Received: 5 April 2020 | Revised: 27 May 2020 | Accepted: 28 June 2020

DOI: 10.1111/ppc.12577

ORIGINAL ARTICLE

Perspectives in PSYCHIATRIC CARE WILEY

Elders health empowerment scale: Turkish translation and psychometric testing

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Abstract

Purpose: The aim of this study is to adapt "Elders Health Empowerment Scale" (EHES) to Turkish and to find out the validity and reliability of the scale.

Desing and Methods: This methodological study was conducted with 300 patients who agreed to participate in the study in Turkey.

Findings: It was found that Cronbach's α reliability coefficient of the scale was .90, item factor loads of the scale ranged between 0.30 and 0.89 and item-total correlation coefficients ranged between 0.30 and 0.84. The one-factor structure of the scale was supported as a result of the CFA and EFA conducted. Good fit index values were obtained as a result of CFA.

Practice Implications: EHES is a valid and reliable measurement tool for the evaluation of the empowerment states of elders in Turkish society.

KEYWORDS

Elders Health Empowerment Scale, psychometrich testing, Turkish translation

1 | INTRODUCTION

While the developments in the field of science and technology and the decrease in birth rates are the most important factors in the increase in elderly population, they have also caused life expectancy to increase.[1-3] Elderly population is increasing in the world and Turkey is the 66th among 167 countries with the highest number of elderly population. In our country, while the rate of elderly population in the total population was 8% in 2014, this rate increased to 8.8% in 2018. It is estimated that this rate will rise to 10.2% in 2023.[4] With this increase in elderly population, it has become inevitable to come across problems about elderly more frequently every day and it has become more important to empower the elderly.

Old age is a period in which individuals go through physical loss, loss of their status, interpersonal support becomes weaker and individuals become more dependent on the environment, and mental problems are observed more due to increasing physical illnesses and disability.[5] Dementia, Alzheimer, urinary incontinence, visual disturbances, hearing disorders, malnutrition, osteoporosis, gait disorders, and frequent falls, pressure sores, sleep disorders and diseases such as osteoarthritis are common in the elderly.[2] Depending on the increase in the loss of abilities which occur as a result of these diseases, old people have difficulties in maintaining their lives in society and their need for help increases.[1] One of the important problems of this period is of course economic problems. Old people can experience social and psychological problems due to bad economic conditions. In addition, individuals also experience social adaptation problems in this period. Loneliness and social isolation problems of the elderly are becoming deeper in the modern society of our day. One of the important problems among the problems of the elderly is their abuse which hurts them and causes psychosocial problems.[6] The elderly should be empowered so that they can overcome these problems and go through an active, healthy, and happy old age. Not only the problems experienced by the elderly but also the problems experienced by individuals providing care to them show the necessity of empowering the elderly because it is reported that mental disease symptoms are more common and burnout levels are high in individuals who provide health care to the elderly.[7,8]

According to the World Health Organization, empowerment has been defined as the process of individuals having more control on the decisions and actions affecting their health and life.[9] If individuals have a power on their life, they will have more rights to choose, their decision making abilities develop and they have more power to defend their rights.[10,11] Empowerment approach protects individuals' rights and develops the quality of care.[12-14] While empowerment is a concept which has recently become to get a place in health care, its use in health literature, especially related with chronic conditions, has been gradually increasing.[15-21]

Empowerment of the elderly should promote welfare, healthy life styles, and social attachment.[16] To minimize the effects of problems that can occur in old age and to enable the elderly to continue their lives independently, empowerment methods to improve their health should be determined and elderly individuals should be made to participate in these methods.[22] In our literature review, no measurement tools which aimed to find out the empowerment states of the elderly individuals were found in our country. For this reason, the present study aims to conduct the Turkish validity and reliability study of the eight-item "Elders Health Empowerment Scale" (EHES) which has a high validity and reliability and which was developed by Serrani Azcurra[23] in 2014 to assess the empowerment states of elderly individuals.

1.1 | Research questions

1. Is "Elders Health Empowerment Scale" a valid scale for Turkish society?
2. Is "Elders Health Empowerment Scale" a reliable scale for Turkish society?

