



Selected Papers from the 14th Annual John M. Templeton, Jr, Pediatric Trauma Symposium

The Psychological Sequelae of Violent Injury in a Pediatric Intervention Jonathan Purtle <sup>a,\*</sup>, Erica Harris <sup>b</sup>, Rachel Compton <sup>c</sup>, Rich Baccare <sup>c</sup>, Ashley Morris <sup>d</sup>, Danielle Dibartolo <sup>d</sup>, Christine Campbell <sup>d</sup>, Karen Vogel <sup>d</sup>, Nadine Schwartz <sup>e</sup>, Matthew Moront <sup>d</sup><sup>a</sup> Department of Health Management & Policy, Drexel University School of Public Health, Philadelphia, PA<sup>b</sup> Department of Emergency Medicine, Drexel University College of Medicine, Philadelphia, PA<sup>c</sup> Department of Emergency Medicine, St. Christopher's Hospital for Children, Philadelphia, PA<sup>d</sup> Department of Trauma, St. Christopher's Hospital for Children, Philadelphia, PA<sup>e</sup> Department of Psychiatry, St. Christopher's Hospital for Children, Philadelphia, PA

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## ABSTRACT

**Purpose:** Pediatric trauma centers have unique potential to prevent violent injury and its psychological sequelae. Hospital-based violence intervention programs (HVIPs) are proliferating across the U.S., but little is known about the psychological needs of pediatric patients who participate in them. The purpose of this study was to describe the prevalence of symptoms of posttraumatic stress and exposure to community violence among pediatric HVIP participants.

**Methods:** We conducted a cross-sectional analysis of psychosocial needs assessment data that were collected for 48 participants. The Child Trauma Screening Questionnaire (CTSQ) and modified Survey of Children's Exposure to Community Violence were used to assess primary outcomes.

**Results:** The sample was 62.5% male and had a mean age of 14.5 years. Twenty-three percent reported previously sustaining a violent injury resulting in medical care, and 47.8% had witnessed a shooting. The majority (66.0%) had a CTSQ score at/above the threshold for probable PTSD diagnosis. The mean CTSQ score was 5.9 and hyperarousal (3.3) symptoms were more common than re-experiencing symptoms (2.6).

**Conclusion:** Pediatric HVIPs and trauma centers should consider integrating PTSD screening and trauma-focused psychoeducation into the practice and protocols. Future research should evaluate the impacts of these interventions.

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Pediatric trauma surgeons have long recognized the imperative to prevent violent injury and its psychological sequelae. The American Pediatric Surgical Association's (APSA) 2013 statement on Firearm Injuries and Children called for a public health approach firearm-related youth violence and actions to enhance mental health services for violently injured youth [1]—echoing sentiment of a 1999 APSA Trauma Committee Position Report stating that “Pediatric surgeons are uniquely positioned to assess its [violent injury's] devastating impact and staggering costs to society” (p. 1445) [2]. A 2008 American Academy of Pediatrics Policy Statement stated that “efforts should be made to improve injury-prevention programs, emergency medical care, and trauma systems for pediatric patients” (p. 849) and recommended that “evidence-based protocols for management of the injured child should be developed for every aspect of care, from prehospital to postdischarge” (p. 851) [3]. Despite recognition of the importance of providing post-injury intervention to violently injured pediatric trauma patients, there is relatively little research to inform

the design of interventions targeting the psychological needs of this population. This knowledge gap warrants attention given the scope of non-fatal violent injury among youth.

In 2013, pediatric trauma centers in the United States (U.S.) reported 14,123 assault injuries to the National Trauma Data Bank, accounting for 9.2% of all injuries reported [4]. While assault injury has a high case fatality rate (6.25%, only second to self-inflicted injury), the vast majority of pediatric assault patients treated at trauma centers survive their injuries and are discharged. In the absence of intervention, these patients are at risk for a range of injury-related psychological sequelae [5–11].

