

Alzheimer's cognitive decline predicted by patient's age, sex and irregular heart rhythm

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Older age, female sex, irregular heart rhythms, and daily activity levels can help to predict how much Alzheimer's Disease patients' cognitive function will decline, and how much they will depend on their caregivers over the next two years. Credit: Tirol Kliniken/Gerhard Berger, CC-BY 4.0 (creativecommons.org/licenses/by/4.0/)

Older age, female sex, irregular heart rhythms, and daily activity levels can help to predict how much Alzheimer's disease patients' cognitive function will decline, and how much they will depend on their caregivers over the next two years.

The results suggest new ways to predict cognitive decline in patients, and that caregivers need to be considered in treatment plans. Liane Kaufmann from the Ernst von Bergmann Clinic in Potsdam, Germany, Josef Marksteiner from the General Hospital in Hall, Austria, and colleagues present these findings in the open access journal *PLOS ONE* on August 14, 2024.

Alzheimer's disease affects between 50% and 70% of patients diagnosed with dementia. To understand which patient characteristics might best predict cognitive decline in these patients, the authors of this study followed an initial cohort of 500 Austrian patients with probable and possible Alzheimer's disease for two years.

After taking a history of conditions such as [heart disease](#), [atrial fibrillation](#), and diabetes, the researchers tracked cognitive function, daily living activities, depression, pain, and neuropsychiatric symptoms over a period of two years. The researchers also assessed the burden on the patients' caregivers.

All patients experienced significant cognitive decline over the two-year period, associated with decreased daily life activities and increased dependence on their caregivers. Age, female sex, difficulty with daily activities and depression predicted cognitive decline at every time point.

Older age, female sex, inability to carry out daily activities and a history of atrial fibrillation—rapid, nonrhythmic contractions of the top chambers of the heart—predicted the most severe cognitive decline after two years. The changes in cognitive function were strongly associated

with an increased burden on caregivers.

The study had a high dropout rate, and also did not include lifestyle variables like [physical activity](#), smoking or alcohol use. However, the authors believe their findings suggest that a combination of demographics (such as age and sex) alongside measures of daily function and previous medical conditions could help predict [cognitive decline](#), and that caregiver load should also be an important factor in diagnosing and treating Alzheimer's patients.

The authors add, "The results of our large-scale prospective study on patients with early-onset Alzheimer's Dementia (AD) identify a combination of high age, female sex, atrial fibrillation (above and beyond other somatic [risk factors](#)), low activities of daily living and depressive symptomatology as significant (and partly modifiable) risk factors for cognitive deterioration.

"Moreover, our findings disclose strong correlations between caregiver load and various patient-related measures. Thus, we propose that the clinical management of early-stage AD should be targeted at the patient-[caregiver](#) dyad (instead of solely focusing on the patient)."

More information: Predictive value of somatic and functional variables for cognitive deterioration for early-stage patients with Alzheimer's Disease: Evidence from a prospective registry on dementia, *PLoS ONE* (2024). [DOI: 10.1371/journal.pone.0307111](https://doi.org/10.1371/journal.pone.0307111)

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