

Managing children's weight, blood pressure and cholesterol protects brain function mid-life

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Managing weight, blood pressure and cholesterol in children may help protect brain function in later life, according to new research published today in the American Heart Association's flagship journal *Circulation*.

This is the first study to highlight that cardiovascular risk factors accumulated from childhood through mid-life may influence poor cognitive performance at midlife.

Previous research has indicated that nearly 1 in 5 people older than 60 have at least mild loss of [brain function](#). Cognitive deficits are known to be linked with [cardiovascular risk factors](#), such as high [blood pressure](#), obesity, type 2 diabetes, smoking, physical inactivity and poor diet, as well as depression and low education level.

Many diseases that cause neurological deficits, such as Alzheimer's, have a long preclinical phase before noticeable symptoms begin, so finding links between [childhood](#) obesity and other cardiovascular risk factors is important for cognitive health. The researchers noted that there are currently no cures for major causes of dementia, so it is important to learn how early in life cardiovascular risk factors may affect the brain.

"We can use these results to turn the focus of brain health from old age and midlife to people in younger age groups," said the study's first author Juuso O. Hakala, M.D., a Ph.D. student at the Research Centre of Applied and Prevention Cardiovascular Medicine at the University of Turku, in Turku, Finland. "Our results show active monitoring and prevention of heart disease and stroke risk factors, beginning from early childhood, can also matter greatly when it comes to brain health. Children who have adverse cardiovascular risk factors might benefit from early intervention and lifestyle modifications."

[The Cardiovascular Risk in Young Finns Study](#) is a national, longitudinal study on cardiovascular risk from childhood to adulthood in Finland. Researchers followed the participants' cardiovascular risk factor profiles for 31 years from childhood to adulthood. Baseline clinical examinations were conducted in 1980 on approximately 3,600 randomly selected boys and girls, ranging in ages from 3 to 18, all of whom were white. More

than 2,000 of the participants, ranging in ages from 34 to 49, underwent a computerized cognitive function test in 2011. The test measured four different cognitive domains: [episodic memory](#) and associative learning; short-term working memory; reaction and movement time; and [visual processing](#) and sustained attention.

Researchers found:

- Systolic blood pressure, total blood cholesterol and low-density lipoprotein (LDL) cholesterol, as well as body mass index, from childhood to midlife are associated with brain function in middle age.
- Consistently high systolic blood pressure or high blood total cholesterol and LDL cholesterol were linked to worse memory and learning by midlife when compared with lower measures.
- Obesity from childhood to adulthood was associated with lower visual information processing speed and maintaining attention.
- Having all three cardiovascular risk factors was linked to poorer memory and associative learning, worse visual processing, decreased attention span, and slower reaction and movement time.

These results are from observational findings, so more studies are needed to learn whether there are specific ages in childhood and/or adolescence when cardiovascular risk factors are particularly important to brain health in adulthood. Study limitations include that a definite cause-and-effect link between cardiovascular risk factors and cognitive performance cannot be determined in this type of population-based study; cognition was measured at a single point in time; and because all study participants are white, the results may not be generalizable to people from other racial or ethnic groups.

In 2020, the American Heart Association partnered with Nemours, a

nonprofit pediatric health system, to create [Healthy Way to Grow](#)—a national, science-based, [early childhood](#) technical assistance program to help improve practices and policies to prevent [childhood obesity](#).

More information: *Circulation* (2021).

[www.ahajournals.org/doi/10.1161 ... LATIONAHA.120.052358](http://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.120.052358)

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