

# Low vitamin D levels associated with several risk factors in teenagers

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Low levels of vitamin D were associated with an increased risk of high blood pressure, high blood sugar and metabolic syndrome in teenagers, researchers reported at the American Heart Association's 49th Annual Conference on Cardiovascular Disease Epidemiology and Prevention.

In the study, researchers analyzed 3,577 [adolescents](#), 12 to 19 years old (51 percent boys), who participated in the nationally representative National Health and [Nutrition](#) Examination Survey (NHANES) conducted from 2001.

After adjusting for age, sex, race/ethnicity, body mass index, socioeconomic status and physical activity, researchers found the adolescents with the lowest levels of [vitamin D](#) were:

- 2.36 times more likely to have high [blood pressure](#);
- 2.54 times more likely to have high blood sugar; and
- 3.99 times more likely to have metabolic syndrome.

Metabolic syndrome is a cluster of [cardiovascular disease](#) and diabetes risk factors including elevated waist circumference, [high blood pressure](#), elevated triglycerides, low levels of high-density lipoprotein (HDL or "good") cholesterol and high fasting glucose levels. The presence of three or more of the factors increases a person's risk of developing diabetes and cardiovascular disease.

"We showed strong associations between low levels of vitamin D and higher risk of high blood pressure, hyperglycemia and metabolic syndrome among adolescents, confirming the results of studies among adults," said Jared P. Reis, Ph.D., the study's lead author and post-doctoral research fellow at Johns Hopkins Bloomberg School of Public Health in Baltimore.

Researchers used a biomarker of vitamin D to measure levels in blood. The biomarker measures vitamin D obtained from food, vitamin supplementation and exposure to sunlight.

The ethnic breakdown was similar to the general U.S. population: 64.7 percent non-Hispanic whites; 13.5 percent non-Hispanic blacks; and 11 percent Mexican Americans.

The study highlights the association between high levels of vitamin D and lower risk of heart disease. The highest levels of vitamin D were found in whites, the lowest levels in blacks and intermediate levels in Mexican Americans. Whites had almost twice as high levels as blacks.

In whites, the average level of vitamin D was 28.0 nanograms per milliliter (ng/mL); in blacks, 15.5 ng/mL; and in Mexican Americans, 21.5 ng/mL.

"Although our study is important, we believe clinical trials designed to determine the effects of vitamin D supplementation on the risk of heart disease risk factors in adolescents should be conducted before recommendations can be made for vitamin D in the prevention of cardiovascular disease," Reis said.

The Institute of Medicine recommends a daily intake of vitamin D of 200 International Units (IU) for those less than 50 years, which includes children and adolescents. More recent recommendations, however, from the American Academy of Pediatrics suggests a daily intake of 400 IU daily. While these intakes have been shown to be important in the prevention of skeletal conditions such as rickets in children and osteoporosis in adults, some specialists have suggested intakes of at least 1,000 IU daily may be needed for overall health.

Low levels of vitamin D are strongly associated with overweight and abdominal obesity. Since vitamin D is a fat-soluble vitamin, it may be sequestered

within adipose tissue. This may explain why those who are obese are more likely to be vitamin D deficient, Reis said.

Vitamin D plays a useful role in general human health, particularly in bone health. Other roles are emerging, Reis said. "This is an exciting time; since we are just now beginning to understand the role that vitamin D may play in cardiovascular health."

"These data on serum vitamin D levels in young people raise some concern about their food choices and even the amount of time they spend in the sunshine," said Robert H. Eckel, M.D., American Heart Association past president. "The American Heart Association recommends an overall healthy diet and lifestyle, and that people get their nutrients primarily from food sources rather than supplements."

Source: American Heart Association ([news](#) : [web](#))

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