Traumatic brain injury and abuse among female offenders compared to non-incarcerated controls

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ABSTRACT

Objective: To examine the prevalence of traumatic brain injury (TBI) and past abuse experienced by adult female offenders.

Methods: Twenty-nine female offenders from a UK women's prison and twenty-nine age and gender matched university controls were recruited. In addition to demographic data, the Brain Injury Screening Index was utilized alongside the Childhood Trauma Questionnaire and the Abusive Behaviour Inventory.

Results: Approximately 79% (n = 21) of female offenders reported a history of TBI, with 38% (n = 8) reporting six or more injuries. However, only 28.5% of female offenders reporting injury (n = 6) believed they had sustained a brain injury. Prevalence of both childhood (n = 15, 51.7%), and partner (n = 19, 65.5%) abuse was also high among offenders. TBI Index scores correlated with past childhood and past partner physical abuse. Past mental illness, partner physical abuse, and number of convictions were predictive of greater TBI severity.

Conclusion: This is the first European study to examine combined TBI and abuse among an exclusively female offender population. It suggests that TBI is as prevalent among incarcerated females as it is among males. The unique presentation of female offenders must be acknowledged if effective rehabilitation programs are to be implemented.

KEYWORDS: Traumatic brain injury, prison, abuse, female offender, trauma

Coping strategies and traumatic brain injury in incarcerated youth: a mediation analysis

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ABSTRACT

Objective: Investigation into whether coping strategies mediated the relationship of traumatic brain injury (TBI) on depression/anxiety and alcohol and drug problems within incarcerated youth. Subjects: A non-probability sample of youth (N = 227) adjudicated for a variety of offences. Methods: Cross-sectional study within two long-term residential facilities for youth offenders in Pennsylvania. TBI assessed with question about lifetime head injury with blackout. Coping measured with Coping Strategies Inventory that included domains of acting-out coping, internalised coping, partying coping, prosocial coping, and expressing coping. Outcomes of depression/anxiety as well as alcohol and drug

Objective: Despite being at high risk, little is known about traumatic brain injuries (TBIs) among incarcerated young people. This study aims to describe the prevalence of TBI among incarcerated young people and assess the association with mental health, substance use, and offending behaviors.

Setting: The 2009 NSW Young People in Custody Health Survey was conducted in 9 juvenile detention centers.

Participants: A total of 361 young people agreed to participate, representing 80% of all incarcerated young people.

Main Measures: Young people were asked if they ever had a head injury where they became unconscious or "blacked-out." The survey used the Kiddie Schedule for Affective Disorders for Children to assess for psychiatric disorders, the Alcohol Use Disorder Identification Test, and the Severity of Dependence Scale to measure problematic substance use.

Results: The sample comprised 88% man, 48% Aboriginal, with an average age of 17 years. One-third (32%) of young people reported ever experiencing a TBI, and 13% reported multiple TBIs. The majority (92%) of "most serious" TBIs were defined as mild, and the most common cause was an assault (62% woman, 34% man). Young people who reported a history of TBI (compared with those reporting no TBI) were significantly more likely to be diagnosed with a mental health disorder, psychological distress, a history of bullying, problematic substance use, participation in fights, and offending behaviors. Reporting multiple (>2) TBIs conferred a higher risk of psychological disorders and problematic substance use.

Conclusions: Incarcerated young people have high rates of TBI. Enhanced detection of TBI among incarcerated young people will assist clinicians in addressing the associated psychosocial sequelae.

Racial Disparities in Outpatient Mental Health Service Use Among Children Hospitalized for Traumatic Brain Injury

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Original Articles

Objective: To examine racial differences in mental health service utilization after hospitalization for traumatic brain injury (TBI) among children with Medicaid insurance.

Design and Main Measures: Retrospective analysis of the MarketScan Multi-State Medicaid database from 2007 to 2012 was performed. Outpatient mental health service utilization (psychiatric and psychological individual and group services) was compared at TBI hospitalization, from discharge to 3 months and from 4 to 12 months after discharge, between children of non-Hispanic white (NHW), non-Hispanic black (NHB), Hispanic, and "Other" racial groups. Multivariable mixed-effects Poisson regression models with robust standard errors were utilized.

