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Education Empowers Emergency Department Nurses During Pediatric Traumas

Brett Tracy, MD ■ Mickey Ott, MD ■ Miller Hamrick, MD ■ Kathryn Bailey, FNP

ABSTRACT

In January 2017, the Emergency Trauma Advocate (ETA) program was piloted at our Level 1 trauma center to promote patient advocacy, particularly in pediatric patients. The goal was to empower emergency department nurses by improving their knowledge base through interactive didactic sessions. This study reviews the preliminary findings of the program. Surveys were administered after each teaching session to participating ETA nurses to determine their personal academic interests and how to improve the program. We then performed a retrospective review of pediatric trauma admissions from January 2017 through April 2017 to delineate the most common injury patterns. Survey responses demonstrated the greatest nursing interest in learning critical care (n = 11), orthopedic management (n = 11), and neurosurgical trauma education (n = 9). During this study period, 113 pediatric patients arrived and had a mean age of 7.8 ± 5.2 years. The most common injury patterns were orthopedic (n = 38) and neurosurgical (n = 28), and 35 patients required critical care management. Bivariate analysis revealed a significant and positive relationship between injury frequency and educational interests (R^2 = 98.8%, p = .0057). A nurse's interest in educational topics directly correlates with recent pediatric trauma injury patterns. Future work should focus on determining what impact the ETA program has had on pediatric outcomes.

Key Words

Emergency room nurses, Nursing education, Outcomes, Patient care, Pediatric trauma

Traumatic injury is the leading cause of death in children aged 1–14 years (Centers for Disease Control and Prevention & National Center for Injury Prevention and Control, 2017). Effective initial assessment and triage of these patients require a multidisciplinary team led by physicians and emergency staff (Cole & Crichton, 2006). The immediate stabilization and care provided by pediatric trauma nurses are crucial to preventing premature mortality, especially in cases of rural communities with extended transport time (Harmsen et al., 2015; Petersen & Ad Hoc Committee on Rural Trauma, 2002). Nurses are vital to trauma resuscitations in the emergency department (ED) and their communication, leadership, and team work enable quality patient outcomes (Clements & Curtis, 2012).

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Previous studies have suggested that providing simulation training of typical trauma scenarios to a pediatric team can result in the identification and reduction of errors in care, thus improving performance and outcomes (Falcone et al., 2008; Hunt, 2006). Additional improvements in care can be facilitated through the inclusion of experienced and educated nursing staff (Gunnels & Gunnels, 2001; Kendall-Gallagher & Blegen, 2009). For example, Fecura, Martin, Martin, Bolenbaucher, and Cotner-Pouncy (2008) demonstrated that seasoned trauma nurse coordinators in the military setting improved performance in trauma care by improving patient care processes, policy refinements, and clinical practice guidelines implementation. Academic partnerships between hospitals and educational institutions that support continuing medical education for nurses may improve quality of care as well (Niederhauser et al., 2016).

In January 2017, our institution's ED began a 4-month pilot test of the Emergency Trauma Advocate (ETA) program. The ETA program advocates for the trauma patient, particularly pediatric patients, by creating nurse champions who deliver the best care possible. The program focuses on the empowerment of nurses by improving their knowledge base through interactive didactic series. This observational survey study was conducted to review the preliminary findings of the program and to inform future program development.

METHODS

Hospital leadership selected a sample of 13 ED nurses to participate in the ETA pilot program. These nurses staffed the intermediate and most severe trauma activations in the ED. The education provided included hands-on skill development and interactive lectures. There was no financial incentive and sessions occurred monthly. During this 4-month period, our study team prospectively collected survey data after each half-day education session.

A simple, open-ended survey design was utilized for evaluating personal interests relevant to emergency trauma care. The survey assessed the following areas: the helpfulness of the information presented in the session, which topics participants would like to hear in future sessions, and which skills participants would like more experience with. Members also provided input as to how the program could be improved. Program partakers completed this optional survey at the end of each session. The results of the surveys were collated and reviewed for trends.

To delineate the types of pediatric traumas that came through our ED during the time of the ETA pilot, we retrospectively reviewed pediatric trauma admissions from January 2017 through April 2017 at our Level 1 trauma center. Data were collected from a previously de-identified trauma registry and included patient age, trauma activation level, injury complex, and admission location. This project was undertaken as a quality improvement initiative at our medical center and received approval from our institutional review board.

RESULTS

Survey response rate was 100% (n = 13) among the ETA group in the first month. Months 2 and 4 had a 71.4% (n = 10) response rate, and Month 3 had an 85.7% (n = 12) response rate. We compiled and categorized the open-ended responses by injury patterns. There was a large interest in learning critical care (78.6%, n = 11), neurosurgical care (64.3%, n = 9), and orthopedic management (78.6%, n = 11) (Figure 1). There was no mention of desiring to learn how to perform any invasive procedural tasks. For example, instead of instruction on chest tube insertion, nurses preferred to learn when it was appropriate for water seal rather than wall suction. Rather than learning to personally reduce a fracture, nurses wanted information about which open fractures needed specific antibiotics.

