

Diet in childhood linked to blood vessel damage in teenage years

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Diets high in calories, fat and sugar in childhood can cause damage to blood vessel function, known to heighten the risk of early heart attacks and strokes, as early as adolescence according to new research from the

University of Bristol.

The team has [published](#) their study in the *British Journal of Nutrition* today (10 January) and say their findings highlight the importance of healthy eating habits throughout life to protect [heart health](#). The article is titled "Associations of childhood diet quality scores with arterial stiffness and carotid artery intima-media thickness in adolescence/early adulthood: findings from the ALSPAC cohort."

Arteries carry blood rich in oxygen and nutrients from the [heart](#) to the rest of the body. Arteries naturally stiffen as we age, but this can be aggravated by smoking or conditions like diabetes. Stiff arteries can drive up [blood pressure](#), increase the workload on the heart and raise the risk of heart attacks and strokes.

Researchers at the University of Bristol investigated links between childhood diet and arterial stiffness in adolescence. They found that eating a diet high in calories, fat and sugar, and low in fiber, at the ages of 7 and 10 was associated with stiffer arteries at age 17.

In addition, Mediterranean and anti-inflammatory eating patterns appeared to be protective for heart health, and [children](#) whose diets were most similar to these patterns had less stiff and more elastic arteries at age 17.

Dr. Genevieve Buckland, BHF Research Fellow at Bristol Medical School, University of Bristol, who led the research, said, "Our research highlights the importance of developing well-balanced eating habits from childhood to reduce the risk of future heart problems. Arterial stiffness is an important sign of blood vessel damage with potential for long-lasting effects.

"Through its links to [high blood pressure](#), it is associated with a variety

of serious conditions including heart failure, stroke and vascular dementia. We hope that our work highlights the need for prevention strategies to stop arterial stiffness developing in people from such a young age."

Researchers collected information on the diets of more than 4,700 children involved in the Children of the 90s health study. Diets were studied when they reached ages 7, 10 and 13. Arterial stiffness and arterial wall thickness were then measured in thousands of these children at ages 17 and 24.

Diet was assessed using five different quality scores. The scores reflected how closely the child's diet aligned to five dietary patterns, with each known to either help protect heart health or raise the risk of heart problems.

The children with diets high in calories, fat and sugar and low in fiber at ages 7 and 10, had stiffer arteries aged 17 compared to children who had eaten less calorific, fatty and [sugary foods](#) in childhood. In previous research on these children, this calorie-dense dietary pattern was associated with excess weight in childhood and adolescence.

Some of the other dietary patterns investigated were also linked to blood vessel health. Children age 7 who had a more Mediterranean-style diet—which includes fruit and vegetables, beans and lentils, fish and unsaturated fats, and less meat and meat products—had reduced arterial stiffness at 17.

Similarly, eating a [diet](#) with more anti-inflammatory nutrients at the age of 10 was associated with reduced [arterial stiffness](#) at age 17. Foods considered to be anti-inflammatory include fruit and vegetables, particularly berries and a variety of brightly colored vegetables, as well as nuts, seeds, spices and seafood.

In general, children with healthier diets, according to the study's scoring system, were more likely to be female, have a lower BMI, and have a mother with higher educational attainment and who came from a higher socio-economic background.

Dr. Sonya Babu-Narayan, associate medical director at the BHF, said, "Cardiovascular disease is the U.K.'s major cause of disability and premature death and can hit those living in the least well-off areas hardest. The results of this study suggest that, to stop heart disease in its tracks, improving people's diets has to start early and be lifelong.

"A bold and comprehensive approach from Government is needed to ensure the healthy option is the easy option for everyone. This includes pushing ahead with delayed laws to curb junk food marketing, and driving industry to reduce the salt and sugar levels in our everyday foods. Only then will we give children the opportunity to live a long and healthy life, no matter where they live."

More information: Genevieve Buckland et al, Associations of childhood diet quality scores with arterial stiffness and carotid artery intima-media thickness in adolescence/early adulthood: findings from the ALSPAC cohort, *British Journal of Nutrition* (2024). [DOI: 10.1017/S0007114523002763](https://doi.org/10.1017/S0007114523002763)

Provided by University of Bristol

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