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Higher vitamin D levels in first year of life could help against obesity in adolescence

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Low levels of vitamin D during the first year of life are inversely associated with metabolic syndrome in adolescence—which is closely linked to obesity—according to a new University of Michigan study.

Metabolic syndrome is a group of conditions such as high blood sugar, excess body fat around the waist and abnormal cholesterol or triglyceride levels that together increase risk of heart disease, stroke and type 2 diabetes.

"We can never tell from an observational study if there is causation but at least from a predictive point of view, the fact that a single measure of vitamin D in early life predicts cardiovascular risk over such a long period is compelling," said senior author Eduardo Villamor, professor of epidemiology at the U-M School of Public Health.

The study, published in the *American Journal of Clinical Nutrition*, used data from more than 300 children from a cohort of about 1,800 participants recruited as infants. The children from 50 low- and middle-income neighborhoods in Santiago, Chile, were followed through adolescence for a cardiovascular risk assessment.

Villamor and colleagues measured blood concentration of vitamin D at age 1 and examined its association with body mass index-for-age at ages 5, 10, and 16-17. They also measured the percentage of fat and muscle mass and a metabolic syndrome score and its components (waist circumference, blood pressure, blood lipids, insulin resistance) at age 16-17.

They found that every extra unit of vitamin D in the blood of a 1-year-old was related to a slower gain in BMI between ages 1 and 5, a lower metabolic risk score at age 16-17 and less body fat and more muscle mass in adolescence.

Another important aspect of the study was that it was conducted at a time when early cardiovascular risk factors in Chilean children were on the rise, driven in part by the obesity epidemic in this Andean country.

"The fact that you can have 16-year-olds with high blood pressure, a poor lipid profile and insulin resistance is very sobering. Finding potentially modifiable factors that might modulate that risk could be valuable," said Villamor, adding that more research is needed to examine the effects of vitamin D supplementation in early life on long-term cardiometabolic outcomes.

More information: Joshua Garfein et al. Vitamin D status in infancy and cardiometabolic health in adolescence, *The American Journal of Clinical Nutrition* (2020). DOI: 10.1093/ajcn/nqaa273

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