Assessing the Validity and Reliability of Rowland's Universal Dementia Assessment Scale (RUDAS) in Patients with Dementia

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Article information	Abstract
	Background: The present study aims to investigate the validity and reliability of universal dementia assessment scale in patients with dementia. ***Materials and Methods***: This study, 78 patients with dementia were diagnosed, in that the study tools were applied and collected and then analyzed using SPSS software over these patients. ***Results***: The validity and reliability of the scale was calculated. Also, the appropriate alpha (78%) of this questionnaire indicates the acceptable reliability among Iranian elderly clinical population. ***Conclusion***: Given its characteristics, the universal scale of dementia analysis can be a useful tool for screening the dementia in the clinical population.

Introduction

One of the most common disorders associated with severe progressive and disability in the elderly period is the cognitive impairment [1]. Researchers have estimated that after the age 65 years the prevalence of dementia doubles every five years [2]. Dementia involves a series of disturbances that have features such as memory loss, impaired thinking and problem solving skills. One of the major symptoms of dementia is cognitive problems. Cognitive change sin dementia is usually associated with disorders in mood, behavior and personality [3]. Therefore; cognitive problems can be one of the areas of dementia diagnosis. One of the possible methods to diagnose dementia is the assessment of individual performance in a short cognitive test (usually refers to screening test) as a precondition for further testing and evaluation [4]. Western countries, which faced with the phenomenon of aging population several decades ago, designed several tools over the past few decades [5-9] Of course, these tests have some defects including depending on a specific culture, failure to diagnose dementia in the early stages. Followed by building some tools for assessing dementia, Rowland's Universal Dementia Assessment Scale was created to overcome the shortcomings of other assessment tools. This scale was built by Rowland and colleague made with 6 items which assess multiple cognitive measures which includes orientation, memory and learning, spatial vision (including building and drawing), attention and initiation, preservation, judgment, language, programs, habits and behavior. These items are influenced by age, education, different performance and language [10]. Given that most tests are subject to cultural orientations, the necessity for standardization and determining demographic norms are quite felt [11]. Regarding the above-mentioned schemes and the need for an appropriate tool not depending to culture to diagnose the initial dementia among patients, the researcher aims to explore the reliability and validity of Universal Dementia Assessment Scale in the clinical population.

Materials and Methods

This study is followed by descriptive-correlative design. The accessible random sampling procedure was conducted among patients with dementia, and finally 78 patients, diagnosed by the physician, were chosen among the patients with dementia of the Kahrizak nursing home. Having been translated and approved by two psychologists, RUDAS scale was prepared without removing any item. To examine the validity, two convergent and divergent methods were used in this study and the test reliability was calculated using three methods of Cronbach's alpha coefficient, test-retest and bisecting method. To review the validity of convergent, depression and quality of life inventories were used, and to examine convergent, Mini-Mental Status Examination Inventory and Elderly's Cognitive Status Axis Inventory were used i.e. GDS Inventory. This inventory was made by Yesavage and is comprised of 15 questions. In Iran, Malakouti et al. reported alpha coefficient and test-retest reliability as 96% and 85%, respectively. Quality of Life Inventory of Euro QoL (European Quality of Life) is among screening inventories that assess health-related quality of life, which was evolved by Euro QoL group in 1993. This inventory is composed of 5 questions in which 5 health-related qualities are assessed. Grading is done by coding practices (i.e. total scores for each question is recorded as a 5-digit code). Mini-Mental Status Examination Inventory: this inventory was introduced by Folestin as a practical method for grading the cognitive status of patients in 1975 for clinical physicians.

Table 1. Study of the convergent and divergent validity of Rowland's Universal Dementia Assessment Status (RUDAS)

Variable	p-Value	Quality of life	p-Value	depression	p-Value	Mini-Mental Cognitive Status Examination	p-Value	Centered-cognitive decline in the elderly (informant)
Visual-spatial orientation	0.004	0.37	0.03	-0.028	0.001	0.58	0.004	-0.42
Praxis	0.146	0.19	0.29	-0.29	0.005	0.43	0.029	-0.32
Judgment	0.115	0.21	0.16	-0.19	0.002	0.47	0.024	-0.32
Memory recall	0.010	0.34	0.28	-0.29	0.001	0.55	0.002	-0.44
Language	0.063	0.65	0.002	-0.41	0.004	0.45	0.004	-0.42
Total score of RUDAS	0.038	0.28	0.002	-0.40	0.001	0.63	0.001	-0.52

Table 2. Examination of reliability coefficient of Rowland's Universal Dementia Assessment Status (RUDAS)

