Thus, the classroom has been described as "the most homophobic of all social institutions."⁶ Besides the already stressful developmental challenges that sexual minority youth (SMY) face in society in general, sexual orientation-based teasing and bullying is the form through which victimization most frequently occurs for SMY in school settings, placing these individuals at risk for greater suicidal ideation, depression, and isolation.⁷⁻⁹

Previous research has consistently documented the deleterious physical and psychological consequences of such victimization and the corresponding protective factors against these effects (e.g., peer support and connections, role models, accessible resources, positive school climate).^{10,11} Other research has found that verbal abuse was related to higher traumatic stress reactions in gay and lesbian high school students,¹² and has found sexual orientation-based victimization to be associated with increased levels of anxiety, somatic complaints, and post-traumatic stress.^{13,14} The experience of witnessing the

victimization of other SMY students, referred to as vicarious victimization, also has been documented as related to heightened levels of distress among gay and lesbian students.¹² Given that, it is not surprising that sexual orientation-based bullying is one of the strongest predictors of school disengagement for SMY.¹⁵

Other studies have also documented the significant rate of sexual orientation-based victimization and general discrimination against SMY across other social environments, including workplace settings, at home, and in the community,¹⁶⁻¹⁸ and there is meta-analytic evidence of greater victimization rates among SMY than heterosexual individuals for several forms of violence (e.g., weapon assault, verbal humiliation, physical violence, etc.), with an estimate that as many as 80% of non-heterosexual individuals experience some form of harassment throughout their lives, especially boys.¹⁹ Furthermore, in comparison to bullying "caused" by other individual traits (i.e., physical characteristics), sexual orientation-based bullying appears to be linked to a differential level of targeting, as sexual orientation and gender expression are part of one's identity; therefore, targeting people on that basis can cause a stronger sense of alienation and social exclusion than when it is related to other individual traits.¹⁹⁻²¹

As shown by a growing body of research, bullying that takes place in schools is commonly motivated by bias or prejudice, and the negative consequences of such forms of bullying appear to be worse than others. Previous research found that boys who were bullied in high school by being called gay had greater psychological distress and more negative attitudes about the school climate compared with boys who were bullied for other reasons.²² Similar results were reported previously by a survey of over 200,000 students, which found that the rates of compromised school grades and attendance, depression, and substance use were higher for students who had been bullied at school because of their race or "because you are gay or lesbian or someone thought you were" than for students who did not experience identity-related victimization, with both groups also reporting higher health risks than those who were not bullied.²³ It is worth noting that it is not SMY status that causes signs of psychological distress, but rather the victimization experienced from the stigma, prejudice, and discrimination.⁸

Rooted deep in its patriarchal culture and *machismo*,²⁴ Brazil has a long history of discrimination and violence against SMY. For many years, the country has held the world record for hate-based SMY murders, with 331 recorded in 2016, resulting in the statistic of an SMY person being killed roughly every 25 h.²⁵ Recently, a Brazilian judge approved "gay conversion therapy," overturning a national psychology council decision from 1999 that forbade psychologists from offering treatments claiming to "cure" gay people.²⁶ In this context, the study of SMY victimization has risen on

the agenda as a priority for the promotion of health policies focusing on these groups.

The National Survey of School Health (PeNSE [*Pesquisa Nacional de Saúde do Escolar*]) is an ongoing school-based survey conducted by the Brazilian Ministry of Health, together with the Brazilian Institute of Geography and Statistics, designed to monitor the health of children and adolescents enrolled in the ninth grade in public and private schools.²⁷ In its 2015 edition, three variables related to mental health were collected: feelings of loneliness, sleeping difficulty, and having close friends,²⁷ which were used by the present study in order to understand whether sexual orientation-based bullying has a significant impact on the mental health and well-being of students, especially SMY students.

The hypothesis was that victimization by sexual orientation-based bullying is associated with reporting higher levels of feelings of loneliness and sleeping difficulties among Brazilian middle school students. Furthermore, this study aimed to investigate the extent to which sexual orientation-based bullying, alone and in comparison to bullying by other causes, relates to self-reported feelings of loneliness and sleeping difficulty among male and female middle school students in Brazil.