2 | METHODS

2.1 | Study design

This methodological study was conducted in 2018. The steps followed in the study are as follows; (a) adaptation of the test into Turkish and back translation to English, (b) testing content validity by a group of experts, (c) conducting psychometric analyses (factor analysis, validity coefficient, item-total correlation and confirmatory factor analysis [CFA]).

2.2 | Population and sample of the study

The population of the study consists of individuals who were 65 years of age and older and who were receiving inpatient treatment in a university hospital in Erzurum between May and December 2018. In literature, it is emphasized that in the adaptation of a scale to another culture, there must be a sample of at least ten times higher than the number of items in the scale.[24] Patients aged 65 and older who could communicate and who did not have psychiatric problems were included in the study. Thus, the study was completed with 300 patients.

2.3 | Data collection tools

2.3.1 | Personal information form

This form consists of 13 questions to find out the demographic characteristics of individuals (age, gender, marital status, family type, occupation, level of income, general status, state of using cigarette and alcohol) and three questions related with illnesses (presence of a chronic illness, type of illness, frequency of visiting doctor).

2.3.2 | Elders Health Empowerment Scale

"Elders Health Empowerment Scale" developed by Serrani Azcurra[23] in 2014 was adapted from Diabetes Empowerment Scale-short form[15,23] to assess powerfulness about health. It is an eight-item scale created to assess the empowerment levels of the elderly about their own health. It is a 5-Likert type scale and its Cronbach α value was found as .89. In the scale, the answers are as scored as 1 "strongly disagree", 2 "disagree", 3 "undecided", 4 "agree", 5 "strongly agree". High scores show that the elderly have high empowerment levels about their health.[23]

2.4 | Data collection procedures

The research data were collected from individuals aged 65 and over who received inpatient treatment at a university hospital in Erzurum between May and December 2018. Data were collected by using "Personal Information Form" and "Elderly Health Empowerment Scale". The data were collected in the patient's room in approximately 10 to 15 minutes after the necessary explanations were made by the researcher GBT to the individuals. A total of 460 patients over the age of 65 who were treated on the dates specified by the researcher were reached. The study was completed with a total of 300 patients, since 112 of these patients could not speak and understand Turkish (communication could not be established), 53 did not want to participate in the study, and five discontinued the study while filling in the questionnaire. It was decided that the sample size was sufficient and the data collection process was terminated on 30 December 2018.

2.5 | Data assessment

Cronbach's alpha reliability coefficient, Pearson's Correlation, factor analysis, Barlett test, Kaiser-Meyer-Olkin (KMO) test, and correlation were used in the assessment of the data obtained. Level of significance was accepted as 0.05.

2.6 | Data analysis

Statistical analyses of the data were conducted by using the Statistical Package for Social Sciences version 18.0 (SPSS Inc, Chicago, IL). In the study, principal components analysis was conducted to provide more precise results in the study. Eigenvalues' being higher than 1.0 and the lowest factor load being 0.30 was considered as criterion to find out the most appropriate structure. Before factor analysis, KMO, and Barlet tests were conducted to determine sample adequacy and suitability for factor analysis. Content validity index (CVI) and item total score correlation were used to find out internal validity. CFA was conducted to find out construct validity. Level of significance was accepted as 0.05.

2.7 | Ethical considerations

For the Turkish adaptation of "Elders Health Empowerment Scale" used in the study, permission was taken from Serrani Azcurra[23] by email. Ethical approval was taken from the Ethical Board of Atatürk University Faculty of Nursing (Decision number: 2018-2/5) and official written permissions were taken from the hospital in which the study was conducted.

2.8 | Psychometric assessment of EHES

2.8.1 | Validity

Language validity

Translation of a scale into another language changes the nature of that scale. This inevitable change results from the differences in conceptualization and expression. To minimize the differences, meticulous analysis of the scale items, making the necessary transformations so that they are meaningful in the target language and standardizing according to the norms of the individuals using the language from which translation is made are the bases of adapting a scale to a new culture.[25] By taking these issues into consideration, original EHES was translated into Turkish first by the researchers and then by two faculty members. The scale which was translated into Turkish was reviewed by the researchers and made into one form. Next, these forms were translated back into English from Turkish by an English linguist who knew both languages well. The original scale and the scale translated into Turkish were compared and it was assessed whether there were any changes in meaning in the items of the scale. The items which were in both scales and which expressed both items best were chosen and presented to the views of seven experts.

