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Quick Review of Model System Research

The relationship between sleep-wake cycle disturbance and trajectory of cognitive recovery during acute traumatic brain injury[1]

What is the study about?

Difficulty sleeping and problems with attention, memory, and understanding and processing new information, called cognitive function, are common occurrences after suffering a traumatic brain injury (TBI). A patient suffering from these types of problems may experience significant loss of their ability to function. This study examined how a lack of sleep might influence performance on cognitive tests in the three weeks following a traumatic brain injury.

Who participated in the study?

106 participants with moderate to severe TBI were selected from the TBI Model Systems database from 1999-2003. They were separated into two groups: 50 patients with TBI who reported trouble sleeping, and 56 patients with TBI who did not report trouble sleeping.

How was the study conducted?

Patients were rated on Sleep-Wake Cycle Disturbance (SWCD) as measured by the Delirium Rating Scale-Revised-98. Ratings for the SWCD came from nursing logs and clinicians' and/or families' reports of patients' sleeping patterns. They also completed the Cognitive Test for Delirium (CTD) upon admission, and then were tested weekly afterwards for 3 weeks. The CTD tests orientation, basic attention, visual recognition memory, comprehension, and vigilance.

What did the study find?

The study found that patients who had more trouble sleeping scored lower on the CTD. They also found that if someone had persistent difficulty sleeping (over 3 weeks) that their performance on CTD demonstrated a lower trajectory (reduced recovery). These findings suggest that a stronger focus on sleep interventions are likely to help to improve cognitive outcomes for patients with TBI.

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[1] Holcomb, E. M., Towns, S., Kamper, J. E., Barnett, S. D., Sherer, M., Evans, C., & Nakase-Richardson, R. (2016). The relationship between sleep-wake cycle disturbance and trajectory of cognitive recovery during acute traumatic brain injury. *The Journal of head trauma rehabilitation*, *31*(2), 108-116.