Featured Article

Patient perspectives of the experience of a computerized cognitive assessment in a clinical setting

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Abstract

Introduction: Computerized assessments are becoming widely accepted in the clinical setting and used as a potential outcome measure in clinical trials. To gain patient perspectives of this experience, the aim of the present study was to investigate patient attitudes and perceptions of the Cognigram [Cogstate], a computerized cognitive assessment.

Methods: Semi-structured interviews were conducted with 19 older adults undergoing a computerized cognitive assessment at the University of British Columbia Hospital Clinic for Alzheimer Disease and Related Disorders. Thematic analysis was applied to identify key themes and relationships within the data.

Results: The analysis resulted in three categories: attitudes toward computers in healthcare, the cognitive assessment process, and evaluation of the computerized assessment experience. The results show shared views on the need for balance between human and computer intervention, as well as room for improvement in test design and utility.

Discussion: Careful design and user-testing should be made a priority in the development of computerized assessment interfaces, as well as reevaluating the cognitive assessment process to minimize patient anxiety and discomfort. Future research should move toward continuous data capture within clinical trials and ensuring instruments of high reliability to reduce variance.

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Keywords: Cognitive assessment; Patient experience; Qualitative interviews; Alzheimer's disease; Dementia; Computerized assessment

1. Background

In response to the burden and rising costs associated with Alzheimer disease (AD), there is policy consensus for the public health benefit of early intervention. By the time AD is diagnosed, many patients have suffered significant neuronal injury that is believed to be irreversible. With no preventive or disease-modifying therapies available [1], early detection of cognitive decline is becoming increasingly critical in parallel with advances in therapeutics [2]. As a result, cognitive assessments are being used to assist with earlier diagnosis, evaluating treatments, and as a potential outcome measure in clinical trials [3,4].

Cognitive assessments are available in a range of settings, including at home and at the clinic [5]. Currently available methods of evaluation include the following: neuropsychological assessments conducted by a clinical neuropsychologist; pen-and-paper screening tools; and computerized versions of cognitive tests [2]. As technology advances, clinical trials are moving away from conventional methods and adopting validated computerized tests that can sensitively capture the cognitive changes in secondary prevention cohorts [4]. Computerized cognitive assessments can offer novel benefits over traditional tests, such as precisely recording accuracy and speed, minimizing floor and ceiling effects, and offering a standardized format unaffected by

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examiner bias—all characteristics critical in detecting AD-related cognitive change [2]. Furthermore, computerized cognitive assessments can be time and cost saving [2,6].

While computerized assessments are increasingly accepted, there remain several limitations to their utility. Computerized adaptations of existing tests may not have the same psychometric properties as their pencil-and-paper counterparts, and thus, require their own validation studies. In addition, few studies have found substantive evidence to support the equivalence between the experience of computer and noncomputer methods of test administration from the patient perspective [2,7]. Finally, computerized assessments raise issues related to the impersonal nature of testing, in particular at a time when end-users may feel vulnerable.

Compounding these considerations, many older adults face unique barriers in adopting technology compared with their younger counterparts [8]. Multiple studies have cited age-related sensory, motor, and cognitive declines as the most common physical obstacles faced by older adults when using computers [9,10]. These changes can limit the ability of older adults to perform computer-based tasks and thus have important implications for the design of computerized interfaces.

A growing body of research examines the broader social context, in which older adults interact with computer technology. Resistance to using computers is associated with the perception that computer use is discordant with social and cultural values, such as freedom and the need for social interaction [11]. Older adults who regularly use computer technology tend to be younger, highly educated, and financially affluent, suggesting that older adults' experiences and comfort with computer technology may also be colored by social, cultural, and economic factors [8,12]. Taken together, these findings related to physical and social barriers in using computer technology highlight the importance of considering the voices of end-users in the development and implementation of computerized assessments.

Despite the abundance of literature on aging and computer experience, little is known about how the intersection of these factors affects individuals in a clinical setting. This study addressed these gaps through a series of qualitative interviews with patients undergoing the Cognigram [Cogstate] test.

2. Methods

2.1. Setting and context

We conducted a qualitative study using semi-structured interviews to explore patient perspectives on the experience of a computerized cognitive assessment for AD. The study took place at the University of British Columbia Hospital Clinic for Alzheimer Disease and Related Disorders.

During the study period, University of British Columbia Hospital Clinic for Alzheimer Disease and Related Disorders clinicians were testing the use of a computerized cognitive assessment called the Cognigram [Cogstate], a computerized test battery designed to detect and monitor change in cognitive function over time (Fig. 1). Patients were asked to take the Cognigram test every 3 months until either their test scores dropped or they reached the top of the waitlist.

Patients scheduled to undergo their first cognitive assessment using the Cognigram were invited to participate in our study. Patients were considered eligible for participation if they met the following inclusion criteria: (1) were English-speaking, (2) held residency in British Columbia, (3) were taking the Cognigram test, (4) were available for two interview segments. Patients with advanced cognitive
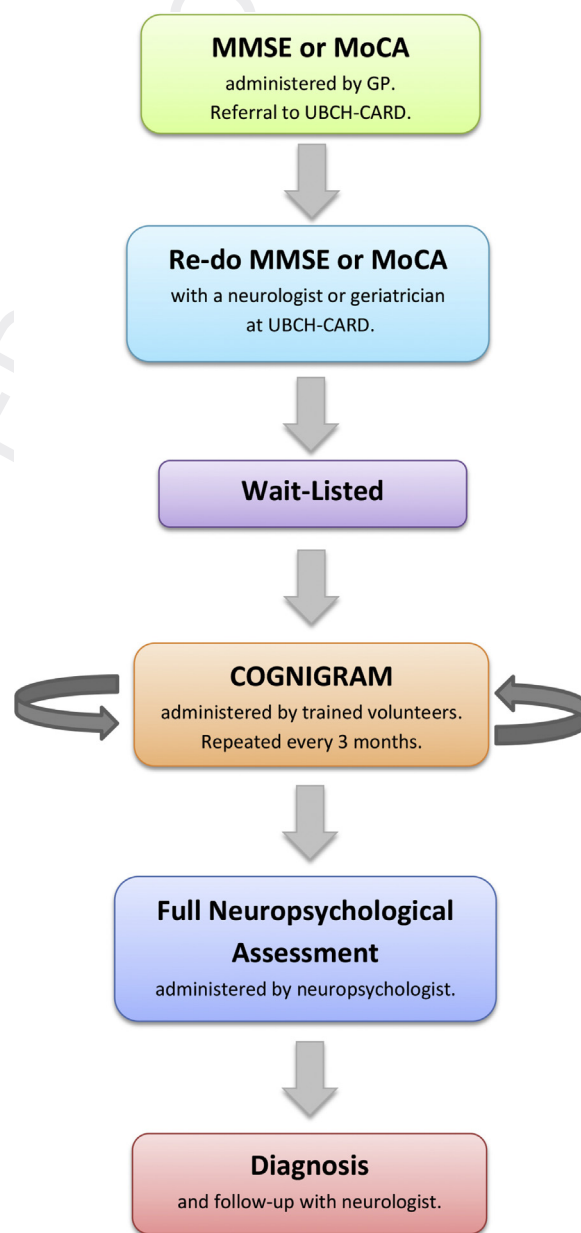

Fig. 1. Integration of the Cognigram test into the cognitive assessment and diagnostic process. Abbreviations: UBCH-CARD, University of British Columbia Hospital Clinic for Alzheimer Disease and Related Disorders; **Q5** MMSE, Mini–Mental State Examination.