Review article

Cyberbullying Prevalence Among US Middle and High School—Aged Adolescents: A Systematic Review and Quality Assessment

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A B S T R A C T

Purpose: Cyberbullying (CB) has established links to physical and mental health problems including depression, suicidality, substance use, and somatic symptoms. Quality reporting of CB prevalence is essential to guide evidence-based policy and prevention priorities. The purpose of this systematic review was to investigate study quality and reported prevalence among CB research studies conducted in populations of US adolescents of middle and high school age.
Methods: Searches of peer-reviewed literature published through June 2015 for "CB" and related terms were conducted using PubMed, PsycINFO, CINAHL Plus, and Web of Science. Included manuscripts reported CB prevalence in general populations of US adolescents between the ages of 10 and 19 years. Using a review tool based on the Strengthening the Reporting of Observational Studies in Epidemiology statement, reviewers independently scored study quality on study methods, results reporting, and reported prevalence.
Results: Search results yielded 1,447 manuscripts; 81 manuscripts representing 58 unique studies were identified as meeting inclusion criteria. Quality scores ranged between 12 and 37 total points of a possible 42 points (mean = 26.7, standard deviation = 4.6). Prevalence rates of CB ranged as follows: Perpetration, 1%—41%; victimization, 3%—72%; and overlapping perpetration and victimization, 2.3%—16.7%.
Conclusions: Literature on CB in US middle and high school—aged students is robust in quantity but inconsistent in quality and reported prevalence. Consistent definitions and evidence-based measurement tools are needed.

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IMPLICATIONS AND CONTRIBUTION

Using an evidence-based quality tool, this review provides a detailed critical assessment of studies of cyberbullying prevalence in US adolescents as well as a call for cyberbullying-related policy to incorporate quality evidence based on standardized definitions and measurement instruments.

Cyberbullying (CB) is an emerging public health concern among adolescents, with established links to physical and mental health problems [1]. Youth who experience CB are more likely to complain of difficulty sleeping, recurrent abdominal pain, and frequent headaches [2]. They are also more likely to endorse symptoms of anxiety, depression, and suicidal ideation compared with nonvictimized peers [1,3,4]. CB differs from "traditional" forms of bullying (i.e., physical, relational, and reputational aggression) due to distinct features of the electronic medium. [5] These include a virtually limitless audience, greater potential for anonymity by perpetrators, permanency of bullying displays on the Internet, and minimal constraints on time and space in which bullying can occur [5,6]. Although adult monitoring and supervision is a problem for both traditional and cyber

forms of bullying, adult monitoring and supervision of the online activities of teens is thought to be especially poor [7]. Taken together, these features have led some researchers to speculate that CB may be more pernicious than traditional forms of peer aggression, although preliminary findings addressing this claim have been mixed [8].

One of the major challenges facing researchers is how to conceptualize and define CB [9]. "Bullying" is defined by the Centers for Disease Control and Prevention as "any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated." [10] The extent to which this definition can be applied to CB is unclear, particularly with respect to whether online behaviors can adequately be considered "aggressive" in the absence of important in-person socio-emotional cues (i.e., vocal tone, facial expressions). Additionally, there is recognition that assessing "repetition" is challenging in that a single harmful act on the Internet has the potential to be shared or viewed multiple times [8]. Many researchers have responded to this lack of conceptual and definitional clarity by creating their own measures to assess CB—very few of which capture the components of traditional bullying (i.e., repetition, power imbalance, and whether the aggressive behavior was "unwanted") [11].

Given the lack of consensus on the definition of CB, it may not be surprising that estimated prevalence rates of CB perpetration and victimization vary widely around the world. In a small sample of global studies, estimates of prevalence ranged from 1% to 30% for CB perpetration and from 3% to 72% for cyberbullying victimization (CV) [12–15]. Multiple factors have been proposed to explain this broad range of estimates. First, the term "cyberbullying" is sometimes used as an all-encompassing term to describe behaviors that may be seen as distinct to some researchers, such as a single act of Internet aggression or repeated acts of electronic harassment [9,16]. The use of varied instruments and samples may also contribute to variation in prevalence [11]. Furthermore, cross-cultural, age, and time of measurement differences may meaningfully influence prevalence rates [17,18]. In addition, variability in rates of technology use may contribute to variance in prevalence [18,19]. Previous work has suggested that increased Internet use is associated with increased risk for CB [13]. Thus, rates of CB may be lower in countries where technology use is lower than that of adolescents in the United States.

Determining the prevalence of CB specific to middle and high school students in the United States may guide priorities for inclusion of CB prevention in US policy and school curricula. However, given the variation of prevalence rates reported across countries and over time and the lack of consensus on a CB definition, setting such priorities is difficult. Thus, the present review had dual purposes. Specifically, the aims of this systematic review were to (1) evaluate the methodological rigor of studies attempting to measure the prevalence of CB in US adolescents of middle and high school age (ages 10–19 years) using a standardized appraisal checklist [20,21] and (2) report the prevalence of CB perpetration, victimization, and dual perpetration/victimization status as reported by the highest quality studies. Our goals in providing this information were to evaluate the current state of the science and to understand future directions for improving research quality on this important and timely topic.

Methods

Study design

Our goal was to conduct a systematic review of the peer-reviewed literature addressing CB literature, guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. Given the heterogeneity of CB measurement instruments used in the included studies, we did not feel that a meta-analysis to determine overall CB prevalence between studies was feasible.

Search strategy

In consultation with a health sciences librarian, searches were performed on four major databases of medical and social science literature—PubMed, PsycINFO, CINAHL Plus, and Web of Science—from inception to June 2015. Given that no Medical Subject Headings were found specific to the topic of interest, we identified keyword search terms starting with the term "cyberbullying" and expanded the search to keywords associated with the manuscripts found in the initial search. The final list of search terms included the following keywords or keyword combinations: cyberbullying, electronic harassment, Internet bullying, and online aggression. To identify additional manuscripts, we searched the bibliographies of included manuscripts.

Study manuscript selection

Given that traditional bullying tends to peak in prevalence in the middle and high school years [17], we included English-language manuscripts that reported the prevalence of CB perpetration and/or victimization among middle school and high school–aged adolescents through surveys of participants aged 10–19 years. Other manuscript inclusion criteria were: (1) Conducted solely in the United States, or (2) data could be separated such that prevalence in the US could be determined. Given that special populations such as students with disabilities and lesbian, gay, bisexual, transgender, questioning/queer (LGBTQ) students have been found to be at higher risk for bullying than the general population of students, we excluded manuscripts that focused solely on special populations [4]. To focus this review on CB, we excluded related concerns such as electronic dating violence or unwanted electronic sexual solicitation. We included manuscripts that reported CB across all available technology platforms including social media, texting, and chat rooms.

In review of our included manuscripts, we discovered that some studies measuring CB prevalence were reported in multiple manuscripts. To systematically determine which manuscripts referred to a single study, we examined overlap in (1) title of the survey described in the manuscript's Methods section (if available); (2) manuscript authors; and (3) similarities in total number of participants and sample demographics. Manuscripts that referred to the same study are grouped by study in the Appendix.

Quality review tool

Currently, a specific tool for assessment of the quality of CB studies is lacking. However, the Strengthening the Reporting of Observational Studies in Epidemiology recommendations were created "to improve the quality of reporting of observational studies" [20]. Thus, we used the Strengthening the Reporting of Observational Studies in Epidemiology statement to develop a