

Review: women have worse outcomes than men after traumatic brain injury

Farace E, Alves WM. *Do women fare worse: a metaanalysis of gender differences in traumatic brain injury outcome.* *J Neurosurg* 2000 Oct;**93**:539–45.

QUESTION: In patients with traumatic brain injury (TBI), do sex differences affect outcome?

Data sources

Studies were identified by searching Medline using the terms brain injuries and sex or gender.

Study selection

Studies were selected if they were articles from a peer reviewed journal or edited book published before January 1998 involving patients 12 years of age with a TBI, and 1 outcome measure was reported separately for men and women.

Data extraction

Data were extracted on TBI severity and type, time since injury, and outcome variables. The outcome variables were classified as outcome categories to allow for comparisons across similar outcomes: initial injury severity included death, days of post-traumatic amnesia, and length of hospital stay; somatic or postconcussive symptoms included impaired memory, dizziness, fatigue, irritability, impaired concentration, insomnia, tinnitus, hearing defect, double vision, and headache; return to work included not returning to work; and new psychiatric symptoms included anxiety and depression. Effect sizes (ESs) were computed for each comparison between men and women.

Main results

8 studies (1397 patients and 20 outcome variables) met the inclusion criteria and reported outcome measures separately for men and women. Outcome after TBI was worse in women than in men for 17 (85%) of the outcome variables. The mean ES was -0.15 . The largest effect size (-0.43) was seen for the outcome variable ≥ 1 postconcussive symptom 6 weeks after the TBI. Small to medium ESs were found for headache (2 studies -0.35 and -0.37), dizziness (1 study -0.35), insomnia (1 study -0.21), days of post-traumatic amnesia (1 study -0.22), and length of stay in hospital (1 study -0.20). In 2 studies that assessed return to work, 1 study showed women to have worse outcomes than men (ES -0.22) and the other study showed men to have worse outcomes than women (ES 0.39).

Conclusion

In patients with traumatic brain injury, limited evidence shows that women fare worse than men for most outcomes.

COMMENTARY

TBI is an important health issue because it is common, tends to occur frequently in younger people, and frequently causes chronic symptoms and disability. This meta-analysis of the available literature (as of January, 1998) by Farace and Alves addresses the question of whether sex affects outcome in TBI. This question is relevant to our understanding of TBI and its outcomes because the answer will inform us as to possible differences in TBI pathophysiology and prognosis between men and women, and may have management implications (eg, the need to monitor more closely for outcomes that occur more frequently in men or women).

The meta-analysis identified and included 8 studies that reported outcome rates in men and women separately. The results of the meta-analysis are limited by the small number of studies reporting on most outcomes, and probably by methodological limitations of the original research, although the authors do not appear to have critically appraised the original research.

The findings suggest that women may have slightly worse outcomes than men who have had a TBI. One possible explanation derives from the finding (from 1 study only) that women may have more severe TBI in the first place (initial severity of TBI has been shown to correlate with most outcomes after a TBI). With respect to practice recommendations, this research suggests that it may be important to follow women even more closely than men for many of the adverse outcomes of TBI, and therapeutic interventions to minimise, prevent, and treat such outcomes should be considered.

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