Although the development of psychopathology after pediatric injury is well documented, most research has focused on accidental, as opposed to intentional, injuries [12–14]. The research that has been conducted with violently injured pediatric patients indicates that symptoms of posttraumatic stress are common after the injury. A study of acute stress disorder (ASD) symptoms among youth receiving hospital care for violent injury found that “reexperiencing symptoms” (e.g., nightmares about the injury) were present among 89% of patients ages 9–12 and 74% of patients ages 13–17 [15]. A similar study found that such symptoms persisted among a large proportion of violently injured youth and that in-hospital symptom severity was predictive of symptom severity at multiple weeks/

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months follow-up [16]. Compared with youth hospitalized for a medical illness, youth hospitalized for a gunshot wound were found to be substantially more likely to have ASD (14% Vs. 75%) [17]. A study of violently injured adolescents found that ASD symptoms were highly prevalent within 72 hours of hospital treatment and that symptom severity predicted posttraumatic stress disorder (PTSD) symptom severity at 6–18 months follow-up [18]. In addition to the acute mental health sequelae of violent injury, many violently injured youth have extensive histories of exposure to community violence and prior victimization that increase risk for adverse mental and physical health outcomes [19–23].

## 1. Hospital-based violence intervention programs

Hospital-based violence intervention programs (HVIPs) offer a model that is increasingly embraced by trauma centers and emergency departments to address the psychosocial needs of violently injured youth. HVIPs combine brief in-hospital intervention with intensive case management services to prevent violent reinjury, violent retaliation, and improve the health and social trajectories of violently injured patients [24,25]. There are over 25 HVIPs currently operating across the U.S., many coming together through the National Network of Hospital-based Violence Intervention Programs (<http://nnhvip.org/>).

While HVIPs are proliferating, little is known about the psychological sequelae of violent injury among the youth who participate in them. This information is needed to inform the design and protocols of pediatric HVIPs and identify priorities for outcomes research. The purpose of this study was to begin and address these knowledge gaps by describing the prevalence of symptoms of posttraumatic stress and exposure to community violence among participants of a pediatric HVIP.

## 2. Methods

### 2.1. HVIP setting, recruitment procedure, and eligibility criteria

Our HVIP operates out of a pediatric hospital with a level 1 trauma center in a major northeastern U.S. city. Patients presenting at the hospital for violent injuries were identified through the medical record system and/or referred to the program by emergency department/trauma center staff. HVIP social workers met the patient/family in the hospital if the patient presented or was admitted on a weekday between 9:00 and 5:00 p.m and contacted the patient/family by phone if they presented outside this timeframe or were not admitted. Patients were eligible to participate in the HVIP if they were between the ages of 7–17 years, not released to police custody, and sustained an intentional interpersonal injury (e.g., penetrating gunshot/stab wound, blunt trauma caused by assault) excluding cases of child abuse, domestic violence, and sexual assault. The latter were excluded because other programs and protocols exist to address the unique dynamics of these injury types. If the patient met eligibility criteria and opted to participate in the HVIP, social workers addressed immediate health care and safety needs, provided trauma-focused psychoeducation, conducted a comprehensive psychosocial needs assessment to identify mental health, medical, education, criminal justice, and safety needs and provided intensive case management to connect patients to services. HVIP social workers also facilitated psychoeducation groups and offered trauma-focused therapy.

### 2.2. Violently injured patient population

In the 34 month period between December 2010 and October 2013, 1,029 violently injured patients were referred to/identified by the pediatric HVIP (Fig. 1). Of these, 683 (66.4%) were male, the mean age was 14.0, 904 (87.9%) were blunt assaults, 37 (6.4%) were gunshot wounds, 22 (2.1%) were stab wounds, and the injury type was unknown for 66 (6.4%). Of these 1,029 patients referred/identified,

398 (38.7%) were never contacted due to unsuccessful attempts to reach the patient/family (e.g. non-working phone number) or because the HVIP was at capacity and not accepting new participants, 93 (9.0%) were contacted but did not meet HVIP eligibility criteria, 77 (7.3%) declined HVIP services, and 461 (44.8%) met eligibility and received some service (e.g., trauma-focused psychoeducation, needs assessment, case management) from the HVIP.

