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Sleep and Cognitive Outcomes in Multiple Sclerosis: A Systematic Review

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ABSTRACT

Introduction: Multiple sclerosis (MS) is a disabling condition of the central nervous system. Signs and symptoms vary widely between patients. Fatigue, visual abnormalities, muscle spasms, pain, depression and anxiety, bladder problems, cerebellar dysfunction, and cognitive dysfunction are the most common presentations of MS. Sleep disturbance is a prevalent manifestation in MS patients, even in patients with a low level of disability. Poor sleep quality, and insomnia are found to be more prevalent in MS. Through this, a possible connection between sleep status and cognitive function is suggested in the literature.

Search Strategy: PubMed, Scopus, Embase, and Web of Science databases were searched. All original clinical studies delineating the relationship between sleep status and cognitive findings in MS patients were included in this systematic review. The following terms were utilized in database: “Sleep” AND “Multiple sclerosis”. Discrepancies were resolved by discussion or decided upon by a third reviewer. A data extraction table comprising authors' surname, publication date, study design, setting, sample size, age, female ratio, severity and phenotype of MS, scales about cognitive and sleep-related assessment, result and conclusion was designed.

Results: In the final review, of 1,633 screened records, 33 studies with 5,145 participants were included. Pittsburgh Sleep Quality Index , Epworth Sleepiness Scale, and polysomnography were the most common assessment tools for evaluation of sleep condition, and cognitive evaluations were conducted using the Paced Auditory Serial Addition Test, California Verbal Learning Test, Symbol Digit Modalities Test, and Brief Visuospatial Memory Test. Assessing the quality of studies showed no significant bias in most of the included articles.

Conclusion and Discussion: Only four studies found no correlation between sleep and the cognition assessment scales. We also understood that subjective assessments of sleep quality and cognitive dysfunction in MS patients do not precisely match up with their objective measurements in samples. One study concluded associations between sleep duration and cognitive performance in patients with brain injury. A review study came to the conclusion that sleep disorder is common and is a predictor of cognitive impairment in the elderly and in adults with neurodegenerative diseases.

Keywords: Cognition, Cognitive dysfunction, Multiple sclerosis, Sleep

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