

While official Finnish vitamin D recommendations in children have been reduced several times from 4,500 IU per day in 1964 to 400 IU currently, the incidence of Type 1 Diabetes has increased 350% in the same period of time.

Type 1 Diabetes may be linked to vitamin D deficiency

Several previous studies have indicated a possible connection between vitamin D intake and the incidence of Type 1 Diabetes (T1DM). In a 2001 Finnish study published in *Lancet*, children who consumed 2,000 IU of vitamin D per day had a 78% lower incidence of T1DM than those who consumed less. Other observational studies have shown that intake of cod liver oil or vitamin D in early childhood significantly reduced the risk of diabetes.

In a more recent study published in the *American Journal of Preventive Medicine*, researchers examined the possible association of reductions in official Finnish vitamin D intake recommendations with incidence of T1DM. Finland has the highest incidence rate of T1DM in the world, and its rates are rapidly rising. Due to its high latitude and long winters, oral vitamin D intake is very important since exposure to UV radiation is virtually non-existent for months at a time.

Several substantial reductions in official vitamin D recommendations for children were each followed by a rise in incidence rates. Prior to 1964, the vitamin D recommendation was 4,500 IU and the age-adjusted incidence of T1DM was 18 per 100,000 population. In 1964, the vitamin D recommendation was cut to 2,000 IU per day, followed by a reduction to 1,000 IU in 1975, and finally to 400 IU per day in 1992. Almost immediately after each reduction in the official recommendation, sharp increases in the incidence of T1DM were seen. By 2005, the incidence of T1DM had risen to 64 per 100,000 population, an increase of 350%.

Since T1DM is an autoimmune disease, the connection to vitamin D levels may be related to vitamin D's role in moderation of immune response. Low serum vitamin D levels are associated with an insufficient response by certain immune cells, allowing a more intense and prolonged attack of killer T-cells on pancreatic islet cells. More specific research on the role of vitamin D levels on T1DM is needed, but the evidence suggests that possible preventive action should be considered.

Sharif B. Mohr, MPH et al. Is There a Role of Vitamin D Deficiency in Type 1 Diabetes of Children? *Am J Prev Med* 2010;39(2)189-190