### 2.3. Study design and inclusion criteria

We conducted a cross-sectional analysis of psychosocial needs assessment data for HVIP participants who met the study inclusion criteria of: a) completing an exposure to community violence screening and/or b) completing a posttraumatic stress symptom screening. A web-based case management database that houses data on HVIP participants was queried to identify participants that met study inclusion criteria. Data were exported from the case management database in a de-identified format for analysis. Institutional Review Board approval was obtained for this study.

### 2.4. Measures

#### 2.4.1. Survey of children's exposure to community violence

Questions from the Survey of Children's Exposure to Community Violence [26] were used to assess exposure to community violence. The screening instrument includes dichotomous (*yes/no*) questions pertaining to hearing about, witnessing, and being the victim of community violence (e.g., history of previous violent injury resulting in medical care) as well as ordinal questions about the frequency of violence exposure (e.g., how often the respondent hears gunshots) and about the participant's age when exposures to community violence first occurred.

#### 2.4.2. Child trauma screening questionnaire

The Child Trauma Screening Questionnaire (CTSQ) was used to assess symptoms of posttraumatic stress among HVIP participants. The CTSQ includes 10 dichotomous (*yes/no*) questions about posttraumatic stress symptoms related to a potentially traumatic event. All questions were asked in reference to the potentially traumatic event of the violent injury that brought participants into contact with the HVIP. Five questions assess "reexperiencing" symptoms (e.g., having bad dreams about the event) and five assess hyperarousal symptoms (e.g., feeling "jumpy.") The CTSQ has demonstrated 82% sensitivity and 74% specificity in predicting PTSD among children sustaining accidental injuries at 6 months follow-up [27]. The CTSQ is scored on a scale of 1 to 10, with an aggregate score of 5 or more established as the cut point with the optimal predictive validity for a full PTSD diagnosis.

### 2.5. Statistical analysis

Statistical Package for the Social Sciences (SPSS version 20.0, Armonk, NY) was used to conduct all analysis. Descriptive statistics were generated to report the demographics and injury characteristics of study participants, histories of exposures to community violence, and posttraumatic stress symptoms. T-tests were used to compare posttraumatic stress symptom score means and  $X^2$  tests were performed to test for differences in the proportion of patients meeting posttraumatic stress symptom thresholds given different exposures to community violence. Statistical significance was set to  $P \leq 0.05$  for all analyses. When data were missing, means and proportions were calculated using the number of participants for whom data were available as the denominator.

