SERBIAN TRANSLATION AND VALIDATION OF SF-36 FOR ASSESSMENT OF QUALITY OF LIFE IN PATIENTS WITH DIAGNOSED ARTERIAL HYPERTENSION

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SRPSKI PREVOD I VALIDACIJA SF-36 ZA PROCENU KVALITETA ŽIVOTA BOLESNIKA SA DIJAGNOSTIKOVANOM ARTERIJSKOM HIPERTENZIJOM

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ABSTRACT

Precise estimation of life quality is of special importance in patients with chronic diseases, such as arterial hypertension. There are many questionnaires for that purpose. SF 36 with 8 domains has been proved as one of the most appropriate. To date, there was no translated and validated SF 36 in the Serbian language for hypertensive patients. The aim of this study was to test validity and reliability of the SF-36 in Serbian patients with diagnosed arterial hypertension. Cronbach's alpha coefficient was calculated to assess the internal consistency of the Serbian version of the SF-36. After deducting the overlap between each of the 36 items and its related domain, the collective validity was considered to be good if the correlation coefficient remains > 0.4. Only 2.54% answers to the questions were missing. The values of all 8 domains were higher in men than in women. Cronbach alpha coefficient was high for the SF-36, 0.897, and it suggests that the SF-36 had good internal reliability. All 8 domains showed high values of non-rotating factorial weights (>0.300) (range from 0.742-0.856), and all measure the same thing. It means that all components in this questionnaire measure the things they are assigned to.

Keywords: *SF 36, quality of life, hypertension.*

SAŽETAK

Precizna procena kvaliteta života je od naročitog značaja kod pacijenata sa hroničnim bolestima, kao što je arterijska hipertenzija. U tu svrhu postoje brojni upitnici. SF 36 sa 8 domena pokazao se kao najprikladniji. Do danas, ne postoji prevedena i validirana forma SF 36 kod srpskih pacijenata sa hipertenzijom.Cilj ove studije bio je da se testira validnost i postojanost SF 36 kod srpskih pacijenata sa dijagnostikovanom arterijskom hipertenzijom. Cronbach alfa koeficijent je primenjen da se proceni interna konzistencija srpske verzije SF 36. Posle dedukcije i preklapanja svakog od 36 stavki i njegovih domena, kolektivna validnost je bila dobra ako je korelacioni koeficijent ostao > 0,4. Samo 2,54% odgovora na pitanja je nedostajalo. Vrednosti svih 8 domena bili su viši kod muškarac nego kod žena. Cronbach alfa koeficijent bio je visok za SF 36, 0,897, i to ukazuje na dobru unutrašnju postojanost SF 36. Svih 8 domena pokazali su visoke vrednosti ne-rotirajućih faktorskih težina (>0,300) (raspon 0,742-0,856), i svi mere istu stvar. To znači da sve komponente u ovom upitniku mere ono za šta su namenjene.

Ključne reči: *SF 36, kvalitet života, hipertenzija.*

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INTRODUCTION

There is an increasing demand by doctors and other medical professionals to measure the quality of life in different disease groups. It is very important to assess the quality of life especially in patients with chronic diseases, having in mind their longevity and associated problems[1,2]. In the Serbian population, there is a growing number of hypertensive patients. For that reason, it is important to analyze the quality of life among these patients. The patients`perception of their life quality may be affected by a disease and medication,that is especially important in the patients with arterial hypertension. Namely, the patients with moderate and mild hypertension usually do not have any symptoms[3]. On the other hand, many antihypertensive drugs may show some side effects that may impact the quality of life[4,5]. It was already shown that hypertensive patients had poorer quality of life in comparison to healthy individuals[2].

Many researchers have found a wide range of questionnaires to measure the patient's quality of life. The short form health survey questionnaire (SF-36) has been proved as one of the most appropriate and has been translated and validated into a variety of languages[6-10].

The SF-36 consists of 36 questions grouped in 8 domains[11,12]. The scientific evidence showed that the SF-36 is a reliable questionnaire for the assessment quality of life in different populations[13].

