

Predictive Risk and Protective Factors for Suicidal Ideation in Adolescents

Leticia de Moraes¹ 

Vanessa Barbosa Romera Leme¹ 

Susana Coimbra² 

Leonardo de Barros Mose³ 

Abstract: Suicidal ideation in adolescents is a global public health issue, but few studies explore this phenomenon in middle school. This study tested a predictive model for suicidal ideation, considering victimization by bullying and cyberbullying, social skills, school climate, and gender as variables in students in the final years of middle school. A total of 659 students, aged 10-18 years, of both sexes, from 6th to 9th grade in public schools participated. The instruments used included the Global School-based Student Health Survey, Delaware School Climate, and the Social Skills Inventory for Adolescents. The results of logistic regression indicated that increased verbal bullying and cyberbullying raised the likelihood of suicidal ideation by 5% and 9%, respectively, while better self-control and school climate reduced the likelihood by 6% and 2%. The study concludes that interventions should focus on promoting positive school environments and preventing violence.

Keywords: suicide prevention, adolescence, violence, bullying, mental health

Fatores de Risco e Proteção Preditivos da Ideação Suicida em Adolescentes

Resumo: A ideação suicida em adolescentes é um problema de saúde pública global, mas poucas pesquisas exploram esse fenômeno no ensino fundamental. Este estudo testou um modelo preditivo para a ideação suicida, considerando vitimização por bullying e cyberbullying, habilidades sociais, clima escolar e sexo como variáveis em estudantes dos anos finais do ensino fundamental. Participaram 659 alunos (de 10 a 18 anos), de ambos os sexos, do 6º ao 9º ano em escolas públicas. Os instrumentos utilizados incluíram: Global School-based Student Health Survey; Delaware School Climate; Inventário de Habilidades Sociais para Adolescentes. Os resultados da regressão logística indicaram que o aumento no bullying verbal e cyberbullying elevou as chances de ideação suicida em 5% e 9%, enquanto um melhor autocontrole e clima escolar reduziram as chances em 6% e 2%. Conclui-se que intervenções devem focar na promoção de contextos escolares positivos e na prevenção da violência.

Palavras-chave: prevenção do suicídio, adolescência, violência, bullying, saúde mental

Factores de Riesgo y Protección Predictivos de la Ideación Suicida en Adolescentes

Resumen: La ideación suicida en adolescentes es un problema de salud pública mundial, pero pocos estudios exploran este fenómeno en la escuela primaria. Este estudio probó un modelo predictivo de ideación suicida, considerando como variables victimización por bullying/cyberbullying, habilidades sociales, clima escolar y género en estudiantes de los últimos años de la escuela primaria. Participaron 659 estudiantes (10 a 18 años), de 6º a 9º grado de escuelas públicas. Los instrumentos utilizados incluyeron: Global School-based Student Health Survey, Delaware School Climate y el Inventario de Habilidades Sociales para Adolescentes. Los resultados de la regresión logística indicaron que un mayor bullying verbal y cyberbullying aumentaba la probabilidad de ideación suicida en un 5% y un 9%, respectivamente, mientras que un mejor autocontrol y clima escolar reducían la probabilidad en un 6% y un 2%. El estudio concluye que las intervenciones deberían centrarse en promover entornos escolares positivos y prevenir la violencia.

Palabras clave: prevención del suicidio, adolescencia, violencia, bullying, salud mental

¹Universidade do Estado do Rio de Janeiro, Rio de Janeiro-RJ, Brazil.

²Universidade do Porto, Coimbra, Portugal.

³Universidade São Francisco, Campinas-SP, Brazil.

