

Trends and sex disparities in school bullying victimization among U.S. youth, 2011–2017

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Abstract

Objectives The prevalence of being bullied traditionally among U.S. high school students is expected to reduce to 17.9%, according to Healthy People 2020 Initiatives. We examined trends in traditional and cyberbullying victimization with the latest large-scale time-series data in the United States.

Methods We analyzed the data from the 2011-2017 national Youth Risk Behavior Survey (YRBS) to access the trends in traditional and cyberbullying among U.S. high school students. We identified the temporal trends using multivariate logistic regression analyses, accounting for survey design features of YRBS.

Results The overall prevalence of victimization was 19.74% for traditional bullying and 15.38% for cyberbullying, suggesting that cyberbullying is not a low frequent phenomenon. The prevalence of victimization ranged from 20.19% to 19.04% for traditional bullying and 16.23% to 14.77% for cyberbullying, and the declined trends for the two kinds of bullying victimization were both statistically non-significant. The degree of overlap between the two kinds of bullying victimization was about 60%. Besides, female students experienced more traditional and cyberbullying than male peers within each survey cycle.

Conclusions No declined trends in traditional and cyberbullying victimization were observed during 2011-2017. Female students are more likely to experience bullying. To achieve the Healthy People 2020 goal on bullying, more work is needed.

Introduction

School bullying was considered a serious and often overlooked issue for school-aged children[1]. Dan Olweus of Norway, one of the world's pioneering researchers on bullying, provides strong evidence that compared with traditional bullying, cyberbullying is still a relatively low-prevalence phenomenon, which has not increased over time and has not created many new victims and bullies using large-scale time-series data sets in United States(2007-2010) and Norway(2006-2010)[2, 3]. The heterogeneity of empirical prevalence estimates of cyberbullying, according to Olweus, can be explained by three primary reasons: different reference periods, different cutoff point, and different measurement contexts[4].

The prevalence of being bullied traditionally among U.S. high school students is expected to reduce to 17.9%, according to Healthy People 2020 Objective IVP-35 [5]. The national Youth Risk Behavior Survey (YRBS) measured both traditional bullying victimization and cyberbullying victimization in the four cycles of the survey during 2011-2017 with a national representative and racially/ethnically diverse high school students in the U.S., which provides an opportunity to re-evaluate the prevalences and trends in bullying victimization and cyberbullying victimization among U.S. high school students.

Methods

The data used in this secondary analysis are de-identified and publicly available (<https://www.cdc.gov/healthyyouth/data/yrbs>), hence no protocol approval from an Institutional Review Board was needed.

Sample

The YRBS is an ongoing, biennial, cross-sectional, school-based survey of a representative sample of high school students from across the U.S. that monitors the prevalence of health-related behaviors[6]. A three-stage cluster sample design was used to recruit nationally representative samples of students attending public and private schools in grades 9-12[6]. This study drew data (n=59,079) from four YRBS waves (2011-2017), considering that YRBS measured both traditional bullying and cyberbullying since 2011. The sample sizes and overall response rates were 15,425, 71.1% (2011); 13,583, 67.3% (2013); 15,624, 59.7% (2015) and 14,765, 60.4% (2017) respectively[6].

Measures

Traditional bullying victimization and cyberbullying victimization were measured using the same reference period (in the past 12 months). During 2011-2017 surveys, traditional bullying victimization was assessed by the question “During the past 12 months, have you ever been bullied on school property?” During 2011-2015 surveys, cyberbullying victimization was assessed by the question “During the past 12 months, have you ever been electronically bullied? (Include being bullied through e-mail, chat rooms, instant messaging, websites, or texting.)”. In the 2017 survey, the definition of been electronically bullied was revised to “Count being bullied through texting, Instagram, Facebook, or other social media”.

We hence derived a variable to represent three forms of bullying victims: those being bullied traditionally only, those being cyberbullied only, and those being poly-victimized. The degree of overlap between traditional and cyberbullying victimization was measured as the ratio of poly-victimization to cyberbullying victimization.

