

High biological age may increase the risk of dementia and stroke

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People who have a higher biological age than their actual chronological age have a significantly increased risk of stroke and dementia, especially vascular dementia. These are the results of a study from Karolinska

Institutet in Sweden published in the *Journal of Neurology, Neurosurgery and Psychiatry*. The study is titled, "Clinical biomarker-based biological aging and future risk of neurological disorders in the UK Biobank."

The study, which was led by Sara Hägg, associate professor, and Jonathan Mak, doctoral student at the Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, shows that the increased risk persists even if other risk factors such as genetics, lifestyle and socioeconomics are taken into account.

As we age, the risk of chronic diseases such as cancer, [cardiovascular disease](#) and neurodegenerative disorders increases. Researchers have traditionally relied on [chronological age](#)—the number of years a person has been alive—as an approximate measure of [biological age](#).

"But because people age at different rates, chronological age is a rather imprecise measure," says Sara Hägg.

In order to measure biological age and the link to disease, the researchers used data from the UK Biobank. They studied a cohort of 325,000 people who were all between 40 and 70 years old at the time of the first measurement.

Biological age was calculated using 18 biomarkers, including blood lipids, [blood sugar](#), blood pressure, lung function and BMI. The researchers then investigated the relationship between these biomarkers and the risk of developing neurodegenerative diseases such as [dementia](#), stroke, ALS and Parkinson's disease within a nine-year period.

When compared to actual, chronological age, high biological age was linked to a significantly increased risk of dementia, especially [vascular dementia](#), and ischemic stroke, (i.e. blood clot in the brain).

"If a person's biological age is five years higher than their actual age, the person has a 40% higher risk of developing vascular dementia or suffering a stroke," says Jonathan Mak.

As it is an [observational study](#), causal relationships cannot be established. However, the results indicate that by slowing down the body's aging processes in terms of the measured biomarkers, it may be possible to reduce or delay the onset of disease.

"Several of the values can be influenced through lifestyle and medications," says Sara Hägg.

The results are particularly interesting because the study included such a large group of people. This makes it possible to break down the material into smaller pieces and capture less common diagnoses such as ALS.

The risk of developing ALS also increases with higher biological age. However, no such risk increase was seen for Parkinson's disease.

"We already know that Parkinson's disease is a bit unique in other contexts as well, for example, when it comes to smoking," says Sara Hägg.

The researchers will now proceed to investigate the connection between biological age and other diseases such as cancer.

More information: Clinical biomarker-based biological aging and future risk of neurological disorders in the UK Biobank, *Journal of Neurology, Neurosurgery and Psychiatry* (2023). [DOI: 10.1136/jnnp-2023-331917](https://doi.org/10.1136/jnnp-2023-331917)

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