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Correspondence address: Vanessa Barbosa Romera Leme. Universidade do Estado do Rio de Janeiro. Rua São Francisco Xavier, 524, Maracanã, Rio de Janeiro, RJ, Brazil. CEP. 20550-900. E-mail: vanessaromera@gmail.com

Suicide is a complex, multifactorial phenomenon considered a public health problem in Brazil and worldwide (Richardson et al., 2024). According to the World Health Organization (2021), it is the third leading cause of death among adolescents aged 10 to 19 years (World Health Organization [WHO], 2021a). Although it occurs in all socioeconomic groups, it is more prevalent among adolescents in socially vulnerable situations, such as those exposed to family and community violence, ethnic minorities or LGBTQIA+ (WHO, 2021a). Self-harm is characterized by the WHO (2021a) in two ways: through suicidal behavior, which involves thoughts, planning, and attempts of suicide; and through self-inflicted violent acts, such as self-harm, with or without suicidal intent (WHO, 2021a). According to Nock et al. (2008), death by suicide is a fatal act with evidence of the intention to die. However, the individual exhibits some suicidal behaviors before this outcome, which include suicidal ideation, planning, and suicide attempts. Therefore, suicidal behaviors are non-fatal actions characterized as a potential risk for suicide and should be investigated in prevention studies (Nock et al., 2008).

Suicidal ideation, the focus of this study, is an initial part of a self-harm process, and its detection in adolescence is a preventative measure. It is understood as the act of thinking about and considering a way to end one's life, and occurs in almost all people who attempt suicide (Klonsky et al., 2016). Suicidal ideation peaks in adolescence, with a prevalence ranging from 1% at age 10 to 30% at age 18 (Nock et al., 2008). Suicidal ideation is more prevalent among young women and individuals who identify as lesbian, gay, bisexual, transgender or queer (Holst-Schumacher et al., 2022; Richardson et al., 2024; WHO, 2021a).

The prevalence of suicidal ideation has increased sharply among adolescents in recent decades and has been exacerbated by the COVID-19 pandemic (Gaylor et al., 2023; Shoshani, 2024; WHO, 2021a). In the Brazilian context, data from the National School Health Survey (PeNSE), conducted in 2019 with adolescents aged 13-17 years, showed that 21.4% of students stated that most of the times or always, life was not worth living (Instituto Brasileiro de Geografia e Estatística [IBGE], 2021). A difference was observed between genders, with 29.6% of female adolescents presenting suicidal ideation, in contrast to 13.0% of male adolescents (IBGE, 2021). Another study conducted with 643 students aged 12-18 years revealed that suicidal ideation occurred in 17.4% of participants (Beserra et al., 2020). In their study, Moraes et al. (2020) found the presence of suicidal ideation in a much higher percentage, almost double, corresponding to 34.2% of 363 Amazonian students (aged 11-24 years), with a higher number among females, with 96 cases. These findings also suggest regional variability, as local factors, such as geographic isolation, socioeconomic inequalities and limited access to mental health services may influence the prevalence of suicidal ideation among adolescents living in Amazonas (Moraes et al., 2020). This reinforces the importance of considering the regional context when analyzing mental health issues.

In the international context, Gaylor et al. (2023) examined the presence of suicidal behaviors among high school students, comparing data from the 2019 (before the pandemic) and 2021 (during the pandemic) U.S. Youth Risk Behavior Survey. The study indicated that from 2019 to 2021, female adolescents showed an increase in the prevalence of suicidal ideation (from 24.1% to 30%), in making a suicide plan (from 19.9% to 23.6%), and in suicide attempts (from 11.0% to 13.3%). In contrast, the prevalence of suicidal thoughts and behaviors remained stable for male students and at lower levels compared to female adolescents. The authors argue that these findings are consistent with trends of increasing suicide risk rates among females and highlight the differential effect of the COVID-19 pandemic between the sexes.

The WHO declared the beginning of the COVID-19 pandemic on May 11, 2020 and its end in May 2023. In March 2022, the WHO published a scientific summary synthesizing the initial evidence on the pandemic's impact on mental health. It showed that the COVID-19 resulted in a 25.6% increase in anxiety disorders and a 27.6% increase in major depression globally, with this increase being more significant in women and young people (Richardson et al., 2024). Thus, the experience of prolonged isolation and loneliness was a risk factor for worsening mental health and may have contributed to greater vulnerability to suicidal ideation and related behaviors among female adolescents (Richardson et al., 2024). Monitoring and addressing the long-term mental health consequences of the pandemic is essential to ensuring individual well-being and preventing future repercussions of mental health problems.

