Medical Xpress

# Concussion linked to heightened risk of dementia and Parkinson's disease

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Concussion is linked to a heightened risk of subsequent hyperactivity disorder, dementia, and Parkinson's disease, as well as mood and anxiety disorders among women in particular, finds research published online in

the journal *Family Medicine and Community Health*.

Concussion upsets the workings of the autonomic nervous system as well as blood flow to, and around, the brain. Those affected usually recover within a week of injury, but there may be long term consequences.

Previous research has implicated concussion in the development of various neurological and psychological disorders. But many of these studies have relied on self-reported medical data or failed to account for potentially important coexisting conditions, say the researchers.

In a bid to get round these issues, the researchers drew on medical health data for the province of Manitoba, Canada, covering the period 1990-1 to 2014-15 inclusive.

They wanted to see if those who had been concussed were more likely to subsequently be diagnosed with attention deficit hyperactivity disorder (ADHD), mood and anxiety disorders, dementia, or Parkinson's disease than those who hadn't been concussed.

During the 25 year study period, 47,483 people (28,021 men, average age 25; and 19,462 women, average age 21) were diagnosed with concussion.

Each of them was compared with up to three other people, matched for age, sex, and geographic area, who hadn't been concussed (81,871 men and 57,159 women).

Compared with those who hadn't been concussed, those who had been, were more likely to be diagnosed with various neurological or psychological disorders.

After taking account of potentially influential factors, including income,

educational attainment, and other coexisting health conditions, ADHD was 39% more likely in those who had been concussed.

Similarly, mood and anxiety disorders were 72% more likely, particularly among women, who were 28% more likely than men to subsequently become hyperactive and 7% more likely to become depressed/anxious after a concussion.

Concussion was also associated with a 72% increased risk of developing dementia and a 57% increased risk of developing Parkinson's disease.

A second concussion further strengthened the association with the heightened risk of dementia, while three or more concussions strengthened the association with mood and anxiety disorders and Parkinson's disease.

Unsurprisingly, the findings indicated that a diagnosis of ADHD after concussion was more likely in younger people while a diagnosis of dementia and Parkinson's disease was more likely in older people.

But while the findings indicate that the conditions studied may be interlinked, concussion was still independently associated with ADHD, mood and anxiety disorders, dementia and Parkinson's disease.

This is an observational study, and as such, can't establish cause. Other limiting factors include the absence of data on previous medical history and the fact that only people in one province of Canada were studied, say the researchers.

But "concussions are a potentially debilitating injury and have shown a steady increase in incidence over recent years—namely, in adolescents," they point out.

**More information:** Associations between concussion and risk of diagnosis of psychological and neurological disorders: a retrospective population-based study, DOI: 10.1136/fmch-2020-000390

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