General Practitioner Cognitive Assessment Implementation

Contents

Introduction

Prevalence of dementia in the world is more than 24 million and this is projected to exceed 40 million in 2020 and 80 million in 2040 (1). Sri Lanka has an aging population such that the proportion of population over sixty is projected to reach 21% by 2025(2). Aging of the population brings to the fore a range of health problems including dementia. Burden of dementia is high on families and society (3, 4).

Early identification of dementia allows opportunity for early treatment to improve cognition, functioning and behavioral problems (5). Furthermore, the early identification of cognitive impairment can help families prepare for future, and allow clinicians to identify at risk patients for driving mishaps (6) or delirium (7). Primary care physicians or general practitioners (GPs) are the first health professional whom patients or families see if they are concerned about memory impairment (8). Nevertheless, the majority of patients with dementia remain undiagnosed in the primary care setting (9).

GPs complains about the lack of suitable screening instruments and the time they have to spend to assess cognitive functions (8). General Practitioner Cognitive Assessment instrument (GPCOG) (10) (Annexure -1) has been developed as a tool designed specifically to be used in primary care that has the characteristics of being efficient,

quick and psychometric properties which are at least similar to the Mini-mental State Examination (MMSE) (11). Unlike most other screening tools GPCOG combines cognitive testing with an informant interview. It takes only four minutes to administer, use can be easily learnt, does not requires specific forms or equipment, and its diagnostic accuracy is equivalent to or better than the MMSE (12). GPCOG has been translated successfully into a number of different languages (13).

GPCOG has been developed from three main sources: Cambridge Cognitive Examination (CAMCOG) (14), Psychogeriatric Assessment Scale (15) and Instrumental Activities of Daily Living Scale (16).

GPCOG has a cognitive assessment section, which is based on 9 items assessing cognitive functions (score range = 0–9). Its informant interview section covers six functional items. These items are clinically relevant and they are related to essential activities of daily living (score range = 0–6). A Higher score indicates better functioning on both the subscales. These subscales have been developed to facilitate a two-step test procedure which maximizes efficiency for the use in a busy general practice. In step one, the cognition is assessed. A score of nine out of nine indicates intact cognition. A score of less than five out of nine indicates impaired cognition. In both the above situations, the accuracy of the diagnosis is about 90% which makes the step two (informant interview) unnecessary (10). However, in the case of intermediate scores (five to eight out of nine), one should proceed to step two (informant interview) to clarify if there is a significant functional impairment. If the informant interview reveals that there has not been a decline in 4 or more out of the 6 questions, the subject is considered to be cognitively well, although a repeat test in 6 months' time is advocated. In the case that the informant affirms lack of decline only in 3 or fewer items, cognitive impairment can be diagnosed (10).

Justification

Validity of an instrument is the degree to which it measures what it is thought to measure. This indicates the extent to which experiential evidence and theoretical rationale support sufficiency and suitability of inferences and actions taken based on the test scores or other methods of evaluation (17). Reliability denotes the overall consistency of the test (18).

Although there are a number of cognitive assessment instruments their use is limited by the unavailability of validation and cultural adaptation to the Sri Lankan setting (19). Only the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) (20), MMSE (21), the Montreal Cognitive Assessment (MoCA) (22), Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE)(23), and Clinical Dementia Rating (CDR)(23) scales have been validated / culturally adapted to the Sri Lankan

population. All these tests have deficiencies when used in routine clinical practice. MMSE is not sensitive or reliable enough for the identification of mild cognitive impairment. Furthermore, factors such as level of education influence the MMSE score compromising the accuracy of diagnosis (24). Although the MoCA is sensitive to mild cognitive impairment it takes a longer time to administer. Both the MMSE and MoCA do not include an informant interview which is often used by clinicians to diagnose dementia. On the other hand, IQCODE solely depend on the informant provided information and there is no assessment of cognition. CDR takes a long time to administer. All of the above-mentioned scales (MMSE, MoCA, RBANS, IQCODE, CDR) lack the brevity of the GPCOG which precludes their use in the busy primary care setting.

GPCOG has been recommended as one of the finest dementia screening tools for GPs to use due to its sound psychometric properties, fast administration time, ease of use, and high level of acceptance by the GPs and their patients (12). A further review has shown that the GPCOG is a time saving and a high-quality tool for primary care, which is free from many biases common to other screening tools (25). Despite these advantages that the GPCOG offers, it has not been used in Sri Lanka so far. Translation of GPCOG to Sinhala language and Validation to the Sri Lankan setting will be useful in this context and its use in the busy primary care setting is expected to identify cases which may not be detected otherwise.