Suicidal behavior prevention requires a comprehensive approach that considers individuals as a whole, including their biopsychosocial aspects and the influences of the social and environmental context (Klonsky et al., 2016). Therefore, this study adopts the theoretical model proposed by Gallagher and Miller (2018), which assumes a biopsychosocial perspective for investigating suicidal ideation in children and adolescents. In the analysis of suicidal behavior, the proposal includes risk factors (e.g., psychiatric disorders, bullying/cyberbullying victimization, and physical/sexual violence), personal protective factors (e.g., self-esteem, self-control, and problem-solving skills), and contextual resources, such as family support, positive parenting practices, a positive school climate, teacher support, peer acceptance, and community connection. Based on this biopsychosocial model as a contextual resource, bullying/cyberbullying victimization will be analyzed as risk factors, and social skills and school climate as protective factors.

Children and adolescents are recognized as more vulnerable to suicidal behavior, as this period of life is characterized by significant physical, emotional, and social changes, in addition to greater exposure to various forms of interpersonal violence, such as bullying, cyberbullying, sexual harassment, and discrimination, which increase the likelihood of suicidal behavior (Beserra et al., 2020; Holst-Schumacher et al., 2022; Richardson et al., 2024). The meta-analysis by Richardson et al. (2024) on suicidal behavior and self-harm in adolescents showed that bullying and cyberbullying victimization, being

part of LGBTQIA+ groups, mental health disorders, a history of school failure, and the use of psychotropic drugs increase psychological distress and constitute risk factors for suicide. Other studies show that bullying and cyberbullying can be a risk factor that triggers others, as adolescents who are victims of this form of violence are more likely to experience suicidal ideation, which consequently leads to demotivation, impaired academic performance and harm to student well-being (Baiden & Tadeo, 2020; Beserra et al., 2020; Moraes et al., 2020; Wang et al., 2023). Therefore, research assessing the influence of bullying and cyberbullying victimization on the development of suicidal ideation in adolescents is needed (Holst-Schumacher et al., 2022).

In the development of prevention and intervention strategies, it is also important to consider individual and contextual variables that can mitigate the impact of bullying/cyberbullying. In this regard, social skills can play an important role as individual protective factors. Social skills refer to a set of behaviors valued in a given culture and historical period that are learned by people informally (with family and in the community, with friends) and formally, through interactions with teachers (Del Prette & Del Prette, 2009). Demonstrating empathy with others, offering help, sharing feelings, initiating relationships, denying abusive requests, and making resolutions are examples of important social skills for psychosocial and academic development in adolescence (Nunes & Mota, 2023). Such skills contribute to maintaining or expanding a support network, improving the quality of relationships with peers and family, life satisfaction, and increased well-being (Portilho et al., 2018). Thus, social skills constitute an important personal protective factor against suicidal ideation and promote a positive school climate, another protective resource (Ayer et al., 2023; Nunes & Mota, 2023).

As schools are a recurring context in these different forms of violence, protective factors that can mitigate the various forms of bullying/cyberbullying have to be identified, providing evidence-based strategies to prevent suicidal behavior, promote positive interpersonal interactions, and increase the connection between students and the school (Ayer et al., 2023). School climate is understood as a multidimensional concept and encompasses the sociocultural, emotional, ethical, academic, and environmental aspects of school life (Holst et al., 2016). These elements can be exemplified as rules, goals, values, interpersonal relationships, teaching and learning practices, as well as institutional structures of a school (Holst et al., 2016). A positive school climate can be characterized by a balance of: (1) support or the capacity for interaction in school relationships; (2) structure or demand with clear behavioral expectations, fair rules, and adult supervision of student behavior. A welcoming and inclusive school environment is associated with lower levels of stress, anxiety, and depression (Rayan et al., 2022), aspects that contribute to reducing suicidal ideation in adolescents. When young people feel safe, supported and valued at school, they are more likely to have the opportunity to develop appropriate coping skills and seek protection against various forms of interpersonal violence (Cao et al., 2022; Estévez-García et al., 2023).

In short, a positive school climate fosters social connection and a sense of belonging, helping to prevent suicide (Cao et al., 2022; Estévez-García et al., 2023).