Test indicator	Mean±SD	Correlation Coefficient	p-Value
First application	4.23±5.68	0.96	0.001
Second application	4.04±6.20		
Cronbach's alpha coefficient	-	0.74	0.001
First half	-	0.44	0.001
Second half	-	0.65	
Correlation between the two half	-	0.72	

This inventory is comprised of 11 articles and its performance needs 5-10 minutes. Informant questionnaire (centered cognitive decline in the elderly) (IQCODE): This questionnaire was devised by Jorm, member of Mental Health Research Center of the Australian National University to measure the rate of cognitive decline in subjects over the last 10 years. This test has 16 questions graded on a 5-choice Likert scale. Method of collecting data was in such way that due to the cognitive problems these patients have as well as low education level, all the tools of the study for each person was separately read by the researcher and the answers were recorded. Also regarding MMSE inventory, the items of writing and reading about illiterates were removed. Also, to apply the centered cognitive decline in the elderly, a nurse with a working history of 10 years more or accompaniments in the days of referral was used. Finally, the data were analyzed using SPSS-16 software.

Results

In this study, 78 patients with dementia in the age range between 65 to 90years were involved. Among the 78 patients with dementia, the most frequent is related to the age of 80-76 years (23.1%), and the minimum frequency of is related to 71-75 years that comprises 7.7% of the samples. It is worth mentioning that the mean and standard deviation of patient's age with dementia were generally 78.75 and 13.02. Also, 82.1 (64%) of the sample was women and 17.9 (14%) of them were men. Results of the study showed that 92.3% of elderly patients with dementia were illiterate and only 7.7% have a primary school education.

Also, to examine the validity of convergence, the correlation between the universal scale of dementia assessment and its subscales with Mini-Mental Status examination inventory and centered cognitive decline in the elderly were calculated (Table 1). The correlation results showed a positive and significant relationship between the individual's scores in Rowland's Universal Dementia Assessment Inventory and its 6-type scales with

Quality of Life Inventory and Mini-Mental Status Examination. In other words, people who scored higher on Rowland's Universal. Dementia assessment inventory, scored higher in and Mini-Mental Status Examination Inventory. They also have a higher score on the Roland scale and have less cognitive problems and a higher quality of life was reported. The important point is that mentioned positive correlation can be seen all aspects of rowland's universal dementia assessment inventory and quality of life and mini-mental cognitive status examination inventory. Table 1 also shows a significant negative correlate on between rowland's universal dementia assessment inventory and its subscales with centered cognitive decline in the elderly and elderly's depression.

Discussion

Now, according to the results obtained in this study based on research information and resources, the findings are discussed. Analysis conducted here provided acceptable evidences about the criterion validity, convergent and divergent validity, internal consistency coefficients and stability over time about the Roland's Universal Dementia Assessment Status in samples of Iranian elderly. Studying Cronbach's alpha coefficients as an index of internal consistency showed that RADUS and its subscales in this study, as the studied performed before, has good internal consistency among the clinical sample. Also, study of retest coefficients within 2 weeks showed that RADUS and its subscales have appropriate reliability, which can be compared with the values assessed by Rowland, Lype, Basic and Storey [12-14]. Results of bisecting of the scale and the correlation of the two halves has also a good reliability condition. Comparison between the Roland's Universal Dementia Assessment Status with scales of quality of life and depression among patients with dementia showed that this inventory and its subscales have divergent validity. Study of the relationship between depression and dementia disorder has been recurrently emphasized in the studies

conducted by Halperlin, Alexopoulo and Gilley Van Reekum [15]. In this study, as in previous studies of [10, 12-14], there was a high correlation between MMSE and total score of RUDAS scale, and there was also a low correlation between visual-spatial orientation subscales and MMSE.

Due to the fact that Roland's Universal Dementia Assessment Status (RUDAS), lower score indicate dementia, it is therefore natural that it has a positive correlation with MMSE; because, increasing RUDAS score and diagnosis of lack of dementia should be compatible with increased MMSE score, because high score in MMSE test indicates lack of cognitive problems. For this reason, these two tests had correlated with each other in the above-mentioned studies and MMSE is one of the most authoritative tools in diagnosing cognitive disorders.

Accordingly, it can be said that this study has provided an evidence of an acceptable reliability and validity of Roland's Universal Dementia Assessment Status (RUDAS) among Iranian elderly with dementia. In fact, it is claimed in Roland's Universal Dementia Assessment Status (RUDAS) it acts somewhat beyond cultural aspects and can contribute to the diagnosis of dementia. The findings in the present study have guided us in preliminary findings in the direction of reliability and validity.

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Conflict of Interest
The authors declare no conflict of interest.
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