Healthcare Utilization and Missed Workdays for Parents of Children With Traumatic Brain Injury

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Background: We enrolled patients in a prospective study in which we obtained estimates of the direct and indirect burden for families of children with traumatic brain injury (TBI) relative to a control group of families of children with orthopedic injury (OI).

Methods: Parents were surveyed at 3 time points following injury: 3, 6, and 12 months. At each follow-up contact, we asked parents to list the number of workdays missed, number of miles traveled, amount of travel-related costs, and whether their child had an emergency department (ED) visit, hospital admission, any over-the-counter (OTC) medications, and any prescription medications during that time period. We assessed the difference in these outcomes between the TBI and OI groups using multivariable logistic and 2-part regression models to account for high concentrations of zero values.

Results: Children with TBI had significantly greater odds of having an ED visit (3.04; 95% CI, 1.12-8.24), OTC medications (1.98; 95% CI, 1.34-2.94), and prescription medications (2.34; 95% CI, 1.19-4.59) than those with OI. In addition, parents of children with TBI missed significantly more days of work (19.91 days; 95% CI, 11.64-28.17) overall during the 12 months following injury than their OI counterparts.

Conclusion: Extrapolating our results to the entire country, we estimate that pediatric TBI is associated with more than 670 000 lost workdays annually over the 12 months following injury, which translates into more than $150 million in lost productivity. These missed workdays and lost productivity may be prevented through safety efforts to reduce pediatric TBI.

Changing Healthcare and School Needs in the First Year After Traumatic Brain Injury

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Abstract

Objective: To examine children's unmet and unrecognized healthcare and school needs following traumatic brain injury (TBI).

Setting: Two pediatric trauma centers.

Participants: Children with all severity of TBI aged 4 to 15 years.

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Mental Health Implications of Traumatic Brain Injury (TBI) in Children and Youth

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Abstract

Traumatic brain injury (TBI) is the most common cause of death and disability in children and adolescents. Psychopathology is an established risk factor for, and a frequent consequence of, TBI. This paper reviews the literature relating psychopathology and TBI.

Method:

Selective literature review.

Results:

The risk of sustaining a TBI is increased by pre-existing psychopathology (particularly ADHD and aggression) and psychosocial adversity. Even among individuals with no psychopathology prior to the injury, TBI is frequently followed by mental illness especially ADHD, personality change, conduct disorder and, less frequently, by post-traumatic stress and anxiety disorders. The outcome of TBI can be partially predicted by pre-injury adjustment and injury severity, but less well by age at injury. Few individuals receive treatment for mental illness following TBI.

Conclusion:

TBI has substantial relevance to mental health professionals and their clinical practice. Available evidence, while limited, indicates that the risk for TBI in children and adolescents is increased in the presence of several, potentially treatable mental health conditions and that the outcome of TBI involves a range of mental health problems, many of which are treatable. Prevention and management efforts targeting psychiatric risks and outcomes are an urgent priority. Child and adolescent mental health professionals can play a critical role in the prevention and treatment of TBI through advocacy, education, policy development and clinical practice.

Keywords: traumatic brain injury, mental illness, attention deficit hyperactivity disorder, children and adolescents

As a consequence of the high prevalence, resulting impairment and cost, disproportionate burden on individuals with lower SES as well as its typical occurrence during a period of rapid neural development, childhood TBI poses considerable challenges to policy makers, scientists and practitioners. Moreover, TBI has substantial although frequently overlooked relevance to mental health. This review addresses key issues regarding mental health and TBI in children and adolescents.

Go to:

Pre-injury psychopathology and psychosocial risk factors

Pre-injury mental illness as indexed by psychiatric diagnosis in particular ADHD, aggression, prescription for psychiatric medication or utilization of mental health services doubles the risk for TBI (Bijur, Golding, Haslum, Kurzon, 1988; Fann et al., 2002; Eme, 2012). For example, ADHD is found in 20–30% of TBI cases prior to injury compared with a population prevalence of 5% (Gerring et al., 1998; Max, Wilde, et al., 2012; Yeates & Taylor, 2005).

Other risk factors for TBI include low SES, overcrowded households, disadvantaged neighborhoods, high incidence of adverse life events, young maternal age, many older and few younger siblings in the home as well as a history of previous TBI (Bijur, Golding, & Kurzon, 1988; Max, Schachar, et al., 2005a; Max, Wilde, et al., 2012). Among children younger than age five with one head injury (4.5%), 15% will have an additional head injury before age ten, 2.8% will have two, and 0.4% will have three (Keenan, Hall, & Marshall, 2008). Parental psychopathology also increases risk for TBI and its adverse consequences (McAllister, 2010). For example, children of mothers categorized as problem drinkers compared to children of mothers who are nondrinkers have twice the risk of various, serious injuries including TBI.