Although suicidal behavior occurs before the age of 15, few studies have identified risk and protective factors in middle school students compared to high school students (Ayer et al., 2023), highlighting a research gap. The information from this study may contribute to both clinical research and interventions targeting this segment of the population. The WHO (2021a) emphasizes that suicide prevention requires early detection and intervention. Therefore, investigating suicidal ideation as early as middle school is a way to act on prevention and ensure that actions are taken to preserve the lives of adolescents and their overall well-being. To this end, this study tested a predictive model for suicidal ideation, considering bullying and cyberbullying victimization, social skills, school climate and gender as variables in students in the final years of middle school.

Method

Participants

The study included 659 students aged 10-18 years ($M = 12.37$ years; $SD = 1.50$); 290 (44%) girls and 367 (55.7%) boys, attending 6th to 9th grade in eight public schools located in a city in the state of Rio de Janeiro. The sample was selected for convenience and defined to meet the regression analysis criteria. According to Bryman and Cramer (1999), at least 30 subjects are recommended for each predictor variable. Of the total number of students, 263 were in 6th grade (39.9%), 117 were in 7th grade (17.8%), 203 were in 8th grade (30.8%), and 75 were in 9th grade (11.4%). The inclusion criterion for participation in the study was being a student enrolled in grades 6-9, providing signed authorization from the legal guardians and signing the own consent form. The exclusion criterion was the presence of a severe developmental disorder that prevented them from completing the questionnaires.

Instruments

Adapted version of the Global School-based Student Health Survey (GSHS). This instrument was proposed by the World Health Organization (WHO, 2021b) and other organizations to assess lifestyle and health risk behaviors in adolescents, such as alcohol and drug use, dietary and hygiene habits, sexual activity, and suicidal behavior. The instrument contains 63 items, three of which address suicidal behavior (ideation, planning, and attempts). Suicidal ideation, the focus of this study, is assessed by the question “In the past 12 months, have you seriously considered attempting suicide?” (Response options: yes or no). Suicide planning is addressed by the question “In the past 12 months, have you made a plan about how you would attempt suicide?” (Response options: yes or no). Suicide attempts are assessed with the question

“In the last 12 months, how many times have you attempted suicide?” (Response options: none, once, 2 to 3 times, 4 to 5 times, or 6 or more times).

Social Skills Inventory for Adolescents - IHSA (Brief Version). Developed by Del Prette and Del Prette (2009) to assess adolescents' social skills through their self-reports of everyday situations. Leme et al. (2017) analyzed the evidence on the internal structure and accuracy of scores from a brief version consisting of 16 items. Responses are arranged on a 5-point Likert-type scale (0 = never to 4 = always), asking adolescents to rate the frequency with which they exhibit a particular reaction. Higher scores indicate higher levels of social skills. The inventory covers four factors, presenting the following internal consistency values in the validation study and for the present sample, respectively: (1) empathy ($\alpha = .78$; $\alpha = .80$); (2) self-control ($\alpha = .66$; $\alpha = .76$); (3) assertiveness ($\alpha = .75$; $\alpha = .72$); (4) affective approach ($\alpha = .69$; $\alpha = .74$).

Delaware School Climate Survey Student - DSCS-S (Brazilian version). This instrument was adapted by Holst et al. (2016) for the Brazilian population and aims to assess students' perceptions of the school climate and environment. The questionnaire consists of 78 items distributed across four scales. Two scales were used in the present study: (1) Scale I - School Climate, composed of 36 items ($\alpha = .86$; in the study $\alpha = .82$). This scale encompasses eight subscales assessing: (1) teacher-student relationships ($\alpha = .87$; in the study $\alpha = .82$); (2) relationships among students ($\alpha = .86$; in the study $\alpha = .87$); (3) respect for diversity ($\alpha = .80$; in the study $\alpha = .79$); (4) clarity of expectations ($\alpha = .76$; in the study $\alpha = .80$); (5) fairness of rules ($\alpha = .79$; in the study $\alpha = .81$); (6) school safety ($\alpha = .80$; in the study $\alpha = .76$); (7) student engagement ($\alpha = .80$; in the study $\alpha = .82$); and (8) bullying in general ($\alpha = .77$; in the study $\alpha = .78$). (2) Scale III - Victimization by bullying and cyberbullying, composed of 18 items ($\alpha = .82$, in the study $\alpha = .82$), is specific to assess physical, verbal, social/relational bullying and cyberbullying. Scale I - School Climate is answered using a four-point Likert scale, in which students indicate their agreement with each statement, ranging from 1 = Strongly disagree to 4 = Strongly agree. Higher scores indicate more positive perceptions of that dimension. The “bullying in general” subscale is the only one with negative items and is, therefore, inverted. Scale III - Bullying/cyberbullying uses a Likert scale from 1 to 6, in which students report the frequency of victimization situations, choosing from the options: 1 = Never, 2 = Sometimes, 3 = Once or twice a month, 4 = Once a week, 5 = Several times a week, and 6 = Every day. Higher scores on Scale III indicate greater student perceptions of bullying/cyberbullying.