There is an increasing need among health professionals to use the validated quality of life questionnaires in hypertensive patients[14]. At present, there is no validated form of the Serbian version of the SF-36.

THE AIM OF THIS STUDY

The aim of this study was to test validity and reliability of SF-36 in Serbian patients with diagnosed arterial hypertension.

MATERIAL AND METHOD

One hundred and sixty nine patients with diagnosed arterial hypertension were recruited from September 2019 to January 2020 from the Pharmacy Department in Kragujevac. Each patient gave informed consent to participate in the study, according to the ethical standards and Declaration of Helsinki. The protocol of the study was approved by the Ethical committee from the Faculty of Medical Science in Kragujevac (No 01/18-4834).

The study was anonymous, and the results remained confidential. The completed questionnaires did not contain any identifying information about the individual participant. Enrollment in the study was voluntary-based.

The SF-36 Health Survey is composed of 36 questions and standardized response choices, organized into eight multi-item scales:

- physical functioning (PF);
- role limitations due to physical health problems (RP);
- bodily pain (BP), general health perceptions (GH);
- vitality (VT), social functioning (SF);
- role limitations due to emotional problems (RE);
- general mental health (MH).

In this study, the translated Serbian form of the SF-36 was used (**Appendix 1**).

Statistical analysis - Reliability

Cronbach's alpha coefficient was calculated to assess the internal consistency of the Serbian version of the SF-36. The internal consistency estimates of a magnitude of >0.70 were considered acceptable for the group comparisons[15]. The test-retest reliability of the SF-36 was assessed using interclass correlations (ICC) between the baseline and retest. The correlation of >0.80 was considered 'good'[16].

Statistical analysis - Validity

The complete statistical analysis was performed using the computer program IBM SPSS Statistics 19.0. All continuous variables are shown in the form of the mean ± standard deviation with 95% confidence interval or median with interquartile range (25-75th percentiles) (IQR), while categorical variables are shown with the percentage of certain category frequency. Chi-square test and independent t-test were used for the analysis of socio-demographic characteristics of patients. Kolmogorov-Smirnov test (tests of normality) was used for testing normality of the SF 36 domains. Mann-Whitney U test was done to compare the SF 36 domains according to gender. The correlation between two continuous variables was examined by Pearson linear correlation.

Cronbach's alpha, split-half and test-retest methods of reliability were used. For evaluation of the validity of this scale, the Principal Component Analysis was applied and the criterion for a number of the extracted components was Eigenvalue > 1. The factor loading of 0.4 or greater was considered.

In the present study, the factor analysis for eight domains was used to evaluate the structural validity of the SF-36 questionnaire. The Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's spherical check were carried out to check for the sample suitability for the factor analysis. The factor analysis is a statistical method used to test the structural validity of a scale and describes variability among the observed variables in terms of fewer unobserved variables - called factors.

RESULTS

Characteristics of patients

The SF-36 was completed by 169 adult patients with diagnosed arterial hypertension. This sample represented 76 males and 93 females with a mean age of 65.04 ± 11.18 years (age range 35-88 years) (Table 1).

Missing data

Out of all patients (169) and all questions (6084), 2.54% or 157 answers on the questions were missing. About 97.5% SF-36 questions were completed.

Descriptive statistics of SF-36

Descriptive statistics of all 8 domains of SF 36 was shown in Table 2. When the check of normality was done, we could see that only in one domain (General health) the condition for normality of data was fulfilled, but with other domains no. Meridian range of all 8 domains was from 50.00 (Role limitations due to physical health) to 66.67 (Role limitations due to emotional problems).

Gender differences

SF-36 domains for the responder sample were further analysed to determine any differences between males and females. Table 3 displays the descriptive characteristics as a function of gender (mean, standard deviation). Analysis revealed many differences between males and females for SF-36 domains (Physical functioning, Role limitations due to physical health, Energy/fatigue, Emotional well-being, Social functioning, and Pain). Values of all the 8 domains were higher in men than in women.

