

ABSTRACT

DISTINCT NEUROPSYCHOLOGICAL PROFILES OF ACUTE PEDIATRIC TRAUMATIC BRAIN INJURY

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Traumatic brain injury (TBI) can cause significant impairment in a child's life, particularly impacting their cognitive and psychological functioning. Despite these significant consequences, there are currently no validated treatments to alleviate or mitigate the negative impact of TBI. Failed clinical trials in pediatric TBI are thought to be due to simplistic diagnostic criteria and coarse classification nomenclature (i.e., mild, moderate, severe), which results in significant variability in recovery within a classification category. Furthermore, other variables, such as age, preinjury functioning, social determinants of health (SDOH), and post-injury cognitive functioning, more effectively predict long term outcomes than classification nomenclature, highlighting the need to identify new ways to categorize TBI. This project used Latent Profile Analysis (LPA) to identify distinct profiles of pediatric TBI using preinjury functioning and post-injury cognitive functioning and associated these profiles with demographic, SDOH, preinjury, and injury characteristics. Moreover, differences between long-term cognitive and psychological functioning, cognitive recovery, and healthcare referrals were investigated for the identified profiles and compared with the traditional classification criteria. Overall, five profiles were identified: (1) Low Average Preinjury with Severe Impairment (24%), (2) High Average Preinjury with Severe Impairment (8%), (3) Average Preinjury with Moderate Impairment (23%), (4) Average Preinjury with Low Impairment (40%), and (5) Low Average Preinjury with Low Impairment (5%). The identified profiles were significantly associated with demographic, SDOH, and injury factors predictive of worse injury (e.g., diffuse axonal injury, high deprivation index). The identified profiles were also associated with long-term cognitive outcomes and cognitive recovery, whereas the traditional classification criteria were not. However, the traditional classification criteria demonstrated stronger associations with healthcare referrals. Overall, distinct neuropsychological profiles of acute pediatric TBI were identified, and the profiles were associated with injury characteristics and long-term cognitive outcomes, thus allowing clinicians to use a patients' inpatient profiles to tailor clinical-trials, treatments, and education regarding TBI recovery.