

Vitamin D supplements do not prevent bone fractures in children, finds study

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A major clinical trial led by Queen Mary University of London and the Harvard T.H. Chan School of Public Health has found that vitamin D supplements do not increase bone strength or prevent bone fractures in

children with vitamin D deficiency. The findings challenge widely held perceptions relating to the effects of vitamin D on bone health.

Around one-third of children have at least one fracture before the age of 18. This is a major global health issue, as childhood fractures can lead to life years of disability and/or poor quality of life. The potential for [vitamin D](#) supplements to improve [bone strength](#) has attracted growing interest in recent years, based on vitamin D's role in promoting bone mineralization. However, [clinical trials](#) designed to test whether vitamin D supplements can prevent bone fractures in children have not previously been conducted.

Working with partners in Mongolia, a setting with a particularly high fracture burden and where vitamin D deficiency is highly prevalent, researchers from Queen Mary and Harvard conducted a clinical trial to determine if vitamin D supplementation would decrease risk of [bone fractures](#) or increase bone strength in schoolchildren. The study, published in *The Lancet Diabetes & Endocrinology*, is the largest randomized controlled trial of vitamin D supplementation ever conducted in children.

Over the course of three years, 8,851 schoolchildren aged 6–13 living in Mongolia received a weekly oral dose of vitamin D supplementation. 95.5% of participants had vitamin D deficiency at baseline, and study supplements were highly effective in boosting vitamin D levels into the normal range. However, they had no effect on fracture risk or on bone strength, measured in a subset of 1,438 participants using quantitative ultrasound.

The trial findings are likely to prompt scientists, doctors and public health specialists to re-consider the effects of vitamin D supplements on [bone health](#).

Dr. Ganmaa Davaasambuu, Associate Professor at the Harvard T.H. Chan School of Public Health, said, "The absence of any effect of sustained, generous vitamin D supplementation on fracture risk or bone strength in vitamin D deficient children is striking. In adults, vitamin D supplementation works best for fracture prevention when calcium is given at the same time—so the fact that we did not offer calcium alongside vitamin D to trial participants may explain the null findings from this study."

Professor Adrian Martineau, Lead of the Center for Immunobiology at Queen Mary University of London, added, "It is also important to note that children who were found to have rickets during screening for the trial were excluded from participation, as it would not have been ethical to offer them placebo (dummy medication)."

"Thus, our findings only have relevance for [children](#) with low vitamin D status who have not developed bone complications. The importance of adequate vitamin D intake for prevention of rickets should not be ignored, and UK government guidance recommending a daily intake of 400 IU vitamin D remains important and should still be followed."

More information: Vitamin D supplements for fracture prevention in schoolchildren in Mongolia: analysis of secondary outcomes from a multicentre, double-blind, randomised, placebo-controlled trial, *The Lancet Diabetes & Endocrinology* (2023). [DOI: 10.1016/S2213-8587\(23\)00317-0](#)

Provided by Queen Mary, University of London

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