Methods

This is a cross-sectional study using data from the 2015 PeNSE. The 2013 School Census was the reference population for the sampling design, and schools reporting ninth-grade classes administered during daytime hours were included in the list; nighttime programs were excluded. The sample was designed to be representative of the Brazilian population of students in the 26 state capitals and the Federal District, the 26 federative states, and the five geographic regions (North, Northeast, Central-West, Southeast, and South) in addition to the country as a whole. A probabilistic sampling process was used, and schools (primary sampling units) and the schools' classes (secondary sampling units) formed the sampling plan. In the case of noncapital cities, the primary sampling units were groups of cities, and the secondary sampling units were schools, while classrooms were the tertiary sampling units.²⁷

The final sample included 101,646 students, 84.6% of those considered eligible for the study. A total of 88.6% of students in the sample were between 13 and 15 years old; 48.7% were male, and 51.3% were female; 14.5% students were from private schools, and 85.5% were from public schools.²⁷

Data were collected using electronic devices (similar to smartphones) containing the self-applied questionnaires. The procedure for data collection was implemented by previously trained agents from the Brazilian Institute of Geography and Statistics in the schools during classes from April to September 2015. Further details concerning the methods of the 2015 PeNSE can be found in the survey's documentation.²⁷

The bullying variable was assessed using the question, "In the last 30 days, how often did some of your schoolmates belittle, mock, scorn, or intimidate you to the point that you felt hurt, bothered, annoyed, offended,

or humiliated?" The answers were categorized as no (for those who answered "never") and yes (for those who answered "rarely," "sometimes," "most of the time," or "always"). Occurrence of sexual orientation-based bullying was defined in response to the question, "In the last 30 days, what was the reason/cause your schoolmates have belittled, mocked, scorned, or intimidated you?" for all participants who selected the option "my sexual orientation" as the main cause for being bullied. Other answers to this same question were categorized as "other causes of bullying" (for participants who answered "my race or color," "my religion," "my facial appearance," "my body," "my region of origin," or "other reasons/causes").

The analysis was performed through the computation of the prevalence of the experience of bullying (none, sexual orientation-based, and other causes) and their respective 95% confidence intervals (95% CI) according to the selected variables: geographic region (North, Northeast, Central-West, Southeast, or South), state capital (yes or no), anti-bullying policies present in the school (yes or no), sex (male or female), age (in years), self-reported color/race (white, black, yellow [Asian], brown [mixed], or indigenous), socioeconomic status (in quartiles), having close friends (none, one, two or three, or more), whether parents understood their problems and concerns (never, rarely, sometimes, most of the time, or always), self-reported feelings of loneliness (never, rarely, sometimes, most of the time, or always), and self-reported sleeping difficulty (never, rarely, sometimes, most of the time, or always).

To investigate whether sexual orientation-based bullying could predict self-reported feelings of loneliness (assessed by the question, "In the last 12 months, how often have you felt alone?") and self-reported sleeping difficulty (assessed by the question, "In the last 12 months, how often did you not sleep at night because something made you very worried?"), whose response options are presented in the previous paragraph, multiple linear regressions were used, considering as reference students who had not experienced bullying as well as students who had experienced other causes of bullying. These regression analyses were stratified by sex, in order to understand whether the experiences of sexual minority boys were different than the experiences of sexual minority girls, and adjusted by geographic region, state capital, anti-bullying policies, age, color/race, socioeconomic status, close friends, and parents understanding their problems and concerns; a significance level of $p < 0.05$ was accepted. All estimates were calculated considering the sampling design using the *svyset* family of commands in Stata, v. 12.1.

The 2015 PeNSE was approved by the National Commission for Research Ethics of the National Health Council, which regulates and approves health research involving human beings in Brazil.

Results

Table 1 shows that 0.8% (95% CI: 0.7–0.9) of the students in the sample ($n = 101,646$) reported having experienced sexual orientation-based bullying by schoolmates. The prevalence was higher among male students (1.1%; 95% CI: 1.0–1.2), students aged 11 years old (10.7%; 95% CI: 0.9–22.3), those

Table 1 Prevalence and respective 95% confidence interval (95% CI) of the experience of bullying among Brazilian middle school students, according to selected variables (n = 101,646).

