



PTSD, cyberbullying and peer violence: prevalence and correlates among adolescent emergency department patients



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ABSTRACT

Objective: Posttraumatic stress disorder (PTSD) is often underdiagnosed and undertreated among adolescents. The objective of this analysis was to describe the prevalence and correlates of symptoms consistent with PTSD among adolescents presenting to an urban emergency department (ED).

Methods: A cross-sectional survey of adolescents aged 13–17 years presenting to the ED for any reason was conducted between August 2013 and March 2014. Validated self-report measures were used to measure mental health symptoms, violence exposure and risky behaviors. Multivariate logistic regression analysis was performed to determine adjusted differences in associations between symptoms consistent with PTSD and predicted correlates. **Results:** Of 353 adolescents, 23.2% reported current symptoms consistent with PTSD, 13.9% had moderate or higher depressive symptoms and 11.3% reported past-year suicidal ideation. Adolescents commonly reported physical peer violence (46.5%), cyberbullying (46.7%) and exposure to community violence (58.9%). On multivariate logistic regression, physical peer violence, cyberbullying victimization, exposure to community violence, female gender and alcohol or other drug use positively correlated with symptoms consistent with PTSD.

Conclusions: Among adolescents presenting to the ED for any reason, symptoms consistent with PTSD, depressive symptoms, physical peer violence, cyberbullying and community violence exposure are common and interrelated. Greater attention to PTSD, both disorder and symptom levels, and its cooccurring risk factors is needed.

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1. Introduction

Approximately 4% of children and adolescents experience posttraumatic stress disorder (PTSD) [1–3], with higher rates among trauma-exposed adolescents [4]. PTSD in adolescents has been associated with long-term functional impairment [5], including poor physical health [6], academic failure [7] and increased medical service utilization [8]. PTSD is frequently comorbid with multiple psychological and behavioral concerns, including depression [9–11], suicidal ideation [10,12,13] and substance use disorders [14]. Prior PTSD symptoms also increase

the conditional risk of PTSD after future trauma [15–19], emphasizing the importance of early PTSD assessment even for those whose symptoms will spontaneously remit [20]. PTSD, despite effective treatment, is currently underdiagnosed, underreported and undertreated [21]. Large-scale adult studies suggest that only half of adults with PTSD seek psychiatric treatment, with rates falling as low as one third in minority adults [22]. This lack of treatment is further compounded among children and adolescents, since parents may fail to recognize PTSD symptoms [23,24].

The need for early diagnosis and treatment may be highest in adolescents with a history of physical peer violence, a population at high risk for future trauma [25,26]. A history of physical peer violence is a strong predictor of PTSD symptoms in adults and adolescents [2,3,27,28]. Cyberbullying is a relatively new form of peer violence, defined as “using electronic means to intentionally harm someone else” [29]. Cyberbullying overlaps with, and may predict exposure to, physical peer violence [30]. Cyberbullying may be more strongly associated with suicidal behavior and depression than other forms of peer violence

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[31–34]. Its correlation with PTSD symptoms has not, to our knowledge, been reported.

Early recognition and treatment of PTSD may alter adolescents' trajectory of future physical and cyberviolence, behavioral disorders and social consequences [35,36]. Regulatory agencies are, correspondingly, increasingly urging standardized evaluation and treatment of PTSD, particularly for high-risk adolescents presenting for clinical care [37,38]. The American College of Surgeons guidelines encourage systematic screening for PTSD in trauma centers [39]. Such screening would facilitate both alterations in the immediate care provision, for instance, by using a trauma-informed care protocol [40], and in the long-term plans for affected individuals, by facilitating referral to a collaborative or psychiatric care program [41].

Some studies suggest that the emergency department (ED) may be an appropriate location to screen adolescents for PTSD and other psychiatric disorders [42,43], given the large number of high-risk adolescents seen in the ED and the important role of the ED as a liaison to community mental health services [44]. Emergency physicians, however, are currently limited in their understanding of the prevalence and impact of PTSD in adolescent ED patients [45], particularly among patients who are not necessarily presenting in the aftermath of an obviously traumatic event. We are aware of only one small study ($N=64$, 8–21 years of age) involving assessment of preexisting PTSD symptoms in youth presenting to the ED for noninjury complaints [46]. Existing literature on PTSD in adolescent ED patients describes its development after an acute assault [47–52] or motor vehicle crash [53,54]. Further elucidation of the correlates of PTSD, including prior physical violence and cyberbullying, in adolescent ED patients could help improve future efforts at targeted or indicated screening.

