

Background

Post-concussion syndrome (PCS) is a complex disorder characterized by persistent cognitive, physical, and emotional symptoms following a traumatic brain injury. Management of PCS emphasizes a personalized, multidisciplinary approach that includes lifestyle considerations such as physical activity, sleep hygiene, stress reduction, nutritional support, and screen time moderation. As artificial intelligence (AI) tools like ChatGPT and OpenEvidence gain popularity in healthcare settings, it is important to evaluate the reliability of these models in comparison to established clinical care guidelines. Thus, this project aims to compare lifestyle care plans for patients with PCS generated by different AI models, ChatGPT and OpenEvidence, to current evidence-based clinical guidelines and peer-reviewed literature, assessing whether AI can serve as a reliable adjunct in providing lifestyle modification recommendations for PCS management.

Methods

We created a standardized clinical prompt representing a typical patient scenario, which was entered into ChatGPT-4 and OpenEvidence with all memory settings disabled to ensure unbiased output. A qualitative comparison of the AI-generated responses was conducted based on key lifestyle recommendation categories. These categories were derived from a targeted literature review using PubMed, from which the top 10 relevant articles on lifestyle interventions for post-concussion syndrome (PCS) were selected. The AI-generated recommendations were then compared against evidence-based literature to assess alignment, completeness, and clinical relevance.

Results

PCS Management based on Cited Literature	ChatGPT-4	Open Evidence
Restricted Screen Time Throughout the Day	✓	◆ *only mentioned for improved sleep hygiene
Gradual Return to Physical Activity (not prolonged rest)	✓	✓
Sub-symptom Threshold Exercise	◆ *Advises specific low level aerobic exercise rather than "sub-symptom threshold exercise."	✓
Cognitive Behavioral Therapy	✓	✓
Sleep Hygiene	✓	✓
Avoidance of Alcohol and Recreational Drugs	✓	✗
Avoidance of Caffeine	✗	✓
Adequate Diet and Hydration	✓	✓
Mental Health Screening	✓	✓
Structured Routine	✓	✓
Multidisciplinary Team	✓	✓
Return to School/Work	✓	✓

KEY: ✓ Match ✗ Missing ◆ Partial/Inaccurate

Discussion

- Differences between platforms were due to omission of advice cited in medical literature and amount of detail provided.
- ChatGPT mentions magnesium and beta-blockers for headache management, which has not been extensively cited in literature,
- Few discrepancies noted between cited literature and AI platforms.
- Both AI models emphasize importance of multidisciplinary care.

Both ChatGPT and Open Evidence emphasize a multidisciplinary approach to PCS, incorporating lifestyle, psychological, and pharmacological interventions. While ChatGPT excels at summarizing complex topics and generally aligns with current literature, it may occasionally include information lacking strong evidence. Open Evidence offers highly reliable, citation-backed recommendations, though it may omit some clinically relevant points not emphasized in the literature. Together, these tools can serve as useful adjuncts to clinical decision-making, with the understanding that they do not replace clinical judgment.

References

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