In summary, the risk for TBI is increased in children and youth who have pre-injury psychiatric disorders and those who are experiencing high psychosocial risk. These factors likely operate in concert to alter the child's behavior and environment, to initiate and in turn, perpetuate a cycle of risk through TBI-related changes in behaviour. Given the high prevalence of ADHD (5%), aggression (4%) and psychiatric disorder of any type (20%) in children and youth, the importance of these conditions in conferring risk in the population for TBI is considerable.

Mental illnesses after TBI

A wide range of mental health problems emerge de-novo in the absence of pre-injury psychopathology, and most illnesses that were present prior to TBI will persist or worsen (Catroppa et al., 2015; Levin et al., 2007; Yeates et al., 2005).

Secondary ADHD (S-ADHD)

S-ADHD is defined in the same way as developmental or primary ADHD with the exception of needing to be evident prior to 12 years of age. S-ADHD originates in 15–50% of individuals following TBI (Gerring, et al., 1998; Levin, et al., 2007; Max, Schachar, et al., 2005a; McKinlay, Grace, Horwood, Fergusson, & MacFarlane, 2009). The incidence of S-ADHD in TBI is greater than that found in healthy controls, or those hospitalized for a fracture not involving the head. In S-ADHD cases, inattentive subtype tends to predominate (Max, Schachar, et al., 2005b), and many cases exhibit affective lability and aggression. S-ADHD does not emerge in all cases immediately following the injury but can surface at various time-points: 15% of cases manifest S-ADHD after one year and 21% manifest S-ADHD after two years (Max,

In summary, a wide range of psychiatric disorders including internalizing and externalizing disorders can appear de novo and persist for many years following TBI (Catroppa, Godfrey, Rosenfeld, Hearps, & Anderson, 2012; Max et al., 2013). The extent of persistence of impairment increases with injury severity, family dysfunction and pre-injury psychopathology (Ventura et al., 2010). Post-TBI mental illnesses are often accompanied by an overall decrease in general health, shorter life expectancy, academic under-achievement and neurocognitive deficits in areas such as working memory and response inhibition (Ventura et al., 2010). Comorbidity tends to be the rule rather than the exception for children who have experienced TBI. Max et al. (2005b) reported that 60% developed more than one novel psychiatric disorder at some point after TBI.

Prediction of outcomes

It is a truism that no two individuals with TBI are the same with regard to pre-injury risk and protective factors (Bigler, Abildskov, et al., 2013). Each individual experiences a unique neurotrauma arising from the mechanics of their injury, post-injury adjustment (anxiety, depression, guilt) and resulting social consequences such as the amount of time that a child misses school (Richards & Carroll, 2012). Predictors include adverse environmental circumstances, low pre-injury adaptive function and scholastic ability, psycho-pathology, and family dysfunction.

Injury severity is a critical factor in predicting adverse mental health outcomes -the greater the TBI severity, the higher the likelihood of post-injury psychopathology. Even among those with mTBI, there seems to be a relationship between TBI severity and the risk of adverse outcomes (Massagli et al., 2004; McKinlay et al., 2009). Nonetheless, injury severity does not account for all of the variation in mental health outcome (Max, Schachar, et al., 2005a; Max, Wilde, et al., 2012; Yeates et al., 2005). The incidence of psycho-pathology, the number of lesions on CT or MRI scans and the extent of cognitive deficit after TBI are often unrelated to initial injury as typically assessed. Even among children with severe brain injury, half have no neuropsychological, behavioral, adaptive or academic impairment at follow-up (Fay et al., 2009). To some extent, the lack of a strong severity-outcome relationship could be explained by our poor understanding of the notion of severity. With every new development in imaging, we discover lesions that had not previously been detected but which predict outcome (Bigler, 2013; Levin et al., 2008).

