Medical Xpress

Lower levels of dietary vitamins and antioxidants are linked to frailty in older adults

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Researchers from The Irish Longitudinal Study on Ageing (TILDA) at Trinity College Dublin have shown in the largest study to date that lower

levels of specific dietary vitamins and antioxidants are associated with frailty.

Frailty is a common chronic syndrome which affects up to 25% of adults over 65 years and over half of adults over 80. Frailty is characterised by an overall decline in physical function and a loss of ability to bounce back after experiencing a stressful event such as infection, a fall or surgery. It is associated with poor health, disability and death. The TILDA study examined the association of vitamin B12, folate, vitamin D, lutein and zeaxanthin levels with frailty.

The B vitamins (B12 and folate) are important for several cellular processes throughout the body including DNA repair and energy metabolism. Vitamin D is essential for bone metabolism, muscle strength and mood. Lutein and zeaxanthin have antioxidant and anti-inflammatory properties important in eye health and brain health. Low levels of all of these vitamins and antioxidants is common among Irish adults.

In this new research lower levels of lutein, zeaxanthin, and vitamin D were consistently associated with not only frailty but also earlier stages of 'pre-frailty' (a subclinical precursor of frailty). Low levels of B vitamins were associated with pre-frailty. Furthermore, the accumulation of micronutrient insufficiencies—having low levels of more than one micronutrient—was progressively associated with severity stages of frailty.

This data raises the question of the role of dietary supplementation and contributes to the ongoing policy discussions regarding fortification.

Lead author of the study and Senior Research Fellow at TILDA, Dr. Aisling O'Halloran, said: "We have presented evidence in the largest study to date that lower levels of specific vitamins and antioxidants—and

having low levels of more than one micronutrient—is consistently and progressively associated with the most commonly used methods for measuring frailty. Our data suggest that low micronutrient status may act as an easily modified marker and intervention target for frailty among adults aged 50 years and over".

Principal Investigator of TILDA, Professor Rose-Anne Kenny said:

"Frailty occurs when a number of systems in the body lose reserve capacity and therefore the ability to 'bounce back' after even trivial illnesses. It is an important and challenging state; commonly associated with ageing but also common in patients of any age who have major surgery, cancer treatments and severe infections. The hall mark of frailty is muscle weakness. If it is recognised in its early stages, it can be reversed. However, the longer it is present, the more difficult is it to 'bounce back' and generalised weakness and fatigue become progressively worse. This research suggests new potential treatments for a common and important condition."

Co-author of the study Dr. Eamon Laird said "Again we see that micronutrients (including vitamin D) are associated with better health outcomes in older adults. However we still lack a food fortification policy in Ireland and whilst this continues, we miss the opportunity of a cost-effective strategy to prevent and intervene in the progression of these conditions. As of yet there is no sign that the Irish government or the FSAI (Food Safety Authority Ireland) intend to advise or implement on such a strategy".

More information: Aisling M. O'Halloran et al. Circulating Micronutrient Biomarkers Are Associated With 3 Measures of Frailty: Evidence From the Irish Longitudinal Study on Ageing, *Journal of the American Medical Directors Association* (2019). DOI: 10.1016/j.jamda.2019.06.011

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