

## A Concussion May Increase Risk of Opioid Use Disorder by 65%, Study Finds

By Joni Sweet | Published on September 17, 2021

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### Key Takeaways

- People who have a history of concussion may be up to 65% more likely to develop an opioid use disorder, new research shows.
- The findings support the “perfect storm” hypothesis that people who take opioids for pain after a traumatic brain injury face higher risk of opioid use disorder and greater barriers to treatment.
- The authors recommend that healthcare professionals screen people with a traumatic injury for at-risk substance use.

If you’ve ever had a concussion, you may be at higher risk of developing an opioid use disorder, according to a new study.

The research, published in the most recent issue of the *Journal of Head Trauma Rehabilitation*, analyzed data on nearly 3,500 adults and found that those with a history of a traumatic brain injury were significantly more likely to have used or misused prescription opioid medications in the past year. A traumatic brain injury, which includes concussions, happens when there’s a sudden, physical assault on the brain from an external source.

Let’s take a closer look at the findings and how they could be used in efforts to address the opioid epidemic.

## The Study

For the study, a team of researchers looked at data on 3,448 adults in Ohio who participated in the 2018 Ohio Behavioral Risk Factor Surveillance System survey, which aims to glean insights on behaviors linked with preventable deaths. The group was nearly 60% female, mostly over the age of 45 years old, and overwhelmingly White.

Nearly 23% of the participants had experienced at least one traumatic brain injury at some point in their lives, more than two-thirds of whom lost consciousness as a result. Most of those folks were under the age of 20 when they experienced a traumatic brain injury with a loss of consciousness.

Of the entire group, more than a quarter of participants said they had used a prescription opioid within the past year. Just over 3% met the criteria for misusing those medications, meaning they took opioids more frequently or in higher doses than recommended by a doctor, or they used opioids prescribed for someone else.

After adjusting for some other factors (including gender, age, and race), the researchers found that people who've had a traumatic brain injury in the past were 52% more likely to use prescription opioids, and 65% more likely to meet the criteria for prescription opioid misuse, compared to those who didn't experience a brain injury.

## Limitations of the Research

The study has several limitations to be aware of. It relied on self-reports from participants, which are not always accurate, to determine the rates of traumatic brain injury and opioid use. It also did not take into account participants' use of illicit opioids (such as heroin and fentanyl), which have been responsible for many overdoses and deaths since 2010.

“It would also be interesting to discern whether individuals were actively using substances when they sustained injuries,” says Leela R. Magavi, MD, psychiatrist and regional medical director for Community Psychiatry and MindPath Care Centers. “Individuals who abuse substances tend to sustain head injuries more often. Additionally, we need more data to discern how much a traumatic brain injury can exacerbate preexisting substance use.”



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The results may have been slightly skewed by the older age of most participants, says Benjamin Emanuel, DO, associate professor of neurology at Keck School of Medicine of the University of Southern California.

“The major problem with this study is that 40% of patients were 65 years old or older. Many patients in this age group also suffer from low back pain and arthritis, which may provoke opiate use, as well,” explains Dr. Emanuel. “The questionnaire did not include questions regarding previous history of chronic pain, so one cannot be certain if opiates were being prescribed for other reasons.”

It’s also important to note that correlation does not equal causation, meaning that even though the findings found an association between history of a head injury and opioid use, there may be other factors behind the trend.

“I feel that an important takeaway is the understanding that the potential link between traumatic brain injury and opioid use and/or misuse may not be as direct as one may think,” adds Ilan Danan, MD, MSc, sports neurologist and pain management specialist at the Center for Sports Neurology and Pain Medicine at Cedars-Sinai Kerlan-Jobe Institute in Los Angeles.

## **Head Injuries and Chronic Pain**

Despite the limitations, the study offers important insights on a potential risk factor—traumatic brain injury—for opioid use and misuse.

“This study adds to the existing knowledge of associations between traumatic brain injury and alcohol and other substance misuse,” says Matthew J. Ashley, MD, JD, neurologist and chief medical officer at Centre for Neuro Skills. “As the authors accurately point out, injury to the brain often impairs the ability to regulate behavior following brain injury, and this may be an underlying reason for increased susceptibility to substance use disorders.”

The research supports the three-phase “Perfect Storm” hypothesis for why people with a history of a traumatic brain injury face increased opioid risks. It suggests that people are more likely to be exposed to opioids for pain after such an injury, progress to long-term opioid use or develop opioid use disorder, and face barriers to receiving treatment for opioid use disorder.

“Individuals may also experience post-concussive symptoms, such as confusion and cognitive impairment, which may lead to unintentional use of additional pain medications,” adds Dr. Magavi. “Many individuals experience symptoms of depression, anxiety and insomnia secondary to a concussion, and may consequently, use pain pills to alleviate their symptoms.”



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More studies in this area could increase opportunities to identify people at risk of opioid use disorder and bring down the rates of opioid overdoses and deaths.

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Establishing a more concrete link between traumatic brain injury and opioid use could also lead to greater awareness of the risks when people are prescribed these medications after a concussion.

“Providing patients with an opioid consent/agreement is a great way to establish medication guidelines and to further educate the patient population, with the hope that it lessens the likelihood of medication management evolving into a chronic issue,” says Dr. Danan.

## What This Means For You

Experiencing a concussion or other type of traumatic brain injury may make a person more susceptible to developing an opioid use disorder, new research shows. While opioid use disorders can happen to anyone, understanding your specific risk level could help you make an informed decision before taking such a medication.

Healthcare professionals may consider screening people for a risk of substance use disorder when treating a traumatic brain injury. Likewise, substance use treatment counselors may take a history of a concussion into account when working with patients. Still, experts say more research is needed to establish a more concrete link between traumatic brain injury and opioid use disorder.

### 2 Sources

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1. Adams RS, Corrigan JD, Ritter GA, Hagemeyer A, Pliskin MB, Reif S. Association of lifetime history of traumatic brain injury with prescription opioid use and misuse among adults. *J Head Trauma Rehabil.* 2021;36(5):328-337. doi:10.1097/HTR.0000000000000729
2. Johns Hopkins Medicine. Traumatic brain injury.