Validity and reliability of the depression in old age scale (DIA-S) in Iranian older adults

Vahid Rashedi[a,*], Mohammad Rezaei[b], Mahshid Foroughan[a,c], Ahmad Delbari[a,c]

[a] Iranian Research Center on Aging, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[b] Faculty of Rehabilitation Sciences, Hamadan University of Medical Sciences & Health Services, Hamadan, Iran
[c] Department of Neurobiology, Care Sciences and Society, Division of Clinical Geriatrics, Karolinska Institute, Stockholm, Sweden

ARTICLE INFO

ABSTRACT

Objective: One of the most common geriatric psychiatric syndromes is depression. The aim of this study was to assess the validity and reliability of the Depression in Old Age Scale (DIA-S) as a self-report screening tool for depressive symptoms in Iranian elders.
Methods: The population sample was consisted of 210 older subjects admitted to Hamadan adult day care centers. The DIA-S and a socio-demographic questionnaire were used to gather the data. Concurrent and convergent validity were assessed by Geriatric Depression Scale (GDS-15), and Abbreviated Mental Test score (AMTs), respectively. Measures for internal consistency were calculated with Cronbach's alpha. Factor structure of DIA-S was evaluated by principal component analysis, using varimax rotation with Kaiser normalization. Test-retest reliability was carried out using re-administration DIA-S to 24 participants after a gap of 16 days. Independent *t*-test and ANOVA were used to assessing significance of differences across demographic groups.
Results: The mean score of DIA-S was 3.69 (SD: 1.92, Range: 1–9). The Cronbach's α for DIA-S score was 0.821, indicating a high degree of internal consistency and homogeneity between the DIA-S items. Test-retest correlation on the 24 patients showed excellent results (ranging from 0.748 to 0.946). Factor analysis revealed one component that confirmed the theoretical construction of the scale. Based on the results, statistically significantly higher DIA-S scores with lower incomes were found.
Conclusions: The DIA-S is a valid and reliable self-report screening tool for depressive symptoms in Iranian geriatric population and may be used in clinical and epidemiological studies.

© 2016 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Late life depression is one of the most prevalent psychiatric disorders in old age (Blazer, 2003) and is associated with increased morbidity, mortality, medical illness, impaired daily functioning, reduced quality of life and dementia (Murray & Lopez, 1997). The empirical literature on major depression suggests that it is an important mental health problem in late life, with prevalence estimates range between 1 and 3% in the community and 6–9% in primary care settings (Hall & Reynolds-Iii, 2014). There have been several studies reporting Iranian older adults suffer from depressive symptoms in a range of 33–62% (Ghaderi et al., 2012; Gharanjik et al., 2011; Manzouri, Babak, & Merasi, 2010; Rashedi &

Khedmati Morasae, 2014; Sharif, Mansouri, Jahanbin, & Zare, 2010).

Depression is the leading cause of disability measured by Years Lived with Disability and the 4th leading contributor to the global burden of disease estimated by Disability Adjusted Life Years (Montorio & Izal, 1996; Unützer et al., 2000).

Over the last five decades, life expectancy at birth increased globally by almost 20 years, from 46.5 years in 1950–1955 to 66.0 years in 2000–2005 (United Nations, 2015). Compared to the Western societies, Iran has a younger population, but the phenomenon of population aging has begun in Iran since a few decades ago (Rashedi, Gharib, & Yazdani, 2014). In recent years the elderly population growth in the country has been rapid and it has increased from 7.2% to 8.2% within last 5 years (Statistical Center of Iran, 2015).

Diagnosing depression in the elderly is a difficult matter. The changes related to normal aging process and various diseases, on one hand, and intergenerational differences, on the other, may cover the nuclear symptoms of depression like depressed mood

* Corresponding author at: Iranian Research Center on Aging, University of Social Welfare and Rehabilitation Sciences, Koodakyar Ave Student Blvd Evin, Tehran, Iran.
E-mail address: vahidrashedi@yahoo.com (V. Rashedi).

(Albiński, Kleszczewska-Albińska, & Bedyńska, 2010; Fisher, Seow, Brazil, Smith, & Guthrie, 2015); and, this may lead to under-diagnosis and hence, under-treatment of depression in older adults. Thus active screening of depression is warranted and recommended (Nyunt, Fones, Niti, & Ng, 2009).