Demographic Information Questionnaire. Instrument developed for this study to investigate the social and demographic characteristics of participants, such as age, gender, and school grade.

Procedure

Data collection. The instruments were administered collectively in school classrooms during approximately

70 minutes. Data collection was conducted by the researcher and another postgraduate student, both with prior training and field experience. The researchers read each question aloud, and the students completed the instruments individually. Data collection took place from May to July 2022. At the end of data collection, students were asked if anyone had experienced any discomfort and/or would like to talk privately about their feelings/thoughts. At this time, the student was given a list of psychological services available through the public health system and/or a referral was made to a public health service within the school territory.

Data analysis. Data analysis was conducted using the Statistical Package for the Social Sciences for Windows (SPSS, version 22.0). Initially, the assumptions of normality were tested and confirmed (Kolmogorov-Smirnov test). Then, the correlation between the variables was calculated (Pearson's r coefficient). To interpret the magnitude of the correlation coefficients, the following values were adopted: $< .20$ = very low; $> .20$ and $< .40$ = low; $> .40$ and $< .70$ = moderate; $> .70$ and $< .90$ = high; $> .90$ = very high (Bryman & Cramer, 1999). A binary logistic regression analysis (backward method) was performed to test whether suicidal ideation is predicted by bullying (verbal bullying, physical bullying, socio-relational bullying, and total scale score) and cyberbullying victimization, by social skills (empathy, self-control, assertiveness, affective approach, and total score), school climate (teacher-student relationships, student relationships, respect for diversity, overall school engagement, clarity of expectations, fairness of rules, school safety, overall bullying, and total score), and gender (female: 0 and male: 1). The significance level used in the analyses was $p < .05$ and $p < .001$.

Ethical Considerations

This study is part of a larger study coordinated by the second author. It was submitted to the Research Ethics Committee of the Universidade do Estado do Rio de Janeiro and approved under number CAA: 49261221.5.0000.5282). All students' legal guardians signed the Informed Consent Form, and the students signed the Assent Form before data collection began.

Results

Among the participants, 157 (23.8%) reported having had suicidal ideation in the previous 12 months, 140 (21.2%) indicated having made a plan to attempt suicide, and 124 (18.8%) reported having attempted suicide between once and 6 times or more. The significant results of the correlation analyses indicated that the total bullying victimization score ($r = .27$; $p = .01$) and all its factors - verbal bullying ($r = .26$; $p = .01$), physical bullying ($r = .22$; $p = .01$), socio-relational bullying ($r = .26$; $p = .01$) and cyberbullying ($r = .27$; $p = .01$) showed positive associations (low to moderate magnitude) with suicidal ideation. Regarding protective factors, the results indicated significant negative associations (weak magnitude)

between the social skills of self-control ($r = -.15$; $p = .01$), assertiveness ($r = -.08$; $p = .02$), and the total score ($r = -.12$; $p = .02$) and suicidal ideation. Furthermore, the total score ($r = -.17$; $p = .01$) and all dimensions of school climate - teacher-student relationship ($r = -.14$; $p = .01$), student-student relationship ($r = -.12$; $p = .01$), respect for diversity ($r = -.10$; $p = .01$), general school engagement ($r = -.08$; $p = .03$), clarity of expectations ($r = -.09$; $p = .01$) and fairness in rules ($r = -.10$; $p = .01$) showed negative associations (weak or very weak magnitude) with suicidal ideation.

