

## Higher vitamin D levels associated with better cognition and mood in PD patients

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A new study exploring vitamin D levels in patients with Parkinson's disease (PD) opens up the possibility of a new avenue of early intervention that may delay or prevent the onset of cognitive impairment and depression. The findings are published in the *Journal of Parkinson's Disease*.

Investigators conducted a cross-sectional analysis of 286 patients with PD and found that higher plasma vitamin D levels were associated with lower symptom severity, better cognition, and less [depression](#) in the entire group, but the relationships were even stronger in those who were not demented.

"About 30% of persons with PD suffer from cognitive impairment and dementia, and dementia is associated with nursing home placement and shortened life expectancy," says Amie L. Peterson, MD, of the Oregon Health and Sciences University. "We know mild [cognitive impairment](#) may predict the future development of dementia. Intervening in the development of dementia has the potential to improve morbidity and mortality in persons with PD."

In this analysis, which was an add-on study to an ongoing longitudinal study of neuropsychiatric function in people with PD, patients were given a battery of tests measuring global cognitive function, verbal memory, semantic verbal fluency, executive function, and depression. On the same day, serum 25-hydroxyvitamin D levels were measured. Of the 286 subjects, 61 were considered to be demented by a consensus

panel based on the Diagnostic and Statistical Manual of the American Psychiatric Association (4th edition) and 225 were not demented.

For the entire group, significant negative associations were found between vitamin D levels and disease severity, as measured both by the Hoehn and Yahr Scale and the United Parkinson's Disease Rating Scale motor section. Mean vitamin D3 levels were higher in those who were not demented, although the differences did not reach statistical significance.

Investigators found that for the entire group, higher levels of serum vitamin D3 were associated with greater fluency for naming vegetables and animals and immediate and delayed recall on a verbal learning test. When the group was divided into those who were demented or not, significant findings with vitamin D were found for fluency and verbal learning only for those who were not demented. "The fact that the relationship between vitamin D concentration and cognitive performance seemed more robust in the non-demented subset suggests that earlier intervention before dementia is present may be more effective," says Dr. Peterson.

A significant negative association was also found for vitamin D levels and depression, as measured by the Geriatric Depression Scale, for both the entire group and those who were not demented. No significant relationship was found for those who were demented.

The authors point out that a cross-sectional study cannot determine causation: for instance, does low vitamin D affect cognitive performance, or are persons with more advanced PD and worse cognition less ambulatory, get less sun exposure, and subsequently have lower vitamin D? The study also did not consider if [patients](#) were taking vitamin D supplements.

Vitamin D's role in health has been a subject of considerable scrutiny in recent years. Low levels increase the risk of type 2 diabetes mellitus, multiple sclerosis, hypertension, cancer, and infections. Vitamin D receptors and its final converting enzyme have been found in human brain tissue, including the hippocampus, which plays a significant role in memory and learning.

**More information:** "Memory, Mood, and Vitamin D in Persons with Parkinson's Disease," by Amie L. Peterson, Charles Murchison, Cyrus Zabetian, James Leverenz, G. Stennis Watson, Thomas Montine, Natasha Carney, Gene L. Bowman, Karen Edward, and Joseph F. Quinn. *Journal of Parkinson's Disease*, Volume 3/Issue 4, [DOI: 10.3233/JPD-130206](https://doi.org/10.3233/JPD-130206)

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