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STUDYING VALIDITY AND RELIABILITY OF PERSIAN VERSION OF THE QUESTIONNAIRE HUI3 IN IRANIAN OLD FOLKS

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ABSTRACT

Background and objective: the incidence of the phenomenon of ageing in countries is one of the great changes in the 21st century. With these changes in the age pyramid of the population of the world the great challenges have been created for these countries in the field of health; the diseases have been oriented to chronic diseases and disabilities. Accordingly, to determine priorities and more effective macro policies, we must have a broad and comprehensive assessment of our society with a preventative approach. In this study, we have examined the validity and reliability of the tool HUI3 to assess the status of the Iranians old folk group.

Working procedure: this study was descriptive-analytic. 400 old folks over 60 years were selected by the method of "classified sampling" from 6 Health Centers and two nursing homes in Sabzevar of Iran, between April and July 2017 and were participated in study to determine the validity and reliability of the tool. The data were collected by the use of the demographic information questionnaires of SF-36 and HUI3 through interview. To determine the validity of the tool the content validity indicator and the concurrent criterion-based validity were used, and to determine reliability the method of determining internal stability along with reporting the number of Cronbach's Alpha and the method of Inter Rater Reliability with reporting intra class correlation coefficient. Data were analyzed using the software SPSS-v24.

Findings: the tool calculated CVI was 0.82 for the entire items of the tool. The coefficient of correlation between the tool HUI3 and the SF-36 was 0.87 as a criterion. The intra class correlation coefficient done by different implementers was 0.93 and Cronbach's Alpha for the entire items was 0.80.

Conclusion: reliability and validity of HUI3 questionnaire of Persian version is proper and acceptable; so this questionnaire can be used to check the health status of the Iranians old folk.

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Introduction

In 21st century, where the life expectancy has traversed 66 years, every year the world's population increases by 1.7%. This is while this increase for population of 66 years and above has been 2.5% (1). This age composition has led the population of the world towards becoming aged. The medical science advances in the field of the knowledge and control of diseases have caused the increasing growth of population and this growth has created basic and challenging changes in the demographic pyramid of world countries (2).

The incidence of the phenomenon of ageing leads diseases to be chronic diseases that neither can be prevented easily nor treated with low cost. These phenomena have caused the developing countries to be suffered from the double burden of diseases. This means that, in addition to chronic diseases, the infectious diseases still common in these countries cause many side-effects. These problems have caused the health system to pay special attention to the health of this age group (3).

Regarding the costs, the burden of treating the aged is very heavy. In the meantime, the developing countries are faced with a more difficult conditions in terms of enduring this burden and providing its cost. Providing the costs of developing countries that constitute 85 percent of the world's population and bear 93% of the burden of diseases is considered a fundamental problem (4).

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According to the report of National Center for health statistics of the United States in 2006, the progress of the preventive measures, the timely detection and treatment of diseases have had a significant impact on the health of persons over 65 years. In recent 50 years the mortality, especially the death caused by cardiovascular diseases and recently cancers, has been reduced significantly. So more than 70 percent of American aged in 2006 have not experienced the hospitalization and have reported their health as to be excellent or very good. Also in this report we read the people over 75 years is mostly weak in terms of independent performance and functional limitations (5).

So for the promotion of health in the aged we must evaluate comprehensively the health condition in different dimensions. In the present, a comprehensive geriatric assessment (CGA) method was used, known as one of the best existing approaches for knowing and deciding on treatment planning of the old people. For the implementation of this method we need to complete 8 separate questionnaires and the time required for completing the questionnaires is at least 30 minutes. In addition, the implementation of this type of assessment requires a team work and collaboration of different expertise, consequently its implementation is not possible for all aged. Accordingly, there must be a tool by which the complete and at the same time concise and useful assessment of the health status of the aged is carried out (6).

Nowadays, the multiple questionnaires are used in order to assess the health status that the most common one of them is HUI3 [Health Utility Index (Mark III)] (7-10). The questionnaire HUI3 has been designed by Feeny et al after 25-year work in 1990. Its translation into 40 languages of the world is available (11, 12). This questionnaire has 8 dimensions including: hearing, vision, speech, going (ability to go around), emotions, cognitive status (memory and thinking), pain (comfort) and skills (ability to use hands). The results of this questionnaire can be reported one-dimensionally or generally (12, 13). The applied purposes of this questionnaire are as follows: investigating the health status related to quality of life (11, 14), measuring the results of therapeutic methods in patients (11, 15), examining the health status in general populations (11), estimating Quality Adjusy life Years (11, 15), measuring the cost-effectiveness of cares in the services of providing care services (11, 16).

