Diagnostic Assessment & Prognosis

Validation of geriatric depression and anxiety rating scales into Arabic

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Abstract

Introduction: This study aimed to examine the validity and internal consistency of Arabic version of the Cornell Scale for Depression in Dementia (A-CSDD) and compare it to the Geriatric Depression and Hospital Anxiety and Depression Scales.

Methods: Hundred fifty individuals were recruited; they underwent a clinical interview and filled the A-CSDD, Geriatric Depression Scale, and Hospital Anxiety and Depression Scale. The depression rating scales were validated against the Structured Clinical Interview for Diagnostic and Statistical Manual disorders.

Results: A-CSDD found to have sensitivity of 70%, specificity of 91%, and internal consistency of 0.89. The presence of depression was significantly associated with dementia. The associations of the A-CSDD with Arabic Geriatric Depression Scale (r: 0.3) and Arabic Hospital Anxiety and Depression Scale (r: 0.4) were lower in the demented group than in the nondemented group (r: 0.7 and 0.8, respectively).

Conclusion: The diagnosis of depression in the context of dementia may be challenging. With this validated version, clinicians now have a tool helping them with the diagnosis.

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Keywords: Arabic; Dementia; Depression; Scales; CSDD; Validation

1. Introduction

The number of people living with dementia in the Middle East and North Africa region was estimated at 1.2 million in 2010, and it is expected to grow exponentially [1]. The projected proportionate increase of dementia numbers from 2010 to 2050 was the highest for the Middle East and North Africa region and is estimated to reach 438%, which means by 2050, the projected number of people suffering from dementia will be approximately 6.2 million [1]. One of the most frequent psychiatric disturbances associated with dementia is depression [2,3]. In fact, depression was reported in a recent meta-analysis to affect as many as 42% of dementia patients and up to 48% in patients with severe Alzheimer’s disease [4]. In vascular dementia, the rate of depression may even be higher. The relationship between the two most common disorders of the elderly (depression and dementia) is complex; depression has been reported to be both a risk factor for dementia [5] and frequently a prodromal phase of dementia [6].

Diagnosing depression in patients with dementia can be challenging due to the overlap of symptoms between the two conditions, but it is extremely important for adequate
patient management. Self-rated and informant-rated scales are both available for measuring depression in patients suffering from dementia. However, the accuracy of the standard self-rating questionnaires can be influenced by the increasing cognitive impairment and, therefore, not useful in the later stages of dementia; on the other hand, the accuracy of the informant-based reports may be influenced by the caregiver’s mood and perceived burden [7]. For those reasons, a combination of patient interview and caregiver report is probably the most accurate method to measure depression in people with dementia, as in the Cornell Scale for Depression in Dementia (CSDD) [8]. The CSDD is a 19-item instrument specifically developed to assess signs and symptoms of major depression in patients suffering from dementia [8]. Because some of the patients with dementia may give unreliable reports, the CSDD uses a comprehensive interviewing approach that derives information from the patient and the informant.

The Geriatric Depression Scale (GDS) is one of the most commonly used self-rating scales of depression among older individuals. It was originally intended for the screening of depression in the nondemented elderly [9]. The original consists of 30 items; however, shorter versions of the GDS have been developed, and the 15-item version is the most commonly used version [10]. It is worth to note that the validity of the GDS-15 has been shown to decrease when administered to cognitively impaired elderly [11]. Although the 15-item GDS was validated in Arabic [12], it was validated in community-dwelling older adults and primary care patients only, and not in psychiatry clinics or inpatient units. The Hospital Anxiety and Depression Scale (HADS) is another reliable instrument for detecting states of depression and anxiety in elderly [13]. It was originally aimed at hospital patients but has been used much more widely in the recent years and been validated in different settings including general practice and community settings. It also has been validated for use in adolescents [14]. Though it is accurate and easy to administer, it has little practical use for dementia patients with significant cognitive impairment.

Even though some authors translated the GDS and HADS into Arabic, their validation was limited in terms of population, as both instruments have not been validated in psychiatry clinics or inpatient units [12,15]. Furthermore, to the best of our knowledge, there has been no validation study of the Cornell scale conducted on any Arabic population with or without dementia. Therefore, our primary objective is to translate into Arabic and validate the Arabic version of CSDD as well as GDS and HADS in three different populations of patients namely outpatient clinics, inpatient units, and nursing home residents. Our secondary objective is to evaluate the association between dementia and psychiatric disturbances.

These scales are validated here against the Structured Clinical Interview for Diagnostic and Statistical Manual disorders (SCID), the gold standard for making psychiatric diagnosis in clinical trials [16].