1.1. Statement of purpose

The main aim of this analysis was to describe prevalence and correlates of symptoms compatible with PTSD among adolescents presenting to an urban ED for care for *any* reason, focusing on its correlation with known risk factors for PTSD as well as its correlation with the novel risk factor of cyberbullying.

2. Materials and methods

2.1. Study design, setting and population

This study represents a cross-sectional analysis of adolescents aged 13–17 years presenting for care at a Level I trauma center's pediatric ED. The study site is the primary children's hospital for a Northeastern state, serving approximately 50,000 pediatric patients per year with a diverse population (30% Hispanic, 20% African American and 40% publicly insured). The administered survey represented a screening assessment for a larger study of adolescents presenting to the ED [55]. Study procedures were approved by the participating hospital's institutional review board.

2.2. Study protocol

We approached a consecutive sample of adolescents aged 13–17 years presenting to the ED for any reason to take the survey. Trained research assistants recruited eligible participants on a convenience sample of shifts, weighted by patient volume, between August 2013 and March 2014. Inclusion criteria for screening included being medically stable, mentally and physically able to consent, English speaking and having a parent/guardian present to consent. Exclusion criteria included presenting complaints of suicidality, psychosis, sexual assault or child abuse or being in police or state agency custody. We obtained verbal parental/guardian consent and verbal adolescent assent. Participants completed the survey on a touch-screen tablet and received a small gift valued at US\$2 on completion of the survey.

2.3. Measures

2.3.1. Primary outcome

Past 2-week PTSD symptoms were measured using the Child PTSD Symptom Scale (CPSS) [56], a validated 17-item measure corresponding to clinical criteria defined by the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR) [57]. A cutoff score of 11 or higher was used to define presence of PTSD symptoms that are consistent with a diagnosis of PTSD (hereafter referred to as "PTSD"), in accordance with previous studies in which this cutoff has a sensitivity of 95% and a specificity of 96% for this disorder [56].

2.3.2. Other mental health symptoms

Past 2-week depressive symptoms were measured using the Patient Health Questionnaire-9 (PHQ-9) [58], a 9-item measure that corresponds to clinical criteria defined by the DSM-IV-TR. A cutoff score of 10 or higher was used to define presence of moderate-or-higher depressive symptoms, in concordance with clinical recommendations [58]. For adolescents, a score of 10 or higher has a sensitivity of 89.5% and a specificity of 77.5% for major depressive disorder [59,60]. Suicidal ideation was measured using two items from the 2013 Youth Risk Behavior Survey (YRBS) [61] and one item from the PHQ-9 [58]. Suicide attempts were measured using one item from the 2013 YRBS ($\kappa=0.61-1.00$) [62].

2.3.3. Past-year violence

Past-year physical peer violence (victimization and perpetration) was measured using a 14-item modified version of the Conflict Tactics Scale, Second Edition [63], as used by other studies on youth peer violence [64–66]. Previous studies report Cronbach's α ranging from 0.79 to 0.95 [63]; this study's Cronbach's α was 0.87. High overlap between physical violence perpetration and physical violence victimization in this sample (83% of youth reporting physical perpetration also reported victimization; Pearson's $r=0.65$) was observed; prior literature indicates strong correlation between victimization and perpetration in adolescent samples [67]. However, given that there is limited theoretical justification for physical violence perpetration being correlated with PTSD, the physical peer violence variables were maintained as separate "perpetration" and "victimization" variables for analytic purposes. Past-year experience with cyberbullying was measured using a modified 2-item version of the Student School Survey [68]. As prior evidence [69], as well as our own data (see the results section below), indicates that cyberbullying perpetrators and victims had separate characteristics, we maintained a separation between cyberbullying perpetrators and cyberbullying victims in the analysis. Past-year exposure to community violence was measured using the NIMH Community Violence Questionnaire [70], a 7-item construct to measure exposure to acts of crime and violence in one's community. Exposure to community violence was defined as a positive answer to any question.

2.3.4. Substance use

Past-year risky behaviors were measured using a 3-item version of the National Institute on Drug Abuse-Modified Alcohol, Smoking and Substance Screening Test Quick Screen to measure alcohol, prescription drug and other illegal drug use [71]. Given observed correlations between alcohol and drug use in our sample, as well as extant empirical and theoretical support for the overlap of alcohol and drug use [72], these variables were collapsed for the purpose of analysis.

2.3.5. Past-year healthcare utilization

We measured primary care provider utilization and the number of past-year ED visits using a modified 3-item version of the Substance Abuse Outcomes Module [73]. The chief complaint for the current visit (abstracted from the medical record by the research assistant) was categorized into three groups by a medical professional: injury (e.g., fall, sprain, concussion), medical (e.g., asthma, nausea, headache)

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