Variables	Bullying		
	None (95% CI)	Sexual orientation-based (95% CI)	Other causes (95% CI)
<i>Total</i>	56.2 (55.9–56.5)	0.8 (0.7–0.9)	42.9 (42.6–43.2)
<i>Geographic region</i>			
North	56.9 (56.3–57.6)	0.8 (0.7–1.0)	42.1 (41.4–42.7)
Northeast	57.6 (57.1–58.1)	0.7 (0.6–0.8)	41.6 (41.0–42.1)
Central-West	54.6 (53.7–55.4)	0.8 (0.7–1.0)	44.5 (43.7–45.3)
Southeast	53.9 (53.2–54.7)	0.9 (0.8–1.1)	45.0 (44.3–45.7)
South	55.5 (54.6–56.5)	0.7 (0.5–0.9)	43.6 (42.6–44.6)
<i>State capital</i>			
Yes	56.9 (56.5–57.3)	0.8 (0.7–0.9)	42.1 (41.7–42.5)
No	55.4 (55.0–55.9)	0.8 (0.7–0.9)	43.6 (43.2–44.1)
<i>Anti-bullying policies present in the school</i>			
Yes	55.9 (55.6–56.3)	0.8 (0.7–0.9)	43.1 (42.8–43.4)
No	58.0 (57.0–58.9)	0.7 (0.5–0.8)	41.2 (40.3–42.1)
<i>Sex</i>			
Male	55.5 (55.1–56.0)	1.1 (1.0–1.2)	43.2 (42.8–43.6)
Female	56.8 (56.3–57.2)	0.6 (0.5–0.7)	42.6 (42.2–43.0)
<i>Age (in years)</i>			
11	57.1 (38.4–75.8)	10.7 (0.9–22.3)	32.1 (14.5–49.7)
12	52.4 (48.1–56.8)	0.3 (0.1–0.9)	47.1 (42.7–51.4)
13	53.4 (52.6–54.1)	0.6 (0.4–0.7)	45.9 (45.2–46.7)
14	55.1 (54.6–55.5)	0.7 (0.6–0.8)	44.1 (43.6–44.5)
15	58.3 (57.7–59.0)	0.9 (0.8–1.1)	40.6 (39.9–41.2)
16	60.6 (59.5–61.7)	1.2 (1.0–1.5)	38.0 (36.9–39.1)
17	61.4 (59.7–63.2)	1.4 (1.0–1.8)	37.0 (35.3–38.7)
18	63.3 (60.1–66.6)	1.2 (0.5–2.0)	35.3 (32.1–38.5)
19	61.4 (57.4–65.4)	1.2 (0.3–2.1)	37.3 (33.3–41.3)
<i>Color/race</i>			
White	56.2 (55.7–56.8)	0.8 (0.7–0.9)	42.8 (42.3–43.3)
Black	56.7 (55.8–57.5)	0.8 (0.5–0.9)	42.4 (41.5–43.2)
Yellow	53.2 (51.8–54.7)	0.9 (0.6–1.2)	45.7 (44.2–47.1)
Brown	56.4 (56.0–56.9)	0.8 (0.7–0.9)	42.7 (42.2–43.1)
Indigenous	54.0 (52.4–55.6)	0.8 (0.5–1.1)	45.0 (43.4–46.6)
<i>Socioeconomic status (in quartiles)</i>			
First	56.7 (56.0–57.4)	0.9 (0.7–1.0)	42.3 (41.6–43.0)
Second	55.5 (54.9–56.2)	0.9 (0.7–1.0)	43.5 (42.8–44.1)
Third	55.3 (54.5–56.1)	0.8 (0.7–0.9)	43.8 (43.0–44.5)
Fourth	55.6 (54.8–56.3)	0.9 (0.8–1.1)	43.4 (42.7–44.1)
<i>Close friends</i>			
None	51.9 (50.3–53.4)	1.3 (0.9–1.6)	46.7 (45.2–48.2)
1	49.0 (47.8–50.3)	1.3 (1.0–1.5)	49.6 (48.3–50.8)
2	50.3 (49.5–51.2)	1.2 (1.0–1.3)	48.4 (47.5–49.2)
3 or more	57.8 (57.5–58.1)	0.7 (0.6–0.8)	41.4 (41.0–41.7)
<i>Parents understood their problems and concerns</i>			
Never	53.4 (52.6–54.1)	1.4 (1.3–1.6)	45.0 (44.3–45.8)
Rarely	50.3 (49.6–51.1)	0.9 (0.7–1.0)	48.6 (47.9–49.4)
Sometimes	53.2 (52.6–53.9)	0.8 (0.7–0.9)	45.8 (45.1–46.4)
Most of the time	56.6 (55.8–57.4)	0.6 (0.4–0.7)	42.7 (41.9–43.5)
Always	63.1 (62.5–63.7)	0.5 (0.4–0.6)	36.3 (35.7–36.9)

