



Tech Meets Trauma: Mobile Health Innovations for Managing Mild Traumatic Brain Injuries

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Introduction

- Mild Traumatic Brain Injury (mTBI) and concussions are becoming increasingly common.
- Current evaluation and treatment options for mTBI are often inadequate.
- Stigma and delayed assessments further hinder timely mTBI care.
- Mobile health (mHealth) technologies offer innovative solutions for:
 - Remote monitoring**
 - Education**
 - Intervention**
- mHealth provides an opportunity to improve mTBI management by addressing gaps in care.

Synthesizing current evidence highlights the value of mHealth in enhancing mTBI treatment.

Methodology

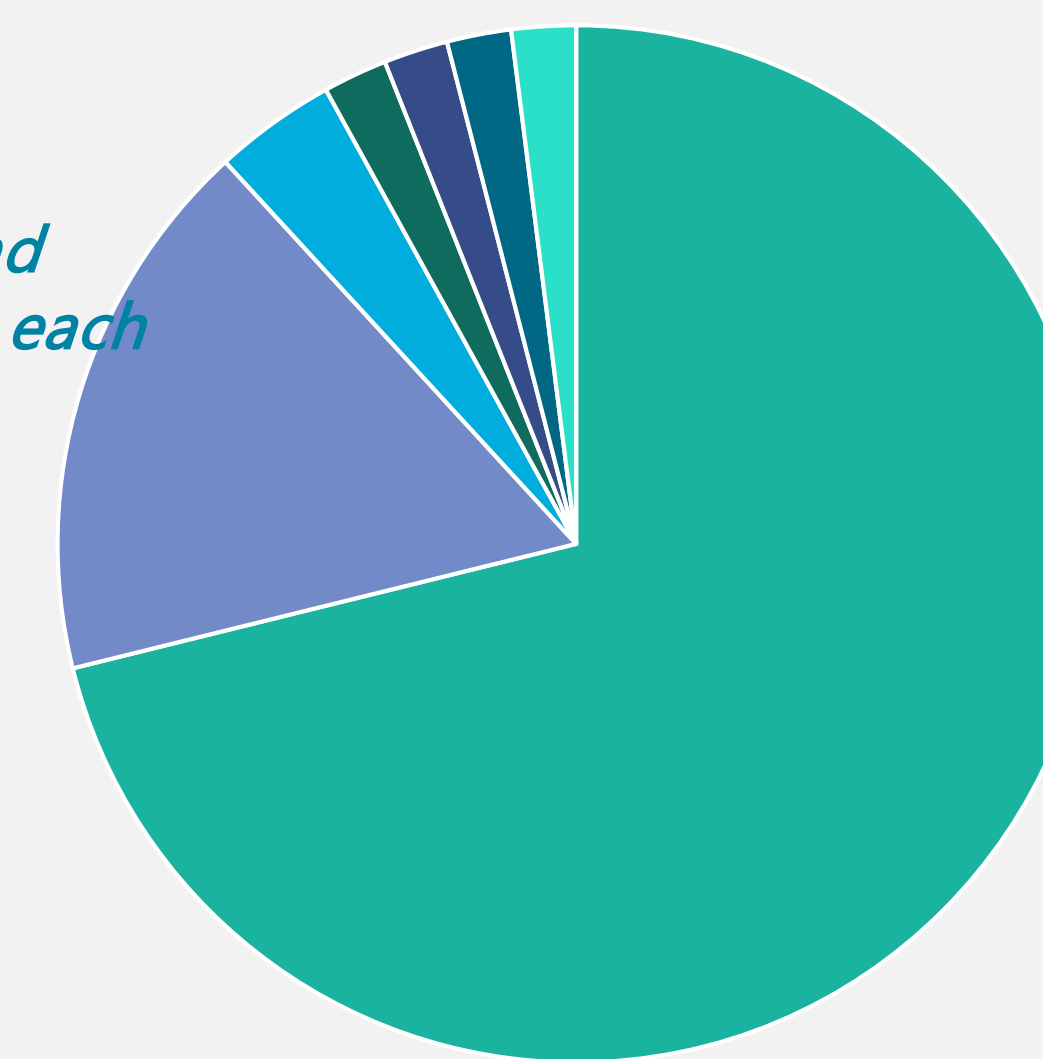
- A **scoping review** methodology was used to map the landscape of mobile mTBI health innovations.
- A comprehensive literature search was conducted across four major databases:
 - PubMed**
 - Embase**
 - Web of Science**
 - CINAHL**
- Search Strategy:** Keywords were strategically combined in 9 different ways.
- Combined Search Terms:**
 - "Mild Traumatic Brain Injury" AND "Mobile Health"
 - "Mild Traumatic Brain Injury" AND "mHealth"
 - "Mild Traumatic Brain Injury" AND "Mobile App"
 - "mTBI" AND "Mobile Health"
 - "mTBI" AND "mHealth"
 - "mTBI" AND "Mobile App"
 - "Concussion" AND "Mobile Health"
 - "Concussion" AND "mHealth"
 - "Concussion" AND "Mobile App"

