Detection of cognitive impairment using self-rated AD8 and informant-reported AD8

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KEYWORDS
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Abstract  Background/Purpose: Screening of dementia can help to initiate proper management of the disorder. The use of the Ascertain Dementia 8-item Questionnaire (AD8) in screening has been promoted in Taiwan recently. The purpose of this study was to compare the psychometric properties and appropriateness of informant-reported and self-rated AD8 in cognitive impairment screening in Taiwan.

Methods: The AD8 were administered to 153 participants and their informants recruited from two neurology out-patient clinics. The discriminative abilities for early cognitive impairment [Clinical Dementia Rating scale (CDR) 0.5 and 1] of informant-based and self-rating AD8 were determined and compared with their areas under the receiver operating curve. κ coefficients representing the agreement between self-rated and informant-reported AD8 scores were also calculated.

Results: Participants and their informants were aged 76.9 years and 56.0 years on average, respectively. Only informant-reported AD8 was significantly associated with CDR level (Spearman ρ = 0.469, p < 0.001) and Cognitive Abilities Screening Instrument score (Spearman ρ = -0.458, p < 0.001). The item-by-item agreements between self-rated and informant-reported AD8 were poor (κ coefficients: −0.030 to 0.206). The area under the receiver—operator characteristic curve was 0.59 for self-rated AD8 scores, and 0.77 for informant-reported AD8 scores, indicating that the discriminating ability of AD8 scores between CDR...
Introduction

The growth of dementia prevalence has been receiving increasing attention in Taiwan. According to a recent national survey, the prevalence of mild cognitive impairment and dementia in population aged 65 years and above was 16.04% and 4.97%, respectively, doubling every 5 years after age 70 years.1 Within the next 45 years, the older population is expected to triple, with the oldest old group growing the fastest,2 thus adding to the current challenge of dementia care.

Screening of cognitive impairment and dementia in high-risk populations is crucial to initiate proper management of the disorder, thus helping individuals to maintain their functions and quality of life, reducing the cost and financial burden.3,4 Several screening tools, such as Mini-Cog, Memory Impairment Screen, General Practitioner Assessment of Cognition have been suggested for the early detection of dementia.4 Unlike the above performance-based examinations, the Ascertain Dementia 8-item Questionnaire (AD8) is a short informant-based screening tool that can detect the intraindividual changes that may be early dementia symptoms.11 It is convenient to administer when a reliable informant is available to rate for the target client. However, if there is no informant around, the use of AD8 may be limited.8 Recently, the use of Chinese version of AD8 in screening had been promoted in Taiwan, both self-rated and informant-reported. However, it is obvious that administration modes might affect the results of screening.9 Several studies have showed inconsistent results concerning whether self-rated AD8 results were valid or not.9-10 There is a lack of evidence in our local population suggesting the preferred testing methods of AD8. Therefore, the purpose of this study was to compare the psychometric properties and appropriateness of informant-reported and self-rated AD8 in cognitive impairment screening in Taiwan.

Methods

Participants and data collection

Participants were recruited from two neurology out-patient clinics at a District Hospital (Cardinal Tien Hospital) located in the New Taipei City between July 2012 and June 2013. Patients with subjective or objective memory complaints and their informants were referred by the physician for data collection. Exclusion criteria were: (1) a diagnosis of psychological disorder other than dementia; and (2) inability of verbal communication.

During the recruiting period, 169 patients and their informants finished the AD8 questionnaires. A research assistant then collected the demographic data and results of medical examination, Clinical Dementia Rating scale (CDR) level and score of Cognitive Abilities Screening Instrument (CASI) assessed by a licensed clinical psychologist from the medical charts. Participants scoring zero in the CDR were considered to be cognitive intact, CDR 0.5 as mild cognitive impairment, and CDR 1 as mild dementia. Participants with CDR 2 and above were excluded from further analysis. If the participant was a first-visit patient, the medical data would be collected within the following 3 months as soon as they were available.

Instrument: the AD8

The AD8 was developed by the Alzheimer’s Disease Research Center of the Washington University in 2005. It is an 8-item informant-based questionnaire designed to detect the within-patient change in fields of memory, orientation, judgment, and function,11 which may be signs of early cognitive disorder. The number of items rated to be yes, there is a change is considered to be the score of AD8. The informant-rated AD8 has been identified to have good internal consistency (Cronbach $\alpha = 0.84-0.85$ for the English version12,13; Cronbach $\alpha = 0.78$ for the Chinese version14), interrater reliability (intraclass correlation coefficient $= 0.85$ for the English version13), and test–retest reliability (weighted $k = 0.67-0.80$ for the English version12,13; intraclass correlation coefficient $= 0.96$ for the Chinese version14). Also, the AD8 has been found to be moderately correlated with CDR ($r = 0.65-0.75$ for the English version11-13; $r = 0.82$ for the Chinese version14) and MMSE ($r = -0.64$ to $-0.39$ for the English version11,13; $r = -0.75$ for the Chinese version14). In this study, the Chinese version of the questionnaire was administered to both the participants and their informants by two trained raters separately with either Mandarin or Taiwanese.

Ethical considerations

The study was approved by the Ethical Committee of Cardinal Tien Hospital (CTH-101-3-5-008). Each participant provided written, informed consent.

Analysis

Descriptive statistics were used to report the demographic characteristics of the participants and their informants. Correlations of AD8 scores with CDR level and CASI score
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