

Research In Focus: A Weekly Digest of New Research from the NIDILRR Community

People with Traumatic Brain Injury May Be More Likely to Use Prescription Opioids and at Higher Risk for Opioid Misuse

A study funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR).

A traumatic brain injury (TBI) is injury to the brain due to external or penetrating force. People with TBI may experience chronic pain and headaches, for which they may be prescribed opioid medication. According to the Centers for Disease Control and Prevention, the adverse effects of opioid overuse have become a public health crisis with nearly half a million deaths resulting from opioid-related overdose between 1999 and 2018. These overdoses included both prescription and illicit opioid use. Populations with higher rates of prescription opioid use may be at higher risk for adverse effects of opioid use and overuse. Research has shown that people with a history of TBI are more likely to receive prescriptions for opioids to manage pain than people without TBI. Researchers have described this and other risk factors associated with TBI and potential opioid misuse as a “perfect storm.”

This perfect storm is thought to be related to high rates of chronic pain in people with TBI compared to those without TBI, and subsequent increased rates of prescribing opioid medications to this population. This situation is also thought to be due to behavioral changes after injury, which may increase impulsivity and decrease awareness of a potential problem. Other perfect storm risk factors include risky substance use pre-injury, and potential physiological susceptibility to addiction. Despite these risks, there has been relatively little investigation into whether people with a history of TBI may have more challenges than others when exposed to opioids.

In a recent NIDILRR-funded study, researchers sought to examine the relationship between having a history of TBI and receiving prescription opioids, and misuse of prescribed opioids. The researchers wanted to know whether having a history of TBI would be related to increased prescription use and misuse of opioids.

For the study, researchers from the project INROADS: Intersecting Research on Opioid Misuse, Addiction, and Disability Services looked at publicly available data from 3,440 individuals who participated in the Ohio Department of Health’s 2018 Behavioral Risk Factor Surveillance System (BRFSS) survey. The BRFSS is a population-based survey that collects data from all 50 states regarding health-related risk behaviors, chronic health conditions, and the use of preventive services. In addition to core demographic-related questions, this survey included two topic-specific modules: lifetime history of TBI and prescription pain medication use. To be included in the study sample, participants had to be at least 18 years old, and have answered the study questions about history of TBI, and prescribed opioid pain medication use.

The survey gathered demographic data including sex, age group (18-44, 45-64, and 65+), race or ethnicity (non-Hispanic/White or non-White), and marital status. The participants answered questions regarding their medication use and misuse during the previous year, including whether they used any pain medication they had been prescribed, whether they used it more frequently or at higher doses than prescribed, and whether they took any pain medication not prescribed to them.

To assess for lifetime history of TBI, respondents reported whether they experienced head or neck injuries at any point in their past. If the respondents reported having had a prior head or neck injury, they were asked the follow-up questions: “Were you ever knocked out or did you lose consciousness/have a loss of consciousness (LOC) from any of the injuries you reported earlier?” and “If you were not knocked out by any of these injuries, did any of them cause you to be dazed or confused, or create a gap in your memory?” Those who reported a head/neck injury and answered yes to at least one of these two questions were classified as having a history of TBI.

Of all respondents, the researchers found that approximately 25% had used prescription opioids within the past year, about 3% met the criteria for prescription opioid misuse, and nearly 23% reported at least one TBI during their lifetime. Of those who reported having TBI, over two-thirds reported a TBI with LOC. Over half of those who had a TBI with LOC, reported that their first TBI with LOC occurred prior to the age of 20. The researchers also found the following results:

General findings

- Females were more likely than males to report prescription opioid use in the past year, but less likely than males to misuse opioids.
- Participants between the ages of 45-64 were more likely than those between 18-44 to report prescription opioid use in the past year, but less likely than that same group to misuse opioids.
- Non-White participants were more likely to report prescription opioid use in the past year and more likely to misuse opioids than non-Hispanic/White participants.
- Participants with a marital status of “other” (widowed, separated, non-married couple) were more likely to report prescription opioid use in the past year than those who were married or never married.
- Participants with a marital status of never married had the highest rate of opioid misuse compared to all other marital statuses.

TBI-specific Findings

- Participants who were female were less likely than males to report a lifetime history of TBI.
- Married participants were less likely than those with a never married or other status to report a lifetime history of TBI.

- A history of TBI was strongly associated with use and misuse of prescription opioids, regardless of age, sex, or ethnicity.
- Participants with TBI had more than a 50% increase in risk for use of prescription opioids in the past year and over 65% increase in risk for prescription opioid misuse than those without TBI.

The researchers noted these findings posed a significant concern considering that the national average of people with history of TBI may be even higher than that found in this study, with other estimates as high as 43% of the population experiencing a TBI during their lifetime. Previous research has shown that TBI can lead to impairments in decision making, impulse control, and emotional challenges which can put people with TBI at risk for opioid misuse.

The authors noted these results appear to confirm the belief that people with a lifetime history of TBI may be more likely to use prescription opioids and may be more susceptible to subsequent misuse. Subsequently, this increased likelihood might lead to more rapid development of dependency and addiction. The authors also suggested that future research into non-pharmacological interventions may be beneficial as alternatives for treating pain in people with TBI. Based on the results of this study, the authors suggested that substance use treatment providers may want to screen their clients for a lifetime history of TBI, and integrate support strategies that address the behavioral challenges that can make recovery difficult such as impulse control. They also suggested that rehabilitation professionals may wish to screen their TBI clients for substance use. This screening for substance use and history of TBI may improve the chances of people with a history of TBI to safely manage their pain without the potential adverse effects of opioid use.

[To Learn More](#)

The [INROADS project](#) has published several factsheets, research briefs, and other resources on the connection between TBI and opioid use and misuse, including [The Intersection between Traumatic Brain Injury \(TBI\) and Opioid Use: Recommendations for Substance Use Treatment Providers](#).

This study was also featured in a Newsweek article, [Study Finds People Suffering Traumatic Brain Injuries Are More at Risk of Opioid Abuse](#).

In [Traumatic Brain Injury and Opioid Use: Additional Evidence Supporting the “Perfect Storm” of Cascading Vulnerabilities](#), a preface to this issue of the Journal of Head Trauma Rehabilitation, Dr. Adams explores the connection between exposure to opioids, long-term opioid therapy, and barriers to treatment, and the risks and consequences of opioid use disorders among people with TBI.

The [Model Systems Knowledge Translation Center \(MSKTC\)](#) offers a range of evidence-based information resources for people with TBI including [Chronic Pain & TBI](#) and [Understanding Behavior Changes after TBI](#).

To Learn More About this Study

Adams, R.S., et al (2021) [Association of lifetime history of traumatic brain injury with prescription opioid use and misuse among adults](#). Journal of Head Trauma Rehabilitation, 35(5), 328-227. This article is available from the NARIC collection under Accession Number J87412 and free in full text from the publisher.

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