Objectives

1. To translate the GPCOG to Sinhala language and to culturally adapt the GPCOG to the Sri Lankan setting.
2. To investigate the reliability and validity of the GPCOG in detecting dementia in a Sinhalese speaking population in Sri Lanka

Methodology

- **The study samples**

Sample size was calculated in order to detect a target sensitivity of 85%, specificity of 85%. The sample will consist of fifty patients with dementia and fifty normal people aged 55 years or more.

- **Study setting**

Colombo South Teaching Hospital, National Hospital of Sri Lanka, and Base Hospital Panadura.

- **Inclusion criteria**

Control group

Females and males aged 55 years or more, without dementia according to criteria specified in DSM-5 (a detailed clinical interview will be used to assess for the presence or absence of dementia)

Patient group

Females and males aged 55 years or more, diagnosed with Alzheimer's Dementia (AD) according to criteria specified in DSM-5 (a detailed clinical interview will be used to assess for the presence or absence of dementia)

- **Exclusion criteria**

People with learning disability, hearing impairment, or visual impairment will be excluded, because these deficits compromise the person's ability to do the test. Those with a history of stroke, head trauma, psychotic illness or depression will be excluded. Patients who are disoriented will also be excluded. People with complaints of memory or other cognitive impairment will be excluded from the control group.

- **Translation of the GPCOG**

A qualitative and quantitative approach will be used for translation and cultural adaptation of GPCOG (26). The GPCOG will be translated to Sinhala by a bilingual expert. Then it will be back translated in to English by another bilingual expert who is unfamiliar with the original GPCOG. Then it will be compared with the original GPCOG scale. Opinion of an expert panel is to be obtained with regard to cultural adaptation of the GPCOG. (26)

- **Establishing Judgmental Validity (content, semantic, conceptual and consensual validation)**

Judgmental Validity will be determined using the Delphi Method (27). The translated scale will be subjected to a review by a group of experts to determine the content, semantic, conceptual and consensual validity.

- **Gold Standard Diagnosis**

The gold standard for the diagnosis of Dementia of Alzheimer's type will be the clinical diagnosis by the consultant Psychiatrist according to the DSM 5 criteria, against which the diagnosis made with GPCOG-S will be assessed.

Procedure and Data Collection

Subjects to the Patients group i.e., patients with dementia, are to be recruited from the Psychiatry wards and outpatient clinics of the Colombo South Teaching Hospital, National Hospital of Sri Lanka, and Base Hospital Panadura. Dementia of Alzheimer's type (AD) will be diagnosed according to criteria specified in DSM-5 after a clinical assessment by a Consultant Psychiatrist or the researcher.

Subjects in the control group will undergo a detailed clinical assessment to exclude dementia.

The Sinhala version of the MMSE (Annexure 2) and GPCOG Sinhala version (GPCOG-S) will be administered to all participants of the study.

A qualified medical doctor trained in administering of GPCOG-S and MMSE, who is blinded to the clinical diagnosis, will administer the instruments.

All patients diagnosed with dementia will undergo biochemical screening (Complete blood count, blood picture, thyroid profile, VDRL, Erythrocyte sedimentation rate) and neuro-imaging tests (MRI or CT scan) to exclude other possible causes of cognitive impairment and dementia if they have not been already screened with these investigations.

Data Processing and analysis

- **Reliability**

Reliability is to be measured using internal consistency as well as inter item correlation. Cronbach's alpha of test scores will be used to measure internal consistency.

- **Calculation of concurrent validity**

Pearson correlation coefficients between the GPCOG-S scores and MMSE scores will be used to assess concurrent validity.

- **Calculation of criterion validity**

Receiver operating characteristic (ROC) analysis will be used to assess criterion validity.

- **Pre testing**

The translated GPGOG-S will be pre tested in 10 people in the community.

- **Statistical analysis**

Statistical analysis will be done using SPSS statistical software package.

Ethical Aspects

- **Informed consent**

All subjects and their primary caregiver are to be informed of the objectives and methods of this study (verbally as well as using a written information sheet – Annexure-3), and their informed written consent (consent form – annexure – 4) is to be obtained.

- **Benefits to subjects**

All the subjects who are identified as having cognitive impairment will be offered all the components of dementia care at the Psychiatry Units of Colombo South Teaching Hospital, National Hospital of Sri Lanka or Base Hospital Panadura.

- **Risks to subjects**

There are no risks involved.

- **Permission to translate and validate the GPCOG**

GPCOG is copyrighted and I have obtained written permission from the original author (annexure -4) to use, translate and validate the GPCOG

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