ORIGINAL ARTICLE

Validation of the Persian version of self-care tools for hypertension among older adults

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ABSTRACT

Aim To validate two sub-scales of self-care behaviour and self-efficacy of hypertension in elderly patients in Iran using an English scale developed by Dr. Han et al.

Methods The Persian version of two sub-scales of self-care behavior and self-efficacy was validated for 300 elderly people who suffered from hypertension. These sub-scales were translated into Persian according to the Wild et al. model. The validity of the tool was confirmed through formal, content and structural validity and reliability through calculation of internal consistency and time stability.

Results Cronbach's alpha was reported to 0.85 for behavior, 0.86 for self-efficacy. Pearson's correlation coefficient for behavior was 0.89, for self-efficacy 0.92. Intraclass correlation coefficient (ICC) was 0.84 for behavior and 0.88 for self-efficacy. The minimum acceptable content validity ratio (CVR) for each grade was equal to 49.0 and for the content validity index (CVI) equal to 0.79, indicating that all items obtained the grade points. In exploratory analysis, two dimensions of diet and disease management were determined for both sub-scales, which were approved according to fit indicators.

Conclusion The Persian version of the Self-Care Tools for hypertension showed favourable validity and reliability, and thus it can be used for measuring the level of self-care for hypertension in Iranian elderly population.

Key words: aged, hypertension, Persian, self-care, validation

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INTRODUCTION

Because of high rate of outbreaks of the hypertension disease and its effects on vital organs, it is recognized as one of the most important health challenges worldwide (1). The global outbreaks of this disease are reported ranging between 10% and 60%, and the percentage of global outbreak in the elderly population is reported to be about 40% (2). Hypertension is associated with an increased risk of developing diseases such as kidney, brain, heart and vision, and if left untreated, among half of the patients suffering from coronary artery disease, one third of them due to myocardial infarction disease and 10 to 15% of them because of kidney disease will die (3). Despite the advancement and development of modern technologies, the availability of multiple drug and non-drug therapies, and the facility of diagnosis and treatment, controlling this disease continues to be a challenge, imposing high cost on many healthcare systems (4,5). According to the World Health Organization, half of the people are unaware of their diseases and less than 12.5% of those who were treated can control the disease (6). Usually, the first treatment suggested for hypertension is drug therapy, but the medication is not always successful. About 30% of people do not provide their own drug, and many patients are unwilling to be exposed to the medication side effects or they are reluctant to take medication (7). In the elderly, as they often experience emotional problems, such as mental burdens caused by unpaid life insurance, family members' neglect or social isolation, as well as physical problems such as impaired function of the heart, kidneys, liver or hemodynamic changes caused by using the medications without prescription or complementary home remedies; they may refer to the healthcare centers with an exacerbation in their clinical situation (8,9).

Eighth joint national committee (JNC-8) recommends drug -based treatment of hypertension, as well as interventions for changing lifestyle along with presenting a set of self-care behavior, which are useful with regard to its cost-effectiveness, and it is also accompanied with taking medication for effective control of hypertension (10).

Self-care is the most important form of primary care in developed and developing countries (11). A review of previous studies has confirmed that the reduction of 5 and 4.3 mmHg in systolic and diastolic blood pressure occurred as a result of practicing self-care (2).

Unfortunately, despite the fact that the role of self-care in controlling high blood pressure is well documented, there is a limited number of valid tools for measuring it throughout the world (12). One of the most valid tools used globally is the Hypertension Self-Care Tool which was designed by Hae- Ra Han et al (13). This scale was developed during a research conducted at the Johns Hopkins University in 2014, which covers all aspects of self-care in hypertension. This tool has three distinct sub-scales: motivation, behavior, and self-efficacy. This 4-point Likert scale actually has four options that are tailored to each area according to the designer's view; each of these sub-scales can be used alone or together (13). Regarding the importance of self-care in controlling chronic diseases such as hypertension and considering the fact that unfortunately in Iran, there is an increase in the outbreaks of hypertension, especially among the elderly, the need for developing a standard tool in accordance with the scientific principles of nursing in the medical field is considered as a necessary measure.

Since this tool has been designed based on the nursing frameworks and principles, as well as the need for the simplicity of tool comprehension, full validation steps, the inclusion of all aspects of self-care for hypertension, and also the proposal of designers regarding the use of this tool in different ethnicity, cultures and different age groups and finally because of the fact that, there is no study conducted on the validation of this tool in the elderly population of Iran.

The aim of this study was to validate two subscales of self-care behavior and self-efficacy for hypertension in the elderly.

PATIENTS AND METHODS

This is a methodological study carried out to validate two sub-scales of behavioural and self-efficacy of self-care for hypertension among 300 elderly people in Ahwaz, Iran. Inclusion criteria were: being 60 years old and older, completion of a consent form for participation in the research, diagnosis of hypertension by physician, possession of active health records in community health centres, receiving anti-hypertensive medications, and ability to speak the Persian language. The existence of cognitive impairments, the existence of severe conditions associated with hypertension and the presence of visual and auditory disorders so that one is not able to communicate and com-

plete the questionnaire form, all were considered as the exclusion criteria. Based on these Plichta et al. criteria the adequate number of sample size needed to perform construct validity is between 200 and 500 people, 300 people were selected for the sample size in this study (14).