Table 1 (Continued)

Variables	Bullying		
	None (95% CI)	Sexual orientation-based (95% CI)	Other causes (95% CI)
<i>Feelings of loneliness</i>			
Never	68.9 (68.4–69.4)	0.4 (0.3–0.5)	30.6 (30.1–31.1)
Rarely	54.4 (53.8–55.1)	0.6 (0.4–0.7)	44.9 (44.2–45.5)
Sometimes	51.1 (50.5–51.7)	0.9 (0.8–1.1)	47.8 (47.2–48.4)
Most of the time	42.0 (41.1–43.0)	1.4 (1.1–1.6)	56.4 (55.5–57.4)
Always	37.9 (36.7–39.0)	2.6 (2.2–3.0)	59.4 (58.2–60.6)
<i>Sleeping difficulty</i>			
Never	67.9 (67.4–68.4)	0.4 (0.3–0.5)	31.6 (31.1–32.1)
Rarely	52.5 (51.9–53.0)	0.7 (0.6–0.8)	46.7 (46.1–47.2)
Sometimes	50.1 (49.5–50.7)	1.0 (0.9–1.1)	48.7 (48.1–49.4)
Most of the time	42.7 (41.6–43.7)	1.8 (1.5–2.1)	55.4 (54.3–56.4)
Always	41.2 (39.5–43.0)	2.3 (1.8–2.8)	56.3 (54.6–58.0)

who always reported feelings of loneliness (2.6%; 95% CI: 2.2–3.0), and those who always reported sleeping difficulty (2.3%; 95% CI: 1.8–2.8). The prevalence was lower among students who reported having three or more close friends (0.7%; 95% CI: 0.6–0.8) and those who reported that their parents always understood their problems and concerns (0.5%; 95% CI: 0.4–0.6).

Among those who reported having been bullied ($n=44,495$), 1.9% (95% CI: 1.8–2.0) reported that it was because of their sexual orientation. The prevalence was higher among male students (2.6%; 95% CI: 2.3–2.8), students aged 17 years old (3.7%; 95% CI: 2.6–4.8), those who always reported feelings of loneliness (4.3%; 95% CI: 3.6–4.9), and those who always reported sleeping difficulty (4.0%; 95% CI: 3.1–4.9). The prevalence was lower among students who reported having three or more close friends (1.7%; 95% CI: 1.5–1.8) and those who reported that their parents always understood their problems and concerns (1.3%; 95% CI: 1.1–1.6) (Table 2).

In the adjusted multiple linear regressions, when the reference group was composed of students who had not experienced bullying, the associations between sexual orientation-based bullying and feelings of loneliness and between sexual orientation-based bullying and sleeping difficulty were positive for both male and female students, with magnitudes about twice as large as those found among those who reported having experienced other causes of bullying (Tables 3 and 4). However, when the reference group was composed of students who had experienced other causes of bullying, only the association between sexual orientation-based bullying and feelings of loneliness was positive for both male and female students (Table 3), since the association between sexual orientation-based bullying and sleeping difficulty did not show statistical significance (Table 4).

Discussion

The results show that sexual orientation-based bullying is a predictor of signs of psychological distress, as observed in previous longitudinal studies.^{8,11} Moreover, in comparison to

Table 2 Prevalence and respective 95% confidence interval (95% CI) of the experience of sexual orientation-based bullying among Brazilian middle school students who reported having been bullied, according to the respective selected variables ($n=44,495$).

