

# Childhood stress linked to higher risk of high blood pressure, obesity, diabetes in adults

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Young adults who reported higher stress during their teenage years to adulthood were more likely to have high blood pressure, obesity and other cardiometabolic risk factors than their peers who reported less

stress, according to new research published in the *Journal of the American Heart Association*.

Cardiometabolic [risk factors](#) often occur together and are a significant cause of cardiovascular disease. These include obesity, type 2 diabetes or prediabetes, high cholesterol and [high blood pressure](#), researchers noted.

"Understanding the effects of perceived [stress](#) starting in childhood is important for preventing, lessening or managing higher [cardiometabolic risk factors](#) in young adults," said study author Fangqi Guo, Ph.D., postdoctoral research fellow at Keck School of Medicine, University of Southern California, Los Angeles.

"Our findings suggest that perceived stress patterns over time have a far-reaching effect on various cardiometabolic measures including fat distribution, [vascular health](#) and obesity," Guo said. "This could highlight the importance of stress management as early as in adolescence as a health protective behavior."

In 2020, cardiometabolic diseases, including cardiovascular diseases and type 2 diabetes, were the most prevalent chronic health conditions and collectively accounted for nearly a quarter of all deaths in the U.S., according to the American Heart Association statistics.

In 2023, the American Heart Association noted the strong connections among [cardiovascular disease, kidney disease, type 2 diabetes and obesity](#), and suggested redefining cardiovascular risk, prevention and management.

Childhood adversities affect cardiometabolic health across the [life course](#), and interventions that improve early exposures may be more appropriate than interventions for cardiovascular disease risk factor effects later in life, according to a [2017 American Heart Association](#)

[Scientific Statement: Childhood and Adolescent Adversity and Cardiometabolic Outcomes](#). In recent decades, researchers have found that perceived stress is a risk factor for cardiometabolic health conditions.

For this study, researchers analyzed health information from the Southern California Children's Health Study. Participants had enrolled in the study as children along with their parents, then participated in follow-up assessments as adolescents—average age 13—and as [young adults](#)—average age 24.

At each stage, stress was measured with a four-item Perceived Stress Scale, a questionnaire about feelings and thoughts during the last month. Study participants were categorized into four risk-based groups: consistently high stress over time, decreasing stress over time, increasing stress over time and consistently low stress over time.

To evaluate cardiometabolic risk in young adulthood, Guo and colleagues used measures of carotid artery intima-media thickness (measures neck artery thickness); systolic (top number) and diastolic (bottom number) blood pressure; weight, percentage of body fat and [fat distribution](#); and hemoglobin A1c. Hemoglobin A1c gauges blood sugar over time; increased thickness of the neck artery's inner layers suggests blood may not be flowing smoothly; and more fat around the abdomen is associated with a higher risk of cardiovascular diseases and/or type 2 diabetes.

The analysis found:

- Consistently high perceived stress from adolescence through adulthood was associated with greater risk for cardiometabolic diseases in young adulthood. If individuals experienced greater levels of stress from their [teenage years](#) into adulthood, they were

more likely to have worse vascular health, higher total body fat, more fat around the belly and higher risk of obesity compared to those who felt less stressed over time.

- In general, higher perceived stress levels were also associated with higher risk for cardiometabolic health conditions. For example, adults who experience higher levels of stress tended to have worse vascular health and higher systolic and diastolic [blood pressure](#).

"Although we assumed that perceived stress patterns should have some association with cardiometabolic measures, we did not expect such consistent patterns across various risk factors," Guo said.

"Health care professionals should consider using the Perceived Stress Scale to evaluate individuals' stress levels during clinic visits. This way, those with higher stress levels can be identified and receive treatment earlier."

Study details, background or design:

- Researchers reviewed data on 276 people from Southern California communities participating in the Southern California Children's Health Study. Participants enrolled as children from 2003 to 2014 and took part in follow-up health assessments as adults from 2018 to 2021.
- About 56% of participants were girls/women; 62% identified as white; 5% as Asian; 1% as either Black or Native American; and 13% were classified as "other." About 47% identified as Hispanic.
- Researchers investigated perceived stress reported by participants' parents during childhood (average age of about six years); then by participants, themselves, in adolescence (average age about 13 years); and then again in young adulthood (average

age nearly 24 years).

A limitation was the study's relatively small size. Studies with more participants would help clarify the results.

**More information:** Perceived Stress From Childhood to Adulthood and Cardiometabolic End Points in Young Adulthood: An 18-Year Prospective Study, *Journal of the American Heart Association* (2024). [www.ahajournals.org/doi/10.1161/JAHA.123.030741](http://www.ahajournals.org/doi/10.1161/JAHA.123.030741)

Provided by American Heart Association

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