



# Research Week 2021

## Post-traumatic pain in children and adolescents following critical care hospitalization: prevalence and association with recovery

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### Keywords

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### Introduction

Over 60,000 US children require critical care hospitalization for traumatic brain injury (TBI) each year. Many have additional bodily injuries that contribute to risk for acute and chronic pain. We hypothesized presence of clinically significant pain would be associated with poorer physical, cognitive, and psychosocial functioning.

### Methods

We used a cross-sectional analysis to evaluate pain 1-3 months after TBI hospitalization among a cohort of children age  $\geq 8$ -18 years ( $n=78$ ) seen in the Pediatric Critical Care and Neurotrauma Recovery Program. Clinically significant pain was defined by parent-proxy completed PROMIS pain intensity score  $\geq 3$  in the prior week. Chi-square and Mann-Whitney U tests compared groups (pain vs no pain) by demographic, clinical, and outcome measures. Significance defined as  $p < .05$ .

### Results

Among 69 children with complete data, 25 (36%) children had ongoing clinically significant pain a median of 54 days after discharge (IQR 39, 74). Patients with mild TBI, rated by admission Glasgow Coma Scale  $\geq 13$ -15, had increased risk of pain compared to patients with moderate-severe TBI (Relative Risk = 3.5, 95% Confidence Interval 0.9-13.2). Serious bodily injuries, determined by Abbreviated Injury Scale scores  $\geq 2$  (present in 46%), were not different between pain or TBI groups. No other demographic or clinical factors increased risk of pain. Children with clinically significant pain had worse scores across domains of sleep (Sleep Disturbances Scale for Children); fatigue (PedsQL); cognitive functioning, anxiety, and depression (PROMIS); and patient and family quality of life (PedsQL).

## Conclusion

Pain is common after pediatric trauma hospitalization with far reaching implications for optimal recovery. Despite association with milder initial injury severity, pain portended worse outcomes across health domains. Pain may serve as a modifiable target to improve physical, cognitive, and psychosocial recovery in this vulnerable population. Future research is needed to understand the impact of post-traumatic pain and to determine effective interventions.