The strength of the link between severity and prognosis also depends on what outcome is being addressed and possibly on the length of time since injury. For example, Anderson et al. (2012) found that poorer adaptive skills were evident for those with more severe injury ten years after injury, but that behavioural difficulties were present regardless of injury severity. In some studies, adaptive function at outcome was predicted primarily by pre-injury adaptive function (Anderson, Catroppa, Haritou, Morse, & Rosenfeld, 2005; Catroppa, Anderson, Morse, Haritou, & Rosenfeld, 2008; Yeates et al., 2004).

How outcome is related to injury characteristics over time is only just beginning to be understood. It was once assumed that brain recovery reached a stable state after TBI, but it is now clear that chronic neuroinflammation and white matter degeneration persist for years after a single traumatic brain injury while neurogenesis can occur throughout life (Smith et al., 2013). These processes provide a mechanism for the waxing and waning after injury of mental health, neurocognitive and behavioural outcomes.

Pre-injury psychopathology increases the likelihood of post-injury psychopathology (Levin et al., 2007; Massagli et al., 2004; Max et al., 2013; Yeates et al., 2005) and may interact with injury severity in predicting adverse outcomes; pre-injury psychopathology coupled with increasing injury severity predict greater risk of psychopathology and impairment after injury. The association of poorer pre-injury behavioral adjustment predicting greater distress and impairment after injury is also found in mTBI. This pattern highlights the role of reserve capacity as a moderator of adverse effects of TBI (Ponsford et al., 2000; Satz, Cole, Hardy, & Rassovsky, 2011; Satz et al., 1999).

Contrary to what was once thought, young age at the time of injury confers no advantage for recovery for mental illness (Dennis, Spiegler, et al., 2013). Given that neural circuitry, as well as social and cognitive skills are developing during childhood in step with rapid neural growth, it is understandable that injury in young child could have greater adverse effects than an equivalent injury in an older individual (Gronwall, Wrightson, & McGinn, 1997). Younger age at injury predicts greater cognitive deficit (Leblanc et al., 2005), risk for developmental delay and epilepsy, as well as poorer academic and intellectual performance especially if the injury occurs before the age of two years (Anderson et al., 2009). Furthermore, TBI early in life affects a larger proportion of an individual's lifespan than does an injury later in childhood or in adolescence.

Treatment implications

There is little solid evidence supporting the role of medication in neuroprotection and neurorecovery in children and adolescents (Pangilinan, Giacoletti-Argento, Shellhaas, Hurvitz, & Hornyak, 2010), or to guide mental health practice after a TBI. Few treatment trials of quality for TBI patients have been conducted (Frenette et al., 2012; Teasell et al., 2007). Only 28% of acquired brain injury treatment studies have employed a randomized clinical trial, and most studies have small sample sizes. Consequently, a minority of therapeutic conclusions are based on strong evidence. Most TBI patients (86%) do not receive any therapy targeting their psychological or psycho-educational needs either in the short or the long term (Colantonio, Howse, et al., 2010). This state of affairs is true even among the most severely injured (Catroppa et al., 2012).

A good example of the gaps in treatment literature can be found on the question of stimulant medication for post-injury ADHD. Experimental animal studies support treatment for S-ADHD (increase striatal dopamine transmission in injured rats; Wagner et al., 2009). A review of the few studies that evaluated stimulant treatment of childhood S-ADHD suggested that these drugs are effective in S-ADHD although they may have less effect than in primary ADHD. Typically, stimulants are used at a lower dose in S-ADHD than in primary ADHD in the absence of quality evidence (Jin & Schachar, 2004). In the general population, 56% of primary ADHD cases (Visser et al., 2014; Visser, Lesesne, & Perou, 2007) but only 7% of S-ADHD cases receive treatment with methylphenidate (Levin et al., 2007). The relative under-utilization of stimulants in the care of patients with TBI could reflect family or practitioner preferences, absence of clear practice guidelines, lack of access to service or insufficient education about the potential of drug therapy. Of note, half of the potential TBI subjects in one study declined participation (Willmott & Ponsford, 2009). ADHD practice guidelines make no specific treatment recommendations for psychiatric disorders such as S-ADHD after TBI (CADDRA, 2011; see Pliszka & Issues, 2007).

There is an urgent need for evidence based practice guidelines for the full range of mental health consequences of TBI including non-pharmacological interventions aimed at improving cognitive, academic and psychosocial outcomes. Mental health practitioners of all disciplines can play a critical role in the prevention and treatment of TBI through advocacy, education, policy development and clinical practice.

Acknowledgments/Conflicts of Interest

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