The retrospective registry review (n = 113) revealed an average pediatric patient age of 7.8 ± 5.5 years. Regarding activation level, 12% (n = 13) were the highest and 37% (n = 42) were intermediate, indicating that ETA nurses were present for at least 49% of all pediatric

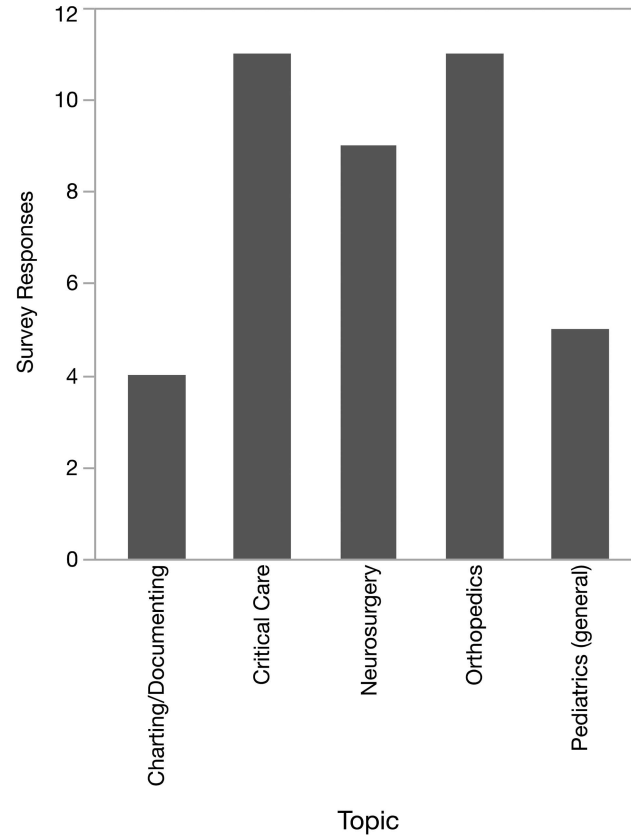

Figure 1. Nurses' survey responses (n = 40) regarding educational interests.

traumas. The remaining 51% (n = 58) were the lowest trauma level. Following the ED, 31% (n = 35) of admitted patients went to the intensive care unit (i.e., to receive critical care), 43% (n = 49) went to a step-down unit, and the remaining 26% (n = 29) were discharged, expired, transferred, or went to a general pediatrics floor. When the 113 children were grouped by injury type, 33% were shown to have orthopedic injuries (n = 38), 25% had various neurosurgical injuries including intracranial hematomas (n = 16) and skull fractures (n = 12), and 11% had general, noncritical pediatric injuries such as complex lacerations, facial fractures, and low-grade burns.

We performed a bivariate analysis of the number of pediatric injuries in a designated category and the corresponding nurse educational interests. A linear fit was plotted, nursing interest in topic = 2.5 + 0.24 (number of injured patients), and demonstrated a near perfect correlation with an R^2 of 98.8% and a p value of .0052 (Figure 2).

DISCUSSION

In this observational study of the ETA pilot program, we found a statistically significant positive correlation between nurses' educational interests and recent pediatric

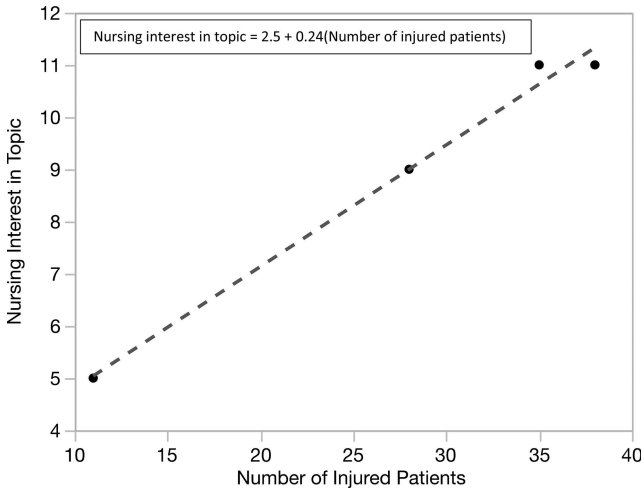

Figure 2. Frequency of traumatic injuries versus nursing interest level.

trauma injury patterns. These results are consistent with work by Pascoe et al. (2007), who showed that areas of educational interest to nurses reflect the current role of nurses, rather than an expanded or aspiration role. A different study by Lee and Lee (2014) found that nurses wanted to learn direct patient care areas regarding their current work rather than indirect care areas. Not surprisingly, our assessment did not uncover a correlation between admissions and interest in charting, likely because documentation may not immediately or tangibly impact care during the ED triage.

We believe that a nurse's understanding of certain pediatric trauma themes influences quality of care in the index trauma setting. Therefore, future education efforts should focus on relevant, common trauma themes. By doing so, the ETA program will create better nurse champions who can improve patient care because of their enhanced understanding of patient pathophysiology and traumatic burden. Yakusheva, Lindrooth, and Weiss (2014) found that nurse effectiveness strongly and positively correlated with baccalaureate education and nurse expertise. These researchers advocated for preferential hiring of academically decorated nurses to significantly improve patient care. Regardless of degree, it is established that nurses working with trauma patients are most confident if they have two or more years of trauma experience (Cudmore, 1996). By the end of the ETA program's first colloquium, the education provided will empower our nurses to deliver more effective care in the pediatric trauma care setting as seen with such veteran nurses.

A similar program was described by Wurster, Coffey, Haley, and Covert (2009) called Trauma Nurse Leaders (TNLs), which also was a performance improvement process that sought to use experienced pediatric trauma nurses in the trauma room to identify and resolve frequent issues. The TNL offered consistency and communication, therefore promoting group cohesion in an often-disjointed ED. These nurses, as a result of their special training and enhanced education, ensured adequate fluid management, temperature documentation, pain control, and prevented overcrowding in the bay (Wurster et al., 2009). Wurster et al. concluded that the TNL was essential to providing specialized pediatric care at a Level 1 pediatric trauma center.

Although our institution is not a designated pediatric hospital, we still are the region's busiest trauma center and have anecdotally seen a positive impact of the ETA program. Further research is needed to determine whether the program has had a meaningful effect on pediatric patient outcomes.

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