

Low levels of vitamin D in elementary school could spell trouble in adolescence

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Vitamin D deficiency in middle childhood could result in aggressive behavior as well as anxious and depressive moods during adolescence, according to a new University of Michigan study of school children in

Bogotá, Colombia.

Children with blood vitamin D levels suggestive of deficiency were almost twice as likely to develop externalizing [behavior problems](#)—aggressive and rule breaking behaviors—as reported by their parents, compared with children who had higher levels of the vitamin.

Also, low levels of the protein that transports vitamin D in blood were related to more self-reported [aggressive behavior](#) and anxious/depressed symptoms. The associations were independent of child, parental and household characteristics.

"Children who have vitamin D deficiency during their elementary school years appear to have higher scores on tests that measure behavior problems when they reach adolescence," said Eduardo Villamor, professor of epidemiology at the U-M School of Public Health and senior author of the study appearing in the *Journal of Nutrition*.

Villamor said vitamin D deficiency has been associated with other [mental health problems](#) in adulthood, including depression and schizophrenia, and some studies have focused on the effect of vitamin D status during pregnancy and childhood. However, few studies have extended into adolescence, the stage when behavior problems may first appear and become serious conditions.

In 2006, Villamor's team recruited 3,202 children aged 5-12 years into a cohort study in Bogotá, Colombia, through a [random selection](#) from primary public schools. The investigators obtained information on the children's daily habits, maternal education level, weight and height, as well as the household's food insecurity and socioeconomic status. Researchers also took blood samples.

After about six years, when the children were 11-18 years old, the

investigators conducted in-person follow-up interviews in a random group of one-third of the participants, assessing the children's behavior through questionnaires that were administered to the children themselves and their parents. The vitamin D analyses included 273 of those participants.

While the authors acknowledge the study's limitations, including a lack of baseline behavior measures, their results indicate the need for additional studies involving neurobehavioral outcomes in other populations where [vitamin](#) D deficiency may be a public health problem.

More information: Sonia L Robinson et al, Vitamin D Deficiency in Middle Childhood Is Related to Behavior Problems in Adolescence, *The Journal of Nutrition* (2019). [DOI: 10.1093/jn/nxz185](https://doi.org/10.1093/jn/nxz185)

Provided by University of Michigan

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