# Intentional traumatic brain injury

## Epidemiology

Intentional injury has been associated with certain demographics and socioeconomic groups. Less is known about the relationship of intentional traumatic brain injury (TBI) to injury severity, mortality, and demographic and socioeconomic profile.

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A planned secondary analysis of a prospective multicentre cohort study was conducted in 10 emergency departments EDs in Australia and New Zealand, including children aged <18 years with head injury (HI). Epidemiology codes were used to prospectively code the injuries. Demographic and clinical information including the rate of clinically important traumatic brain injury (ciTBI: HI leading to death, neurosurgery, intubation >1 day or admission ≥2 days with abnormal computed tomography [CT]) was descriptively analysed.

Intentional injuries were identified in 372 of 20 137 (1.8%) head-injured children. Injuries were caused by caregivers (103, 27.7%), by peers (97, 26.1%), by siblings (47, 12.6%), by strangers (35, 9.4%), by persons with unknown relation to the patient (21, 5.6%), other intentional injuries (8, 2.2%) or undetermined intent (61, 16.4%). About 75.7% of victims of assault by caregivers were <2 years, whereas in other categories, only 4.9% were <2 years. Overall, 66.9% of victims were male. Rates of CT performance and abnormal CT varied: assault by caregivers 68.9%/47.6%, by peers 18.6%/27.8%, by strangers 37.1%/5.7%. ciTBI rate was 22.3% in assault by caregivers, 3.1% when caused by peers and 0.0% with other perpetrators.

Intentional HI is infrequent in children. The most frequently identified perpetrators are caregivers and peers. Caregiver injuries are particularly severe [1].

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A study identified 1,409 (8.0%) intentional TBIs and 16,211 (92.0%) unintentional TBIs. Of the intentional TBIs, 389 (27.6%) was self-inflicted TBI (Si-TBI) and 1,020 (72.4%) was other-inflicted TBI (Oi-TBI). The most common cause of Si-TBI was “jumping from high places” (32.1%), followed by “firearms” (30.6%). About half of Oi-TBI was because of “fight and brawl” (48.3%), followed by “struck by objects” (26.1%). Si-TBI was associated with younger age, female gender, and having more alcohol/drug abuse history. For Oi-TBI, younger age, male gender, having more alcohol/drug abuse history were independently associated.

This research provides the first comprehensive overview of intentional TBI based in Canada.

The comprehensive data set (CDS) of the Ontario trauma registry (OTR) provided the ability to identify who is at risk for intentional TBI. Prevention programs and more targeted rehabilitation services should be designed for this vulnerable population [2].

# Outcome

Intentional injury is associated with significant morbidity and mortality.

Caregiver injuries are particularly severe in children [3].

Prospective data were obtained for 2,637 adults sustaining TBIs between January 1994 and September 1998. Descriptive, univariate, and multivariate analyses were conducted to determine the predictive value of intentional TBI on injury severity and mortality.

Gender, minority status, age, substance abuse, and residence in a zipcode with low average income were associated with intentional TBI. Multivariate analysis found minority status and substance abuse to be predictive of intentional injury after adjusting for other demographic variables studied. Intentional TBI was predictive of mortality and anatomic severity of injury to the head. Penetrating intentional TBI was predictive of injury severity with all injury severity markers studied.

Many demographic variables are risk factors for intentional TBI, and such injury is a risk factor for both injury severity and mortality. Future studies are needed to definitively link intentional TBI to disability and functional outcome [4].

# References

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