

New screening tool can assess cognition issues in older adults

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A self-administered screening tool, developed by Cleveland Clinic researchers, can effectively and efficiently assess cognition issues in older adults.

A new study found that the [simple test](#) taken on a tablet computer before an annual physical is conducive to use in a primary care setting for detecting mild cognitive impairment, early Alzheimer's disease, and other related dementias. Results were published in *Journal of Alzheimer's Disease*.

About 15% to 20% of the population in the United States has mild cognitive impairment, a significant risk factor for Alzheimer's disease. A substantial proportion of patients with mild cognitive impairment and early Alzheimer's disease are underdiagnosed and underreported, with diagnosis typically occurring late in the disease course.

"The goal of this low-cost screening is to incorporate testing into an annual physical for [older adults](#) and make it as routine as checking your [blood pressure](#) and weight," said Stephen Rao, Ph.D., lead author of the study and director of the Schey Center for Cognitive Neuroimaging at Cleveland Clinic. "As the population ages and the incidence of Alzheimer's and other dementias increases rapidly, it is critical that we find new ways to identify the disease early."

Currently, there are no definitive screening tests for mild cognitive impairment and early Alzheimer's for healthy older adults. Existing tests, such as MRI, genetic testing and PET scans, are either non-definitive or too costly to give every patient. Dr. Rao and Cleveland Clinic colleagues developed the 10-minute self-administered brain health assessment.

The Cleveland Clinic Cognitive Battery (C3B) assesses memory and thinking skills, to provide efficient screening of cognitive impairment of adults age 65 and older during their Medicare annual wellness visits.

The research team validated the tool in a series of studies, starting with an initial assessment of 428 participants, ages 18-89, who were doing well cognitively to provide norms for aiding clinical interpretation.

This was followed by integrating the tool into a primary care clinic, in which patients took the computerized test in the waiting room prior to seeing their doctor. Greater than 95 percent of [older patients](#) over age 65 were able to complete the unsupervised computerized tests and a survey indicated a high degree of satisfaction in taking the screening tool.

The researchers then assessed the tool in 30 older adults with diagnosed mild cognitive impairment compared with a cohort of 30 older adults without the condition. The tool identified 90% of patients with mild cognitive impairment, whereas a common screening tool currently used in primary care clinical practice identified only 45%.

"We demonstrated that the C3B tool was able to distinguish mild cognitive impairment patients from demographically matched people who did not have the condition," said Dr. Rao. "Overall this study showed that this simple screening can be effectively used in a busy primary care setting for detecting [mild cognitive impairment](#)."

Studying people before they have any symptoms of dementia is important because the disease can begin in the brain 10 to 20 years before diagnosis. If the disease can be detected earlier before significant brain damage occurs, patients can potentially modify their risk.

"Many risk factors such as physical inactivity, depression, obesity and smoking are amenable for primary care intervention that could delay or prevent dementia if detected in the earliest stage of the disease," said Dr. Rao.

"If we can slow down the disease to delay onset by five years we can cut the number of people diagnosed by half. If we can delay by 10 years, we can practically eliminate the disease and improve length and quality of life. Disease-modifying drugs and lifestyle interventions, like physical activity, can delay the diagnosis of dementia if implemented at the

earliest stage of the disease."

Dr. Rao's team is currently preparing for a large multisite study to better define test result thresholds for cognitive dysfunction and to expand diversity of the test population. Patients—both those who score well and those who score poorly on the C3B—will be randomly selected to undergo MRI scanning, laboratory tests and extensive neurological examination.

More information: Stephen M. Rao et al, Cleveland Clinic Cognitive Battery (C3B): Normative, Reliability, and Validation Studies of a Self-Administered Computerized Tool for Screening Cognitive Dysfunction in Primary Care, *Journal of Alzheimer's Disease* (2023). [DOI: 10.3233/JAD-220929](https://doi.org/10.3233/JAD-220929)

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