

Vitamin D—a pseudo-vitamin for a pseudo-disease

August 30 2018, by Tim Spector



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We are still in love with vitamins a century after they were discovered, with [half the US and UK population](#) taking a supplement. Vitamin D – the sunshine vitamin – is the favourite and is believed to have the most

proven benefits. Governments, including the UK government, have said that the evidence for vitamin D's health benefits is so overwhelming that every adult should take it as a supplement for at [least six months of the year](#).

It was first used to cure [rickets](#) in Victorian children living in urban poverty and is now routinely given to [prevent and treat](#) brittle bone disease (osteoporosis) and fractures. It has been associated with a reduced risk of over a hundred common diseases in observational studies, ranging from [depression](#) to [cancer](#).

The largest ever clinical study on the benefits of [vitamin D](#) in preventing fractures is now reported in the *BMJ*, with over 500,000 people and around 188,000 fractures from 23 cohorts from many countries. As vitamin D levels are strongly influenced by genes, the researchers used genetic markers for vitamin D blood levels (called Mendelian randomisation or MR) to avoid the normal biases of observational studies, such as confusing cause and consequence of disease and the effects of other related health behaviours (so-called "confounders").

The results showed no association between vitamin D levels over a lifetime and the risk of fracture. This latest study contradicts the UK government's recent view, but not a host of earlier clinical trials.

In 2014, [a review and meta-analysis](#) of 31 vitamin D supplement trials found no effect on all fractures. Much of our strong belief in the benefits of vitamin D came from studies of supplements in care homes in the 1980s, which were never replicated and were probably flawed.

In a [more recent meta-analysis](#) of 33 randomised trials of over 50,000 older adults, supplementation with calcium or vitamin D had no effect on the incidence of fractures. There were also no clear benefits on muscle strength or mobility.

So, if all the data points to vitamin D failing to prevent fractures, why worry about all the people with low blood levels of the vitamin? Vitamin D deficiency has become a modern epidemic with a fifth of the UK and US populations reported to have low levels. Will they be more susceptible to other diseases and cancer?

No consensus on deficiency

There is little agreement on what vitamin D deficiency is. Deficiency levels are arbitrary with no international consensus and confusion caused by different units in the US. A "normal" level can vary from 50 to 80 nanomole per litre of blood, but recent studies [suggest 30nmol is quite enough](#).

While clinical deficiency (

Citation: Vitamin D—a pseudo-vitamin for a pseudo-disease (2018, August 30) retrieved 1 January 2023 from <https://medicalxpress.com/news/2018-08-vitamin-da-pseudo-vitamin-pseudo-disease.html>

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