Data analysis

Data were weighted to account for the complex survey design and adjusted for the survey nonresponse. Unweighted sample sizes were presented along with weighted prevalence estimates and corresponding 95% confidence intervals (CIs). Chi-squared tests of independence were used to examine statistical differences between female and male students across survey years. The linear trends in traditional and cyberbullying victimization during 2011-2017 were examined using logistic regression models, adjusting for sex, race/ethnicity, and grade[7].

All analyses were performed from January 2020 to April 2020 using SVY procedures in Stata/SE 15.1 (StataCorp LLC), and 2-tailed P-value less than 0.05 was considered statistical significance.

Results

In total, we included 29,612(50.12%) female students and 29,467(49.88%) male students from 4 survey cycles of YRBS (Table 1). The sample was racially/ethnically diverse and largely composed of White, non-Hispanic students (55.12).

During 2011-2017, 19.74% of the U.S. high school students reported being bullied in the traditional way, and 19.74% reported being cyberbullied, females reported higher prevalences of traditional bullying and cyberbullying than males did (Table 2). Among high school students, 10.31% were bullied traditionally only, 9.61% were cyberbullied only, and 9.61% were bullied in both ways.

Trend analysis showed that there was no significant change in the percent of high students who were traditionally bullied or cyberbullied during 2011-2017 (Figure 1). The prevalences were 20.06% (2011), 19.65% (2013), 20.19% (2015), 19.04% (2017) for traditional bullying victimization, and 16.23% (2011), 14.77% (2013), 15.55% (2015), 14.94% (2017) for cyberbullying victimization (Table 2). Bullying victimization was higher among females than among males in every survey year for both traditional bullying and cyberbullying.

The degree of overlap between traditional bullying and cyberbullying was moderate. Overall, of students who were cyberbullied, 62.48% were also been bullied traditionally (Table 2). The overlap ranged from 57.42% (2011) to 66.33% (2017). The prevalence of being cyberbullied only varied from 6.81% (2011) to 5.04% (2017).

Discussion

The main findings of this study are we did not observe a downward trend in both forms of bullying victimization, and more female students reported being bullied compared with male students, both traditionally and electronically. These findings echoed the previous findings[8, 9], and highlighted the gap between reality and the Healthy People 2020 goal on reducing bullying and identify female students as the priority group.

Olweus concluded that compared with traditional bullying, the prevalence of cyberbullying was actually quite low using the time series data from two large-scale studies in the U.S. and Norway[2]. The data from the U.S. sample (total n=447,000) showed that the average across time prevalences of being bullied verbally and electronically were 17.6% and 4.5%, and were 11.0% and 3.4% in Norwegian data (total n=45,000)[2]. However, according to YRBS data, there were 19.74% and 15.38% of high school students who were exposed to traditional bullying and cyberbullying during 2011-2017, indicating that in the past few years, cyberbullying is not a low frequent phenomenon[10], at least among U.S. adolescents.

In spite of increasing accessibility to smartphones and other Internet devices, Olweus found that there was no growth trend in the prevalence of being cyberbullied during 2006-2010, neither did the traditional bullying[2, 11]. For cyberbullying, the prevalence ranged from 15.4% to 18.4% in the U.S. and from 10.3% to 11.75 in Norway; for traditional bullying, the results were 15.4%-18.4% in the U.S. and 10.3%-11.7% in Norway[2]. We achieved a similar conclusion from YRBS data. Among U.S. high school students, the

prevalences of being cyberbullied and traditionally bullied were both unchanged significantly from 2011 to 2017. Across the seven years, the prevalence ranged from 14.77% to 16.23% for cyberbullying and from 19.04% to 20.19% for traditional bullying.