2. Methods

2.1. Participants selection

Hundred fifty participants were recruited for this study; 75 individuals suffering from dementia and 75 matched controls. Participants were recruited from outpatient psychiatry clinics, inpatient psychiatry and geriatric units, as well as nursing home residents. Participants were randomly selected. Controls were matched according to sex, age (± 3 years), and educational background. From the 150 participants, 132 were included in the final analysis; 75 individuals suffering from dementia and 57 dementia-free controls (18 controls were not included due to incomplete data). Every individual enrolled was interviewed by a clinical psychologist (J.C.D.) or a psychiatrist (N.S.S.). Several scales were administered [17] including the GDS and HADS to all participants. Dementia-free participants were administered the SCID. The SCID, considered the gold standard for making psychiatric diagnosis in clinical trials, was used for complete diagnostic evaluation of major depression and/or anxiety in nondemented participants. Every individual was reevaluated by a blinded geriatric psychiatrist (G.E.K.) to establish a clinical diagnosis and control the quality of the interviews. Family members of all participants were also interviewed, which helped in further establishing the clinical diagnosis of dementia, depression, and anxiety.

2.2. Translation

A bilingual professional translator translated the three scales into Arabic, which were reviewed afterward by four psychiatrists and three psychologists. Subsequently, the scales were translated back into English. The forward and backward translation continued until the back-translated versions were comparable with the original English. Any conflicts in the translation process were resolved through consensus from expert panel discussions.

2.3. Ethics

The study was approved by the Institutional Review Board of the Balamand University/St. George Hospital University Medical Center which is registered and certified in the United States of America. Both the participants and their caregivers were consented before participating in the study.

2.4. Statistical analysis

Data analyses were performed using STATA version 11.1. All statistical tests were two tailed, and P values less than .05 were considered statistically significant. The correlations between the scales were computed using Pearson’s correlation, and their internal consistency (reliabilities) was computed using Cronbach’s alpha statistics. The scales for depression and anxiety were compared to the gold standard interview for criterion validation in the nondemented sample; accordingly, a receiver operating curve (ROC) was
derived for each scale, and the area under the curve was used to find the best cutoff points of the translated scales.

3. Results

3.1. Descriptive

The age of the final 132 participants in this study ranged from 63 to 101 (mean: 81.9 years), and their Mini Mental State Examination scores ranged from 1 to 30 (mean: 20.2). The diagnosis of dementia was established based on the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer’s Disease and Related Disorders Association diagnostic criteria. The SCID (gold standard in this study) was administered to the dementia-free participants, and the results were as follows: (1) 10 were diagnosed with major depression, (2) 13 with anxiety, and (3) the rest were free of depression and/or anxiety. There were no statistically significant associations between the demographic variables and the diagnosis of dementia (Table 1).

3.2. Scales’ validation in the nondemented population

The internal consistency reliability for the Arabic CSDD (A-CSDD) was high and found to be 0.89. According to the A-CSDD, 24% of the nondemented patients had depression for the original cutoff value of ≥12 and 19% for the cutoff value of ≥13. In this study, the ≥13 cutoff gave the best balance between sensitivity (70%) and specificity (91%), with an area under the ROC curve of 0.80, indicating the good ability of the A-CSDD in discriminating cases with and without depression in this nondemented population. The percent agreement between the SCID and A-CSDD was 88% (κ: 0.6; P value < .001).

The Arabic GDS (A-GDS) demonstrated better discriminating abilities than the A-CSDD, with an area under the ROC curve equal to 0.90. The A-GDS yielded was best balanced between sensitivity (80%) and specificity (87%) at the cutoff ≥ 7. The original GDS cutoff point of ≥6 demonstrated higher sensitivity (90%) but decreased specificity (76%). The internal consistency for the A-GDS was found to be 0.84.

For the Arabic HADS (A-HADS), the optimal cutoff points were calculated ≥6 for both depression and anxiety subscales. The depression subscale demonstrated a sensitivity of 90% and specificity of 70%. As for anxiety, the sensitivity was 85% and specificity 83%. The area under the ROC curve is 0.84 for the depression subscale and 0.92 for the anxiety subscale, indicating the excellent ability of the A-HADS to discriminate between cases with and without both depression and anxiety in this population of nondemented elderly.

3.3. Associations between dementia and psychiatric disturbances

The presence of depression was significantly associated with dementia; not only demented individuals showed higher scores of A-CSDD than others (P value: .022), the mean scores of all translated depression scales increased with increasing dementia severity, and this was statistically significant (Table 2). Anxiety on the other hand was not significantly associated with dementia (P value: .861).

3.4. Scales’ correlation in the demented and nondemented populations

Pearson correlation coefficient was computed to assess the relationship between the different scales in the overall sample (n = 132); a strong and highly statistically significant correlation was found between the A-GDS and A-HADS (r: 0.8; P value < .001), and a moderate correlation was found between A-GDS and A-CSDD (r: 0.5; P value < .001) (Table 3).