Content validity

CVI was used to prove both language and culture equivalence and content validity of the items with numerical values and to assess experts' views healthily.[25] The experts were asked to assess each item of the scale by scoring between 1 and 4 by choosing from "4 = completely suitable", "3 = very suitable", "2 = suitable but the expressions need small changes" and "1 = not suitable." CVI was calculated by using Davis technique. As a result of the analysis conducted, CVI was found as 0.99. A content validity greater than 0.80 shows the sufficiency levels of the items.[25] Content validity of the scale was found to be statistically significant. Thus, no item was deleted.

Construct validity

The method frequently used to test construct validity is factor analysis. Factor analysis is a procedure conducted to assess whether the items in the scale can be grouped under different dimensions.[24] It is grouped into two as exploratory factor analysis (EFA) and CFA. EFA is calculated to find out under how many topics the items in the scale can be grouped. CFA is calculated to test whether this construct determined is confirmed.[24,26] Before construct validity analysis, KMO, and Barlett tests are conducted as the measurement technique for sample adequacy.[26] For KMO test, it is stated that a value lower than 0.50 is unacceptable, while a value between 0.80 and 0.90 is good and a value higher than 0.90 is very good.[27]

Principal component analysis, which is one of the most widespread factor analysis statistical techniques, was used in the factor analysis of the scale. The view that the factor load values of the items should be at least 0.25 as a result of factor analysis and that the items which have lower values than these should be deleted was taken into consideration.[26] As a result of EFA, CFA was conducted to support the findings related to the subdimensions of the scale. As a result of CFA, χ^2/df rate of ≤5, root mean square error of approximation (RMSEA) value of ≤0.07 and goodness of fit index (GFI), comparative fit index (CFI), incremental fit index (IFI) values of higher than 0.90 are accepted as the lower limit of the data fit index of the model.[28]

2.8.2 | Reliability

In the reliability analysis of Likert type scales, Cronbach's α internal consistency coefficient technique is recommended. Cronbach's alpha reliability coefficient is an indicator of the internal consistency and homogeneity of the items in the scale. The higher Cronbach's α reliability coefficient of the scale is, the more it shows that the items in the scale are consistent with each other and the scale consists of items which test the elements of the same feature.[24] In the literature, it is stated that a Cronbach's α reliability coefficient of .70 and higher is enough for a measurement tool to be used in researches.[24,29]

Item total correlation coefficients were calculated to analyze the relationship between the scores taken from the test items and the total score of the test. In items selection, the recommendation that an acceptable coefficient should be 0.20 and above was taken into consideration.[30]

Time invariance (test-retest) is consistent results of a scale in repeated measurements. The results of the two applications are analyzed with correlation analysis. The closer correlation coefficient is to 1, the better time invariance of a test is thought to be. Time invariance of the scale was assessed with a test-retest

TABLE 1 Demographic characteristics of the individuals

Average age (ave ± SD)	71.35 ± 6.10	
	n	%
Gender		
Female	131	43.7
Male	169	56.3
Marital status		
Married	269	89.7
Single	31	10.3
Family type		
Nucleus family	147	49.0
Extended family	151	50.3
Other	2	0.7
Level of education		
Illiterate	117	39.0
Literate	31	10.3
Primary education	117	39.0
High school	25	8.3
College/university and beyond	10	3.3
Profession		
Officer	21	7.0
Worker	33	11.0
Housewife	128	42.7
Self-employed	76	20.7
Retired	56	18.7
Level of income		
Income lower than expenditure	78	26.0
Income equal to expenditure	199	66.3
Income higher than expenditure	23	7.7
State of working		
Yes	25	8.3
No	275	91.7
State of having health insurance		
Yes	205	68.3
No	95	31.7
Health status		
Bad	92	30.7
Moderate	106	35.3
Good	100	33.3
Very good	2	0.7
State of smoking		
Yes	31	10.3
No	269	89.7
State of using alcohol		
Yes	2	0.7
No	298	99.3
State of having to assist in care		
Yes	154	51.3
No	146	48.7
State of having been trained about the disease		
Yes	210	70
No	90	30
State of having a chronic disease		
Yes	231	77.0
No	69	23
Disease type		
Hypertension	89	29.7
Diabetes	62	20.7
Osteoporosis	8	2.3
COPD	18	6.0
Asthma	8	2.7
Cardiac failure	47	15.7
Frequency of seeing a doctor		
Once a month	68	22.7
Every 3 months	56	18.7
Every 6 months	72	24.0
Once a year	87	29.0
Never	17	5.7