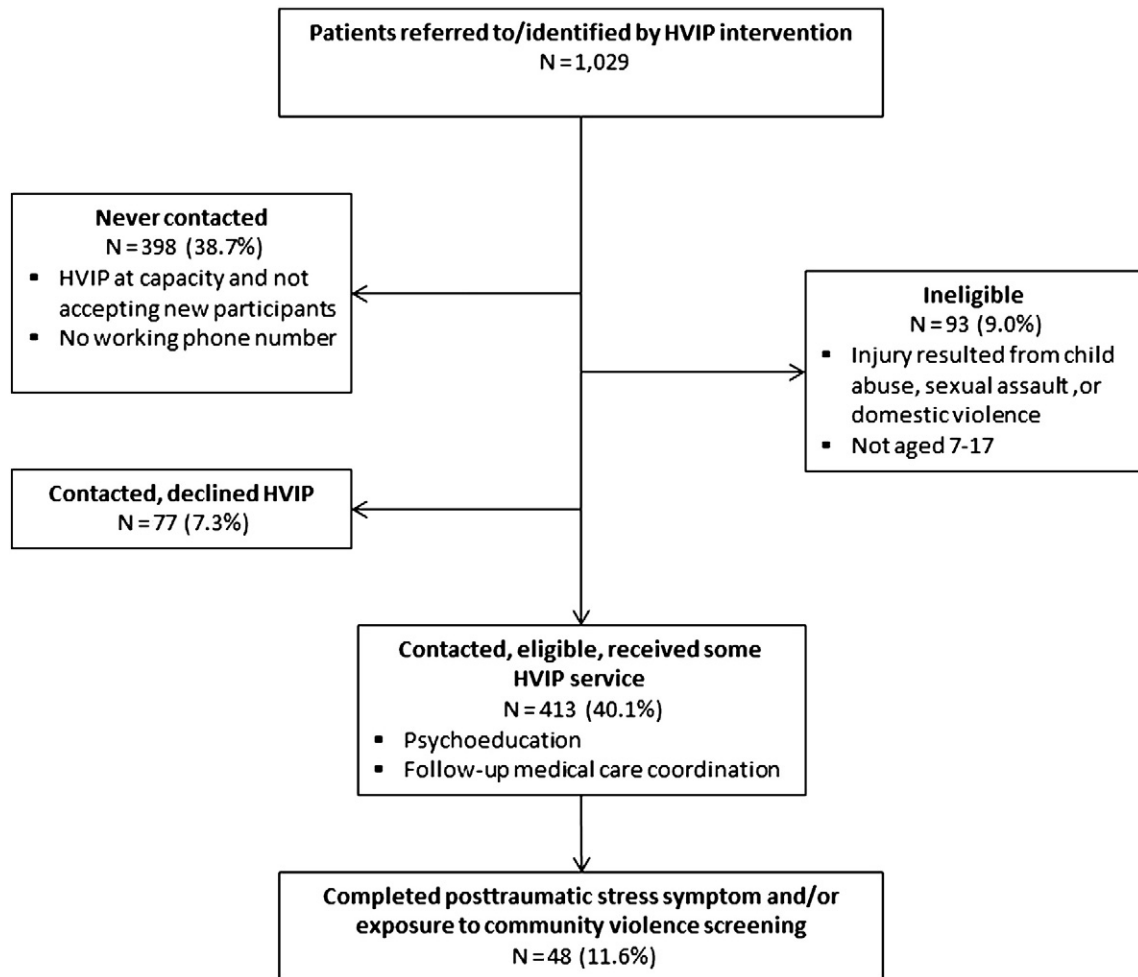


Fig. 1. Patients referred to/identified by an HVIP at an urban, pediatric hospital: December 2010–October 2013. HVIP = hospital-based violence intervention program.

### 3. Results

#### 3.1. Descriptive characteristics of HVIP study participants

Between December 2010 and October 2013, 48 HVIP participants met the study eligibility criteria (Table 1). Of these, (50.0%) self-identified their race as Black/African American and 13 (27.1%) identified their ethnicity as Hispanic/Latino. The mean age of the subjects was 14.5 years (range, 7 to 17 years; standard deviation 2.1).

**Table 1**  
Study population characteristics.

	All (N = 48)	Boys (N = 30)	Girls (N = 18)
Age (in years)			
Mean	14.5 (SD: 2.1)	14.6 (SD: 1.8)	14.2 (SD: 2.6)
Range	7–17	11–17	7–17
Race			
Black/African American	50.0% (24)	46.7% (14)	55.6% (10)
White	10.0% (3)	10.0% (3)	0.0% (0)
Mixed race/ other	43.8 (21)	43.3% (13)	44.4% (8)
Ethnicity			
Hispanic/Latino	27.1% (13)	26.7% (8)	27.8% (5)
Injury mechanism			
Assault (blunt trauma)	47.9% (33)	66.7% (20)	72.2% (13)
Gunshot wound	25.0% (12)	26.7% (8)	22.2% (4)
Stab wound	6.3% (3)	6.7% (2)	5.6% (1)

The study population was predominantly comprised of boys (62.5%). There were no statistically significant differences between boys and girls in terms of age, race, ethnicity, or injury mechanism. Blunt trauma caused by assault was the most common injury mechanism (47.9%) followed by gunshot (25.0%). Gunshot was the mechanism of injury for a significantly larger proportion of the HVIP study sample than the population of 1,029 violently injured patients that were referred to/identified by the HVIP (25.0% Vs 6.4%,  $X^2 50.7 P \leq .005$ ) and blunt assault a significantly smaller proportion of injuries (47.9% Vs 87.9%,  $X^2 16.2 P \leq .005$ ). The median time between date of violent injury and psychosocial needs assessment was in the sample was 22 days.