Over the last decades, a plethora of health surveys has aimed to assess the subjective impact of depression by use of some developed relevant measures. Geriatric Depression Scale (GDS-15) (Yesavage et al., 1983) was developed and used as a basic screening measure for depression in older adults. Some of the most well-established instruments that have been shown to be valid and reliable in older adults include: Center for Epidemiological Studies Depression Scale (CES-D) (Irwin, Artin, & Oxman, 1999), Beck Depression Inventory (BDI) (Olin, Schneider, Eaton, Zemansky, & Pollock, 1992), Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983), Montgomery and Asberg Depression Rating Scale (MADRS) (Montgomery & Asberg, 1979), Major Depression Inventory (MDI) (Bech, Rasmussen, Olsen, Noerholm, & Abildgaard, 2001), Zung Self-Rating Depression Scale (SDS) (Zung, 1965), and Hamilton Rating Scale for Depression (HAM-D) (Hamilton, 1960).

Depression in Old Age Scale (DIA-S), developed and validated in Germany, also has been found to be a proper screening tool for geriatric depression among older adults referring to geriatric inpatient settings (Heidenblut & Zank, 2014). It is a short, simple and self-report instrument with potential applicability in clinical and research settings. So, we tried to assess its appropriateness for detecting depressive symptoms in older Iranian adults.

Before introducing an index such as DIA-S into another population with a different culture, it is essential, however, to carry out a rigorous and punctilious process of translation and validation. In this research the main questions were: (a) How well does the original one-factor model of the DIA-S scale fit to the observed data in our sample? (b) Does the DIA-S scale reveal good reliability and validity in Iranian older population? To the best of the authors' knowledge, this study is a novel work in investigating reliability and validity of the DIA-S in Iranian older adults.

2. Material and methods

2.1. Design and participants

This is a cross sectional descriptive-analytic study. Our sample included 210 elderly subjects (60 years and above) who were recruited from the individuals admitted to Hamadan adult day care centers (3 centers) between March and May, 2014. The census method (complete enumeration) was used to select the sample. The participants were first informed in detail about the study, and then a written informed consent was obtained from all the participants. Inclusion criteria for the participants included age being ≥60, ability to communicate in Persian and orientation to time and place.

2.2. Questionnaire

The DIA-S has been designed as a self-report screening tool for use in clinical practice (Heidenblut & Zank, 2010). It is based on the diagnostic criteria for depressive disorders described in the International Classification of Diseases (ICD) (World Health Organization, 2004). The DIA-S was constructed to be brief and easy to apply and interpret, with items that were meant to be context free, so the instrument could be used in different healthcare settings as well. The scale includes ten short statements about depression which have to be answered as true or false with a simple yes/no answer format (Heidenblut & Zank, 2014). DIA-S showed a considerably higher discriminatory power in terms of

internal consistency and test specificity compared to the GDS-15 (Heidenblut & Zank, 2010).

We used the preliminary cut-off score of DIA-S, showing the sensitivity of 82% and the specificity of 79% (Heidenblut & Zank, 2010), for determining probable depressive symptoms in our sample.

In addition to the 10 item DIA-S, a questionnaire including socio-demographic characteristics such as age, gender, marital status, education level, having insurance, language, and income was also filled out by the subjects.

2.3. Translation

Following the World Health Organization (WHO) process of translation and adaptation of instruments (World Health Organization, 2010), the linguistic translation of the English version of DIA-S into the Persian involved several stages: 1. Forward translation (two gerontologists and a psychiatrist who were fluent in both Persian and English); 2. Holding an expert panel; 3. Back-translation (two different accredited and independent translators); 4. Pre-testing and cognitive interviewing; and 5. Final version. Appropriate changes were introduced to develop a questionnaire that is semantically and conceptually equivalent to the English version.

2.4. Statistical analysis

Data obtained from the questionnaires was initially analyzed using descriptive statistics. The analysis of the study was carried out using SPSS 20.0 (IBM Inc., Chicago, IL). The distribution of data was normal. Independent *t*-test, ANOVA and correlation analyses were used to assess the association between variables. The Cronbach's α was used to measure the degree of internal consistency and homogeneity between the items. Internal consistency is typically a measure based on the correlations between different items of the same test (Knapp, 1991).

GDS as a valid and reliable tool (Yesavage et al., 1983) was used to assess concurrent validity. Concurrent validity is demonstrated

Table 1
Characteristics of the study sample (N = 210).

Variables	N	%
Gender		
Male	51	24.3
Female	159	75.5
Marital status		
Married	120	57.1
Unmarried	90	42.9
Education level		
No formal education	123	58.6
Primary	63	30
Secondary	21	10
Academic	3	1.4
Insurance coverage		
Yes	132	62.9
No	78	37.1
Language		
Unilingual	162	77.1
Bilingual	48	22.9
Income[a]		
<4000000	84	40
4,000,000–8,000,000	78	37.1
>800,0000	48	22.9

[a] Iranian Rial.