Sampling was done from April to November 2018. In this research, translation and validation of tools were performed based on the method proposed by Wild et al. (15).

In order to collect the data, after selection of the qualified elderly people for participation in the study and explaining the goals and method of the research, we took informed consents from the participants. Demographic information questionnaire including demographic information (age, sex, level of education, marital status, occupation, place of residence) along with two sub-scales of self-efficacy and self-care behaviour were distributed among them, and they were asked to complete the questionnaires. For the illiterate people, the questionnaires were completed by the researcher.

Methods

After obtaining the written permission from the original designer of the questionnaire, the original questionnaire was translated by two fluent speakers in English and Persian. The two versions of translations were compared and with some little changes in the words, the final version was obtained. In the next step, to translate the final translated version to English, those versions were given to two people who had good command in both English and Persian language who had no relationship with the first group of people. Finally, the returned translated version was sent to one of the people in the questionnaires design team by email, and was confirmed subsequently. Validation process of the translated questionnaire was performed using formal and content validity, structural validity (confirmatory factor analysis), internal consistency and time stability.

Regarding the evaluation of the content validity index, translated questionnaires were given to 15 people (2 nutritionists, 6 nursing assistants, 3 senior staff assistants, and 4 instrumentation assistants) to evaluate them and submit their corrective comments. Then the questionnaires were given to 10 elderly people to express their opinions about the facility with respect to using the tool and remark their ability to understand sentences. After that, the instruments were used twice in two weeks for 30 people of target groups. The next stage was run on the main group (300 people).

Statistical analysis

Descriptive and inferential tests were performed. Validation process of the translated questionnaire was performed using formal and content validity, structural validity (confirmatory factor analysis), internal consistency and time stability. The construct validity was measured by confirmatory factor analysis using laser level software. Content validity was performed using two indicators content validity ratio (CVR) and content validity index (CVI).

In order to determine the internal consistency and to measure time stability of Cronbach's alpha coefficient, the tests for Pearson correlation coefficient and intraclass correlation coefficients (ICC) were used (14,15).

RESULTS

A total of 300 questionnaires were statistically analysed (Table 1). Content validity was performed using two (CVR) and (CVI) indicators. The minimum acceptable CVR score for each item based on the Lavasheh table was equal to 49/0 according to the number of specialists, which all items obtained grades above 49%.

Table 1. Demographic and clinical data of participating older adults

Category	N (%) of patients
Gender	
Females	163 (54.3)
Males	137 (45.7)
Marital status	
Single	4 (1.3)
Married	242 (80.7)
Widow/ Widower	54 (18)
Education	
Under diploma	221(73.66)
Diploma	55 (18.3)
University degree	24 (8)
Living arrangements	
Alone	21 (7)
Spouse	71 (23.7)
Child and spouse	164 (54.7)
Child	39 (13)
Other family	5 (1.7)
Occupation	
Employed	34 (11.3)
Unemployed	17 (5.7)
Housewife	130 (43.3)
Retired	119 (39.7)
Comorbidity	
YES	184 (61.3)
NO	116 (38.7)

All items obtained good grades. Qualitative method was performed by oral interview and for further understanding, some words such as trans-fat and sodium were changed. Also, foods such as pork that is forbidden in the Islamic culture were deleted from rule 6, and self-efficacy in clause 7. The construct validity for this tool was obtained by exploratory factor analysis and confirmatory factor analysis; two dimensions of dietary observance and disease management were obtained in exploratory factor analysis of the tool. In the next step, with regard to the suggestions made by the software (EQS-6.1 Multivariate software, Inc., Encino, CA, USA) to correct the model, by applying a shift in the item 14 (I avoid from smoking), from the "dietary observance" dimension to the "disease management", fit indicators were improved to a satisfactory level and the model was confirmed. Accordingly, the Persian version of the hypertension self-care tool in the elderly, without the need for removing the items, and with total of 40 items was confirmed in two sub-scales, which includes "dietary observance" with 9 items and the "disease management" with 11 items.

In the final consideration for the reliability of the tool, the Cronbach's alpha value for self-care behaviour was 0.21-0.73, for the total score was 0.851, and for the self-efficacy, the Cronbach's alpha value was between 0.20-0.90, and the Cronbach's alpha for the whole scale was 0.857 (Table 2). Confirmatory factor analysis was performed for the assessment of construct validity and providing the most appropriate model of self-care behaviour and self-efficacy for hypertension (Table 3) presented confirmatory factor analysis results.