Reliability Analysis

Cronbach alpha coefficient was high for SF-36, 0.897, and it suggesting that the SF-36 had good internal reliability. If we look at the correlation matrix, we will see excellent correlation among all SF 36 domains (r>0.300) (Table 4). The lowest correlation was 0.469 and the highest 0.729. Average inter-item correlation was 0.598.

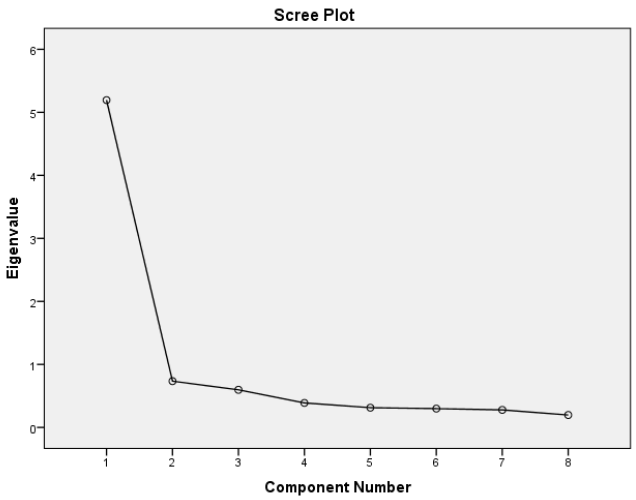
The summary statistics of all SF 36 domains was displayed in Table 5. If any domain removes from analysis, there is no growing of Cronbach's Alpha. It means that all domains should be analysed and they are valid for our population (Cronbach's Alpha if Item Deleted range from 0.880-0.894). Likewise, in Table 5 we could see good correlation of every domain with overall sum of SF-36 score (Corrected Item-Total Correlation range from 0.688-0.774).

Validity Analysis

Structural validity was evaluated by means of factor analysis. Results showed the KMO measure to be 0.904 and the Bartlett's spherical check to be $\chi 2 = 888.231$ and $p < 0.001$, which taken together, indicated that the samples in this study were suitable for factor analysis.

Factor analysis results indicated that when one component summary score, were included the eight domains whose characteristic roots were > 1 or approaching 1, the accumulative contribution rate was up to 64.93% (Figure 1 and Table 6).

Figure 1. Scree plot



In the end, Component Matrix was gained with factorial analysis, where all 8 domains showed high values non-rotating factorial weights (>0.300) (range from 0.742-0.856), and all measure the same thing. It means that all components in this questionnaire measure the things they are assigned to (Table 7).

Using a Pearson product moment correlation analysis, the results are presented in Table 8. The outcome of the correlation analysis indicated that the vast majority of items correlated more strongly with their related domain by comparison to an unrelated domain.

The retest of the correlation between the items showed that $r > 0.900$ could be achieved for all eight domains ($p < 0.001$) (Table 9), demonstrating good stability for the SF-36 questionnaire. This analyze was performed in 19 patients two weeks after first test. The difference between the mean values for each domain after two rounds of measurements was not statistically significant ($p>0.05$ for all domens).

DISCUSSION

The SF 36 is widely used as a reliable, concise and valid questionnaire to measure the quality of life in patients with various diseases[17,18]. This study evaluated validity and reliability of the SF 36 in Serbian hypertensive patients. To the best of our knowledge, this is the first study to validate the SF 36 in Serbian patients with hypertension.

Arterial hype rtension is a great risk factor for many cardiovascular diseases[19]. Hypertensive patients have poorer quality of life and may develop anxiety and depression[20,21]. It was interesting to find out the quality of life in Serbian hypertensive patients. Before that, in order to assess the quality of life in Serbian hypertensive patients, the SF 36 has to be validated. In general, the findings of our study showed that the Serbian version of the SF 36 had good agreement with the English version of the questionnaire. This is in accordance with previous similar studies[22,23].

The number of missing items in our study was low (2.54%). This fact indicated good acceptance of the SF 36 in Serbian hypertensive patients. The low number of missing items obtained in our study was similar to other studies in healthy individuals and in patients with other diseases[24,25]

It was an interesting finding that the SF-36 domains in our study (Physical functioning, Role limitations due to physical health, Energy/fatigue, Emotional well-being, Social functioning, and Pain) were higher in men than in women. This is similar to the study of de Carvahlo et al.[2] who assessed the quality of life in hypertensive and normotensive patients and found higher values of all areas of the SF in males compared to females.

