

Researchers find link between low cognitive score and risk of brain injury

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It is estimated that there are 10 million cases of traumatic brain injury globally every year with mild traumatic brain injuries being responsible for 70-90% of these. Incidence is highest among young males.

Current literature suggests that mild traumatic brain injuries cause changes in brain tissues and have important long-term consequences on cognitive function. Deficits have been described in attention, memory, verbal learning and processing speed and may occur in 15-25% of those suffering one of these injuries.

However, little is known about population-wide cognitive function before a mild traumatic brain injury and whether low cognitive function is a risk factor.

Researchers from Umea University in Sweden therefore carried out a nationwide study on over 300,000 young men who were conscripted for military service in Sweden between 1989 and 1994, all of whom took part in a [cognitive test](#). Average follow-up was 19 years.

The main outcome was mild traumatic brain injuries in relation to cognitive function and other potential risk factors.

Information on diagnosis of mild traumatic brain injuries between 1987 and 2010 was obtained from the National [Hospital Discharge](#) Register (HDR). Other data were taken from the Statistics Swedish database (SSD) and the National Cause of Death Register.

Rates were adjusted for age, weight, height, vision, hearing, [physical fitness](#) and place and year of conscription. The most common causes of mild traumatic brain injury were falling, trauma during transportation and assault.

In the study population of 305,885 men, 4,713 had sustained one mild traumatic brain injury before cognitive testing, 11,217 men sustained one mild traumatic brain injury and 795 men at least two mild traumatic brain injuries during the study.

Cognitive function was 5.6% lower in those who sustained a mild traumatic brain injury in the two years before cognitive testing and 15% lower in those who sustained at least two mild traumatic brain injuries after cognitive testing, compared with those who sustained no mild traumatic brain injury.

Those sustaining a mild traumatic brain injury within three months before cognitive testing and those sustaining one within two years after cognitive testing had similar cognitive scores. Men in the lowest compared with the highest scale of overall cognitive function were at a significantly increased risk of having sustained one mild traumatic brain injury in the two years before the cognitive testing.

Length of education was inversely associated with number of mild traumatic brain injuries and total income was lower in subjects with a mild traumatic brain injury.

Strong risk factors for mild traumatic brain injuries were: low overall cognitive function; low total income; high physical fitness; hospital admission for intoxication; a previous mild traumatic [brain injury](#); low education and taking early disability pension.

The researchers conclude that low cognitive function and factors related

to a low socioeconomic status are important risk factors for mild traumatic brain injuries. They say this may have implications for both interception and rehabilitation following mild traumatic brain injuries. They say that "successful prevention of mild traumatic brain injuries may include an assessment and evaluation of these [risk factors](#)".

In an accompanying editorial, two doctors from the Department of Anaesthesia at the University of Cambridge say that this study provides unique insights into the epidemiology of [mild traumatic brain injury](#) and the results are important for several reasons. They do say, however, that additional studies are important to support these findings and to increase understanding of the "outcome impact of [traumatic brain injury](#)".

More information: www.bmj.com/cgi/doi/10.1136/bmj.f723
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