Variables	Sexual orientation-based bullying (95% CI)
<i>Total</i>	1.9 (1.8–2.0)
<i>Geographic region</i>	
North	2.0 (1.8–2.3)
Northeast	1.8 (1.6–2.0)
Central-West	1.8 (1.5–2.2)
Southeast	2.1 (1.8–2.4)
South	1.7 (1.3–2.1)
<i>State capital</i>	
Yes	2.0 (1.8–2.2)
No	1.8 (1.6–2.0)
<i>Anti-bullying policies present in the school</i>	
Yes	1.9 (1.8–2.0)
No	1.7 (1.3–2.1)
<i>Sex</i>	
Male	2.6 (2.3–2.8)
Female	1.3 (1.1–1.4)
<i>Age (in years)</i>	
11	0.2 (0.1–0.5)
12	0.8 (0.1–1.9)
13	1.2 (1.0–1.5)
14	1.6 (1.5–1.8)
15	2.3 (2.0–2.6)
16	3.2 (2.5–3.8)
17	3.7 (2.6–4.8)
18	3.5 (1.4–5.5)
19	3.1 (0.8–5.5)
<i>Color/race</i>	
White	1.9 (1.7–2.1)
Black	1.9 (1.5–2.2)
Yellow	2.0 (1.4–2.6)

Table 2 (Continued)

Variables	Sexual orientation-based bullying (95% CI)
Brown	1.9 (1.7-2.0)
Indigenous	1.8 (1.2-2.5)
<i>Socioeconomic status (in quartiles)</i>	
First	2.1 (1.8-2.4)
Second	2.0 (1.7-2.3)
Third	1.8 (1.5-2.2)
Fourth	2.1 (1.8-2.4)
<i>Close friends</i>	
None	2.7 (2.0-3.5)
1	2.5 (2.0-3.1)
2	2.4 (2.0-2.8)
3 or more	1.7 (1.5-1.8)
<i>Parents understood their problems and concerns</i>	
Never	3.2 (2.8-3.5)
Rarely	1.9 (1.6-2.1)
Sometimes	1.8 (1.5-2.0)
Most of the time	1.4 (1.1-1.6)
Always	1.3 (1.1-1.6)
<i>Feelings of loneliness</i>	
Never	1.2 (1.0-1.4)
Rarely	1.3 (1.0-1.5)
Sometimes	2.0 (1.7-2.2)
Most of the time	2.4 (2.0-2.8)
Always	4.3 (3.6-4.9)
<i>Sleeping difficulty</i>	
Never	1.3 (1.0-1.5)
Rarely	1.5 (1.3-1.7)
Sometimes	2.0 (1.8-2.3)
Most of the time	3.2 (2.7-3.7)
Always	4.0 (3.1-4.9)

students who did not report being bullied at all, the associations between sexual orientation-based bullying and feelings of loneliness and between sexual orientation-based bullying and sleeping difficulty were twice as large as what was found for those who were bullied for other reasons. These findings are aligned with other studies^{20,21} showing that sexual orientation-based bullying is related to a deeper form of psychological risk and that it can affect those who are targeted in a differential manner.

The major part of the investigated associations only became significant when confounding variables were added to the multiple linear regressions models (Tables 3 and 4) because a portion of the sexual orientation-based bullying effect results in the presence of these confounding factors. Although sexual orientation-based bullying is this study's main exposure of interest, the authors cannot affirm that it is the only factor associated with feelings of loneliness and sleeping difficulty, nor that it has an effect independent of other social determinants (such as age, color/race, socioeconomic status, parental support, anti-bullying school policies), which, in turn, proved to be important confounders of the investigated associations.

Previous research has already pointed to sexual orientation-based bullying as being the most serious bullying

Table 3 Regression coefficients (β) and standard errors (SE) estimated from multiple linear regressions for the unadjusted and adjusted associations between sexual orientation-based bullying and other causes of bullying and feelings of loneliness among Brazilian middle school students, according to sex.

	Male			Female			
	Unadjusted β (SE)	Model 1 ^c β (SE)	Model 2 ^d β (SE)	Unadjusted β (SE)	Model 1 ^c β (SE)	Model 2 ^d β (SE)	Model 3 ^e β (SE)
Bullying^a							
Sexual orientation-based	0.17 (0.31)	0.48 (0.28)	0.84 (0.13) ^f	0.84 (0.27) ^f	0.90 (0.25) ^f	0.78 (0.13) ^f	0.78 (0.13) ^f
Other causes	-0.31 (0.06) ^f	0.01 (0.64)	0.37 (0.03) ^f	0.27 (0.04) ^f	0.37 (0.39) ^f	0.42 (0.21) ^f	0.41 (0.21) ^f
Bullying^b							
Sexual orientation-based	0.49 (0.15) ^f	0.50 (0.16) ^f	0.44 (0.12) ^f	0.56 (0.16) ^f	0.54 (0.16) ^f	0.35 (0.14) ^f	0.35 (0.14) ^f

^a Reference group in bullying variable: students who have not experienced bullying.