The model tested using binary logistic regression with the suicidal ideation variable as the outcome, was statistically significant [$\chi^2(5) = 87.83$, $p < .001$; Nagelkerke $R^2 = .19$], demonstrating an ability to accurately predict 77.77% of cases. The model had a specificity of 95.40% and a sensitivity of 21.15%. Table 1 presents the coefficients for all significant predictors. The other variables did not demonstrate statistical significance in the model. The results showed that each point increase in verbal bullying and cyberbullying increases the odds of suicidal ideation by 5% and 9%, respectively. In turn, each point increase in self-control skills and overall school climate decreases the odds of suicidal ideation by 6% and 2%, respectively. Male participants reported a 44% lower chance of suicidal ideation compared to female participants.

Discussion

This study showed that among participants, 157 (23.8%) reported having suicidal ideation in the previous 12 months, 140 (21.2%) indicated having planned to attempt suicide, and 124 (18.8%) reported having attempted suicide between once and 6 times or more. Other national (IBGE, 2021; Moraes et al., 2020) and international (Beserra et al., 2020; Gaylor et al., 2023; Nock et al., 2008) studies have identified a prevalence similar to that found in this study. These results highlight the urgent need to promote prevention programs and clinical interventions for adolescents, following the negative effects of the pandemic on mental health. One way to act in this direction, aligned with the WHO (2021a) guidelines, which advocate intersectoral and multilevel approaches to

suicide prevention strategies, is to focus on actions in the school context, aiming to reduce interpersonal violence and suicide risk among children and adolescents.

Regarding correlations, the results indicated that bullying, in its various manifestations (verbal, physical, and socio-relational), and cyberbullying were associated with increased suicidal ideation among adolescents in this sample. In turn, the social skills of self-control, assertiveness, and total, as well as all dimensions of the school climate and total, were negatively associated with suicidal ideation. These findings are supported by previous research that shows a positive association between suicidal ideation and bullying and cyberbullying victimization (Beserra et al., 2020; Holst-Schumacher et al., 2022; Lee et al., 2021; Wang et al., 2023), and with an adverse school climate (Cao et al., 2023; Estévez-García et al., 2023). This contributes to disengagement, low academic performance, poor well-being, and lower frequency of socially skilled behaviors in adolescents (Nunes & Mota, 2023; Portillo et al., 2019).

In addition, the correlations were largely weak, suggesting the complex nature of suicidal ideation. In other words, although these variables exhibit a significant association, their isolated effects are limited, likely because suicidal behavior results from the interaction between multiple risk and protective factors distributed across different levels (individual, family, school, and community). Furthermore, low-magnitude correlations are common in studies with large samples and highly complex phenomena. This does not invalidate their practical and theoretical relevance, but rather indicates that each variable contributes modestly to explaining the phenomenon. Thus, the findings reinforce the importance of multivariate analyses that consider the overlap of different factors, as well as the need for integrated prevention strategies that address personal and contextual dimensions.

The literature indicates that both the ability to regulate emotions and behaviors, as well as the ability to express feelings, respond to criticism and refuse requests, for example, favors conflict resolution, contributing to coping with adversity with less stress and a greater sense of well-being (Leme et al., 2019; Nunes & Mota, 2023). Thus, the correlation results suggest a need to create prevention strategies that aim to raise awareness and educate students about interpersonal violence and mental health, create inclusive and welcoming school environments, social skills programs, and provide accessible psychological support (Ayer et al., 2023; Leme et al., 2019). Therefore, it is essential to promote the construction of support networks among students and strengthen communication between students, families, and educators to identify and intervene early in cases of risk (Ayer et al., 2023; Richardson et al., 2024).

