CE 1.5 ANCC Contact Hours

Scratching Below the Surface: Screening for Posttraumatic Stress Symptoms Following Hospitalization With the Pediatric Trauma Service

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ABSTRACT

Significant progress has occurred medically for children who have experienced traumatic injuries; however, attention to their psychological adjustment has only more recently been a focus in research and clinical practice. These needs do not cease at discharge but, instead, require monitoring to determine whether further assessment and/or intervention are required. Our team, inclusive of the Psychology Service and the Trauma Service, identified 2 established screening measures (based on age) that were completed by patients during their outpatient follow-up visits postdischarge. Should a patient screen positive, the Trauma Service referred them to the Psychology Service for further evaluation and possible treatment (i.e., trauma-focused cognitive-behavioral therapy). Of 881 trauma activations, 31 (4%) patients were screened at an outpatient follow-up appointment through pediatric surgery/trauma clinic. Of these completed screening tools, 29% screened positive and warranted a referral to Psychology. Intervention was recommended for the majority of the patients evaluated; however, half of these did not return for this intervention. A collaboration between the Psychology Service and the Trauma Service is a vital step toward providing stepped care for patients after unintentional injuries. This allows for evaluation of patient needs and then a referral source to meet these identified needs. Future directions include increasing the number of screened patients, perhaps with use of technological supports (i.e., REDCap) or expansion into other clinics and consideration of ways to increase family's use of psychological intervention.

Level of Evidence: Therapeutic/Care management Level IV

Key Words

Pediatric, Psychology, Screening, Traumatic stress

Approximately one fourth of all children experience serious injuries, and professionals are now cognizant of the effects that extend beyond physical injury (i.e., emotional and psychological effects; Caffo & Belaise, 2003; Makley & Falcone, 2010). Specifically, posttraumatic stress symptoms (PTSS), which include reexperiencing, avoidance, negative changes in thoughts/mood, and symptoms of hyperarousal (American Psychiatric Association, 2013), have been found to affect approximately one in six youths who experience injuries (Ward-Begnoche et al., 2006). Partial posttraumatic stress disorder (PTSD) can be just as impactful and has been found in up to 25% following pediatric accidental injury, so many times clinicians focus on PTSS instead of only PTSD (Le Brocque, Hendrikz, & Kenardy, 2010). Posttraumatic stress symptoms may lead to negative outcomes including poor adherence, increased risk for medical conditions, lower quality of life, and behavioral concerns (Holbrook et al., 2005). Unfortunately, physicians tend to underestimate the risk for PTSS, and few formal systems have been created to screen for this concern or to provide intervention (Ziegler, Greenwald, DeGuzman, & Simon, 2005).

The pediatric medical traumatic stress model is helpful for understanding the risk for negative mental health outcomes following traumatic injuries. First, medical treatment is included as a potential stressor that could precipitate PTSS, as these events involve life threat and pain. Research from the pediatric and adult literature has highlighted the following risk factors that may predispose an individual to negative adjustment: subjective appraisal (Ozer, Best, Lipsey, & Weiss, 2003), limited social support (Kazak et al., 1998), increased premorbid stressors (Brosbe, Hoefling, & Faust, 2011), initial physiological response (Kassam-Adams, Garcia-España, Fein, & Winston, 2005), pain (Ratcliff et al., 2006), parental distress (Ozer et al., 2003; Nugent, Ostrowski, Christopher, & Delahanty, 2007), and functional impairment (Daviss et al., 2000).

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Children may further be at risk based on their developmental level (e.g., misinterpret causes/treatments, more difficulty with separation) (Kazak et al., 2006).

Several organizations have recognized the need for attention to adjustment following injury. Specifically, the American Academy of Pediatrics has encouraged a focus on reducing the impact of toxic stress for children in addition to the American College of Surgeons, Committee on Trauma, which stated, "A plan to evaluate, support, and treat PTSD should be considered" (Rzucidlo & Campbell, 2009). Zatzick, Jurkovich, Wang, and Rivara (2011) examined Level I trauma centers in the United States. Their evaluation indicated only 20% of those trauma centers were providing specialized screening/intervention for symptoms of posttraumatic stress. There is an essential need to screen for adjustment concerns following injuries and to increase awareness of these needs for medical teams.

