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Perspective

Broken bones, broken minds, and broken hearts: Psychotrauma resources for pediatric non-accidental trauma survivors – Editorial

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Trauma injury at all stages of life can leave us with broken bones, particularly in childhood. However, these broken bones come with more than just physical hurt; oftentimes, a single traumatic event can cause significant post-traumatic stress disorder (PTSD), which can result in debilitating consequences, especially if these traumatic events are non-accidental traumas (NAT) [1]. The literature has demonstrated that PTSD symptoms are reduced as soon as therapeutic interventions are applied; however, this requires timely, accurate detection of NAT. This review aims to investigate psychotherapy resources at Level 1 Pediatric Trauma Centers (PTCs) across the US, and draw attention to the importance of psycho-trauma (PsyT) therapy.

The authors also investigated level I PTC websites and queried for "psycho-trauma" or "psychotherapy." However, PTCs are not required to report specific PsyT resources available and did not, per our review, report such details. It should be noted that many medical centers require an institutional login to access more detailed or sensitive information, and that our review was limited to publicly accessible information. Therefore, the availability of PsyT resources at an institution may be information only visible to institutional members. However, such important resources should be shared publicly as there is also a paucity of literature assessing such resources.

The majority (57%) of the pediatric population in the US lives within 30 miles of a high-level PTC and children treated at PTCs demonstrated lower mortality than those treated at adult trauma centers (adjusted odds of mortality 20% lower) [2,3]. However, this single measure of performance is not an indicator of appropriate NAT screening and subsequent treatment.

The presence of PsyT screening should be more thoroughly reported. According to *Resources for Optimal Care of the Injured Patient* by the American College of Surgeons (ACS), both psychology and psychiatry are important components of Trauma Centers [4]. At level 1 and 2 TCs, medical social workers must also be available. The document makes further recommendations for early screening and referral for PsyT therapy addressing PTSD and related depression; however, there are currently no definitive requirements to provide early psychotherapy screening.

Why do we care? When a patient presents to the PTC with broken bones, we must adequately evaluate the circumstances surrounding the injury. NAT may be more prevalent than we expect, accounting for 7.3% of pediatric trauma evaluations at a regional level 1 PTC [5].

Furthermore, a study assessing prevalence of NAT at ACS-verified PTCs versus non-verified centers found an increased prevalence of NAT at verified centers (1.88 times higher) [7]. This increased prevalence is likely closer to the true prevalence. Several other studies have further demonstrated high rates of missed injuries due to NAT, including 31.2% of abusive head injuries, 20.9% of abusive fractures, and 58.1% of sentinel injuries [8–10].

This training in identifying pediatric NAT should extend beyond the hospital to other members of the care team, including first responders. A cross-sectional, international online survey of 812 pre-hospital providers found a deficit on pediatric traumatic stress knowledge. Most respondents (89.7%) wanted to gain more knowledge and skills to care for pediatric trauma patients [11].

Why is early screening so important? Pediatric trauma can lead to PTSD. A study showed that one week following road traffic accidents, 11% of the children met the diagnostic criteria for PTSD [12]. A quarter of those children reported persistent symptoms at three months. Pediatric patients that present with head trauma secondary to NAT can go on to have significant developmental impairment, including neuro-developmental delays [13].

Pediatric trauma also falls under adverse childhood experiences (ACES), which have been demonstrated to correlate with increased adult health risk behaviors, such as alcoholism, drug abuse, mood disorders, suicide attempts [14]. This correlation is graded; that is, an increased number of ACES increases likelihood of risky adult behaviors. Furthermore, children under one year of age have the highest rate of victimization (25.7 per 1,000) in 2019, per the Children's Bureau of Health & Human Services [15]. That same report showed approximately 28.1% of child maltreatment victims were under the age of two years. It is therefore important to recognize pediatric trauma at first presentation for these children who often have several years of childhood left, and to appropriately screen and manage their social situation as needed to reduce the likelihood of further events.

What can we use? There are established resources for screening the pediatric population. The ACS's Resources for the Optimal Care of the Injured Patient recommends using the PHQ-9, a 10-item Likert scale

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depression screening [4]. However, this screening is recommended for children 12 years or older; as mentioned previously, a significant portion of childhood trauma occurs to children under the age of two. It is therefore important to pursue other screening methods more appropriate to the age group of each patient.

The Child Trauma Screening Questionnaire (CTSQ)-Heart Rate (HR), is a 10-item screen designed to assess traumatic stress reactions following the event at one and six-month intervals [16]. The questionnaire was tested on children of all age groups who presented with their parents following accidental traumas. However, the questionnaire was 82% sensitive and 74% specific in identifying children who demonstrated PTSD symptoms in the following 6 months [16]. It may therefore be helpful in situations following NATs; however, for some situations, it would require children be of older age groups to be able to respond to the screening questions by themselves.

Another potential screening tool is the PTSD Checklist for DSM-5 (PCL-5) assessment, which consists of 20 questions assessing severity of PTSD symptoms on a 1–5 Likert scale [17]. The limitation of this questionnaire is that it is not meant for an acute trauma and is administered to assess PTSD symptoms experienced over the past month [18]. However, this screening tool is indicated for children ages 7 or above, which spans a wider age range than does the PHQ-9. Other screening tools include the alternative PTSD algorithm (PTSD-AA) and the Child Stress Disorders Checklist-Short Form (CSDC-SF) [2]. While none of the screens are meant to be utilized within hours of the trauma, acute care providers can still be helpful in recognizing likely NAT and making the appropriate referrals. Suspicious injuries, such as rib fractures in infants or incongruent histories may indicate further questioning. Integrative medical teams with social workers and psychologists or psychiatrists would help provide appropriate, well-rounded care for the patient in the acute care setting. Immediate child protective services (CPS) notification or referrals for close follow-up at primary care physicians would help provide long-term care.

In conclusion, it is difficult to say how widely available psychotrauma resources are in the acute care setting at PTCs. The literature demonstrates the importance of immediate, adequate psychologic care for pediatric trauma cases. While the ACS does offer recommendations, we hope that a stronger statement can be made to this effect. There are several resources that can be adapted for these settings. We hope that, moving forward, we stop only healing the broken bones – we should instead heal the broken bones, treat the broken minds, and comfort the broken hearts.

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Declaration of competing interest

None.

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