In the regression model tested, a one-point increase in verbal bullying and cyberbullying increased the odds of suicidal ideation by 5% and 9%, respectively. Scientific evidence supports this impact, demonstrating that the experience of bullying can lead to serious mental health problems, including suicidal ideation (Beserra et al., 2020; Holst-Schumacher et al., 2022; Wang et al., 2023). Verbal bullying, which includes insults, threats and humiliation, can cause intense

Table 1
Significant binary logistic regression results for suicidal ideation

Predictors	<i>B</i>	<i>p</i>	<i>OR</i>	<i>OR [95% CI]</i>	
				Lower Bound	Upper Bound
Intercept	-0.09	.89	0.91	-	-
Verbal bullying	0.05	< .05	1.04	1.00	1.09
Cyberbullying	0.09	< .001	1.08	1.04	1.13
Self-Control	-0.06	< .05	0.94	0.89	0.99
School climate	-0.02	< .05	0.98	0.96	0.99
Gender	-0.59	< .01	0.55	0.36	0.82

Note. OR: odds ratio. CI: confidence interval.

psychological damage. Adolescents who are constantly targeted by verbal bullying may develop feelings of devaluation and hopelessness, factors known to contribute to suicidal ideation (Lee et al., 2021). A cross-sectional study conducted by Wang et al. (2023) with 27,030 middle and high school students in Zhejiang Province, China, investigated the associations between bullying victimization, suicidal ideation, and suicide attempts. The results revealed a positive relationship between bullying victimization and suicidal ideation, as well as suicide attempts among adolescents. The authors highlighted that in addition to physical bullying, verbal, relational, and cyberbullying were also associated with an increased risk of suicidal ideation and suicide attempts.

Indeed, cyberbullying or online bullying, can be even more devastating due to its persistent nature and potential wide audience. This form of violence is associated with depression, anxiety, and suicidal thoughts, as the victim may feel constantly persecuted and without escape (Lee et al., 2021). The study by Baiden and Tadeo (2020) with middle and high school adolescents found that bullying victimization was associated with suicidal ideation, and adolescents who were victims of bullying and cyberbullying were 3.26 times more likely to experience suicidal ideation. The authors highlighted the importance of understanding the association between bullying/cyberbullying victimization and suicidal ideation for the early identification of adolescents who may be at risk of suicide. In the study by Lee et al. (2021), school connectedness moderated the relationship between cyberbullying victimization and adolescent suicidal ideation; that is, students who perceived themselves as having a good relationship with their school were less likely to experience suicidal ideation. Therefore, specific programs specifically targeting victims of bullying and cyberbullying should be developed in schools and include guidelines to address the deleterious effects of the COVID-19 pandemic on adolescent mental health (Ayer et al., 2023).

The regression model indicated that each one-point increase in self-control skills decreased the odds of suicidal ideation by 6%. This finding is in line with other studies on the relationship between self-control and suicidal ideation in adolescents (Nunes & Mota, 2023; Portillo et al., 2019). Nunes and Mota (2023) found that adolescents with social skills in self-control, assertiveness, and empathy presented less suicidal ideation. However, unlike the present study, in the regression model for ideation, only self-control remained a significant variable. One hypothesis for this discrepancy is the age difference in the samples, as Nunes and Mota (2023) investigated high school adolescents.

According to Del Prette and Del Prette (2009), self-control and empathy are necessary skills for the development of other more complex skills, such as assertiveness, and are learned in childhood and early adolescence. Suicidal thoughts frequently occur in adolescents, especially during stressful and difficult periods, such as relationship breakups, humiliation, rejection by the social group, academic failure, and loss of friends and family (Klonsky et al., 2016). Thus, self-control promotes emotional and behavioral regulation and informed

decision-making, essential for dealing with challenges and stress common in bullying/cyberbullying situations (Ayer et al., 2023). The presence of self-control social skills in adolescents can promote a healthy development and social integration guided by respect and a sense of belonging (Del Prette & Del Prette, 2009; Nunes & Mota, 2023). Therefore, family members, educators, and mental health professionals should recognize and support the development of self-control during childhood and early adolescence.

In the regression model, each one-point increase in the school climate decreased the odds of experiencing suicidal ideation by 2%. Previous research findings show that higher levels of school climate are negatively associated with bullying victimization and suicidal ideation in adolescents (Cao et al., 2022; Estévez-García et al., 2023). A climate perceived as positive promotes a more favorable school environment for individuals facing emotional and behavioral difficulties who are victims of bullying (Holst et al., 2016). Cao et al. (2022) observed that, compared with their peers, adolescents who reported higher levels of perceived school climate presented less suicidal ideation when they were victims of bullying. Thus, when students perceive the school environment as safe and welcoming, the impact of bullying on mental health can be reduced.

