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Abstract Title: Diagnostic approaches to mild traumatic brain injury and concussion in post-acute settings: a scoping review.

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ABSTRACT:

Abstract Theme: Mild TBI / Concussion

Topic(s) of Interest: Best Practices, Clinical Research

Purpose of Project: There are several challenges in identifying mild traumatic brain injury/concussion (mTBI/C) in rehabilitation trauma patients. The aim of this scoping review was to map the literature on current methods of diagnosing mTBIs/C in the sub-acute and rehabilitation phases following trauma to inform healthcare professionals in formulating an optimized screening pathway for identifying missed mTBI/C.

Methods, Procedure, Results/Outcome, Conclusion: **Methods:** The present scoping review was guided by the framework proposed by Arksey and O'Malley (2005) and followed the PRISMA-ScR guidelines. The inclusion criteria were: a) peer-reviewed and gray literature published in English between January 2010 and June 2023; b) quantitative, qualitative or mixed-methods design; and c) focused on adult trauma populations in the sub-acute and chronic settings. Articles that were commentaries or that presented acute care guidelines were excluded. SCOPUS, MEDLINE, PsycINFO, Embase, and CINHALL databases were searched using a search strategy developed in consultation with an expert librarian. Abstracts and full-texts were reviewed by two independent reviewers.

Results: A total of 683 abstracts were identified, 24 full-texts were screened, and 7 studies met the inclusion criteria. In terms of design, one was a retrospective study, four were cross-sectional, one was longitudinal, and one was a Delphi study. Two studies evaluated the frequency of missed mTBIs, three evaluated and developed diagnostic tools, and two performed follow-up diagnostic testing post-concussion. Two studies used the American Congress of Rehabilitation Medicine (ACRM) guidelines for mTBI, with one being on the development of an updated version of the original guidelines, and one used the World Health Organization's Collaborating Centre Neurotrauma Task Force criteria for mTBI. Three used medical imaging (magnetic resonance imaging [n=2], computerized tomography [c=1]), and a variety of neuro-psychological tests were employed across studies. One study found 14 out of 24 patients sent home from the emergency department with no mTBI diagnosis (60.7%) screened positive for post-concussive syndrome, suggesting a missed diagnosis of mTBI. There were mixed findings on the sensitivity of the Sport Concussion Assessment Tool for detecting differences in mTBI and non-mTBI participants, with one study detecting a difference and the other not finding one.

Conclusion: There appears to be a relative lack of research on the detection of mTBI and concussion in the post-acute phase. The identified studies used a variety of diagnostic criteria and measures to detect mTBI and concussion, with varying levels of sensitivity. The multinational development of the revised ACRM guidelines for mTBI may be useful for improving the identification of mTBI in sub-acute settings; further research is needed to validate its use in evidence-based practice