#### 3.2. Exposure to community violence

Study participants had extensive histories of violent victimization and exposure to community violence early in life (Table 2). Nearly one-quarter (23.4%) of participants reported that they had previously sustained a violent injury resulting in medical treatment and 15.2% reported having a gun shot at them prior to their injury. Almost half (47.8%) of participants had witnessed a shooting and over one third (37.0%) had seen a person who had just been shot. Over one quarter (26.1%) had seen a person shot and killed; with this potentially traumatic experience taking place when participants were an average of 11.2 years old. Half of the participants (50.0%) reported losing a friend or family member to gun violence, with the death taking place when participants were an average of 10.3 years old.

**Table 2**  
Community exposure to violence.

Previous violent injury resulting in medical treatment	23.4% (11) <sup>a</sup>
Been shot at with a gun	15.2% (7) <sup>b</sup>
Hear gunshots frequently or often	41.3% (19) <sup>b</sup>
Witnessed shooting	47.8% (22) <sup>b</sup>
Saw person who had just been shot	37.0% (17) <sup>b</sup>
Saw person who had been shot and killed	26.1% (12) <sup>b</sup>
Lost friend/family member to gun violence	50.0% (23) <sup>b</sup>

Data were missing for some participants. Percentages are based on the number of participants who answered each question.

<sup>a</sup> N = 47.

<sup>b</sup> N = 46.

### 3.3. Symptoms of posttraumatic stress

Symptoms of violent injury-related posttraumatic stress were highly prevalent among HVIP participants (Table 3). Of the 47 participants who completed the CTSQ screening, 31 (66.0%) had an aggregate score of 5 or more—the cut point for a high likelihood of developing PTSD [25]. The mean CTSQ score was 5.9 (range, 1 to 10; standard deviation, 2.7). Symptoms of hyperarousal were slightly, but not significantly, more common than symptoms of reexperiencing, with HVIP participants reporting an average of 3.3 hyperarousal symptoms (95% CI: 2.9–3.7) and 2.6 reexperiencing symptoms (95% CI: 2.1–3.1). Feeling on the “look-out” for danger was the most frequently reported symptom (83.0%), followed by feeling grumpy or easily losing one’s temper (72.3%) and having unwanted thoughts about the violent injury (66.0%).

The proportion of participants with a CTSQ score of 5 or more was substantially higher among participants who had previously sustained a violent injury resulting in medical treatment than those who had not (70.0% Vs 36.1%), however small sample size prohibited the use of  $X^2$  test for statistical significance. The mean CTSQ score was not significantly higher, however, among participants who had previously sustained a violent injury resulting in medical treatment (mean 6.1; 95% CI: 4.5–7.7) than those who had not (mean 5.8; 95% CI: 5.0–6.8).

## 5. Discussion

Histories of exposure to community violence and symptoms of posttraumatic stress were highly prevalent among participants in our pediatric HVIP. Sixty-six percent of pediatric HVIP participants reported a CTSQ score at or above the cut point for probable PTSD diagnosis and 23.8% reported previously sustaining a violent injury resulting in medical care. The results of this cross-sectional analysis are consistent with the findings of a similar study of an adult HVIP (median age 22 years) which found that 75.0% of participants had PTSD 4 to 6 weeks after their injury and that 48.5% had previously sustained a violent injury resulting in medical care [28]. These findings are also similar to another study of violently injured adult trauma patients which found that 56% had probable PTSD 5 to 12 weeks after their injury [29].

