

# Women's Brains May Be the Most Vulnerable to Alzheimer's

By Bec Crew | [Science Alert](#)

Women's brains might be more vulnerable to the degenerative effects of Alzheimer's disease than men's, causing them to decline in memory and cognitive function twice as fast, according to new research that could explain why women make up two-thirds of all diagnosed Alzheimer's cases in the US.



[The finding was presented this week](#) at the 2015 Alzheimer's Association International Conference (AAIC) in Washington, DC, with the team also noting that women tend to decline more dramatically than men in cognition, function, and brain size after they've been in surgery or under general anaesthesia.

"Women are disproportionately affected by Alzheimer's, and there is an urgent need to understand if differences in brain structure, disease progression, and biological characteristics contribute to higher prevalence and rates of cognitive decline," Maria Carrillo, the chief scientific officer at the US Alzheimer's Association, [said in a press release](#). "To intervene and help reduce the risk of Alzheimer's, it's critical to understand the reasons for these differences."

According to the [Alzheimer's Disease Facts and Figures report](#), published by the Alzheimer's Association, of all Americans aged 71 and older, 16 percent of women have Alzheimer's and other dementias, while just 11 percent of men are similarly affected. If a woman manages to avoid Alzheimer's by the age of 65, she'll have a one in six chance of developing it during

the remainder of her life, compared to the one in 11 chance for men, and once women hit their 60s, they'll be twice as likely to develop Alzheimer's disease as they are to develop breast cancer.

So why are women so uniquely affected by this devastating condition? It's not yet clear, but the researchers said it's not just to do with the fact that women are more likely to outlive men [in every country on the planet](#). "There's something else going on in terms of the biology [or] the environment for women," one of the team, Kristine Yaffe from the University of California, San Francisco, [told Jon Hamilton at NPR](#).

One study presented at the conference was based on data from an ongoing project called the Alzheimer's Disease Neuroimaging Initiative. Yaffe and her colleagues investigated how the cognitive abilities of about 400 people (141 women, 257 men), mostly in their mid-seventies, with mild cognitive impairment – a condition that leads to Alzheimer's disease – changed over the course of up to eight years.

"We found that women decline at almost twice the rate of men and we also found that women have faster acceleration of decline over time," one of the team, Katherine Amy Lin from Duke University Medical Centre in the US, [told NPR](#).

The results of a complementary study were also presented, showing that women tend to accumulate more amyloid in their brains than men, which is thought to be the main culprit in Alzheimer's development. But why this is the case is not yet clear.

One possible explanation is to do with the fact that every cell in a woman's body carries two X chromosomes, while every cell in a man's body has an X and a Y, and these double x chromosomes could be what's putting women at a higher risk of developing dementia, according to research done [back in 2009](#).

[Published in Nature Genetics](#), the study showed that women who

inherited two copies of a variant in the PCDH11X gene, found on the X chromosome, were at a much higher risk of developing Alzheimer's disease. Women with a variant on one of their two X chromosomes also had a higher risk than those who didn't, as did men with the variant on their single X chromosome.

"This is a very common genetic variant, and many women who had two copies of it did not have disease. But, overall, the odds were substantially greater that female patients with the disease did have two copies," the study's senior investigator, Steven Younki from the Mayo Clinic in the US, [said in a press release at the time.](#)

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Originally entitled: "Women's brains are more vulnerable to Alzheimer's than men's, studies suggest"



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