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Short communication

The development and validation of a carer questionnaire to assess cognitive function in neuropsychiatric patients

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Abstract

Objectives: The carer history is an integral part of the assessment of patients with cognitive impairment. We aimed to develop a comprehensive yet concise carer questionnaire, the CogRisk, which captures actuarial risk variables for cognitive impairment in addition to key symptoms suggestive of cognitive decline in a number of cognitive domains, and to then assess its validity and reliability in a neuropsychiatric population. **Method:** Carers of patients assessed for cognitive impairment completed the CogRisk, and patients were clinically assessed using the Mini-Mental State Examination (MMSE) and Neuropsychiatry Unit COGnitive assessment tool (NUCOG). Reliability was assessed using test–retest and interrater measures and measures of internal consistency. Construct and concurrent validity was assessed using correlation between total and subscale scores on the CogRisk, total scores on the NUCOG and MMSE, and subscale scores on the NUCOG. Predictive validity was determined using measures of sensitivity and specificity and using receiver operating characteristic (ROC) methods. **Results:** The CogRisk was completed by all carers in less than 10 min. The total CogRisk score correlated significantly with total MMSE and NUCOG scores ($r=-0.511$ and -0.563, respectively) and remained highly significant when age and education were controlled for. Internal consistency of CogRisk items was high ($\alpha=0.943$). Intrarater reliability of the CogRisk was high with an intraclass correlation coefficient of .978 ($P<.001$), and interrater reliability between carers was also high at 0.868 ($P<.05$). Sensitivity and specificity for the detection of dementia were .70 and .73, respectively, with area under the ROC curve not significantly different from that of the MMSE or NUCOG. **Conclusion:** The CogRisk is a brief carer-rated tool of a patient's cognitive functioning developed for use within a neuropsychiatric setting. It exhibited good concurrent validity, internal consistency, and interrater and intrarater reliability. The CogRisk also demonstrated good sensitivity and specificity for dementia. The CogRisk provides carer information, which complements the clinical assessment and can be used to focus on direct carer interview.

Keywords: Cognitive; Informant; Neurocognitive; Dementia; Neuropsychiatric

Introduction

An important component of the neurocognitive assessment in psychiatry is the "cognitive history," which can be provided by both patient and carer. The veracity of a patient account of cognitive symptoms may be limited, due to communication or language difficulties following stroke, a lack of insight or awareness of deficits in dementia, or a lack of cooperation or capacity to attend to the interview process in major mental illness [1–3]. As a result, patients with significant cognitive impairment will often under-report their degree of symptomatology [4,5]. In this circumstance, clinicians will generally rely on a corroborative history, usually from carers who have a significant degree of ongoing contact with the patient, as carer accounts of cognitive impairment are strongly predictive of clinical diagnoses of dementia when multiple domains of cognitive function are enquired about [1,6,7]—although poorly

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predictive when history is confined to memory impairment alone [8]. Carers who have the closest relationship with patients—particularly spouses—provide the most predictive reports [9]. Furthermore, there are significant benefits to engaging carers in the assessment process, as when a patient has significant cognitive impairment; the focus of the "therapeutic alliance" generally shifts towards carers.

The need to streamline cognitive assessment in inpatient and outpatient settings has led to the development of standardized cognitive batteries tools such as the Mini-Mental State Examination (MMSE) [10], or dementia-specific assessments such as the Cambridge Mental Disorders of the Elderly Examination [2,11]. More recently, we developed the Neuropsychiatry Unit COGnitive assessment tool (NUCOG), a brief multidimensional cognitive screening instrument, which assesses cognitive function in the domains of attention, memory, visuospatial function, executive function, and language, and which addresses some of the weaknesses in other cognitive tools including ceiling effects and minimal spatial recall and executive function testing [12,13]. As in direct cognitive assessment, operationalizing the cognitive history ensures thoroughness, screening for more specific or intensive questioning, and allows for quantification of the overall likelihood of clinically significant cognitive impairment.

A range of tools involve carer reports regarding a patient's daily function and cognitive behaviour [2,6,14–22], but whilst in most tools carer reports of symptoms were found to correlate with measures of cognition, a number are disease-specific (particularly for dementia [2,6,21,23]), do not include relevant cognitive risk factors [6,14–22], or do not exhaustively cover all cognitive domains [15–19,22,23]. Additionally, it is becoming increasingly recognized that psychiatric illness often carries a significant cognitive burden, particularly in schizophrenia [24], bipolar disorder [25], and major depression [26]. To meet the needs of the inpatient population of our unit, which includes individuals with neurodegenerative disorders with significant psychiatric symptomatology or patients with major mental illness and comorbid medical or neurological illness, we constructed a new tool, the CogRisk, which we aimed to demonstrate and had the following characteristics: examined performance across all domains of cognitive functioning, included relevant actuarial variables (age, years of education) and medical historical items (history of cardiovascular risk factors, past neurological diagnosis, prior head injury, etc.), gave an indication of frequency of cognitive symptoms in separate domains, and was easy to complete by carers in less than 10 min.

Method

CogRisk structure

The CogRisk is a two-page questionnaire and was developed as a consensus instrument drawn from 3 decades of clinical experience in the authors' clinical neuropsychiatry unit by staff neuropsychiatrists, neurologists, neuropsychologists, occupational therapists, and neuropsychiatric nursing staff. The tool comprises questions relating to three demographic variables (age, education, functional dependence), 10 past medical history variables, and four-level ratings of severity for five current symptoms in each of the following five domains of cognition: attention, visuospatial function, memory, executive function, and language. Each of the first two spheres (demographic variables and past history) is rated out of 10, with the five symptom subscales rated out of 20 each. Maximum CogRisk score is 120 and minimum is zero; the test is designed such that the greater the "risk" of cognitive impairment, the higher the total CogRisk score.

Subjects

Carers of inpatients and outpatients from the Neuropsychiatry Unit of the Royal Melbourne Hospital were approached. Seventy-two carers (42 spouses, 13 parents, 7 children, 3 other family members, and 7 attendants/other carers) agreed to participate in the study. Of the 72 patients rated by their carers, 44 were inpatients and 28 were outpatients. Of these, 40 were male and 32 were female. Of the sample group, 21 patients had dementia (seven with Alzheimer's disease, five with frontotemporal dementia, and the remainder with a range of other cortical and subcortical dementias), 34 with psychiatric illness (15 with mood disorders, 11 with psychotic disorders, and 8 with other psychiatric disorders), 17 with neurological disorders (four Huntington's disease sufferers, three with Parkinson's disease, two with Tourette's syndrome, and the remaining eight with a range of neurological disorders).

Measures

All carers completed the CogRisk, with a subset completing an alternative form of the questionnaire (n=9). Additionally, a further subset had an additional CogRisk completed by a second carer (n=6). Patients were assessed cognitively using the NUCOG, a validated cognitive assessment tool also developed in the unit, and MMSE. Demographic data relevant to cognitive function (age and years of education) was also recorded. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* diagnosis was made by consensus by two neuropsychiatrists and one behavioural neurologist for inpatients and a neuropsychiatrist for outpatients. Diagnoses were classified into three broad groups: dementia, psychiatric disorders, and neurological disorders.

Analysis

Demographic data

The effect of age and education on CogRisk scores was determined using Spearman's correlation coefficient.