

Opioid Use after Traumatic Brain Injury

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September 2020

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UW Medicine

Overview

- Review of research on opioid use after TBI
 - **Scoping review of the literature**
- Current research to learn more about chronic pain after TBI
 - **Questions included on opioid use (current and past) and abuse**
- Public database
- Connecting with research through TBI Model Systems

Scoping review: Opioid Use after TBI

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Chronic Pain Knowledge Translation Advisory Group, August 2020

Funding

- This project was funded in part by The University of Washington TBI Model Systems Grant (UW TBIMS: 90DPTB0008) and TBI Model System Centers Collaborative Research Project Grant (Pain and TBI: 90DPTB0017) as part of the “Characterization and Treatment of Chronic Pain after Moderate to Severe TBI” in collaboration with the Rocky Mountain Regional Brain Injury System (RMRBIS)

Rationale

- TBI Model Systems National Database revealed that 72% of individuals with moderate or severe TBI who received inpatient rehabilitation were prescribed opioids during their inpatient stay¹
- Patient with TBI appear to be at increased risk of opioid prescription and opioid misuse
 - High rates of chronic pain
 - Potential impact of cognitive or neurobehavioral sequelae on medication adherence
- Systematic examination of opioid use after TBI is lacking
- No clinical practice guidelines inform treatment of pain after TBI

¹Hammond FM, Barrett RS, Shea T, Seel RT, McAlister TW, Kaelin D, Ryser DK, Corrigan JD, Cullen N, Horn SD. Psychotropic Medication Use During Inpatient Rehabilitation for Traumatic Brain Injury. *Arch Phys Med Rehabil*. 2015;96(8 Suppl):S256-273.e214.

Study Design

- Scoping Review
- Inclusion
 - published in English, peer review journals
 - adults in the post-acute phase of TBI
 - examined opioid use after TBI
- Exclusion
 - animal models
 - other acquired brain injury
 - acute management of brain injury
 - non-English studies
 - non-peer reviewed papers, theses, or conference abstracts

Study Procedures

**911 citations
identified from
electronic literature
search**

**753 abstracts
screened**

**179 full texts
screened**

**17 studies included
in review**

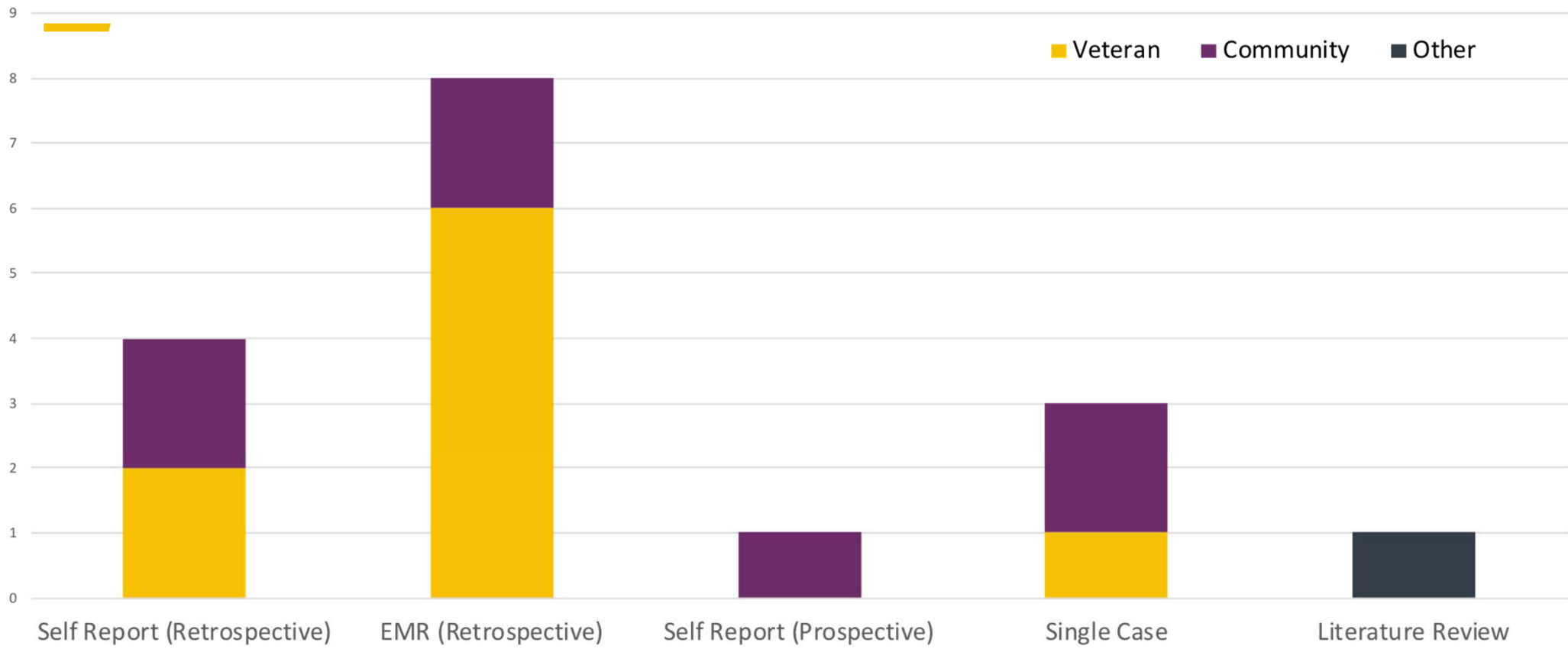
- **158 duplicated citations removed**

- **574 studies excluded**
 - Non-relevant population
 - Non-TBI study population (157)
 - Other acquired brain injury (41)
 - Pediatric population (17)
 - Acute TBI Management (9)
 - Opioid use not examined (229)
 - Animal Model (33)
 - Non-peer reviewed (1)
 - Not relevant (87)

