

# Vitamin D deficiency in younger women increases risk of high blood pressure

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Vitamin D deficiency in premenopausal women may increase the risk of developing systolic hypertension 15 years later, according to research reported at the American Heart Association's 63rd High Blood Pressure Research Conference.

Researchers examined women enrolled in the Michigan Bone Health and Metabolism Study and analyzed data from 559 Caucasian women living in Tecumseh, Mich. The ongoing study began in 1992 when the women were 24 to 44 years old with an average age of 38 years.

Researchers took blood pressure readings annually throughout the study. They measured vitamin D blood levels once in 1993, and then compared their systolic blood pressure measurements taken in 2007.

[Premenopausal women](#) who had vitamin D deficiency in 1993 had three times the risk of developing systolic hypertension 15 years later compared to those who had normal levels of vitamin D, researchers said.

"This study differs from others because we are looking over the course of 15 years, a longer follow-up than many studies," said Flojaune C. Griffin, M.P.H., co-investigator of the study and a doctoral candidate in epidemiology at the University of Michigan School of Public Health in Ann Arbor, Mich. "Our results indicate that early vitamin D deficiency may increase the long-term risk of [high blood pressure](#) in women at mid-life."

At the study onset, 2 percent of women had been diagnosed or were being treated for hypertension and an additional 4 percent of the women had undiagnosed systolic hypertension, defined as 140 millimeters of mercury (mm Hg) or more. But 15 years later, 19 percent of the women had been diagnosed or were being treated for hypertension and an additional 6 percent had undiagnosed systolic hypertension, a significant difference.

Researchers controlled for age, fat mass, anti-hypertensive medication use, and smoking.

Systolic pressure is the pressure of blood in the vessels when the heart beats.

Researchers determined vitamin D status by measuring blood concentrations of 25-hydroxyvitamin D [25(OH)D] in 1993. 25(OH)D is a prehormone in blood that is produced in the liver from the metabolism of vitamin D<sub>3</sub> cholecalciferol. Serum 25(OH)D is the primary form that is tested when examining vitamin D deficiency because it represents vitamin D storage in the body. This assessment in the blood reflects vitamin D obtained from ultraviolet B rays through sun exposure, vitamin D from foods such as fatty fish or fortified milk products and dietary supplements. The researchers did not examine the impact of these different sources of vitamin D.

Vitamin D deficiency was defined as less than 80 nanomoles per liter (nmol/L), while normal levels were considered more than 80 nmol/L. Experts in the medical community generally agree that vitamin D deficiency among women is widespread. Some researchers report many women don't get enough sunlight exposure to help keep vitamin D levels near to normal, nor do they have diets or practice supplementation that support normal levels of vitamin D, Griffin said. Vitamin D is either synthesized in the skin through exposure to ultraviolet B rays in sunlight

or ingested as dietary vitamin D.

However, Griffin said there's no general agreement about the optimal intake of vitamin D. Some researchers said the current recommended intake of 400 international units (IU) to 600 IU daily is inadequate and suggest a much higher daily intake, from 1,000 IU to 5000 IU.

Vitamin D has a well-established role in bone health. Other recent research indicates vitamin D deficiency in [women](#) may increase the risk of some cancers and have a negative impact on immune function and inflammatory diseases, she said.

"Our study highlights the importance of [vitamin D](#) in the risk of high [blood pressure](#) later in life, a major health problem in the United States," Griffin said.

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

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