The high prevalence of posttraumatic stress symptoms among pediatric HVIP participants underscores the need for future research to inform the development of pediatric trauma center intervention strategies. Violently injured patients often have serious mental health needs but are disconnected from services. A study of violently injured patients aged 10–15 years in an emergency department found that a substantial proportion had serious mental health needs but that only 27%–52% were receiving mental health services [30]. Violent injuries resulting in trauma center care provide an opportunity to identify youth with mental health needs and connect them with treatment [8,10]. For example, participants with high CTSQ scores in our pediatric HVIP are offered the Child and Family Traumatic Stress Intervention—a four session, caregiver-child intervention that has

**Table 3**  
Symptoms of posttraumatic stress (N = 47).

Reexperiencing	
Unwanted thoughts about the event	66.0% (31)
Bad dreams about the event	34.0% (16)
Feeling or acting as if the event is about to happen again	46.8% (22)
Bodily reactions when reminded of the event	51.1% (24)
Trouble falling or staying asleep	61.7% (29)
Hyperarousal	
Feeling grumpy or losing temper	72.3% (34)
Feeling upset by reminders of the event	63.8% (30)
Hard time paying attention	44.7% (21)
On the “look-out” for possible dangerous things that might happen	83.0% (39)
“Jump” when things happen by surprise or all of a sudden	63.8% (30)

demonstrated effectiveness in preventing the development of chronic PTSD among trauma-exposed youth [31].

The results of this study also highlight the importance of integrating trauma-focused psychoeducation into the protocols of pediatric trauma centers and HVIP practice. Trauma-focused psychoeducation involves providing information about possible symptoms of posttraumatic stress, their causes (e.g., biological underpinnings), and coping strategies [32]. The effectiveness of trauma-focused psychoeducation has not been thoroughly evaluated [33,34], particularly among pediatric populations in hospital settings, and represents a priority area for future pediatric trauma research.

The high prevalence of exposure to community violence and posttraumatic stress symptoms suggests that it would be advantageous for pediatric trauma surgeons and trauma center/HVIP staff to be knowledgeable about the possible social, emotional, biological, and cognitive effects of traumatic stress. A survey of pediatric emergency care providers found low-levels of knowledge about PTSD symptoms and that many providers held inaccurate beliefs about the prevalence of, and risk factors for, PTSD among injured youth [35]. The data presented in our study highlight the need for training and professional development activities that foster “trauma-informed” approaches to hospital-based violence intervention. A trauma-informed approach recognizes that the psychological trauma of violent injury, as well as traumas experienced earlier in life, are likely to have a profound impacts on how individuals respond to interventions [36]. In many ways, a trauma-informed approach to violence intervention is diametrically opposed to fear appeal approaches that utilize information about the risks of violence in attempt to prompt behavior change [37].

It is critical that the results of our study be interpreted within the context of its limitations. Our sample only consisted of violently injured pediatric patients who self-selected to participate in the HVIP and remained engaged long enough to complete psychosocial needs assessment. Thus, our results are not generalizable to the larger population of violently injured patients who did not participate in the HVIP or received some HVIP service and then disengaged from the program. Future HVIP research should explore the feasibility of conducting psychosocial needs assessment during the initial phase of program engagement. Our study was also conducted at a single urban pediatric hospital in one U.S. city. These limitations do not, however, necessarily limit the extent to which our findings are generalizable to other HVIPs given that pediatric patients self-select to participate in all HVIPs and because most HVIPs are currently operating in U.S. cities (<http://nnhvip.org/>).

Small sample size is a limitation of our study as it did not provide us with statistical power to identify differences in posttraumatic stress symptoms between HVIP participants with different levels of exposure to community violence. This question, however, was not an objective of the study. The cross-sectional design of our study prohibited us from establishing a temporal relationship between violent injury and posttraumatic stress symptoms. Although the CTSQ is an event-specific instrument (i.e., we specifically asked questions in

reference to the violent injury that brought participants into contact with the HVIP), the high prevalence of exposure to community violence and prior victimization suggests that HVIP participants may have already had severe posttraumatic stress symptoms prior to their injury. Ambiguity regarding the source of posttraumatic stress symptoms, however, does not nullify the need for a trauma-informed approach to pediatric HVIP practice.

