

# Type 1 diabetes: Vitamin D deficiency occurs in an early stage

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Vitamin D is known as a major regulator of calcium levels and bone metabolism. Furthermore, it also influences the immune system. Previous studies have shown that patients with recently diagnosed type 1 diabetes have significantly lower vitamin D levels.

Scientists from the Institute of Diabetes Research (IDF) and the Helmholtz Zentrum München, a member of the German Center for Diabetes Research (DZD), as well as from the Diabetes Research Group at the Technische Universität München (TUM) examined whether a vitamin D deficiency occurs during an early stage of [type 1 diabetes](#), defined by the presence of multiple diabetes-specific [islet](#) autoantibodies. Furthermore they also determined whether vitamin D deficiency influences the progression to type 1 diabetes in children with multiple islet autoantibodies.

## Vitamin D deficiency already exists in prediabetes

Children who had not yet developed clinical type 1 diabetes but who have multiple positive autoantibodies in their blood were found to have lower vitamin D levels than children without diabetes-specific autoantibodies. Interestingly, the differences in vitamin D levels were most prevalent in the summer months. These results were obtained from the BABYDIET, BABYDIAB, TEENDIAB and DIMELLI\* diabetes studies. The team of scientists headed by Jennifer Raab, Dr. Christiane Winkler and Professor Anette-Gabriele Ziegler compared the vitamin D

measurements taken from 108 children who were tested positive for islet autoantibodies with 406 children without autoantibodies. Lower vitamin D levels were also found in 244 children who had recently been diagnosed with type 1 diabetes.

## **Progression of the disease remains unaffected**

Prediabetes is defined as the presence of multiple islet autoantibodies. If and when the disease progresses, however, does not seem to be influenced by the vitamin D levels. Within the group of children with positive autoantibodies, a few children quickly developed type 1 diabetes – however this was independent from their vitamin D levels.

## **Recommendation of vitamin D supplementation at an early stage of type 1 diabetes may be considered**

"Vitamin D deficiency precedes the onset of type 1 diabetes. This may be a consequence of an immune response," Professor Ziegler says. "In the case of prediabetic children, we must therefore be mindful of the risk of vitamin D deficiency and consider recommending [vitamin D](#) supplementation at an early stage of type 1 [diabetes](#)."

Provided by Helmholtz Association of German Research Centres

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