Medical Xpress

Link between vitamin D and dementia risk confirmed

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Vitamin D deficiency is associated with a substantially increased risk of dementia and Alzheimer's disease in older people, according to the most robust study of its kind ever conducted.

An international team, led by Dr David Llewellyn at the University of Exeter Medical School, found that study participants who were severely Vitamin D deficient were more than twice as likely to develop dementia and Alzheimer's disease.

The team studied elderly Americans who took part in the Cardiovascular Health Study. They discovered that adults in the study who were moderately deficient in vitamin D had a 53 per cent increased risk of developing dementia of any kind, and the risk increased to 125 per cent in those who were severely deficient.

Similar results were recorded for Alzheimer's disease, with the moderately deficient group 69 per cent more likely to develop this type of dementia, jumping to a 122 per cent increased risk for those severely deficient.

The study was part-funded by the Alzheimer's Association, and is published in August 6 2014 online issue of *Neurology*, the medical journal of the American Academy of Neurology. It looked at 1,658 adults aged 65 and over, who were able to walk unaided and were free from dementia, cardiovascular disease and stroke at the start of the study. The participants were then followed for six years to investigate who went on to develop Alzheimer's disease and other forms of dementia.

Dr Llewellyn said: "We expected to find an association between low Vitamin D levels and the risk of dementia and Alzheimer's disease, but the results were surprising – we actually found that the association was twice as strong as we anticipated.

"Clinical trials are now needed to establish whether eating foods such as oily fish or taking vitamin D supplements can delay or even prevent the onset of Alzheimer's disease and dementia. We need to be cautious at this early stage and our latest results do not demonstrate that low vitamin D levels cause dementia. That said, our findings are very encouraging, and even if a small number of people could benefit, this would have enormous public health implications given the devastating and costly nature of dementia."

Research collaborators included experts from Angers University Hospital, Florida International University, Columbia University, the University of Washington, the University of Pittsburg and the University of Michigan. The study was supported by the Alzheimer's Association, the Mary Kinross Charitable Trust, the James Tudor Foundation, the

Halpin Trust, the Age Related Diseases and Health Trust, the Norman Family Charitable Trust, and the National Institute for Health Research Collaboration for Leadership in Applied Research and Care South West Peninsula (NIHR PenCLAHRC).

Dementia is one of the greatest challenges of our time, with 44 million cases worldwide – a number expected to triple by 2050 as a result of rapid population ageing. A billion people worldwide are thought to have low vitamin D levels and many older adults may experience poorer health as a result.

The research is the first large study to investigate the relationship between vitamin D and dementia risk where the diagnosis was made by an expert multidisciplinary team, using a wide range of information including neuroimaging. Previous research established that people with low vitamin D levels are more likely to go on to experience cognitive problems, but this study confirms that this translates into a substantial increase in the risk of Alzheimer's disease and dementia.

Vitamin D comes from three main sources – exposure of skin to sunlight, foods such as oily fish, and supplements. Older people's skin can be less efficient at converting sunlight into Vitamin D, making them more likely to be deficient and reliant on other sources. In many countries the amount of UVB radiation in winter is too low to allow vitamin D production.

The study also found evidence that there is a threshold level of Vitamin D circulating in the bloodstream below which the risk of developing dementia and Alzheimer's disease increases. The team had previously hypothesized that this might lie in the region of 25-50 nmol/L, and their new findings confirm that vitamin D levels above 50 nmol/L are most strongly associated with good brain health.

Commenting on the study, Dr Doug Brown, Director of Research and Development at Alzheimer's Society said: "Shedding light on risk factors for dementia is one of the most important tasks facing today's health researchers. While earlier studies have suggested that a lack of the sunshine vitamin is linked to an increased risk of Alzheimer's disease, this study found that people with very low vitamin D levels were more than twice as likely to develop any kind of dementia.

"During this hottest of summers, hitting the beach for just 15 minutes of sunshine is enough to boost your vitamin D levels. However, we're not quite ready to say that sunlight or vitamin D supplements will reduce your risk of dementia. Large scale clinical trials are needed to determine whether increasing vitamin D levels in those with deficiencies can help prevent the dementia from developing."

Provided by University of Exeter

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