

Is vitamin D deficiency linked to Alzheimer's disease and vascular dementia?

May 26 2009

There are several risk factors for the development of Alzheimer's disease and vascular dementia. Based on an increasing number of studies linking these risk factors with Vitamin D deficiency, an article in the current issue of the *Journal of Alzheimer's Disease* (May 2009) by William B. Grant, PhD of the Sunlight, Nutrition, and Health Research Center (SUNARC) suggests that further investigation of possible direct or indirect linkages between Vitamin D and these dementias is needed.

Low serum levels of 25-hydroxyvitamin D [25(OH)D] have been associated with increased risk for cardiovascular diseases, diabetes mellitus, depression, dental caries, osteoporosis, and periodontal disease, all of which are either considered risk factors for [dementia](#) or have preceded incidence of dementia. In 2008, a number of studies reported that those with higher serum 25(OH)D levels had greatly reduced risk of incidence or death from cardiovascular diseases.

Several studies have correlated [tooth loss](#) with development of cognitive impairment and Alzheimer's disease or vascular dementia. There are two primary ways that people lose teeth: dental caries and periodontal disease. Both conditions are linked to low [vitamin D](#) levels, with induction of human cathelicidin by 1,25-dihydroxyvitamin D being the mechanism.

There is also laboratory evidence for the role of vitamin D in neuroprotection and reducing [inflammation](#), and ample biological evidence to suggest an important role for vitamin D in [brain](#)

[development](#) and function.

Given these supportive lines of evidence, Dr. Grant suggests that studies of incidence of dementia with respect to prediagnostic serum 25(OH)D or vitamin D supplementation are warranted. In addition, since the elderly are generally vitamin D deficient and since vitamin D has so many health benefits, those over the age of 60 years should consider having their serum 25(OH)D tested, looking for a level of at least 30 ng/mL but preferably over 40 ng/mL, and supplementing with 1000-2000 IU/day of vitamin D3 or increased time in the sun spring, summer, and fall if below those values.

Writing in the article, Dr. Grant states, "There are established criteria for causality in a biological system. The important criteria include strength of association, consistency of findings, determination of the dose-response relation, an understanding of the mechanisms, and experimental verification. To date, the evidence includes observational studies supporting a beneficial role of vitamin D in reducing the risk of diseases linked to dementia such as vascular and metabolic diseases, as well as an understanding of the role of vitamin D in reducing the risk of several mechanisms that lead to dementia."

More information: The article is "Does Vitamin D Reduce the Risk of Dementia?" by William B. Grant, Ph.D. It is published in the *Journal of Alzheimer's Disease* 17:1 (May 2009).

Source: IOS Press ([news](#) : [web](#))

Citation: Is vitamin D deficiency linked to Alzheimer's disease and vascular dementia? (2009, May 26) retrieved 23 April 2024 from <https://medicalxpress.com/news/2009-05-vitamin-d-deficiency-linked-alzheimer.html>

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