The Pediatric Psychosocial Preventative Health Model encourages viewing most youths as being resilient following a traumatic event/illness such as an injury (Kazak et al., 2006); however, screening measures are invaluable tools for defining which youth are in fact experiencing nonnormative and significant symptoms (i.e., PTSS; Kazak et al., 2006). It is important not to pathologize the expected symptom pattern following pediatric accidents, as this can lead to inappropriate offering of services with negative impact on patients and resources (Ward-Begnoche et al., 2006). Universal support such as providing psychoeducation regarding typical reactions is important for most families. A smaller subset of injured youths may present with more initial distress and increased risk factors, and finally the smallest percentage of families may experience persistent distress and impairment leading to the need for formal intervention (i.e., trauma-focused cognitive behavioral therapy—TF-CBT). Research suggests that although many symptoms of traumatic stress improve over time, some symptoms may be longer lasting and require intervention (Le Brocque et al., 2010); stepped levels of care are necessary (Kazak et al., 2007).

PURPOSE

The aim of our study was to briefly describe how our setting, including the Psychology Service and the Trauma Service, collaborated to create a pilot screening process to help foster such a stepped-care model of care postdischarge. A separate screening process is in place for providing more immediate coping support while patients are still inpatient. We intend to share initial outcomes from this pilot, outpatient program including rates of PTSS in a pediatric injured population at least 2 weeks postdischarge. It is our hope that this type of collaborative system can be translated to other sites to extend assessment of psychosocial needs and intervention following pediatric injuries.

METHODS

In addition to inpatient offerings of psychological consultation for patients with more immediate concerns and/or more normative supports such as social work and child life, our Pediatric Health Psychology Program (PHPP) and trauma team collaborated in screening for symptoms of traumatic stress postdischarge for youth with accidental injuries. Our programs are housed in a large, urban Level I Trauma Center hospital that is linked to outpatient clinics as well. For example, the Psychology Service may not only evaluate and treat a child while inpatient but can also provide an evaluation and/or intervention through outpatient clinics. The PHPP is large, but within this team, there are two licensed psychologists with an interest in accidental traumas (one of whom is bilingual) in addition to psychological trainees (interns and fellows). The Trauma Service is similar, treating inpatients and following up with patients postdischarge (patients with abdominal injuries or wound checks and those without appointments with neurosurgery, orthopedics, or plastic surgery). Currently, the Trauma Service includes three pediatric surgeons and two advanced practice providers (APPs).

Our team identified two brief screening tools that were distributed to the patient/parent at their outpatient follow-up appointments with the pediatric surgery/trauma clinic. On the basis of a literature review for current best practice and feasibility, the Child Trauma Screening Questionnaire ([CTSQ]; Centre of National Research on Disability and Rehabilitation Medicine [CONROD], 2017; Kenardy, Spence, & Macleod, 2006) for patients 7–18 years of age and the Young Child PTSD Screen ([YCPS], Scheeringa, 2010) for patients 2–6 years of age were selected to assess for symptoms of traumatic stress; English and Spanish versions were available. The CTSQ has been found to have an internal consistency of 0.69, and criterion validity has been documented with this tool having a sensitivity of 0.85 and specificity of 0.75 at 1 month posttrauma (The National Child Traumatic Stress Network, 2013). The YCPS was created empirically from data on two hundred eighty-four 3- to 6-year-olds who experienced a trauma in a National Institute of Mental Health study, as developmentally sensitive assessment is needed for younger children. Because sensitivity is typically most important for screening (i.e., identifying all who may have the condition), this measure uses six items, with 100% sensitivity including positive predictive power of 70.8% and negative predictive power of 100% as compared with children with at least five symptoms of PTSD; ongoing evaluation is needed of this measure (Scheeringa, 2010).

The screening tools were presented on opposite sides of a sheet of paper, with headers noting which side to complete based on the child's age. These brief and freely available (with author permission) measures were distributed to the patient/parents to complete by the

trauma clinic's medical assistants or APPs during the clinic appointment (often when they left the room); once completed, the results were then reviewed by either the trauma surgeons or the APPs to determine whether a referral was necessary. Referrals for a diagnostic evaluation with the PHPP were made via an electronic medical record system for patients with positive screening results, suggesting concerns for PTSS that require further evaluation (i.e., score of ≥5 on the CTSQ; two items [1 or 2] on the YCPS). This PHPP evaluation included assessment of trauma symptoms with research-based measures in addition to a broad assessment of other developmental concerns, behavior, mood/anxiety, and school functioning. On the basis of this evaluation, recommendations included referrals for therapy, suggestions for how to support positive coping, positive behavior management strategies, and recommendations for school. Mental health codes have been billable for evaluations and any required interventions, and the medical team has been able to incorporate the screening tools into their scope of practice due to their brevity and ease of scoring.

