



# New Vulnerability Index Assesses Risk of Alzheimer's Disease and Related Dementias

University of Miami Miller School of Medicine neurologist James E. Galvin, M.D., M.P.H., has developed a new vulnerability index (VI) to help clinicians assess the risk of Alzheimer's disease and related dementias.



James E. Galvin,  
M.D., M.P.H.

“A brief, easily calculated and interpretable index to assess vulnerability to developing cognitive impairment is needed in clinical practice and research,” said Dr. Galvin, professor of neurology and director of the Miller School's Comprehensive Center for Brain Health. “The VI can identify individuals at high risk for dementia and empower them to take preventive steps at an early stage of cognitive impairment.”



Dr. Galvin developed the assessment tool with Michael J. Kleiman, Ph.D., a post-doctoral data scientist in his laboratory. They are coauthors of a new study, "The Vulnerability Index: A Weighted Measure of Dementia and Cognitive Impairment Risk," published online October 30, 2021, in the journal *Alzheimer's & Dementia*.

Applying statistical analysis and machine learning to deidentified electronic health record data from 387 subject-control pairs, the researchers found that VI scores of 8 or above accurately discriminated between subjects with cognitive impairment and cognitively normal controls. Individuals scoring high on the VI also had worse health, functional, behavioral, cognitive, and quality-of-life ratings than those with lower scores.

The 12 sociodemographic, medical, and functional factors analyzed in the dementia VI are:

- Age: Higher age contributes significantly to dementia risk.
- Biological sex: Women have a higher risk of developing dementias such as Alzheimer's disease.
- Race and ethnicity: Black and Hispanic adults have been found to be at higher risk than non-Hispanic Whites.
- Years of education: More education has a protective effect, with those who have a high school (12-year) education or less at greater risk.
- Obesity: Some studies suggest that obesity contributes to a greater risk of developing
- Frailty: Frailty has been found to raise the risk of cognitive impairment.
- Depression: Depression also increases dementia risk.



- Five additional medical conditions: Diabetes, stroke, heart disease, hypercholesterolemia, and hypertension are dementia risk factors.

“Many of the factors analyzed in the study can be modified by older adults and their physicians, lowering their overall score on the vulnerability index,” said Dr. Galvin. “We hope this new assessment tool will help older adults lower their risk and improve overall health and well-being.”

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