This questionnaire has been applied in many clinical studies (10, 12) and in many studies its validity and reliability has been proven (17). The questionnaire HUI3 also is confirmed for the health of the geriatric population (12). One of the features of the tools of examining health, especially in the aged whose diseases are usually diagnosed in advanced stages, is that the tool can identify the deviation from health condition in its primitive stages. The findings of numerous researches in which this questionnaire has been used show that the questionnaire HUI3 has operated better than other questionnaires in detecting defects in their primitive stages (18). The time required to complete this questionnaire is 3 to 8 minutes. Other feature of this questionnaire is its independence of individuals' education level; it can be completed by researcher, individual himself, or the carer (11)

The most important and undeniable issue is that without the knowledge of psychometric features of measuring instruments we cannot ensure data resulting from them. Therefore, doing research in the field of reliability and validity of any questionnaire is necessary in a specific demographic group, since it may be a tool in measuring a feature has validity, while to measure the same feature for other population does not have any validity (19). The questionnaire HUI3 that has been not evaluated so far in Iran its validity and reliability, for the application in researches as well as clinical evaluations should travers its process of validity and reliability in the aged population in Iran, so that it can be used in examining the health status of the aged.

Materials and methods

This study is analytical descriptive. The units of this research were 400 aged of 60 years and above; they were studied by the method of sampling proportion to size, selected from 6 Health Centers and two nursing homes of Sabzevar in 2017. The data was collected through three questionnaires of demographic information (age, gender, education, marriage and suffering from a chronic disease) and the tools SF-36 and HUI3 with interview.

The questionnaire HUI3 has been designed in order to investigate the status of health related to the quality of life. It is of 8 dimensions that include: hearing, vision, speech, going (the ability to go around), emotions, cognitive status (memory and thinking), pain (comfort) and skills (the ability to use hands). Every dimension has 4 to 6 scales whose scores variate from complete disability (score 0) to complete ability (score 1) (12). To report health status, the score 1 indicates absence of disability in the whole dimensions. The score 0.89-0.99 represents mild disability, score 0.70-0.88 the mean disability and the score below 0.70 the severe disability in the total dimensions (20). It should be noted that several versions of the questionnaire have been designed and are now available; in this study the Usual health version has been used.

Inclusion criteria: age 60 years and above, written consent of research unit for participating in research and residence in the city of Sabzevar during study

Exclusion criteria: the aged being near death and the lack of consent of the research unit during completing the questionnaire

The translation of tool: in the first, with permission of the designer of original version the questionnaire was taken from the referenced site [Health Utility Inc *(*HUInc)] and on the basis of the original Guide of translation of questionnaire (21) the Persian version of the questionnaire was prepared after five steps. The first step: two translators whose mother tongue was Persian and enough experienced in translating English texts, perceived Latin version of the questionnaire. The second step: the backward translation of the questionnaire was done by two other language specialist. The third step: a 10-Member Committee of experts it would took action to review the original translation and the backward translation of the questionnaire. The fourth step: the translated version was completed after reviewing experimentally by 30 aged and then on the last step the proposed amendments were evaluated by the Committee and the final version again was translated backwardly by two other translators.

Validity of questionnaire: in investigating the content validity of questionnaire, 10 experts (2 geriatrics professors, 2 of the old age geriatric specialist physicians and 2 senior students of geriatrics and 4 nurses) determined on each case of eight items three criteria of relevancy, simplicity and clarity as a four-options Lickert, then using the formula CVI the indicator of content validity was calculated.

Regarding concurrent validity, on the basis of other similar studies, the questionnaire SF-36 has been considered as the indicator of the validity of test. Questionnaires were completed by 40 old people and by the use of interview; due to normality of the behavior of variables the results were presented as Pearson correlation coefficient that variates from +1 to -1 and the more is closer the obtained number to 1, that indicates further validity of questionnaire.

Reliability of questionnaire: in examining the reliability of the questionnaire, given that the questionnaire HUI3 measures eight separate dimensions of people's health performance and the answers contain a range of options, for investigating the reliability of the test the calculation of internal consistency correlation coefficient of test questions and calculation of Cronbach's alpha coefficient were used. Also in this study, the reliability of the questionnaire was obtained from the inter rater reliability method and the calculation of intra class correlation coefficient. The information of research units was entered into the software SPSS-v24 and the statistical analyses were carried out using Pearson correlation coefficient.

Findings

Demographic information: in total 400 questionnaires were completed by the aged. The average age of the participants was 9.3 ± 71 years. In the meantime, 45.8% (183 people) were male and 54.3% (217 people) were female. According to the World Health Organization classification 63.75% of the old folks were in the age group of 60 to 74 years (young aged) and of them 57% were married. 60.5% of the aged lived in one way with one of their first-class relatives.