Abbreviation: SD, standard deviation.

correlation.[31,32] For the test-retest analysis of the scale, it was applied to 60 patients again 2 weeks later.

3 | RESULTS

When the demographic characteristics of the individuals in the study were examined, average age of the individuals was found as 71.35 ± 6.10. It was found that 56.3% (169) of the individuals were male, 89.7% (269) were married, 50.3% (151) had extended family and 9% (117) were illiterate and primary school graduates. 42.7% (128) of the individuals were housewives, 66.3% (199) had an income equal to expenditure, 91.7% (275) were not working, 68.3% (205) had social insurance and 35.3% (106) had a moderate state of health. 77% (231) of the individuals had a chronic disease and 29.7% of these chronic diseases were hypertension and 70% (210) of the patients were found to have received a training for the disease. 51.3% of the individuals had someone to assist them with their care and 29% (87) were found to see a doctor once a year (Table 1).

3.1 | Validity

In the study, KMO value was found as 0.902 and $_{\chi}^{2}$ value was found as 1722.594 as a result of Barlett's test of Sphericity analysis. Test results were found to be significant at $P = .000$ significance level.

TABLE 2 Results of the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity

Test		Results	
Kaiser-Meyer-Olkin measure of sampling adequacy		0.90	$P < .001$
Bartlett's test	Approx χ^2	1722.59	
	df	28	
	Sig	0.000	

The results found showed that the sample size was sufficient and suitable for factor analysis (Table 2).[28]

As a result of the EFA conducted for EHES, factor load values were found as between 0.30 and 0.89. In addition, they were found to explain 61.8% of the total variance (Table 3). Thus, EHES, which had eight items and one dimension, was obtained.

CFA fit index values of EHES were found as $\chi^2 = 104.25$, df = 14 ($P < .05$), $\chi^2/df = 7.44$, RMSEA = 0.14, GFI = 0.90, CFI = 0.93, and IFI = 0.93. In the assessment, a good fit was not found in terms of χ^2/df and RMSEA values. At this stage of the analysis, modification recommendations were analyzed and it was found that the error covariations between items 5 and 6 and items 7 and 8 were found to be high. Error covariances of these items were associated and a second CFA was applied. As a result of the change conducted, CFA fit index values were found as $\chi^2 = 33.28$, df = 12 ($P < .05$), $\chi^2/df = 2.77$, RMSEA = 0.07, GFI = 0.97, CFI = 0.98, and IFI = 0.98. The model was found to show an acceptable fit (Table 4). CFA Path Diagram of EHES after the second CFA is shown in Figure 1.

3.2 | Reliability

Cronbach's α reliability coefficient of EHES Turkish version was found as .90 (Table 3). EHES was found to be highly reliable.

Item total correlation coefficients of EHES were analyzed. Item total correlation coefficients were found to be between 0.30 and 0.84. Item total correlation coefficients of all items were higher than 0.30. (Table 3).

Correlation values between the first application and the second application 2 weeks later were found to vary between $r = .94$ and 1.00. In the total dimension of EHES, a positive and high statistically significant association was found ($P = .001$).

4 | DISCUSSION

No specific scales were found which assessed the empowerment states of elderly patients in Turkey. For this purpose, Turkish validity and reliability studies of EHES were conducted. In this section, the results of eight-item and one-dimension EHES were discussed.