In this sense, Estévez-García et al. (2023) emphasize that schools can also act as a protective environment for adolescents exposed to family environments characterized by negative educational practices. According to the authors, adolescents who experience bullying victimization are more likely to experience suicidal ideation and have difficulty disclosing this violence to their families. However, when there is a climate of safety and respect at school, adolescents may seek help in the face of bullying. These results highlight the importance of interventions focused both on reducing bullying/cyberbullying and on promoting an inclusive and supportive school climate to prevent suicidal ideation among adolescents.

Finally, males reported a 44% lower risk of experiencing suicidal ideation compared to females, corroborating the literature (Beserra et al., 2020; Gaylor et al., 2023; IBGE, 2021). Shoshani (2024) conducted a longitudinal study to assess mental health measures in Israeli adolescents at four time points (September 2019 - before the COVID-19 outbreak; May 2020 - after the first lockdown; May 2021 - after the third lockdown; and May 2022 - after the fourth and fifth waves of the pandemic). The study showed that girls had higher levels of anxiety, depression and somatization, and lower well-being during the pandemic than boys.

According to Magson et al. (2021), due to gender-specific socialization practices, female adolescents learn throughout their lives to rely on their support networks to manage stressful events, compared to male adolescents. With the implementation of remote learning and restricted social interactions during the pandemic, these adolescents were prevented from accessing their most commonly used coping strategy, harming their mental health and increasing their likelihood of suicidal ideation (Magson et al., 2021).

Consistent with the psychosocial model of suicidal ideation, the risk factors, personal protective factors, and contextual resources identified in this study allowed us to understand suicidal behavior from a comprehensive approach, breaking with a biological and single-cause perspective. Based on data, the conclusion is that to reduce the incidence of suicidal ideation among students, it is essential to implement, even in the final years of middle school, initiatives and programs that promote an inclusive, diverse school environment free from violence, especially bullying and cyberbullying. Furthermore, it is important to offer social skills programs, such as empathy, assertiveness, and self-control, with a priority focus on female students.

The findings of this study have limited generalizability to the broader Brazilian population, as the sample was one of convenience, drawn exclusively from public school students in a single municipality in the state of Rio de Janeiro. The cross-sectional design used in this study could be complemented by a longitudinal study, which would help to provide a more comprehensive understanding of the sample's characteristics and the impacts of the variables investigated. Furthermore, the study was based on self-report instruments and did not explore students' relationships beyond the school environment, such as their family environment and community life.

Future studies could investigate multiple informants, such as parents and peers, to obtain a more complete picture, not just considering data collected from students' perceptions. Although the selected variables showed significant relationships and were identified as predictors of suicidal ideation, they explained only a small percentage of the observed relationships and variance. Future studies could include other sociodemographic variables, such as those that help understand belonging to groups at risk of suicide and suicidal ideation, as warned by the World Health Organization, such as sexual orientation, socioeconomic status, and exposure to interpersonal violence. Finally, data were collected in the first semester of 2022, the first year in which most schools in the country returned to in-person activities after two years of the COVID-19 pandemic.

It is noteworthy that actions to combat bullying and cyberbullying promote a positive school climate, develop social skills in the school context and can reduce the incidence of suicidal ideation among students. Furthermore, developing information and awareness strategies for the school community to prevent suicidal ideation and related behaviors can also help foster students' sense of protection and belonging in the educational environment. These strategies tend to be comprehensive and aim not only to address immediate crisis situations but also to promote long-term strategies for students' mental well-being.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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- Leticia de Moraes* is a Master of the Universidade do Estado do Rio de Janeiro, Rio de Janeiro-RJ, Brazil.
- Vanessa Barbosa Romera Leme* is a Professor of the Universidade do Estado do Rio de Janeiro, Rio de Janeiro-RJ, Brazil.
- Susana Coimbra* is a Professor of the Universidade do Porto, Coimbra, Portugal.
- Leonardo de Barros Mose* is a Ph.D. at Universidade São Francisco, Campinas-SP, Brazil.



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