

Poor sleep is linked to impeded recovery from traumatic brain injury

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Abstract

Study Objectives

While disruptions in sleep are common after mild traumatic brain injury (TBI), the longitudinal relationships between sleep problems and global functioning after injury are poorly understood. Here, we prospectively investigate risk for functional impairment during the first 6 months of TBI recovery based on sleep onset insomnia symptoms and short sleep.

Methods

Patients presenting to the Emergency Department (ED) at Johns Hopkins Hospital within 24 hours of head injury and evaluated for TBI were eligible for our study. Demographic and injury-related information were collected in the ED. Patients then completed in-person surveys and phone interviews to provide follow-up data on global functioning, sleep, and depressive symptoms at 1, 3, and 6 months post-injury. A total of 238 patients provided sufficient data for analysis, and hypotheses were tested using mixed effects modeling.

Results

Sleep quality and global functioning improved over the 6 months of TBI recovery, but patients were at increased risk for functional impairment when sleeping poorly (odds ratio [OR] = 7.69, $p < .001$). Sleep onset insomnia symptoms and short sleep both independently corresponded to poor global functioning. Functional impairment was highest among those with both insomnia and short sleep (43%–79%) compared to good sleepers (15%–25%) and those with short sleep (29%–33%) or insomnia alone (33%–64%). A bidirectional relationship between sleep quality and functioning was observed.

Conclusions

Functionally impaired patients diagnosed predominantly with mild TBI exhibit high rates of insomnia and short sleep, which may impede TBI recovery. Monitoring sleep after head injury may identify patients with poor prognoses and allow for early intervention to improve functional outcomes.

TBI, insomnia, short sleep, functional impairment, global functioning, sleep latency

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