

Many children with symptoms of brain injuries and concussions are missing out on vital checks, national study finds

April 26 2024



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Almost a quarter of US children with symptoms of a brain injury or concussion are not checked for the condition, with younger children

particularly likely to be overlooked, a new national study finds.

The research, which is published in the journal [*Brain Injury*](#), also shows that children with symptoms or a diagnosis of a [brain injury](#) or [concussion](#) were more likely to have symptoms of depression than other youngsters. They also found it harder to make friends.

Routine checks would help ensure such children receive the care that they need, says lead researcher Priyanka Ramulu, who became interested in the topic after suffering a concussion in a [car accident](#) when she was 15.

She carried out the research while at [high school](#) in Maryland and is now studying neuroscience at Duke University.

"Head injuries from sports, car accidents, falls and other types of blows to the head can be more serious in children than in adults because their brains are still developing," says Ramulu.

"Previous work has shown that symptoms, such as tiredness, headaches and difficulties with memory and concentration, can last for years, affect schooling, and increase a young person's risk of self-harm and suicide.

"Most of this research has, however, been on adults or on children being treated in clinics and there has been a lack of information about the impact of concussions and brain injuries on youngsters in the general population."

To address this, Ramulu, along with Dr. Varshini Varadaraj, of Johns Hopkins University in Baltimore and Dr. Samir Belagaje, of Emory University in Atlanta, analyzed data on 4,269 children aged 5–17 whose parents (or other responsible adult) took part in the 2020 National Health Interview Survey (NHIS), a nationally representative study.

The parents were asked if, as result of a blow or jolt to the head, the child had ever had any symptoms of a brain injury or concussion. Potential symptoms were listed as: being knocked out or losing consciousness; being dazed or left with a gap in memory; headaches, vomiting, blurred vision or changes in mood or behavior.

They were also asked if the child had ever been checked for a concussion or brain injury and if that had led to them being diagnosed with one.

Some 8.7% of the children had had symptoms of a concussion or brain injury and 5.3% had been formally diagnosed.

Extrapolation of the results to all U.S. children aged 5–17 years suggests 4.6 million had symptoms and 2.6 million had a diagnosis in 2020.

In addition, some 23% of children with symptoms had not been checked for a concussion or brain injury (equating to around one million nationally), with [younger children](#) more likely to have missed out.

The survey also contained questions about the child's current mental and social well-being.

Those who'd had symptoms or diagnosis of a concussion or brain injury had 60% higher odds of symptoms of depression and twice the odds of anxiety than those without symptoms or a diagnosis.

They were also more likely to take medication to help with their concentration (70% higher odds), mental health, behavior, or emotions and more likely to have had counseling (50% higher odds).

"We found that just over a quarter (26%) of those with anxiety or symptoms of depression were receiving therapy or medication," says

Ramulu. "If mental health problems are being undertreated, this could increase the risk of self-harm and suicide."

Children with symptoms and/or a diagnosis of concussion or brain injury also found it harder to make friends (57% higher odds).

While the study couldn't prove causation, the results suggest that concussions increase the risk of mental health, social and behavioral difficulties in children, say the researchers.

The study's limitations include lack of information on when the head trauma occurred and on brain injury severity. In addition, it wasn't clear if the mental health problems were specific to head trauma or if they'd occurred after other injuries and illnesses.

The authors conclude that there's an urgent need for all children to be checked for concussion and brain injury after a blow to the head.

"The routine evaluation of children who have suffered a blow to the head is vital if children are to receive the treatments and care that they need, be that medicines, [mental health](#) counseling or help with making friends," explains Ramulu.

"Identifying a concussion or brain injury is also an important step in preventing a second head trauma, which can be more serious and take longer to recover from."

More information: Association of concussion/brain injury symptoms and diagnosis with mental and social well-being in 2020 National Health Interview Survey (NHIS) children, *Brain Injury* (2024). [DOI: 10.1080/02699052.2024.2328312](https://doi.org/10.1080/02699052.2024.2328312)

Provided by Taylor & Francis

Citation: Many children with symptoms of brain injuries and concussions are missing out on vital checks, national study finds (2024, April 26) retrieved 7 May 2024 from

<https://medicalxpress.com/news/2024-04-children-symptoms-brain-injuries-concussions.html>

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