- **162 studies excluded**
 - Non-relevant population
 - Non-TBI study population (18)
 - Other acquired brain injury (1)
 - TBI population not reported separately (9)
 - Opioid use not examined (35)
 - Opioids not reported separately (12)
 - Acute TBI management (84)
 - Duplicate (1)
 - Abstract/Conference Presentation (2)

Results

Study Characteristics



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Results

- Frequency of Opioid use
 - Veterans with TBI were more likely to be prescribed opioids
 - Community sample found 50% discharged with opioids and 30% still using a year later
- Risk Factors
 - Demographics
 - Psychological symptoms
 - Use of opioids during acute management of TBI

Discussion

- Patients with TBI are at elevated risk for receiving opioid prescriptions and suffering negative opioid-related consequences
- Pattern of opioid prescription for those with diagnoses of both TBI and mental health disorders
- There is a significant knowledge gap

Needed Research

- Increase research with civilian/community populations
- Expand beyond EMR data
- Examine interventions to reduce opioid use after TBI

Characterization and Treatment of Chronic Pain after Moderate to Severe TBI



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Co-PIs

Funding

- TBI Model System Collaborative Grant Mechanism funded by the National Institute on Disability, Independent Living, and Rehabilitation Research 90DPTB0017 from September, 2019 to September, 2023

What is known about chronic pain after TBI

- Research from our group has shown:
 - High rates of headache (1/3) up to 5 years post injury. Up to 71% of TBIMS participants reporting pain at 1 year post injury.
 - Up to 81% of VA PRC TBIMS participants reporting pain.
- Despite high rates of pain after TBI, many people are not receiving treatment.

What we don't know...

- Headache is only part of the picture of pain, but there is no data to describe other types of pain complaints, or how many individuals with TBI have multiple types of pain.
- Co-morbid conditions complicate the picture of pain.
 - Depression
 - Anxiety
 - Sleep problems
 - Post-traumatic stress disorder
- No research on which interventions work best for which person.
 - Considering pain type, co-morbid conditions, age, injury severity, etc.

Study Goals

- 1) Determine chronic pain classification (musculoskeletal, headache, central/neuropathic), prevalence, location, duration, and associations with demographic, injury severity, current level of functioning and comorbidities in participants
- 2) Identify extreme groups based on responses to pain (interference and perception of improvement with treatment), or chronic pain extreme phenotypes
- 3) Identify treatment practices by clinicians who treat comorbid TBI and chronic pain to determine gaps in availability/accessibility of guideline level treatment, highlighting underserved populations where applicable.

Collaborating Sites

Site	Lead Investigator(s)
Craig Hospital	Cindy Harrison-Felix
University of Washington	Jeanne Hoffman
Mayo Clinic	Thomas Bergquist
Rusk Rehabilitation	Tamara Bushnik
Baylor Institute for Rehabilitation	Simon Driver
Rehabilitation Hospital of Indiana	Flora Hammond
Rehabilitation Institute of Michigan	Robin Hanks
James A. Haley Veterans Hospital	Risa Richardson, Jolie Haun, Bridget Cotner
Virginia Commonwealth University	William Walker
Spaulding Rehabilitation Hospital	Ross Zafonte
Texas Institute for Rehabilitation (TIRR)	Angelle Sander
Moss Institute for Rehabilitation	Amanda Rabinowitz
University of Alabama Birmingham	Janet Niemeier

Data on Opioid Use

- Whether they are currently taking opioids (list of medications)
- Receipt of prescription for opioids
- Whether it was used
- Overuse (more frequently or higher dosage)/use of someone else's prescription
- Utility of opioids

Current data on opioid use

- 1156 participants completed, 510 (44%) report current chronic pain
- 72% of those with current pain have been prescribed opioids and 91% used them
- Very few report overuse/using medication prescribed for others
- 39% find very helpful, 33% helpful, 16% neutral, 13% unhelpful or very unhelpful

- Take a look! <https://pain.tbindsc.org/>
 - TBI InfoComics and Fact Sheets on Chronic Pain

TRAUMATIC BRAIN INJURY AND CHRONIC PAIN Part I: Life with Chronic Pain



TRAUMATIC BRAIN INJURY AND CHRONIC PAIN Part III: Managing Spastici



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TRAUMATIC BRAIN INJURY AND CHRONIC PAIN Part II: Co-occurring Injury and Pain

Illustrations by: David Lasky and Tom Dougherty
Written by: Silas James and Ayla Jacob



TRAUMATIC BRAIN INJURY AND CHRONIC PAIN Part IV: Pain and Anxiety

Illustrations by: David Lasky and Tom Dougherty
Written by: Silas James and Ayla Jacob

Pain and Anxiety

Anxiety is closely related to pain, and each can make the other worse. Anxiety can add to memory or sleep problems. Anxiety may lead a person to believe that a bad outcome is likely or certain. This type of thinking is called "catastrophizing".

Pain can change your thinking. Often, we have thoughts that we're not fully aware of called "automatic thoughts". They can influence our emotions and the things we do, even if we don't realize it. Pain by itself or with depression, anxiety or PTSD can make people have more negative automatic thoughts. These thoughts can make people do things that may make their pain worse. A therapist who practices cognitive behavioral therapy can help change these thinking patterns.



How to connect to research in the TBI Model System

- Find the TBI Model System site in your area:
 - <https://msktc.org/tbi/model-system-centers>
 - <https://www.polytrauma.va.gov/PolytraumaCenterDatabase/index.asp>
- Each of the 16 civilian sites conduct local research projects and participates in multi-center research (called module projects)

QUESTIONS?

