

# Dementia patients' adult kids diagnosed earlier than their parents

October 23 2019, by Tamara Bhandari

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A person's chance of developing dementia is influenced by family history, variations in certain genes, and medical conditions such as cardiovascular disease and diabetes. But less is known about the factors

that affect when the first symptoms of forgetfulness and confusion will arise.

A new study from Washington University School of Medicine in St. Louis reveals that people with dementia—whose parents also had dementia—develop symptoms an average of six years earlier than their parents. Factors such as education, [blood pressure](#) and carrying the genetic variant APOE4, which increases the [risk of dementia](#), accounted for less than a third of the variation in the age at onset—meaning that more than two-thirds remains to be explained.

"It's important to know who is going to get dementia, but it's also important to know when symptoms will develop," said first author Gregory Day, MD, an assistant professor of neurology and an investigator at the Charles F. and Joanne Knight Alzheimer's Disease Research Center (ADRC). "If we can better understand the factors that delay or accelerate the age at onset, we eventually could get to the point where we collect this information at a doctor's visit, put it through our calculator, and determine an expected age at onset for any adult child of a person with dementia."

The study is available online in *JAMA Network Open*.

Alzheimer's [disease](#) is the most common cause of dementia, affecting an estimated 5.8 million people in the United States. Between 10% and 15% of the children of Alzheimer's patients go on to develop symptoms of the disease themselves.

Day and colleagues, including senior author John C. Morris, MD, the Harvey A. and Dorismae Hacker Friedman Distinguished Professor of Neurology and head of the Knight ADRC, studied people with dementia who were participating in research studies at the Knight ADRC. They identified 164 people with dementia who had at least one parent who had

been diagnosed with dementia.

Using medical records and interviews with participants and knowledgeable friends or family members, the researchers determined the age at onset of dementia for each participant and his or her parent or parents. People with one parent with dementia developed symptoms an average of 6.1 years earlier than the parent had. If both parents had dementia, the age at onset was 13 years earlier than the average of the parents' ages at diagnosis.

Changes over the past few decades in diagnostic criteria and social attitudes toward [cognitive decline](#) in later life partially explain why the study participants were diagnosed at younger ages than their parents, the researchers said. But other factors were likely at play as well.

"Nowadays there's less of a tendency to brush off confusion and forgetfulness as signs of getting older," Day said. "People who watched their parents decline with Alzheimer's disease are especially unlikely to dismiss such concerns. What's most interesting, I think, is that people with two parents with dementia developed the disease much younger than people with one parent. That suggests that it's more than just changes in diagnostic criteria or social attitudes. People with two parents with dementia may have a double dose of genetic or other risk factors that pushes them toward a younger age at onset."

As part of this study, the researchers analyzed a large set of known risk factors for Alzheimer's disease. They studied heritable factors such as ethnicity, race, genetic variants and which parent had the disease. They also looked at education, body mass index, diabetes, [cardiovascular disease](#), blood pressure, blood cholesterol level, depression, tobacco use, excessive alcohol use, and histories of traumatic brain injury.

All of the factors together only accounted for 29% of the variability,

meaning that most of what influences the age of dementia onset remains to be identified. Intriguingly, the researchers found that people who were diagnosed with Alzheimer's disease at unexpectedly younger or older ages than their [parents](#) were more likely than people diagnosed at the expected age to have certain mutations in Alzheimer's genes—although it wasn't clear what effect these mutations have.

"These people are really interesting. We don't know why their symptoms began earlier or later than expected," Day said. "There were no other [risk factors](#) we could identify. We started this project looking for factors that we could target to give people more time before they start experiencing dementia. Although we're not yet at the point where we can modify people's genes, we can begin to explore how these genes may accelerate or slow down the onset of [dementia](#) in these individuals. By learning more about the effect of these genes on Alzheimer's disease, we may be able to develop novel treatments."

**More information:** Gregory S. Day et al, Association of Acquired and Heritable Factors With Intergenerational Differences in Age at Symptomatic Onset of Alzheimer Disease Between Offspring and Parents With Dementia, *JAMA Network Open* (2019). [DOI: 10.1001/jamanetworkopen.2019.13491](#)

Provided by Washington University School of Medicine

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