When significant adjustment and/or posttraumatic symptoms were present, the empirically supported intervention of TF-CBT was offered. This empirically supported intervention that includes elements of psychoeducation, CBT tenets of intervention, and exposure to the traumatic event through narrative work has been demonstrated to be effective for various traumatized groups and has been found to have large effect sizes compared with wait-list. At least eight randomized controlled trials have demonstrated improvement for symptoms of PTSD, depression, anxiety, and behavior as compared with supportive treatment. Positive results have also been documented for parents' own symptoms and for families from diverse backgrounds; specific protocols/plans are also available for preschool-aged children (Cohen, Mannarino, & Deblinger, 2012; Morina, Koersssen, & Pollet, 2016). In our pilot study, referrals to a community provider/clinic were provided if the presenting concern discussed during the evaluation did not match the expertise of the providers in our service (i.e., substance abuse, violent/intentional trauma, families with a primary forensic questions and/or abuse, and to allow for providers who speak the family's native language); the Psychology Service has a social worker who is able to assist with community referrals as needed.

RESULTS

Of 881 trauma activations from May 2015 to January 2017, 31 (4%) patients were screened at a follow-up outpatient appointment through pediatric surgery/trauma clinic; higher numbers of patients tend to be followed through neurosurgery, orthopedics, or plastic surgery. Our clinic is not able to capture overall follow-up rates in the trauma registry. Of completed screens in the pediatric surgery/trauma clinic, nine were positive (29% of those who were screened) and 10 patients were referred to Psychology for evaluation (one patient screened negative but was referred to Psychology when inpatient). An independent-samples *t* test was used to examine age difference in whether participants screened positive or negative for symptoms of posttraumatic stress. The *t* test was significant, $t(29) = 3.02$, $p = .005$. On average, youth who were positively identified by the screening tool were younger ($M = 6.01$, $SE = 1.76$) than youth who were negatively identified by the screening tool ($M = 11.59$, $SE = 0.94$). The injury severity score was similar among the referral and nonreferral groups, 10 (IQR = 9–17) versus 10 (IQR = 4–16), $p = .59$. The most common injury mechanism for patients who were referred to Psychology was automobile versus pedestrian ($n = 4/10$; 40%); other injury mechanisms included motor vehicular accident/bus accident, fireworks explosion, dog attack, and gunshot wound.

Of the 10 referrals, one was accidentally sent to Psychiatry instead of Psychology (incorrect team chosen in the electronic medical record), one was referred out because of the violent/intentional nature of the injuries, and two did not return scheduling calls for appointments; thus, seven patients/families were evaluated. Four patients completed the wrong side of the screening tool (wrong age range), which was not noticed by the medical staff; of these, one had already been evaluated while inpatient and had been receiving intervention since then and one other was referred to Psychology regardless of the wrong age form due to concerns highlighted by the family in their appointment.

For Psychology referrals, intervention was recommended for 71% of patients ($n = 5/7$), and 80% of these patients were referred to the PHPP for TF-CBT. However, half of these ($n = 2/4$) either did not call back to schedule ($n = 1$) or did not show their appointment ($n = 1$). One patient was referred to a community provider because of broader concerns than the impact of adjustment to her injuries. Of the seven evaluations, 29% ($n = 2$) were found to not require intervention at that time. Instead, families were encouraged to monitor symptoms and to call back if concerns increased or began to have an impact; psychoeducation and coping/support strategies were discussed.

DISCUSSION

This pilot study demonstrates the ability of psychology and trauma to collaborate in identifying patients in need of evaluation and possible intervention for traumatic stress symptoms. Having a shared vision for supporting injured youth has allowed this program to be feasible including generating a unified plan for screening and making referrals. In addition, this project has been sustainable due to having the screenings conducted by members of the medical team who are housed within clinic visits, as psychologists are not currently able to bill for this service at our institution. Having psychological adjustment

standardly included in medical visits likely also helps destigmatize these symptoms and/or seeking intervention.