The Cronbach α was >0.8 for all eight domains of the SF 36, indicating very good reliability. In addition, it indicates good internal uniformity. This is in accordance with the study of Zhang et al. [26,] where the overall Cronbach α was 0.794.

In our study, the SF 36 demonstrated good stability due to the result of retest of correlation between the items ($r > 0.900$) achieved for all eight domains ($p < 0.001$).

The limitation of this study was relatively a small number of patients. For that reason, the results of this study should be interpreted with caution to the whole population.

Table 1. Socio-demographic characteristics of patients with diagnosed hypertension

	Male	Female	p value
Gender; n (%)	76 (45%)	93 (55%)	
Age; M ± SD	65.32 ± 11.27	64.83 ± 11.17	0.789*
Level of education; n (%)			
primary school	13 (17%)	22 (25%)	0.050**
secondary school	31 (42%)	48 (54%)	
higher school	10 (13%)	7 (8%)	
University	21 (28%)	12 (13%)	

n (%)- number (%); M ± SD- mean ± standard deviation; *- Independent samples t test; **- Chi-square test

Table 2. Parametric and non-parametric descriptive statistics of SF-36 domains

SF-36 domains	Mean	SD	95% CI	p value*	Median	IQR
Physical functioning	62.02	29.71	57.50-66.53	<0.001	65.00	44.72-89.44
Role limitations due to physical health	46.94	43.83	40.29-54.00	<0.001	50.00	0.00-100.00
Role limitations due to emotional problems	53.55	44.51	46.79-60.31	<0.001	66.67	0.00-100.00
Energy/fatigue	54.21	20.55	51.09-57.33	0.030	52.00	44.00-68.00
Emotional well-being	65.59	19.09	62.69-68.48	<0.001	63.33	52.00-83.33
Social functioning	64.79	23.88	61.17-68.42	<0.001	62.50	50.00-87.50
Pain	62.97	23.84	59.35-66.59	<0.001	57.50	45.00-78.75
General health	51.36	20.98	48.17-54.55	0.200	52.27	38.64-65.91

*- Kolmogorov-Smirnov test (Tests of normality); SD- standard deviation; 95% CI- 95% confidence interval; IQR- interquartile range (25-75th percentiles)

Table 3. Descriptive statistics of SF-36 domains according to gender

SF-36 domains	Male	Female	p value*
Physical functioning	75.00 (51.25-90.00)	60.00 (35.00-86.94)	0.033
Role limitations due to physical health	75.00 (0.00-100.00)	25.00 (0.00-100.00)	0.007
Role limitations due to emotional problems	83.33 (0.00-100.00)	66.67 (0.00-100.00)	0.184
Energy/fatigue	56.00 (49.00-76.00)	52.00 (36.00-64.00)	0.001
Emotional well-being	68.33 (53.33-86.67)	63.33 (50.00-73.33)	0.025
Social functioning	75.00 (53.12-87.50)	50.00 (50.00-75.00)	<0.001
Pain	67.50 (45.00-90.00)	55.00 (45.00-77.50)	0.002
General health	52.27 (38.64-65.91)	47.73 (31.82-68.18)	0.168

*- Mann-Whitney U test; Median (IQR- interquartile range (25-75th percentiles))

Table 4. Inter-item correlation matrix of SF-36 domains*

	Physical functioning	Role limitations due to physical health	Role limitations due to emotional problems	Energy/ fatigue	Emotional well-being	Social functioning	Pain	General health
Physical functioning	1.000							
Role limitations due to physical health	0.618	1.000						
Role limitations due to emotional problems	0.502	0.699	1.000					
Energy/fatigue	0.595	0.605	0.545	1.000				
Emotional well-being	0.478	0.485	0.531	0.729	1.000			
Social functioning	0.592	0.601	0.527	0.684	0.708	1.000		
Pain	0.673	0.647	0.547	0.619	0.548	0.634	1.000	
General health	0.630	0.522	0.469	0.715	0.601	0.634	0.606	1.000