Large studies indicate that there is a substantial overlap between cyberbullying and traditional bullying[12, 13], and the degree of overlap varies from over 90%[2] to 50%[14]. Olweus argued that cyberbullying created a few additional victims of bullying, given that the degree of overlap was up to 88% in the U.S. and 93% in Norway[2, 13]. However, YRBS data showed that the degree of overlap was only about 60%, and the overall prevalence of being cyberbullied only was 5.76% during 2011-2017, which meant that contrary to findings from Olweus, cyberbullying actually added a few new victims at least among U.S. adolescents.

Healthy People 2020 provides science-based national objectives for improving the health of Americans during 2011–2020. Healthy People 2020 objective IVP-35 is to reduce the prevalence of being bullied traditionally in the previous 12 months before the survey among U.S. high school students from 19.9% to 17.9%[5]. However, YRBS data showed that during 2011-2017, the prevalence of traditional victimization during the 12 months before the survey among students in grades 9 through 12 ranged from 21.99% to 19.04% and no linear decrease occurred, which suggested that more work is needed to address the issue of school bullying in the next few years. To achieve the Healthy People 2020 bullying goal[15], priority groups should be identified first. Consistent with the results from previous studies in U.S. high school students[6, 8, 16, 17], in our study, the self-reported prevalences of being cyberbullied and traditionally bullied among female students are both higher than male peers across the survey cycles, indicating that there are sex disparities in traditional and cyberbullying. The underlying cause for the unchanged trends for both female and male students may be that existing anti-bullying initiatives could reduce verbal and physical bullying effectively, but not relational bullying[9]. Relational bullying victimization ranked as the top bullying form among U.S. adolescents, and females were more likely to be involved in relational bullying according to Health Behavior in School-Aged Children study[18]. Societies should give high priority to interventions that focus on female students and relational bullying.

The findings in this study are subject to at least four limitations. First, YRBS data are self-reported, and the experience of being bullied traditionally or electronically may be affected by retrospective recall and social desirability biases[19]. Second, it should be noted that identical or similar measurement properties, including reference period, cutoff point, and context of bullying, must be used to compare the results from different studies. The recommended cutoff for the classification of being bullied is 2 or 3 times per month or more[13]. YRBS used at least once in the past 12 months for the criterion for classification, which led to higher prevalence estimates compared with Olweus's studies. Third, we measured traditional and cyberbullying victimization by one single item respectively. The use of the single-item measure might possess non-optimal psychometric properties, however, the single-item measure can capture enough information when estimating and comparing the prevalence of bullying victimization[20]. Last, it was not possible to identify the reasons behind the non-declines in school bullying using YRBS data.

Conclusion

Given that prevalence estimates of bullying victimization unchanged between 2011 and 2017, more work in policies, programs, and practices might be needed in the next few years to reach Healthy People 2020 targets for reducing the bullying disparities among U.S. high school students[15]. And cyberbullying is not a relatively low frequent phenomenon compared with traditional bullying among U.S. high school students, and should not be ignored, especially among female students[21].

Declarations

Contributors: QL designed the study and helped with result interpretation. RL and QS drafted the manuscript. LL and MX analyzed the data. JH contributed to the analytics strategy and manuscript improvement.

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Conflicts of interest: None declared.

Ethics approval: Not required.

Data sharing statement: Data is available at <https://www.cdc.gov/healthyyouth/data/yrbs/index.htm>.

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Tables

Table1. Sample Characteristics of high school students—national Youth Risk Behavior Survey, United States, 2011-2017

