

# School bullying, cyberbullying, or both: Correlates of teen suicidality in the 2011 CDC youth risk behavior survey

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## Abstract

While school bullying has been shown to be associated with depression and suicidality among teens, the relationship between these outcomes and cyberbullying has not been studied in nationally representative samples. Data came from the 2011 CDC Youth Risk Behavior Survey (YRBS), a nationally representative sample of high-school students ( $N = 15,425$ ). We calculated weighted estimates representative of all students in grades 9–12 attending school in the US. Logistic regression was used to calculate adjusted odds ratios. Overall, girls are more likely to be report being bullied (31.3% vs. 22.9%), in particularly to be cyberbullied (22.0% vs. 10.8%), while boys are only more likely to report exclusive school bullying (12.2% vs. 9.2%). Reports of 2-week sadness and all suicidality items were highest among teens reporting both forms of bullying, followed by those reporting cyberbullying only, followed by those reporting school bullying only. For example, among those reporting not being bullied 4.6% reported having made a suicide attempt, compared to 9.5% of those reporting school bullying only (adjusted odd ratio (AOR) 2.3, 95% C.I. 1.8–2.9), 14.7% of those reporting cyberbullying only (AOR 3.5 (2.6–4.7)), and 21.1% of those reporting victimization of both types of bullying (AOR 5.6 (4.4–7)). Bullying victimization, in school, cyber, or both, is associated with higher risk of sadness and suicidality among teens. Interventions to prevent school bullying as well as cyberbullying are needed. When caring for teens reporting being bullied, either at school or in cyberbullying, it's important to screen for depression and suicidality.

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## 1. Key points

What's known:

- Suicide is among the top causes of death among teenagers.
- School bullying is a risk factor for suicide. School bullying risk is higher among males and decrease through high school. Previous research on middle school students has shown increased female risk on cyberbullying victimization and an association with increased depression risk.

What's new:

- Among US high school students, cyberbullying risk is higher among females and does not show a decreasing trend through high school.

- Teens reporting being victims of cyberbullying only are at increased risk for suicide than those reporting school bullying only. Those reporting both forms of bullying are at the highest risk.

What's clinically relevant:

- Clinicians working with adolescents reporting school bullying should also inquire about cyberbullying and assess suicidality.

## 2. Background

Suicide is a grievous and preventable tragedy, and sadly stands among the top causes of death among teens [1]. The lifetime prevalence of suicide ideation, planning, and attempts among teens is estimated to be 12.1%, 4%, and 4.1% respectively [2]. The role new forms of media play in this outcome is among the challenges in reducing the burden of suicide among teens [3]. Recently, attention has been drawn to teen suicides precipitated by electronic harassment [4]. A Kaiser Foundation study [5] reported that

*Abbreviation:* YRBS, Youth Risk Behavior Survey.

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86% of US youngsters have a computer at home and also estimated the daily average time of recreational Internet use to be over 1 hour. More recent estimates point to 80% of American teens using social network sites [6]. The teens' embracement of online social network has made electronic harassment an issue of their lives and a pervasive exposure in need of study. Furthermore, surveys on US middle school students has shown that, as compared to traditional bullying, there is a stronger association between cyberbullying victimization with depression [7] and suicidality [8], however research looking at this relationship is in its infancy [9].

The term bullying was introduced to Medical Subject Headings (MeSH) in 2011 and defined as "aggressive behavior intended to cause harm or distress. The behavior may be physical or verbal." Developmental psychology definitions of bullying also stress three common criteria: intentionality, repetitiveness, and power imbalance [10]. Cyberbullying occurs when digital media are used for bullying [11]. The 2011 Youth Risk Behavior Survey (YRBS), conducted biannually by the CDC, had for the first time a question addressing cyberbullying [12]. Several studies have shown an association between school bullying and depression and suicidality among teens [13–16] as well as with risk for personality disorder in adulthood along with externalizing behaviors and mental health care utilization [17]. There have been to date, few studies linking cyberbullying to mental health problems in the youth [9,11,18]. In a 2008 sample of Massachusetts high school students 15.8% reported cyberbullying and 25.9% reported school bullying in the past 12 months, and victimization was associated with significant psychological distress [9]. In a study of teens from three European countries, four different forms of bullying were described (direct, indirect, mobile phone, and internet) and regional variations were found, with England having the highest victimization rate, Spain the lowest, with Italy in the middle [11]. Another study of English teens looked at seven forms of cyberbullying and found an overall incidence of 22.2% being victims of cyberbullying within the last couple of months, with girls being at a higher risk [18]. Two regional samples of the YRBS have been used to study cyberbullying and teen mental health, one in Arizona [19] and another in the Midwest [20], both showing an association between cyberbullying and teen suicidality. A previous study on school bullying and suicide attempt was done using the New York City YRBS [21]. To our knowledge, no study on a nationally representative sample of American teens has been conducted to look at the association between cyberbullying and teen mental health.

We used a publicly available, nationally representative, sample of US high school students to study the relationship between school bullying, cyberbullying, and both forms of bullying victimization, to depression and suicide. We hypothesized that subjects reporting school bullying, cyberbullying, or both, are at higher risk of reporting 2-

week sadness, as proxy for depression, and of endorsing suicide related items.

### 3. Methods

The methodology for the Youth Risk Behavior Survey (YRBS) has been described [22,23] and is available at the CDC website (<http://www.cdc.gov/healthyyouth/yrebs>). Briefly, these national high school surveys have been conducted biannually since 1991 and monitor several health-risky behaviors. The aggregate data is made available without any personal identifying information. State participation varies year by year but most states participate. Sampling weights are calculated to allow for nationally representative estimates. Among the participating states, the overall participation rate for the 2011 YRBS was 71%. Comprehensive descriptive results from the 2011 survey have been published [12]. This study protocol was submitted to the Institutional Review Board (IRB) at the University of Arkansas for Medical Sciences and given exempt status given the deidentified nature of the publicly available survey data.

#### 3.1. Exposures

Bullying victimization categories were based on answers to two separate YRBS questions. The school bullying question read: "During the past 12 months, have you ever been bullied on school property?" with a yes/no answer. The cyberbullying question read: "During the past 12 months, have you ever been electronically bullied? (Include being bullied through e-mail, chat rooms, instant messaging, Web sites, or texting)" also with a yes/no answer. Given the overlap between school bullying and cyberbullying, i.e. many students who reported cyberbullying also reported school bullying, we created a new variable, used in the analysis, combining these two types of bullying, resulting in four exclusive categories: no bullying, school bullying victimization only, cyberbullying victimization only, and both forms of bullying victimization. In all analysis the "no bullying" category is the comparison category.

#### 3.2. Outcomes

2-week sadness was assessed by the question "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?" which was used as proxy for depression. Four questions assessed suicidality in a continuum of severity. The suicidal ideation question read "During the past 12 months, did you ever seriously consider attempting suicide?" The suicide plan question read "During the past 12 months, did you make a plan about how you would attempt suicide?" The suicide attempt question read "During the past 12 months, how many times did you actually attempt suicide?" The attempt requiring treatment

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