52% of the aged of this study suffered at least from three chronic diseases; the most common disease was hypertension by 34 percent and in the whole from between 400 aged participating in the research, 5.8% of the aged were in higher level in terms of health status and 67% of them in weak level.

Validity of the questionnaire: for investigating qualitatively the content of the comments 10 experts were chosen (2 professors of aging, 2 geriatricians and 2 senior students of ageing, 2 nurses and 2 nurses responsible for visiting old folks in home). Finally, the calculated CVI for the entire items was desirably over 0.82. After completing the questionnaire (SF-36 and HUI3), for concurrent validity 0.87 was obtained as Pearson correlation coefficient (0.95 as confidence coefficient, P<0.001); the results were shown in table 1.

Table 1: calculation of the Pearson correlation coefficient between the tool HUI3 and SF-36 in old folks under study

Variable		Number	Mean	Standard deviation	Minimum	Maximum	Pearson correlation coefficient	P-value
main	HUI3	400	0/48	0/018	-0/35	1	0/87	0/001
criteria	SF-36	40	54/03	23/56	17/13	89/50		

Reliability of the test: using the calculation of intra class correlation coefficient (ICC) we have studied the reliability of the tool HUI3; ICC>0.75 represents an excellent agreement, ICC between 0.75 and 0.40 represents a good agreement and ICC< 0.40 the weak agreement of questionnaire (22); also the reliability of the tool was evaluated with the method of Cronbach's alpha. The results were shown in table 2.

Table 2. Calculation of the correlation coefficient of Cronbach's Alpha and Kappa of the tool HUI3

Test type	Number	Test case	Coefficient value
Cronbach's Alpha	400	Questionnaire total items	0.80
Intra class correlation coefficient	50	Questionnaire total items	0.93

The results show that the Persian version of the questionnaire HUI3 has a reliability.

Discussion

Based on the results obtained from the assessment of the reliability and validity, the questionnaire HUI3 is of a desired reliability and validity in Iranian old people. For studying the inter rate reliability the intra class correlation coefficient between two -implementers that has been calculated for 50 participants in research, has been 0.93 for the entire items (p-value > 0.001); that represents a high inter rater reliability of the present questionnaire (22). The present study is consistent with that of Matthias et al; in this study they measured the inter rater reliability of the present questionnaire in patients with stroke; the Kappa coefficient obtained for the items has been calculated between 0.37 and 0.80 and the intra class correlation coefficient with the test-retest method as 0.72 (23).

For verifying validity of questionnaire we used the measurement method of internal consistency for 400 old people participating in research; Cronbach's alpha has been calculated as 0.80 that represents a high internal consistency of the questionnaire items (22). The results of the study of Ruize et al that has been done in the public Spanish society are consistent with the results of the present study and the calculated Cronbach's alpha in this study is 0.76 (24). Pressler et al as well have examined the internal consistency of the present questionnaire in 165 patients suffered heart failure whose calculated Cronbach's alpha has reported as 0.51; the dimensions of pain, balance, cognition and feelings have had the lowest coefficients; also the intra class correlation coefficient resulting from the test-retest method in this study has been reported as 0.68 that has been probably caused by the type of the target population in this study (8).

For examining the concurrent validity of the questionnaire HUI3 and SF-36 in 50 old participants the Pearson correlation coefficient was calculated as 0.87 (0.001> p-value); it has represented the concurrent validity of the questionnaire HUI3 in the Iranian old people. Many studies have been done for evaluating the validity of present questionnaire in different languages and cultures. For investigating the con current validity of questionnaire HUI3 in patients with a heart attack living in Thailand, Saiguay and Sakthong used the questionnaire EuroQol Group (EQ-5D); its reported Spearman correlation coefficient was high consistent with the present study (25). Thoma et al carried out also a study in this regard on patients undergoing breast surgery; they used the questionnaire HUI 2 for concurrent validity; the Pearson correlation coefficient was reported as 0.625 that confirms the results of present study; it seems that its lower correlation coefficient is possibly due to the difference in the dimensions of the two employed questionnaires (26). In the study of Fisk et al on patients with neurological disabilities, to assess the concurrent validity of the questionnaire under study with the tool of expanded disability status scale (EDSS) and SF-6, the correlation coefficient was reported as 0.77 and 0.69 respectively, that is consistent with the present study (27). In general, it seems that the questionnaire HUI3 has a desired reliability and validity in Iranian aged people.

Conclusion

the tool HUI3 is of a desired validity and reliability in Iranian old folks and according to the lack of importance of the questionnaire-users' literacy as well as the ability to complete this questionnaire by carers, this questionnaire can be used in a large extent to assess the old folks' health status. It is noteworthy, this questionnaire is oriented to Tools group of examining health associated with the quality of life; it suggests the usability of the HUI3 questionnaire to examine the quality of life.

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