Reflecting on a trauma center-based intervention that was found to reduce PTSD symptoms and improve functioning among adults [38], Coimbra recently commented that “It is unacceptable to consider that the consequences of the initial injury will become nonexistent at the moment that the body heals” (p. 400) [39]. The results our study support this position and highlight the need for more research about the psychological sequelae of violent injury among youth and how pediatric trauma centers can most effectively intervene.

## References

- [1] Nance ML, Krummel T, Oldham KT, et al. Firearm injuries and children: A policy statement of the American Pediatric Surgical Association. *J Am Coll Surg* 2013;217:940–6.
- [2] Stylianos S. The impact of firearm violence on children: Support for prevention strategies: A position report from the APSA trauma committee. *J Pediatr Surg* 1999;34:1445–6.
- [3] American Academy of Pediatrics, Pediatric Orthopaedic Society of North America. Management of pediatric trauma. *Pediatrics* 2008;121:849–54.
- [4] Committee on Trauma, American College of Surgeons. National Trauma Databank Annual Pediatric Report; 2013 [Chicago, IL].
- [5] Kilpatrick DG, Ruggiero KJ, Acierno R, et al. Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: Results from the National Survey of Adolescents. *J Consult Clin Psychol* 2003;71:692–700.
- [6] Berkowitz SJ, Marans S. The traumatized child at the emergency department. *Child Adolesc Psychiatr Clin N Am* 2003;12:763–77.
- [7] Cheng TL, Schwarz D, Brenner RA, et al. Adolescent assault injury: Risk and protective factors and locations of contact for intervention. *Pediatrics* 2003;112:931–8.
- [8] Fein JA, Mollen CJ, Greene MB. The assault-injured youth and the emergency medical system: What can we do? *Clin Pediatr Emerg Med* 2013;14:47–55.
- [9] Kelly VG, Merrill GS, Shumway M, et al. Outreach, engagement, and practical assistance: Essential aspects of PTSD care for urban victims of violent crime. *Trauma Violence Abuse* 2010;11:144–56.
- [10] Makley AT, Falcone RA. Posttraumatic stress disorder in the pediatric trauma patient. *Semin Pediatr Surg* 2010;19:4292–9.
- [11] Powers MB, Warren AM, Rosenfield D, et al. Predictors of PTSD symptoms in adults admitted to a Level I trauma center: a prospective analysis. *J Anxiety Disord* 2014;28:301–9.
- [12] Kassam-Adams N, Marsac ML, Hildenbrand A, et al. Posttraumatic stress following pediatric injury: Update on diagnosis, risk factors, and intervention. *JAMA Pediatr* 2013;167:1158–65.
- [13] Kahana SY, Feeny NC, Youngstrom EA, et al. Posttraumatic stress in youth experiencing illnesses and injuries: An exploratory meta-analysis. *Traumatology* 2006;12:148–61.
- [14] Langeland W, Olff M. Psychobiology of posttraumatic stress disorder in pediatric injury patients: A review of the literature. *Neurosci Biobehav Rev* 2008;32:161–74.
- [15] Fein JA, Kassam-Adams N, Vu T, et al. Emergency department evaluation of acute stress disorder symptoms in violently injured youths. *Ann Emerg Med* 2001;38:391–6.
- [16] Fein JA, Kassam-Adams N, Gavin M, et al. Persistence of posttraumatic stress in violently injured youth seen in the emergency department. *Arch Pediatr Adolesc Med* 2002;156:836–40.
- [17] Hamrin V, Jonker B, Scahill L. Acute stress disorder symptoms in gunshot-injured youth. *J Child Adolesc Psychiatr Nurs* 2004;17:161–72.