Most importantly, approximately one third of the screened patients who were following up with the Trauma Clinic reported concerning symptoms of traumatic stress. Intervention was recommended in approximately half of the patients who were evaluated, and this need would not have been discovered without the aid of the screening program. It appears that younger patients may be most at risk for posttraumatic symptoms postdischarge, although this finding could be secondary to the parent proxy nature of symptoms for the youngest children or a unique risk factor in itself. Further evaluation is needed.

Limitations

Important limitations are present in this study. First, a small sample of patients was screened postdischarge. This could be due to many reasons. Patients who are discharged from the inpatient Trauma Service are seen for follow-up in multiple clinics including neurosurgery, plastic surgery, orthopedics, and the pediatric surgery/trauma clinic. It is possible that a much higher rate of youths than we were able to determine would benefit from an evaluation after accidental injuries that required hospitalization. In addition, youth with injuries that require neurosurgery, plastic surgery, or orthopedic follow-up instead of pediatric surgery may have differing needs that were unable to be determined in this pilot study (i.e., possibility of increased concerns due to appearance differences, neurological involvement, functional limitations). In addition, despite the screenings occurring in only one clinic with fewer opportunities for inconsistency, 13% of the sampled families still completed the wrong age range for their child, which made interpreting the results more difficult. Clearly, ongoing oversight is required to ensure fidelity to the stepped-care screening program. Furthermore, only 70% of those who were referred to Psychology were scheduled for evaluation appointments (n = 7/10), and half of those patients who were referred to our Psychology service did not return to initiate intervention (n = 3/7). Certainly, we have the intent to not merely assess for concerns but also intervene and support adjustment following accidental injuries in youth. Specific reasons for families not returning are not known; however, it is possible this is related to time/financial concerns, though it should be noted that our site is covered by most insurance panels including Medicaid, so most families would have access to benefits. There is also the possibility for bias against psychology services, though our hope is that by partnering with a medical team, any of these concerns can be reduced, as we can be seen as a part of the team.

CONCLUSIONS

This pilot study highlights the importance of screening for PTSS postdischarge from accidental injury, although as noted earlier, there are inherent difficulties in creating such a system (i.e., fidelity to the system). Recommendations for practice include collaboration between the Psychology Service and the Trauma Service regarding systems and possible stakeholders to include in establishing systematic screenings (i.e., nursing staff, APPs). One possible new direction to meet the need for outpatient follow-up includes our recent development of an automated screening plan using the REDCap program, which is a "HIPAA compliant, secure web application for building and managing online surveys and databases" (Harris et al., 2009). Families are informed by the medical team (including nursing and APPs) at discharge that they will be e-mailed a screening questionnaire in 2–4 weeks to evaluate for symptoms of traumatic stress. On the basis of the patient's demographics (age, primary language), the CTSQ or YCPS (English or Spanish) will be automatically included in that e-mail along with a reminder of the purpose of the screening and contact information should the family have concerns regardless of screening results. These responses will then be evaluated by the trauma APP who will refer patients with positive screens to psychology for an evaluation. It is our hope that this program may help increase the number of patients we are able to screen postdischarge and will rely less on multiple individuals in diverse clinics, which may decrease error in the process. However, upon completion of this pilot program within pediatric surgery/trauma clinic, we are currently attempting to also expand the paper screening forms into the neurosurgery, orthopedic, and plastic surgery clinics, where more patients follow-up, to allow for broader outpatient screening and access to any needed intervention. Future studies may be able to examine relationships between scores on the online and printed evaluation screening tools in addition to possible connections with adjustment while still inpatient. Inpatient collaboration and screening for symptoms of acute stress or poor adjustment are also important to allow for supports while the patient is still hospitalized, but this topic is beyond the scope of this article.

Finally, we believe that having a screening program built into the discharge and follow-up process (i.e., included in discharge discussions and directions, medical team discussions) will assist with decreasing stigma for adjustment concerns that may contribute to attrition in the Psychology clinic and will improve coordination of stepped level care for the patient's unique needs after discharge from acute care.

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KEY POINTS

- Traumatic stress symptoms may be experienced after discharge by a noteworthy number of children following accidental injuries requiring hospitalization.
- Using the Psychosocial Preventative Health Model allows consideration of the normalcy of some stress, while also helping create a stepped-care model with the use of screening tools for identifying those who may require additional support.
- There are empirically supported screening tools that can help identify which patients require psychological follow-up after accidental injury. In addition, intervention approaches such as TF-CBT are available when concerns are identified via screening.

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