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Results

- Inclusion Criteria:** Studies were considered if they:
 - Involved human subjects
 - Were written in English
 - Incorporated mHealth approaches in their study design
- Screening Process:**
 - 205 articles were initially identified
 - After removing duplicates, 154 articles were screened by title and abstract
 - 68 full-text articles were reviewed
 - 57 articles met the final inclusion criteria

- 71% USA
- 17% Canada
- 3.8% Thailand
- All other 2% each



- USA
- United Kingdom
- Isreal
- Canada
- Australia
- Thailand
- New Zealand

Figure 2. Distribution of Articles by Country of Origin

- FIVE Categories of mHealth interventions and other approaches for mTBI and concussion:

<i>mTBI Symptom monitoring</i>	n = 18	Mood-related, physiological, and mobility impacts
<i>Self-management</i>	n = 13	Providing pediatric concussion strategies, cognitive training, and peer support; aims to improve independence in managing post-concussion symptoms
<i>Education</i>	n = 9	Providing educational resources related to mTBI management. Measured care experience and satisfaction
<i>Physical activity-focused</i>	n = 7	Assessing balance, reaction times, and tailored exercise plans; focuses on enhancing community engagement for recovery post-concussion
<i>Psychologically focused</i>	n = 5	Interventions for chronic mTBI support, mentor-mentee connections, mindfulness practices, and stress management strategies; aims to enhance psychological well-being and symptom self-management

Key Findings:

- mHealth interventions and approaches are well-received based on satisfaction ratings by users, caregivers, and healthcare providers.
- Significant potential exists for further development and integration of mHealth solutions in managing mTBI.

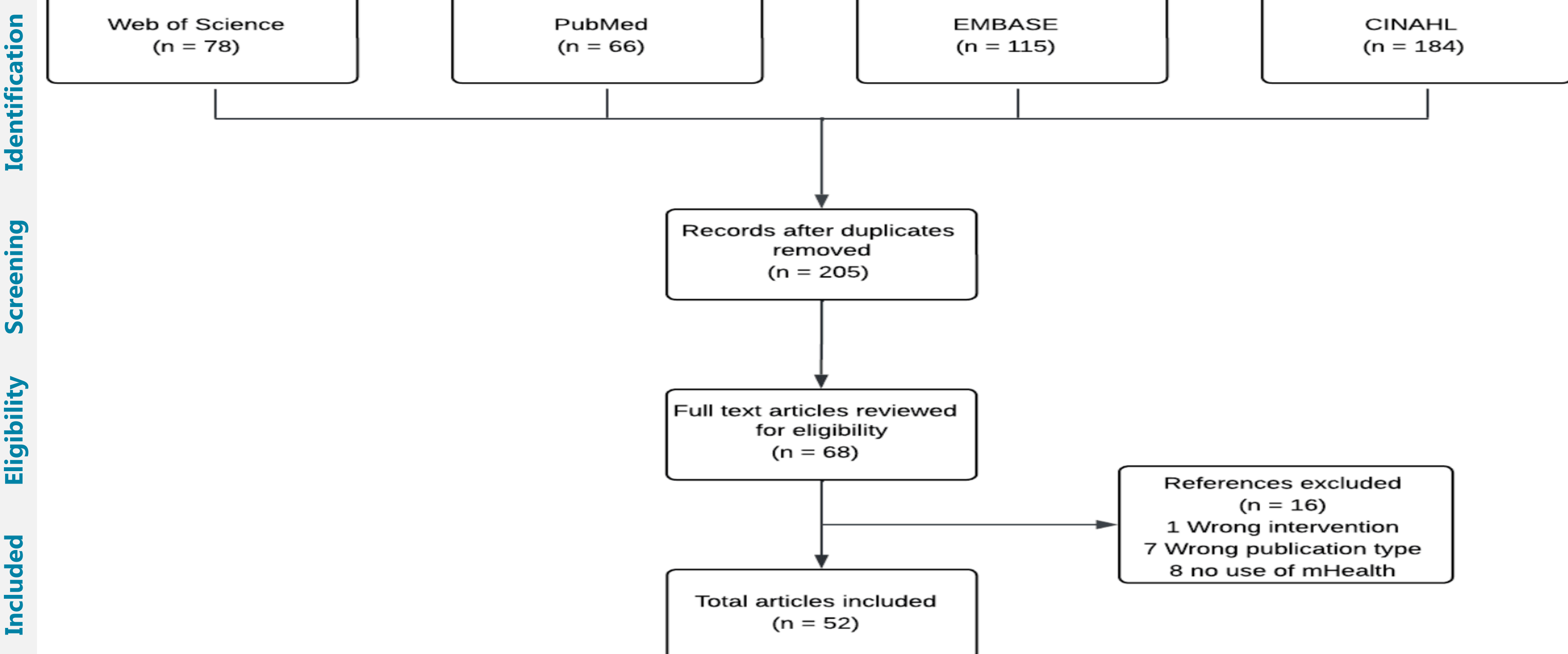


Figure 1. PRISMA Flow Diagram for Scoping Review Process

Conclusion

- Mobile and digital health tools are playing an expanding role in TBI and concussion care, offering real-time monitoring, symptom management, education, and psychosocial support.
- Despite challenges with user engagement, integrating these technologies into clinical practice shows promise for improving patient outcomes.

Acknowledgements

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