^b Reference group in bullying variable: students who have experienced other causes of bullying.

^c Model 1: adjusted by age, color/race, and socioeconomic status.

^d Model 2: adjusted by age, color/race, socioeconomic status, close friends, and understanding of parents.

^e Model 3: adjusted by age, color/race, socioeconomic status, close friends, understanding of parents, geographic region, state capital, and anti-bullying policies.

^f p < 0.05.

Table 4 Regression coefficients (β) and standard errors (SE) estimated from multiple linear regressions for the unadjusted and adjusted associations between sexual orientation-based bullying and other causes of bullying and sleeping difficulty among Brazilian middle school students, according to sex.

	Male			Female			
	Unadjusted β (SE)	Model 1 ^c β (SE)	Model 2 ^d β (SE)	Unadjusted β (SE)	Model 1 ^c β (SE)	Model 2 ^d β (SE)	Model 3 ^e β (SE)
Bullying^a							
Sexual orientation-based	-0.15 (0.33)	0.13 (0.31)	0.60 (0.17) ^f	0.50 (0.29)	0.56 (0.29)	0.60 (0.19) ^f	0.60 (0.19) ^f
Other causes	-0.45 (0.07) ^f	-0.10 (0.07)	0.32 (0.03) ^f	0.12 (0.04) ^f	0.20 (0.04) ^f	0.31 (0.03) ^f	0.30 (0.03) ^f
Bullying^b							
Sexual orientation-based	0.29 (0.18)	0.26 (0.20)	0.27 (0.17)	0.38 (0.18) ^f	0.37 (0.19)	0.29 (0.17)	0.30 (0.17)

^a Reference group in bullying variable: students who have not experienced bullying.
^b Reference group in bullying variable: students who have experienced other causes of bullying.
^c Model 1: adjusted by age, color/race, and socioeconomic status.
^d Model 2: adjusted by age, color/race, socioeconomic status, close friends, and understanding of parents.
^e Model 3: adjusted by age, color/race, socioeconomic status, close friends, understanding of parents, geographic region, state capital, and anti-bullying policies.
^f $p < 0.05$.

practice in school because it is usually more discredited than bullying from other causes.²⁸ Regardless of the student's role in the occurrence of bullying (aggressor, victim, or spectator/witness), he or she is part of a circle of social relations that contributes to the continuation of this practice.²⁹ Socio-cultural influences can induce the actions of students by making them proclaim certain attitudes according to how they were taught to act, hegemonically reflecting socially and culturally constructed patterns that trigger persecution, humiliation, physical/verbal attacks, insults, and slander to those who are seen as different.³⁰

Therefore, initiatives related to the promotion of tolerance of sexual diversity must be developed in Brazilian schools to deconstruct stereotypes that support prejudice against those who do not conform to socially and culturally imposed heteronormativity patterns.

In comparison to students who reported being bullied by other causes, only the association between sexual orientation-based bullying and self-reported feelings of loneliness was statistically significant. Sexual orientation-based bullying appears to be linked to a differential level of targeting, as sexual orientation and gender expression are part of one's identity; therefore, targeting people on that basis can cause a sense of alienation and profound social exclusion,^{19–21} which can lead them to experience a feeling of loneliness.

In the present sample of Brazilian middle school students, prevalence of sexual orientation-based bullying was relatively low compared to findings from other countries,^{3–5,19,31,32} probably because those who reported having experienced bullying by their schoolmates needed to choose only one option that best described the reason/cause of bullying. Therefore, it is possible that the prevalence of sexual orientation-based bullying would have been slightly higher and similar to that found in other countries, if Brazilian middle school students could have chosen more than one option of reason/cause of bullying, since that some of those who reported having experienced other causes of bullying could have also experienced sexual orientation-based bullying.

