Sleep improves functioning in Parkinson's patients, but reasons remain elusive

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Some Parkinson's patients report that their motor function is better upon awakening in the morning, which is contrary to what would be expected after a night without medication. This phenomenon, known as sleep benefit, has been studied but no consistent variables have been found and in the last decade there has been little new research. A new study, published in the June issue of the *Journal of Parkinson's Disease*, assesses a large sample of Parkinson's disease (PD) patients and confirms that some patients experience sleep benefit, both overnight and following afternoon naps, but finds no significant variables between those who do benefit and those who do not.

"If the subjective experience of sleep benefit is proven to be related to an objective improvement in motor function, this could have considerable clinical benefits," says lead investigator Sebastiaan Overeem, MD, PhD, at the Department of Neurology, Donders Institute for Brain, Cognition, and Behavior, Radboud University Nijmegen Medical Centre, The Netherlands.

The study included 243 PD patients who completed a comprehensive screening questionnaire covering the range of motor and non-motor symptoms occurring in PD. Demographic and disease characteristics were analyzed, as were depressive symptoms and functioning and quality of life. Sleep benefit was defined as a report of a "clear decrease in PD symptoms after a period of sleep." The study evaluated nocturnal sleep as well as daytime naps.

Almost half (46.9%) of the patients experienced sleep benefit. There were no differences in demographic and clinical characteristics, including age at onset, disease duration, or type of treatment, between those with and without sleep benefit. There were no differences in depression, quality of life scores, memory, fatigue, or apathy. In addition, there were no reported differences in sleep quality.

The study found that sleep benefit is not limited to nighttime sleep. Regular daytime naps were taken by 98 patients. Of these "regular nappers," 46% had no sleep benefit, 20.4% reported sleep benefit after both nocturnal sleep and naps, 20.4% reported sleep benefit only after nocturnal sleep, and 13.3% of patients reported experiencing sleep benefit only after a daytime nap. "It is tempting to speculate whether daytime naps might constitute a possible therapeutic application," notes Dr. Overeem.

Dr. Overeem comments that the results are based on the patient's subjective judgment of sleep benefit, and may be susceptible to misinterpretation. He recommends that future studies include objective quantifications for motor performance and longitudinal assessment of PD symptoms.

Several hypotheses for sleep benefit have been proposed. Sleep benefit may relate to improved dopaminergic function as a result of increased dopaminergic storage in neurons affected by PD. It has also been proposed that sleep benefit could be unrelated to sleep and merely represents a "morning benefit" related to circadian rhythms. However, the occurrence of sleep benefit after daytime naps suggests a specific role for sleep.

Dr. Overeem concludes, "Further study is important to identify possibly determinants and underlying mechanisms of sleep benefit, in order to identify those patients most likely to benefit from sleep. Both our

research and previous studies show it's important to renew research on this intriguing subject."

More information: "Sleep Benefit in Parkinson's Disease: Time to Revive an Enigma? M. van Gilst, M. Louter, C. Baumann, B. Bloem, S. Overeem. *Journal of Parkinson's Disease*, 2(2012) 1-8. DOI: 10.3233/JPD-2012-12087

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