Table 2. Internal consistency and test–retest reliability of the subscales

Subscale	Cronbach's alpha	Test–retest reliability
Self-care behaviour		
dietary observance	.866	.90
disease management	.727	.78
Total	.851	.89
Self-efficacy		
dietary observance	.813	.88
disease management	.902	.94
Total	.857	.92

Table 3. The verifiable indicators of functional analysis on the Persian version of the strategies for self-care behaviour and self-efficacy for hypertension in the elderly

Model		$\chi 2$ (df)	p	RMSEA (90% CI)	CFI	GFI	AGFI	SRMR
Primary model based on EFA	self-care behaviour	660.7 (169)	<.001	.081 (.073-.090)	.087	.86	.085	.062
	self-efficacy	589.8 (169)		.11 (0.10-0.12)	.90	.84	.85	.096
Modified model of tool	self-care behaviour	504.6 (169)	<.001	.051 (.045-.057)	.92	.91	.87	.049
	self-efficacy	555.6 (169)		.09 (.08-.10)	.91	.90	.87	.071

RMSEA, route mean square error of approximation; CFI, comparative fit index; GFI, goodness of fit index; AGFI, adjusted goodness of fit index; SRMR, standardized root mean square residual , EFA, exploratory factor analysis

DISCUSSION

Considering the fact that there was nobody in the research groups that could find the translation and the psychometric properties of this instrument in other environments, the results of the different sections of the present study were compared with the original paper written for the design of the instrument.

The first step was to translate the tool based on the pattern proposed by Wilde et al. which was translated by the direct-inverse translation after obtaining the written permission from the original designer. Because of its valid theoretical framework, this tool was chosen among the available tools for psychometric assessment (self-care theory and motivational interviewing). Han et al. in their study introduced the lack of comprehensiveness of other tools in the field as the reason for the design and development of this tool, and they stated that tools, such as Hill Ben Adherens and Morinsky, are not well-considered and often considering the drug-related behaviours (18).

In next steps, content validity and face validity of the tool were measured. Content validity was done using two CVR and CVI indicators. The lowest (CVI and CVR) scores were obtained for items 12 in self-care behaviour sub-scale (which was equal to 60) and items 9 and 13 in self-efficacy sub-scale (0.60). The item 12 in self-care behaviour sub-scale concerning "drinking less alcoholic drinks " is less likely to be one of the reasons for the lower rate for the sentence related to the word "alcoholic", which is forbidden in the culture and religion of the studied community. However, experts believed that, given the

acceptable score of CVR and CVI, this item would not be deleted. In the self-efficacy sub-scale, 9-item dietary observance dimension was reviewed to determine the amount of saturated fat (such as fatty meat, peanut, butter, and so on) and solid fats (such as vegetable butter, solid fats, etc.) "Less amount of drinking alcoholic drinks" was found to have the lowest scores. Concerning item 9, it was probably difficult for the elderly to understand the saturated fat content of other fats, and the 13th grade was the same as the 12th grade in the self-care behaviour sub-scale. Some words needed to be changed in the study by Han et al. For example, he used antihypertensive drugs instead of blood- pressure drugs (13). In the quantitative method, using the score formula for the effect of each item, all the items scored above 1.5. In the study by Han et al., this value was reported to be equal to 1.5 and higher.

In the final consideration for the reliability of the tool, the Cronbach's alpha value for self-care behaviour was equal to 0.21-0.73 and the Cronbach's alpha for the total score was equal to 0.851. Han et al. in their study reported it between 0.20 and 0.8 and for the whole scale the score of 0.83 was reported. For the self-efficacy, the alpha value was reported to be between 0.20-0.61 and for the whole scale it was equal to 0.857, and in the study by Han, it was reported to be between 0.40- 0.44 and the total score was reported to be equal to 0.91 (13).

Hypertension is known to be one of the most common diseases in the world, which is positively correlated with age. This disease, with serious complications affecting various organs of the body can be controlled and maintained in low levels if self-care strategies are applied by patients, which is an important factor for the treatment of this disease (16). Considering the effectiveness of self-care in controlling the hypertension in the elderly, there is a low level of implementation regarding self-care program in Iran (17). Therefore, this study was conducted to validate a scientific and applied tool for implementing self-care programs among the elderly who are considered as vulnerable people in the society. An important feature of self-care hypertension tool is that it was designed based on the nursing principles (13). It is simple to use this tool and health care providers or researchers can use it in different places, such as the elderly's house, or outdoor at community health canters, and the participants can complete it within 10-15 minutes. The terms used in the design of these two sub-scales are very simple, clear and understandable for people with any level of literacy and education, and the elderly people can complete it by themselves, and for the illiterate elderly people, it can be completed without the need for the presence of an expert, it can be read by an ordinary person to them.

With regard to the degree of common and close coherence with the initial study on the instruments, it can be concluded that the principles of this tool are common with other tools due to the nature of hypertension in spite of the individual and environmental factors and lifestyle that are shared with other communities and groups.

In conclusion, this study sought for introducing a simple, clear and understandable tool to be used by the elderly and with appropriate indicators, related to instrumental psychometric, can be considered as a valuable source for increasing the awareness and understanding of nurses and healthcare professionals and other people related to the healthcare of the elderly and enables them to design well-programed activities in the fields of education, treatment and health promotion for the elderly.

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TRANSPARENCY DECLARATION

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