Overall prevalence of other causes of bullying was similar for both sexes, but, among the students who reported being bullied, boys experienced sexual orientation-based victimization twice as much as girls, a finding that is consistent with previous research.²² This sex difference is of interest as it could reflect, to an extent, the different social experiences of SMY boys and girls who are targeted at school. Literature has pointed out that, because gay boys usually adopt "female-like" characteristics, they tend to be more bullied than gay girls, who exhibit behavioral traits that are less divergent from their biological sex.³³ Thus, valorization of masculinity, devaluation of women, and antifeminine sentiment are the fundamental elements of homophobia,³³ and, for these reasons, when manifested in the form of bullying, it affects boys more than girls.

A meta-analysis that investigated the association between internalized homonegativity and body dissatisfaction in sexual minority men indicated that the expectation of being discriminated against for belonging to a sexual minority group enhances the distress of not conforming to a masculine-body ideal. Consequently, gay men may worry about being "masculine" and experience pressure to con-

form to the masculine-body ideal. Thus, they may desire a powerful physique as a form of defense against the experience of discrimination.³⁴ An study have shown that abuse and maltreatment such as bullying are correlated with concern about muscle size³⁵ that is seen as an emblem of heterosexuality.³⁴ It is worth mentioning that other study showed that conformity and nonconformity to gender norms is associated with increased levels of school-based bullying and violence.³⁶

Attention is drawn to the fact that the more parents understand the problems and concerns of their children and the more close friends they have, the lower the prevalence of sexual orientation-based bullying is (Table 2), indicating that, regardless of sex, when the reference group was composed of students who have experienced other causes of bullying, social and parental support appeared as protective factors for feelings of loneliness (three or more close friends: $\beta = -0.52$, $p < 0.001$; parents always understood their problems and concerns: $\beta = -1.03$, $p < 0.001$) and for sleeping difficulty (three or more close friends: $\beta = -0.26$, $p = 0.002$; parents always understood their problems and concerns: $\beta = -0.52$, $p < 0.001$) arising from sexual orientation-based bullying. Previous research has already demonstrated that the existence of social and parental support could moderate the consequences of sexual orientation-based bullying.⁵

Some limitations deserve attention. First, the cross-sectional nature of the survey does not allow causality to be determined among the associations observed. Second, the self-report questionnaire used to assess bullying behaviors has not yet been subjected to psychometric validation in Brazil, and there is published evidence of inconsistencies among the items related to self-reports of risk behavior (alcohol use, tobacco use, drug use, and sexual activity) in past editions of the PeNSE survey.³⁷ That, in principle, does not directly influence these results, since inconsistencies were only found on risk-related items. However, self-reported data has several limitations for use, especially reports from young children and adolescents regarding sensitive subjects, such as bullying, in a school environment. As pointed out by other studies on the topic of self-reported data,^{38,39} information bias and social desirability effects could be affecting the validity of the students' responses, causing both under- or overestimation of their bullying experiences. Third, the exposure variable refers to the 30 days prior to the application of the questionnaire, and the outcome variable refers to the previous 12 months; this temporality may limit the interpretation of the results. It is known that effects of sexual orientation-based bullying are not temporary¹¹ and that it is characterized by the repetitive actions of abuse⁴⁰ that, probably, would repeat for well over 30 days.

Lastly, the analyses did not consider the actual sexual orientation of the students, since this information was not collected in the 2015 PeNSE. Thus, the results should not be interpreted for SMY students only, since sexual orientation-based bullying has also been considered as experienced among heterosexual youth.^{11,22} Conversely, some strengths of the present study include the consistency between some of its findings and the international literature, and the representativeness of the sample of the population of students

enrolled in the ninth grade in public and private schools in Brazil.

Notwithstanding its limitations, this study highlights that, even when controlling for the potential protective effects of parental support, close friends, and anti-bullying school policies, sexual orientation-based bullying is a predictor of feelings of loneliness. This is an important point that should be considered in the debates on promoting tolerance of sexual diversity at the Brazilian schools to protect students from sexual orientation-based bullying. This research intends to contribute to policy initiatives that reduce sexual orientation-based bullying at school, because reducing this victimization can have a particularly significant impact on the health and well-being of SMY.

Conflicts of interest

The authors declare no conflicts of interest.

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