- [18] Pailler ME, Kassam-Adams N, Datner EM, et al. Depression, acute stress and behavioral risk factors in violently injured adolescents. *Gen Hosp Psychiatry* 2007;29:357–63.
- [19] Fitzpatrick KM, Boldizar JP. The prevalence and consequences of exposure to violence among African-American youth. *J Am Acad Child Adolesc Psychiatry* 1993;32:424–30.
- [20] Cunningham RM, Murray R, Walton MA, et al. Prevalence of past year assault among inner-city emergency department patients. *Ann Emerg Med* 2008;53:814–23.
- [21] Scarpa A. Community violence exposure in young adults. *Trauma Violence Abuse* 2003;4:210–27.
- [22] Shonkoff JP, Garner AS, Siegel BS, et al. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics* 2012;129:e232–46.
- [23] Singer MI, Anglin TM, Song LY, et al. Adolescents' exposure to violence and associated symptoms of psychological trauma. *JAMA* 1995;273:477–82.
- [24] Cunningham R, Knox L, Fein J, et al. Before and after the trauma bay: The prevention of violent injury among youth. *Ann Emerg Med* 2009;53:490–500.
- [25] Purtle J, Dicker R, Cooper C, et al. Hospital-based violence intervention programs save lives and money. *J Trauma Acute Care Surg* 2013;75:331–3.
- [26] Richters JE, Martinez P. The NIMH community violence project: I. Children as victims of and witnesses to violence. *Psychiatry* 1993;56:7–21.
- [27] Kenardy JA, Spence SH, Macleod AC. Screening for posttraumatic stress disorder in children after accidental injury. *Pediatrics* 2006;118:1002–9.
- [28] Corbin TJ, Purtle J, Rich LJ, et al. The prevalence of trauma and childhood adversity in an urban, hospital-based violence intervention program. *J Health Care Poor Underserved* 2013;24:1021–30.
- [29] Reese C, Pederson T, Avila S, et al. Screening for traumatic stress among survivors of urban trauma. *J Trauma* 2012;73:462–8.
- [30] Anixt JS, Copeland-Linder N, Haynie D, et al. Burden of unmet mental health needs in assault-injured youths presenting to the emergency department. *Acad Pediatr* 2012;12:125–30.
- [31] Berkowitz SJ, Stover CS, Marans SR. The child and family traumatic stress intervention: Secondary prevention for youth at risk of developing PTSD. *J Child Psychol Psychiatry* 2011;52:676–85.
- [32] Phoenix BJ. Psychoeducation for survivors of trauma. *Perspect Psychiatr Care* 2007;43:123–31.
- [33] Wessely S, Bryant RA, Greenberg N, et al. Does psychoeducation help prevent post traumatic psychological distress? *Psychiatry* 2008;71:287–302.
- [34] Wong EC, Marshall GN, Miles JNV. Randomized controlled trial of a psychoeducational video intervention for traumatic injury survivors. *J Trauma Stress Disord Treat* 2013;2:1–5.
- [35] Ziegler MF, Greenwald MH, DeGuzman MA, et al. Posttraumatic stress responses in children: Awareness and practice among a sample of pediatric emergency care providers. *Pediatrics* 2005;115:1261–7.
- [36] Ko SJ, Ford JD, Kassam-Adams N, et al. Creating trauma-informed systems: Child welfare, education, first responders, health care, juvenile justice. *Prof Psychol Res Pract* 2008;39:396–404.
- [37] Witte K, Allen M. A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Educ Behav* 2000;27:591–615.
- [38] Zatzick D, Jurkovich G, Rivara FP. A randomized stepped care intervention trial targeting posttraumatic stress disorder for surgically hospitalized injury survivors. *Ann Surg* 2013;257:390–9.
- [39] Coimbra R. Posttraumatic stress disorder (PTSD) screening and early intervention after physical injury: are we there yet? *Ann Surg* 2013;257:400–2.