The magnitude of the correlations was however different between the two groups (demented and control groups), with

| Characteristics          | No major depression | With major depression | Total | P value |
|--------------------------|---------------------|-----------------------|-------|---------|
| Number                   | 46                  | 10                    | 56    | .76     |
| Age                      | 81.6 (±7.5)         | 79.9 (±8.8)           | 81.3 (±7.7) | .76 |
| Gender                   | Male                | Female                |       |         |
|                          | 15 (32.6%)          | 31 (67.4%)            |       |         |
|                          | 4 (40.0%)           | 6 (60.0%)             |       |         |
|                          | 19 (34.0%)          | 37 (66.1%)            |       |         |
| Marital status           |                     |                       |       |         |
| Married                  | 17 (37.8%)          | 25 (55.6%)            |       | .861    |
|                          | 3 (44.4%)           | 5 (55.6%)             |       |         |
|                          | 21 (38.9%)          | 30 (55.5%)            |       |         |
| Single                   | 3 (6.7%)            | 5 (55.6%)             |       | .861    |
|                          | 0 (0.0%)            | 3 (5.5%)              |       |         |
| Widowed/divorced         | 6 (13.0%)           | 5 (55.6%)             |       | .861    |
|                          | 1 (10.0%)           | 3 (5.5%)              |       |         |
|                          | 7 (12.5%)           | 30 (55.5%)            |       |         |
| Education level          |                     |                       |       |         |
| Illiterate               | 6 (13.0%)           | 1 (10.0%)             | 7 (12.5%) | .89 |
|                          | 1 (10.0%)           | 1 (10.0%)             | 2 (20.0%) | .861 |
| 6 years or less          | 2 (20.0%)           | 1 (10.0%)             | 7 (12.5%) | .861 |
|                          | 2 (20.0%)           | 1 (10.0%)             | 7 (12.5%) | .861 |
| 7–10 years               | 6 (13.0%)           | 6 (13.0%)             |       | .861    |
|                          | 2 (20.0%)           | 2 (20.0%)             |       | .861    |
| 11–13 years              | 6 (13.0%)           | 6 (13.0%)             |       | .861    |
|                          | 1 (10.0%)           | 1 (10.0%)             |       | .861    |
| University graduate      | 6 (13.0%)           | 6 (13.0%)             |       | .861    |
|                          | 0 (0.0%)            | 6 (10.7%)             |       | .861    |
| Working status           |                     |                       |       |         |
| Working                 | 5 (11.4%)           | 5 (11.4%)             | 10 (17.9%) | .70 |
|                         | 2 (20.0%)           | 2 (20.0%)             |       | .70     |
| Retired                 | 24 (45.6%)          | 24 (45.6%)            |       | .70     |
|                         | 4 (40.0%)           | 4 (40.0%)             |       | .70     |
| Never worked            | 15 (34.1%)          | 15 (34.1%)            |       | .70     |
|                         | 4 (40.0%)           | 4 (40.0%)             |       | .70     |
| Interview setting        |                     |                       |       |         |
| Outpatients             | 24 (52.2%)          | 24 (52.2%)            |       | .70     |
|                         | 5 (50.0%)           | 5 (50.0%)             |       | .70     |
| Inpatients              | 14 (30.4%)          | 14 (30.4%)            |       | .70     |
|                         | 3 (30.0%)           | 3 (30.0%)             |       | .70     |
| Nursing homes           | 8 (17.4%)           | 8 (17.4%)             |       | .70     |
|                         | 2 (20.0%)           | 2 (20.0%)             |       | .70     |

Table 1
Demographic characteristics for nondemented participants by the presence of depression

| Scales            | Questionable CDR 0.5 | Mild CDR 1 | Moderate CDR 2 | Severe CDR 3 | P value |
|-------------------|----------------------|------------|----------------|--------------|---------|
| A-CSDD            | 5.6                   | 10.4       | 10.6           | 11.3         | .001    |
| A-GDS             | 5.5                   | 6.2        | 5.8            | 8.1          | .001    |
| A-HADS/depression | 5.5                   | 6.6        | 6.2            | 9.9          | <.001   |
| A-HADS/anxiety    | 4.0                   | 4.8        | 4.5            | 5.1          | .861    |

Table 2
Mean average of translated scales across different dementia severity groups according to clinical dementia rating scales

Abbreviations: A-CSDD, Arabic Cornell Scale for Depression in Dementia; A-GDS, Arabic Geriatric Depression Scale; A-HADS, Arabic Hospital Anxiety and Depression Scale; CDR, Clinical Dementia Rating.
higher correlations found in the control group (Table 3). The associations of the A-CSDD with either A-GDS or A-HADS were significantly lower in the demented group (r: 0.3 and 0.4, respectively) than in the non-demented group (r: 0.7 and 0.8, respectively). However, strong correlations of the A-GDS and A-HADS were found in both the study groups (Table 3).

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RESEARCH IN CONTEXT

1. Systematic review: Currently no validated scales in Arabic exist for the accurate diagnosis and management of depression and anxiety among the elderly population. This study aimed to examine the validity and internal consistency of Arabic version of the Cornell Scale for Depression in Dementia (A-CSDD), and compare it to the Geriatric Depression (GDS) and Hospital Anxiety and Depression Scales (HADS).

2. Interpretation: A-CSDD found to have sensitivity of 70%, specificity of 91%, and internal consistency of 0.89. The presence of depression was significantly associated with dementia. The associations of the A-CSDD with A-GDS (r 0.3) and A-HADS (r 0.4) were lower in the demented group compared to the non-demented group (r 0.7 and 0.8 respectively).

3. Future directions: The translated version of these scales is now validates and can be used by Arabic speaking clinicians to diagnose depression and anxiety among the elderly.
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