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Worldwide incidence of traumatic brain injury could be six times higher than previous estimates

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The first study to estimate rates of traumatic brain injury, without relying on official figures, suggests the worldwide incidence of TBI could be six times higher than previously estimated.

"Our estimates are the first to include more mild cases of TBI that are not usually treated in hospital and, thus, are often overlooked in official estimates," explains Professor Valery Feigin, who heads AUT University's National Institute for Stroke and Applied Neurosciences in New Zealand and led the research.

"It is the first study to show that 95% of all TBI cases are mild and that the true annual incidence of mild TBI is substantially higher than recent World Health Organisation (WHO) estimates (100–300/100 000 people per year). Based on these findings, we estimate that some 54–60 million people worldwide sustain a TBI each year, of which some 2.2–3.6 million people incur moderate or severe TBI. This is almost six times higher than previous estimates and means that every second two people in the world are struck by a new TBI."

TBI occurs when an external force such as a bump or blow to the head disrupts the normal function of the brain. Leading causes include falls, motor vehicle accidents, and assaults.

TBI is the leading cause of long-term disability among children and

young adults and cost the USA alone an estimated $406 billion in 2000. TBI is projected to become the third largest cause of disease burden worldwide by 2020.

The BIONIC (Brain Injury Outcomes New Zealand In the Community) study examined multiple overlapping sources of information (eg, public hospitals, family doctors, rehabilitation centres, coroner/autopsy records, rest homes, ambulance services, and prisons) to record all new cases of TBI that occurred over a one-year period (1 March 2010 to 28 February 2011) in an area (173,205 residents) representative of the New Zealand population in terms of demographic, ethnic, socioeconomic, and urban and rural structure.

Rates of TBI were highest in children (0–14 years old) and younger adults (15–34 years old), accounting for almost 70% of cases, far higher than the 40–60% reported in previous studies.

Men were nearly twice as likely to have a mild TBI as women, and almost three times as likely to sustain a moderate or severe TBI. Maori people also fared worse than New Zealand Europeans, with a 23% greater risk of mild TBI.

Consistent with previous reports, the new figures also indicate that people living in rural areas have more than twice the risk of moderate or severe TBI than those living in urban areas, mainly due to transport accidents.

According to Feigin, "Our analysis raises some very important issues, in particular that healthcare policy and provision may be grossly inadequate for the huge and growing burden of TBI worldwide. More comparable population-based studies of TBI are urgently needed to inform effective treatment, prevention, and rehabilitation strategies."

Writing in a linked Comment, Nada Andelic from the Oslo University Hospital in Norway calls for the development of national TBI surveillance systems to monitor trends and develop appropriate preventive measures, control strategies, and effective TBI care. She adds, "A greater understanding of patient-specific characteristics is needed to reduce TBI risk at the individual level, and a focus on age, mechanism of injury, and severity-specific groups is needed to reduce the incidence of TBI at the population level."

More information: www.thelancet.com/journals/lan … (12)70262-4/abstract

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