

ACADEMIC RECOVERY FOLLOWING MILD TRAUMATIC BRAIN INJURY IN PEDIATRIC PATIENTS



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Introduction

In 2018, the CDC reported approximately 640,000 pediatric TBI-related ED visits, with 18,000 TBI-related hospitalizations (1). Approximately 80% of TBIs across age groups are categorized as mild TBI (mTBI) (2). Furthermore, approximately 7.5% of mTBI may be termed Complicated (C-mTBI), or mTBI with radiographic abnormalities (3). This study investigates the academic effects resulting from a mTBI in a pediatric population, and how those effects differ between different mTBI classifications (mTBI only, mTBI with skull fracture only (mTBI-SF) and C-mTBI).

Study Design

Surveys that included questions of academic functioning were sent to parents of 1777 patients between 5 and 18 after sustaining a mTBI. Descriptive statistics, including frequency and percentage, along with a χ^2 test/Fisher's exact test, were used for data analysis.

References

- (1) Haarbauer-Krupa JK, Glang A, Kurowski B, Breiding MJ. Report to Congress: The Management of Traumatic Brain Injury in Children: Opportunities for Action. Atlanta, GA: Centers for Disease Control and Prevention; 2018
- (2) Wortzel, H. S., & Granacher, R. P. (2015). Mild traumatic brain injury update: Forensic neuropsychiatric implications. *Journal of the American Academy of Psychiatry and the Law Online*, 43, 499–505.
- (3) Lumba-Brown A, Yeates KO, Sarmiento K, Breiding MJ, Haegerich TM, Gioia GA, et al. Diagnosis and Management of Mild Traumatic Brain Injury in Children: A Systematic Review. *JAMA Pediatr*. 2018;30341.

Results

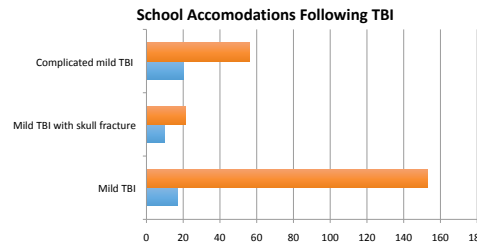


Figure 1: The number of patients who did and did not have new school accommodations following mTBI. There was a significant association between TBI classification and new accommodations ($p=0.001$).

Out of 285 valid survey responses from parents, 122 (42.8%) said their children's academic performance was affected in the first year after injury. The majority of these children ($n = 94$ out of 122, 77.0%) either required greater than 6 months to return to or never returned to normal school functioning.

After injury, 47 (16.5%) children obtained new/revised 504 or IEP, or extra help/simplified workload with no 504 or IEP plan. There was a significant association between mTBI classification and new/revised accommodations needed after injury ($p = 0.001$). Specifically, 32.3% and 26.3% of children with mTBI-SF and C-mTBI obtained new/revised accommodations after injury, respectively, compared to 10.0% among children with mTBI (Figure 1).

Meanwhile, longer time of recovery was significantly associated with the decline in the first-year academic performance after injury ($p < 0.001$). Specifically, recovery time greater than 3 months resulted in 62.1% of children suffering from academic decline, versus 9.3% of children whose recovery time was 1-3 months did. No significant association was found between mTBI classification and first-year academic performance after injury ($p = 0.128$). A significant association was found between length of mTBI recovery and length to get back to normal school functioning (Figure 2).

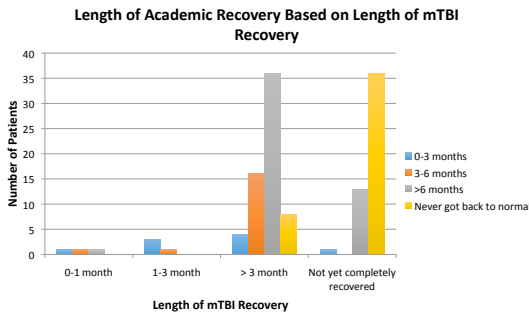


Figure 2: The distribution of length of academic recovery to the patients' baseline by length of recovery from TBI injury. There is significant association between decline in academic performance and longer time of recovery.

Discussion

Almost half of children with mTBI experience academic difficulties, with a majority of these experiencing effects greater than 6 months. There was a significant association between decline in academic performance in the first year, and length of recovery from TBI. Furthermore, mTBI classification significantly impacted the prevalence of new accommodations post-injury, with both mTBI-SF and C-mTBI obtaining more accommodations when compared to mild TBI. These findings shed light on the importance of academic variables in relation to mTBI, especially in children who suffer C-mTBI and mTBI-SF.

Future questions to address with the collected data include: how length of time waited to return to participation relates to length of academic recovery and new IEP need, how repeat concussions relate to academic recovery and new IEP need, and how age at injury relates to academic recovery and new IEP need