Research article

The Greek Version of AD8 Informant Interview: Data from the Neurocognitive Study on Aging (NEUROAGE)

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Abstract

Objective: The Alzheimer Disease 8 (AD8) is a simple and short informant-based tool that could assist in the screening of early stages of dementia. This study aimed to explore preliminary psychometric properties of the Greek version of the AD8 (CY-AD8) and its utility in cognitive screening in a large cohort of community dwellers over the age of 60.

Methods: Evaluation was made on 182 informant reports of community dwellers without a diagnosis of a neurological condition or dementia. The CY-AD8 scores were correlated with Mini Mental State Examination (MMSE) scores.

Results: Internal consistency of the CY-AD8 was acceptable (Cronbach α =0.827). The CY-AD8 correlated moderately with the MMSE (Pearson's r = -.524 p < .001). Median split resulted in two groups based on the CY-AD8 scores. An independent samples t-test was conducted to examine whether there was a significant difference between group 1 (AD8=0-1) and group 2 (AD8=2+) in relation to their performance in MMSE. The test revealed a statistically significant difference between group 1 and group 2 in MMSE (t= 5.53, df =176, p < .001). Those with more symptoms on the CY-AD8 were significantly older than those with fewer symptoms.

Conclusions: The CY-AD8 is a useful screening tool for early detection of individuals who may be at risk for dementia, but still further investigation is needed to explore the psychometric properties of this tool.

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Introduction

Dementia is a global public health burden that causes major disability. The number of persons with dementia (PwD) is expected to increase from 35.6 million in 2010 to 66 million in 2030 and 115 million in 2050 [1]. Early detection of dementia is challenging as research findings show that more than half of elderly patients who meet the criteria of dementia remain undiagnosed [2, 3].

Health care professionals oftentimes implement global cognitive screening tests such as the Mini Mental State Examination (MMSE) [4] and the Montreal Cognitive Assessment (MOCA) [5] to discriminate between normal cognitive decline and pathological performance. These tools are time-efficient since they can be completed within 10 minutes or less, and capture an array of cognitive abilities [6, 7, 8]. Despite criticism regarding lack of sensitivity to detect subtle cognitive changes [9], cognitive screening tests are used by multiple disciplines including neurology, psychiatry, psychology, speech language pathology, and nursing; they serve as a common point of reference and facilitate collaboration and communication among professionals.

One limitation of global cognitive screening measures relates to their static nature. These tests were developed to measure performance at the time of testing and cannot be used to accurately capture cognitive change across time. Furthermore, despite the high prevalence and burden resulting from dementia, most health care systems have not established a standard of care for screening and periodic monitoring. Subsequently, information obtained from common cognitive screening tools reflects performance at the time of testing, without a historical context of the person's prior abilities or changes in cognitive or functional performance across time. Therefore, cognitive screening procedures should include contextual and historical information in addition to cognitive screening tests in order to make accurate clinical decisions.

Clinicians worldwide are encouraged to consider the WHO-ICF framework (World Health Organization [WHO], 2001) when selecting assessment methodologies. According to the ICF model, assessment should incorporate the individual's functioning and the context [8]. Structured questionnaires and informant reports that capture how the individual functions within the daily context can supplement neuropsychological test performance and improve the ecological validity of the assessment process [10].

The Alzheimer Disease 8 (AD8) is a simple, sensitive and short informant-based tool that could assist in the screening of early stages of dementia [11]. The initial goal of the authors was to develop a sensitive and specific cognitive screening tool that is valid, easy to administer, and minimally time-consuming as formal neuropsychological assessments are time-consuming, costly, and not readily available in all clinical situations [11]. Galvin et al [11] proposed that combining the AD8 interview with brief psychometric tests boosts its ability to discern a cognitive impairment in people who do not meet formal clinical criteria for dementia, and the combined procedure is still short enough to be administered in everyday clinical practice. The AD8 includes eight questions asking the informant to assess change (Yes vs No) in memory, problem-solving abilities, orientation and daily activities. The number of Yes answers is summarized to obtain the AD8 score. It was developed using a longitudinal research sample as authors intended to test how well informants of "realworld" patients would rate the cognitive and functional abilities of patients compared to the Clinical Dementia Rating (CDR). Another goal was to investigate the ability of the AD8 to detect nonamnestic forms of dementia using informants from varied social and demographic backgrounds. AD8 can be used in primary care practice during the annual wellness visit and research [12]. Moreover it has been validated for use in emergency departments and other settings [13].

The AD-8 was developed in English and has been validated in multiple languages, including Spanish, French, Portuguese, Norwegian, Chinese, Korean, Indonesian and Tagalog (Filipino) [12]. The AD-8 validation in both English

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and Korean, showed strong internal consistency (Cronbach's = 0.84–0.88), interrater reliability (0.82-0.89) and concurrent validity with the Clinical Dementia Rating scale and other neuropsychological tests [11, 13]. In another study, AD8 was used for the assessment of African-American older adults and reported good sensitivity and specificity by discriminating cognitively normal older adults from those with very mild dementia [15].

The present study was part of the first nation-wide longitudinal project, the Neurocognitive Study on Aging (NEURO-AGE, https://clinicaltrials.gov/ct2/show/NCT01481246) which investigates several aspects of aging, including neurocognitive and linguistic performance, psychosocial factors, biological markers, and quality of life in a large cohort of more than 800 older Greek-Cypriot adults. The aim of the present study was to provide preliminary data on the psychometric properties of the Greek-Cypriot version of the AD8 (CY-AD8) in a large cohort of community dwellers over the age of 60 who were living independently and did not have a diagnosis of dementia or MCI.

