

The Eight-item Informant Interview to Differentiate Aging and Dementia (AD8): A Brief Literature Review

Cho-Hsiang Yang, MD, Yi-Ting Lin, MD, Tzung-Jeng Hwang, MD, PhD

Department of Psychiatry, National Taiwan University Hospital, College of Medicine, National Taiwan University, Taipei, Taiwan

Key highlights:

- The AD8 is a brief instrument for dementia screening with varying cutoff values across different regions of the world.
- Factors that can affect AD8 performance include disease prevalence, geographical region, socioeconomic context, education level, understanding of questions, respondent personality, and conduct and flow of administration.
- A better strategy would be to screen at-risk populations for symptoms and signs of cognitive decline.

Dementia, also known as major neurocognitive disorder, causes distress and burden to affected individuals, their carers, and their communities throughout the course of the disease. This has become a global challenge because the prevalence of dementia nearly triples every decade among older adults and many countries are experiencing or anticipate aging and aged societies. Dementia treatment at an early stage may slow its progression, and hence a convenient screening instrument for early detection is required.

The 8-Item Informant Interview to Differentiate Aging and Dementia (AD8) has been developed, validated and translated into various languages. Numerous studies have used the AD8 to measure cognitive impairment, but the debate on whether this brief tool is useful during health examinations for older adults in the general population remains (Galvin et al., 2012, Wan et al., 2016, Wright et al., 2022).

Although the initial AD8 study and several following have suggested a cutoff value of 2 (Galvin et al., 2005), it has appeared that optimal cutoff values may differ across various geographical regions of the world. For example, a score of 3 and above was recommended for cases of dementia in Brazil (Correia et al., 2011), China (Wang et al., 2023), India, Iran (Pourshams et al., 2022), Japan (Meguro et al., 2015), Philippines (Dominguez et al., 2021), Singapore, South Korea (Ryu et al., 2009), and Thailand (Thaipisuttikul et al. 2022); while a score of 4 and above was recommended in Spain (Pardo et al., 2013), and 5 and above was recommended in Turkey. (Usarel et al., 2019) Correia et al. (2011) explained that education levels, socioeconomic context, and resonant understanding of questions might contribute to such differences.

The conduct and personality types of respondents may have an additional impact on the rating of AD8. Although the AD8 was initially designed as an informant-based interview, many studies evaluated its performance when used as a self-reported questionnaire. Buchanan et al. (2018) pointed out that neuroticism of informants is associated with higher ratings of severity of the cognitive decline of the subjects being evaluated. Others found that self-assessment of one's cognitive ability using the AD8 may be less accurate than that reported by informants, which may be related to level of insight and severity of dementia (Dong et al., 2013, Kelleher et al. 2016, Chio et al., 2018, Ryu et al., 2020, Denny et al., 2021).

Furthermore, the sequence of test administration may affect performance on the AD8. The initial study used the Clinical Dementia Rating (CDR) as a reference standard, with a general score of 0.5 regarded as diagnostic of very mild dementia. Many authors adopted similar strategies in defining dementia and the severity of dementia in their studies, but little was known about the flow of assessment procedures. Given the CDR evaluates cognitive function in a manner that is more refined than that of the AD8, the administration of the CDR before the use of AD8 may falsely improve accuracy on the AD8. For

instance, the Turkish study specified their flow of test administration as such, and their data generated a supreme, if not perfect, area under the receiver operating characteristic curve. (Usarel et al., 2019)

Participant selection and disease prevalence may alter performance as well. Theoretically, sensitivity and specificity are inherent to a test and unaffected by disease prevalence (Galvin et al., 2012), but the initial AD8 study stated that including participants with more severe dementia increased sensitivity. In addition, a major limitation of most AD8 studies was that the prevalence of dementia was higher in the sampled population compared to the general population (Christensen, 2012). Applying such a screening tool to the general population can lead to a low positive predictive value. Several studies pointed out that inadequate specificity or high false positive rates would jeopardize the utility of AD8. (Larner, 2015, Shaik et al., 2016, Tak et al., 2021) In 2020, the United States Preventive Services Task Force commissioned a review of the evidence on screening for cognitive impairment in community-dwelling adults. It concluded that the current evidence was insufficient to assess the balance of benefits and harms of screening for cognitive impairment in older adults who do not show recognized signs or symptoms of cognitive impairment.

Overall, the AD8 was developed as a brief screening tool for dementia with different cutoff values found in different countries. Many factors could affect its performance, including disease prevalence across clinical settings, geographical region, socioeconomic context, education level, understanding of questions, respondent personality, and conduct and flow of administration. It is reasonable, in general, to consider the targeted population, the psychometric properties of test, and the goal of such secondary prevention, before using a screening method like the AD8. For the best interest of persons living with dementia on the community level, in particular, appropriate strategies might be taken to maximize benefits. It would be better to target an at-risk population with symptoms or signs of cognitive impairment. By choosing appropriate populations for screening, we can minimize false positive results, refrain from causing anxiety, and avoid unnecessary medical examinations and expenses.

For further reading: [up to 6 references, hyperlinked when possible]

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3. Christensen KJ(2012) The impact of dementia prevalence on the utility of the AD8. *Brain* 2012: 135; 1–2: e 203.
4. Galvin JE and Morris JC (2012) Reply: The impact of dementia prevalence on the utility of the AD8. *Brain*. 2012 Jan; 135(1): e204.
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6. US Preventive Services Task Force (2020) Screening for Cognitive Impairment in Older Adults: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2020 Feb 25;323(8):757-763.

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Dr. Cho-Hsiang Yang is a clinical and research fellow at the Department of Psychiatry, National Taiwan University Hospital, Taipei, Taiwan. After his psychiatry board examination, he decided to deepen his

knowledge and skills in geriatric psychiatry. He is interested in the research of risk factors, early detection, and treatment of cognitive impairment.



Dr. Yi-Ting Lin is the deputy secretary general of the Taiwanese Society of Geriatric Psychiatry. He obtained his MD and MS degrees from the National Taiwan University. Upon completion of his residency training, he was offered to be an attending physician at the Department of Psychiatry. His current study involves the use of transcranial magnetic stimulation to investigate brain mechanisms of mental illness.