4.1 | Validity

In this study, "Elders Health Empowerment Scale" developed by Serrani Azcurra[23] in 2014 was adapted into Turkish. As a result of the assessment of psychometric features on a sample group consisting of Turkish elderly patients, it was found that EHES was a valid and reliable tool in old patients.

EFA and CFA were used to test the construct validity of EHES. Since there were no items with a factor load lower than 0.30 in the scale as a result of the EFA conducted, there were no items deleted from the scale.[26,30] The results obtained were in parallel with the EFA factor analysis results of the original scale.[23] As in the original scale, the Turkish version was also found to group under one factor. The scale was found to explain 61.88% of the scale. Since the value of ≥52 for the explained variance rates in scale adaptation studies was taken into consideration, the scale was found to meet the construct validity.[26]

TABLE 3 Item total score correlation coefficient, factor loads, alpha coefficients, and explained EHES variance

Item load	Factor load	Mean (SD)	Corrected item total correlations	Cronbach's α if item deleted
1	0.88	3.32 (0.89)	0.81	.87
2	0.87	3.14 (0.86)	0.79	.87
3	0.84	3.16 (0.86)	0.77	.87
4	0.89	3.21 (0.85)	0.84	.87
5	0.55	2.78 (0.94)	0.48	.90
6	0.30	3.85 (0.64)	0.30	.92
7	0.89	3.23 (0.85)	0.83	.87
8	0.86	3.25 (0.87)	0.79	.87
% Variance explained				Total = 61.88
Cronbach's α				Total = 0.90

Abbreviations: EHES, Elders Health Empowerment Scale; SD, standard deviation.

TABLE 4 EHES confirmatory factor analysis results

Fit criteria	Found	Appropriate	Acceptable
χ^2/df	2.77	<2	<5
RMSEA	0.07	<0.05	<0.08
GFI	0.97	>0.95	>0.90
CFI	0.98	>95	>0.90
IFI	0.98	>0.95	>0.90

Abbreviation: EHES, Elders Health Empowerment Scale.

Goodness of fit indices were taken into consideration to assess whether the model built with CFA was suitable for the data.

In the assessment of the scale, a good fit was not found in terms of χ^2/df and RMSEA values. In the literature, it is stated that an χ^2/df value of ≤3 shows a perfect fit. An RMSEA value of 0.07 or lower is an acceptable value.[33] In this context, χ^2/df and RMSEA were found to indicate a weak fit for the analysis conducted. Modification recommendations were examined and a second CFA model was applied by associating error covariances. As a result of the change made, CFA fit index values were found as χ^2 = 33.28, df = 12 (P < .05), χ^2/standard deviation = 2.77, RMSEA = 0.07, GFI = 0.97, CFI = 0.98 and IFI = 0.98. The model was found to show an acceptable fit.

4.2 | Reliability

The reliability of the EHES adapted into Turkish was assessed with Cronbach's α internal consistency coefficient, item-total correlation, and test-retest analysis.

Total internal consistency coefficient of EHES was found as 0.90. In the literature, the reliability of a scale being 0.70 and higher shows that

