

Low blood levels of vitamin D linked to chubbier kids, faster weight gain

November 8 2010

Kids who are deficient in vitamin D accumulated fat around the waist and gained weight more rapidly than kids who got enough vitamin D, a new University of Michigan study suggests.

Vitamin D, which is primarily provided to the body by the sun, has been a hot topic in the U.S. lately. The federal standards for vitamin D intake have come under fire by public health professionals as being much too low, and disagreement continues over the proper amount of vitamin D necessary for optimal health.

Accumulation of abdominal fat, or central fat, may lead to a so-called apple [body shape](#), which is commonly linked to increased risks of [type 2 diabetes](#), heart disease and other chronic conditions later in life, says epidemiologist Eduardo Villamor, associate professor at the U-M School of Public Health and senior author of the study.

Villamor worked with colleagues at the National University of Colombia and began the research while at Harvard. The investigators recruited a group of 479 school children ages 5-12 from Bogota, Colombia, in 2006 and followed them for about 30 months. They measured vitamin D in blood taken at the beginning of the study, and then examined the link between vitamin D levels and changes in three indicators of body fat over time: [body mass index](#), [waist circumference](#) and subscapular-to-triceps skin fold ratio.

"We found that the kids with the lowest vitamin D levels at the

beginning tended to gain weight faster than the kids with higher levels," said Villamor, who added that children with the lowest vitamin D levels had more drastic increases in central body fat measures.

[Vitamin D deficiency](#) was also linked to slower growth in height among girls but not boys, he said.

"Our findings suggest that low vitamin D status may put children at risk of obesity," said Diane Gilbert-Diamond, Villamor's former Harvard student, now at Dartmouth Medical School and first author of the study. "This is significant because vitamin D insufficiency is highly prevalent across the globe and childhood obesity rates are dramatically increasing worldwide."

Though vitamin D intake could be related to early obesity, it's just part of a very complex picture, Villamor stressed.

Of all the children tested, 10 percent were vitamin D deficient, and another 46 percent of kids were insufficient, which meant they were at risk of becoming deficient.

"Interestingly, Bogota, Colombia, is in a subtropical zone where one may not expect to find a lot of vitamin D deficiency since the assumption is that sunlight is abundant there, but there could be many reasons people in subtropical climates may not get enough sun exposure," Villamor said.

Indeed, previous studies have shown that populations in other subtropical areas such as Sao Paulo, Brazil, and Costa Rica may also have vitamin D deficiency.

"These findings should motivate some discussion on ways to enhance vitamin D status of children there, although it will be necessary to confirm in intervention studies whether improvements in vitamin D

status decrease the risk of childhood obesity and early development of chronic diseases," Villamor said.

In addition to sun exposure, other sources of vitamin D are fortified foods and supplements. [Vitamin D](#) supplementation has been shown to prevent some viral infections in school-age children, so there could be benefits on other outcomes as well, which need to be tested in future studies, Villamor pointed out.

More information: The paper, "Vitamin D deficiency and anthropometric indicators of adiposity in school-age children: a prospective study," is available this month in the *American Journal of Clinical Nutrition*: www.ajcn.org/cgi/content/abstr...ct/ajcn.2010.29746v1

Provided by University of Michigan

Citation: Low blood levels of vitamin D linked to chubbier kids, faster weight gain (2010, November 8) retrieved 17 April 2024 from <https://medicalxpress.com/news/2010-11-blood-vitamin-d-linked-chubbier.html>

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