Characteristic	No. (Weighted %)		
	Female	Male	Total
All respondents	29,485(100)	29,261(100)	59,079(100)
Grade			
9th	7,682(27.02)	7,568(27.75)	15,250(27.39)
10th	7,302(25.74)	7,164(25.72)	14,466(25.73)
11th	7,325(23.99)	7,494(23.81)	14,819(23.90)
12th	7,176(23.25)	7,035(22.72)	14,211(22.98)
Race/ethnicity			
White, non-Hispanic	12,330(55.35)	12,357(54.90)	24,687(55.12)
Black, non-Hispanic	5,192(13.81)	5,010(13.91)	10,202(13.86)
Hispanic	8,441(21.41)	8,311(21.73)	16,752(21.57)
Other, non-Hispanic	3,165(9.42)	3,144(9.47)	6,309(9.44)
Survey cycle (year)			
2011	7,708(25.50)	7,656(26.51)	15,364(26.01)
2013	6,621(23.22)	6,950(22.71)	13,571(22.96)
2015	7,757(25.85)	7,749(26.61)	15,506(26.24)
2017	7,526(25.43)	7,112(24.16)	14,638(24.79)

Table 2. Weighted percentage of school bullying victimization—national Youth Risk Behavior Survey, United States, 2011-2017

	School bullying forms			School bullying victimization		Overlap
	Traditional only (A)	Cyber only (B)	Both (C)	Traditional	Cyber	C/(B+C)
	Weighted%(95%CI)	Weighted%(95%CI)	Weighted%(95%CI)	Weighted%(95%CI)	Weighted%(95%CI)	%
2011						
Overall	11.39(10.13-12.78)	6.81(6.25-7.41)	9.32(8.43-10.30)	20.06(18.61-21.59)	16.23(15.21-17.31)	57.42
Male*	12.84(11.32-14.53)	4.68(4.03-5.44)	6.01(4.89-7.35)	18.24(16.52-20.10)	10.75(9.59-12.04)	55.90
Female	9.82(8.59-11.22)	9.10(8.27-10.01)	12.87(11.59-14.27)	21.99(20.42-23.64)	22.11(20.60-23.71)	58.20
2013						
Overall	10.47(9.79-11.19)	5.58(5.08-6.13)	9.20(8.41-10.05)	19.65(18.46-20.89)	14.77(13.68-15.92)	62.28
Male*	10.29(9.26-11.41)	3.26(2.70-3.93)	5.29(4.69-5.95)	15.55(14.25-16.96)	8.54(7.70-9.47)	61.94
Female	10.63(9.89-11.42)	7.91(7.00-8.92)	13.11(11.72-14.64)	23.72(22.14-25.38)	21.01(19.15-23.00)	62.39
2015						
Overall	10.26(9.14-11.51)	5.61(4.98-6.31)	9.96(9.12-10.86)	20.19(18.69-21.78)	15.55(14.37-16.80)	64.05
Male*	10.00(8.80-11.34)	3.84(3.21-4.59)	5.84(4.84-7.03)	15.81(14.42-17.31)	9.66(8.45-11.03)	60.45
Female	10.50(9.10-12.09)	7.44(6.52-8.48)	14.30(12.87-15.86)	24.79(22.75-26.96)	21.74(19.86-23.75)	65.77
2017						
Overall	9.14(8.44-9.90)	5.04(4.57-5.56)	9.91(8.99-10.91)	19.04(17.71-20.44)	14.94(13.77-16.18)	66.33
Male*	9.09(8.13-10.15)	3.41(2.92-3.97)	6.51(2.85-7.25)	15.58(14.46-16.78)	9.91(9.19-10.68)	65.69
Female	9.26(8.45-10.14)	6.66(5.78-7.67)	13.09(11.44-14.95)	22.34(20.21-24.62)	19.74(17.48-22.21)	66.31
2011-2017						
Overall	10.31(9.78-10.85)	5.76(5.47-6.06)	9.61(9.20-10.04)	19.74(19.08-20.42)	15.38(14.86-15.92)	62.48
Male*	10.56(9.92-11.23)	3.81(3.50-4.15)	5.92(5.46-6.42)	16.33(15.60-17.08)	9.74(9.19-10.31)	60.78
Female	10.05(9.46-10.66)	7.75(7.29-8.24)	13.36(12.67-14.08)	23.22(22.31-24.15)	21.14(20.25-22.06)	63.19

Abbreviation: CI=confidence interval

* Significantly different from females.

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