Method

Participants

Participants were recruited from the community and from social organizations for the elderly from all around Cyprus and were native Greek speakers (mainland Greek or Cypriot/Greek dialect). All participants resided independently at home at the time of participation. Informant reports were obtained for 182 study participants over the age of 60 (range = 60-99; mean = 71.24; SD = 7.34) who met the study inclusion/exclusion criteria as following: 1) native Greek speakers from Cyprus; 2) males and females over the age of 60; 3) good general health with no previous history of neurological pathology such as head trauma, epilepsy, stroke or neurodegenerative disorder; 4) No diagnosis of dementia or MCI and 5) absence of history of severe psychiatric or emotional disorder requiring hospitalization.

Measures

As part of the NEUROAGE project, participants were administered a battery of established neurocognitive and language tests, sensitive to cognitive decline [16, 17, 18, 10]. In the present study we analyzed data from the following screening tools:

General Cognitive Screening: Mini Mental State Examination (MMSE) [19]. We have used the validated Greek version of the test by Fountoukakis et al., 2000 [4]. A cut-off of 20 was used in the present analysis.

Depression Screening: Geriatric Depression Scale (GDS-15) [20]. A cut-off score of 6 is recommended in the literature and was incorporated in the present study.

Alzheimer Disease 8: The Alzheimer Disease 8 (AD8) [11]. For the purposes of the present project, the tool was translated and adapted from English into Greek. A blind backwards translation was conducted and the final version of the tool, the CY-AD8 was implemented in the study. The CY-AD8 instructs the informant to indicate whether there has been a change in the last years in 8 different domains due to cognitive difficulties, e.g. remembering appointments, managing finances, manipulating common objects, critical thinking and judgment, etc. Each positive response indicating a change was worth 1 point for a maximum total of 8 points.

Procedures

Study participants were tested at their social club, the Center for Applied Neuroscience at the University of Cyprus or at their home. Participants provided contact information and permission to contact the informant which was typically the spouse, the siblings, or an adult child. The AD-8 was administered either in person or over the phone at a convenient time for the informant. Time of administration was approximately 3 minutes.

Data and Analyses

The total number of points for the CY-AD8 was calculated for each participant. Internal consistency for the CY-AD8 was evaluated by calculating Cronbach's alpha. Independent samples

t-test was used to investigate the presence of differences between those with high vs low scores on the CY-AD8 instrument. Additionally Pearson's correlation analyses were conducted to examine relationships between AD8 and MMSE measures.

Results

Informant reports on the CY-AD8 ranged from 0-8. The median score was 2. The internal consistency of the CY-AD8 was acceptable (Cronbach's α =0.827). The CY-AD8 total score correlated moderately and significantly with the MMSE (Pearson's r = -.524 p < .001).

Median split resulted in two groups based on the CY-AD8 symptom scores. An independent samples t-test was conducted to examine whether there was a significant difference between group 1 (CY-AD8 = 0-1) and group 2 (CY-AD8 = 2+) in relation to their performance on the MMSE. A statistically significant difference was revealed between the two groups t(176) = 5.53, p < .0001. Individuals in group 1 scored significantly higher (M=27.58, SD = 1.78) than individuals in group 2 (M= 25.71, SD= 2.59). The difference was about 2 points and greater than 1 standard deviation. Furthermore, individuals with more CY-AD8 symptoms were significantly older than those with almost no symptoms, t(176) = 5.04, p = .0001 by about 5 years (mean = 73.73, and SD = 7.85 mean = 68.52, SD = 5.62 respectively).

Conclusions

The CY-AD8 is a brief informant-based measure that can be implemented by health care professionals to obtain some preliminary information regarding functional abilities in activities of daily living. Informant reports of changes in two or more questions would warrant further neurocognitive assessment in order to determine the etiology and extend of the cognitive change. Our findings are in line with previous studies that support the classification of a score higher than 2 as a cutoff score and suggest that the use of the AD8 in con-

junction with a brief cognitive assessment could improve diagnostic accuracy [9].

Symptom reporting on the CY-AD8 was related to MMSE performance. Although the relationship is significant, it is a moderate relationship suggesting that the two measures can be used concurrently and that they are complimentary of each other. Specifically, individuals with high CY-AD8 symptoms still performed as a group within the normative range of the MMSE. However, their performance was in the lower end of normal. Brief cognitive tests such as the MMSE may help differentiate cognitively normal older adults from those with moderate dementia but MMSE and other brief tests lack the sensitivity and specificity to detect very mild impairment [7, 11, 21, 22]. Additionally, performance-based measures such as MMSE may not be able to detect or quantify change from previous levels of function, particularly in very high-functioning individuals. Therefore, information obtained by the CY-AD8 could provide information regarding subtle but significant changes in functioning that would be of clinical significance.

The present findings indicate that the Greek version (CY-AD8) has adequate internal consistency. Therefore, the CY-AD8 could be a useful screening tool for early detection of individuals who may be at risk for dementia and could be used to gain a preliminary understanding of an individual's cognitive status. Still further investigation is needed to explore the psychometric properties of this tool in Greek. Future research should also incorporate self-report data to determine congruency of the scores between the two versions (self and informant versions) in Greek. The current study used data from healthy older adults with varied educational and social-demographic backgrounds. Although some participants had low scores on the MMSE, none of them had a formal diagnosis of MCI or dementia. Future studies should incorporate adults diagnosed with MCI and early stage dementia in order to validate the CY-AD8.

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