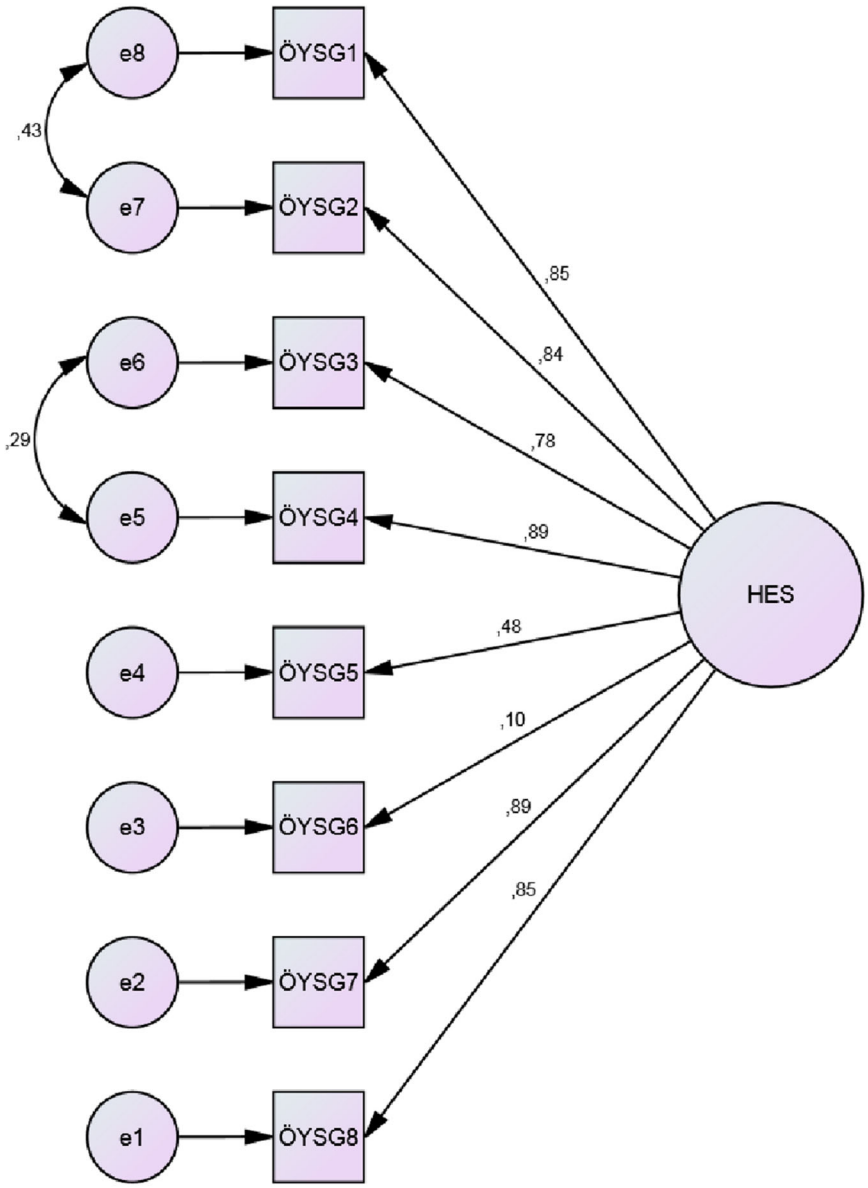

FIGURE 1 Path Diagram of Elderly Health Empowement Scale [Color figure can be viewed at wileyonlinelibrary.com]

the measurement tool is sufficient to be used.[24,29] Serrani Azcurra[23] stated that the Cronbach's α internal consistency coefficient of the original scale was 0.89. The results obtained are similar to the results obtained from the original scale

In the study, it was found that item-total correlation coefficients were higher than ≥0.20, which is the acceptable value in terms of item selection. High correlation coefficient of each item shows that the item is efficient and adequate enough to measure the targeted behavior.[30] In the original scale, item-total correlation coefficient was 0.58 to 0.78. The results obtained are similar to the item-total correlation coefficient results of the original scale[23]

For test-retest analysis, the EHES was applied to 60 patients with 2-week intervals. A positive and high statistically significant association was found in EHES ($P = .001$). The result obtained showed that the scale has high internal consistency and that reliable results can be obtained for more than one application.

4.3 | Implications for nursing practice

The results obtained were found to be in parallel with the analysis results of the original scale. EFA and CFA confirmed the one-factor structure of the scale. Cronbach's α internal consistency coefficient, item-total correlation, and test-retest analysis of the scale had high correlations. These results show that EHES, which was tested for validity and reliability in Turkish, is a valid and reliable tool in assessing the health empowerment levels of elderly individuals.

4.4 | Limitations of the study

The most important limitation of the study is the fact that it was conducted in a university hospital.

ACKNOWLEDGMENTS

We are grateful to the individuals who participated in this study. This study did not receive any grants from any commercial funding agency or public or nonprofit actors.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

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How to cite this article: Karabulutlu EY, Turan GB, Oruç FG. Elders health empowerment scale: Turkish translation and psychometric testing. *Perspect Psychiatr Care*. 2020;1–8. https://doi.org/10.1111/ppc.12577