*- Pearson linear correlation

Table 5. Item-Total Statistics of SF-36 domains

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Physical functioning	399.412	25586.534	0.714	0.572	0.881
Role limitations due to physical health	414.487	21526.545	0.763	0.638	0.883
Role limitations due to emotional problems	407.879	22161.700	0.688	0.540	0.894
Energy/fatigue	407.223	27552.407	0.774	0.692	0.882
Emotional well-being	395.844	28435.334	0.692	0.636	0.888
Social functioning	396.637	26795.792	0.754	0.639	0.880
Pain	398.457	26787.682	0.756	0.597	0.880
General health	410.070	27853.907	0.709	0.600	0.886

Table 6. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings*
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.19	64.93	64.93	5.19	64.93	64.93	4.66
2	0.73	9.18	74.11	0.73	9.18	74.11	4.28
3	0.60	7.46	81.57				
4	0.39	4.86	86.42				
5	0.31	3.91	90.34				
6	0.30	3.72	94.06				
7	0.28	3.48	97.54				
8	0.20	2.46	100.00				

Extraction Method: Principal Component Analysis; *- When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 7. Component Matrix

	Component
	1
Energy/fatigue	0.856
Social functioning	0.838
Pain	0.819
General health	0.806
Role limitations due to physical health	0.802
Emotional well-being	0.790
Physical functioning	0.789
Role limitations due to emotional problems	0.742

Extraction Method: Principal Component Analysis; One component extracted.

Table 8. Item to domain correlations for the SF-36 data (for all correlations $p<0.001$)*

	Physical functioning	Role limitations due to physical health	Role limitations due to emotional problems	Energy/fatigue	Emotional well-being	Social functioning	Pain	General health
SF1	-0.507	-0.384	-0.328	-0.490	-0.408	-0.465	-0.495	**-0.663**
SF2	-0.427	-0.319	-0.271	-0.378	-0.250	-0.333	-0.455	**-0.515**
SF3	**0.755**	0.523	0.367	0.509	0.332	0.383	0.624	0.553
SF4	**0.822**	0.537	0.426	0.536	0.415	0.535	0.557	0.559
SF5	**0.863**	0.578	0.478	0.567	0.433	0.547	0.538	0.581
SF6	**0.837**	0.536	0.424	0.490	0.325	0.417	0.552	0.477
SF7	**0.822**	0.509	0.339	0.514	0.419	0.545	0.544	0.546
SF8	**0.823**	0.519	0.431	0.422	0.252	0.393	0.583	0.506
SF9	**0.852**	0.536	0.439	0.572	0.469	0.556	0.604	0.602
SF10	**0.856**	0.506	0.427	0.498	0.449	0.516	0.562	0.538
SF11	**0.786**	0.377	0.316	0.407	0.357	0.467	0.438	0.446
SF12	**0.711**	0.392	0.376	0.393	0.401	0.503	0.418	0.460

	Physical functioning	Role limitations due to physical health	Role limitations due to emotional problems	Energy/fatigue	Emotional well-being	Social functioning	Pain	General health
SF13	0.570	**0.856**	0.629	0.535	0.491	0.535	0.558	0.476
SF14	0.471	**0.877**	0.603	0.465	0.393	0.515	0.543	0.385
SF15	0.510	**0.869**	0.607	0.532	0.390	0.545	0.559	0.433
SF16	0.600	**0.896**	0.568	0.607	0.451	0.532	0.623	0.540
SF17	0.511	0.669	**0.885**	0.549	0.484	0.526	0.551	0.461
SF18	0.424	0.656	**0.911**	0.484	0.475	0.437	0.487	0.405
SF19	0.385	0.506	**0.865**	0.448	0.464	0.423	0.440	0.377
SF20	-0.527	-0.553	-0.487	-0.554	-0.598	**-0.890**	-0.536	-0.513
SF21	-0.604	-0.578	-0.445	-0.510	-0.418	-0.502	**-0.934**	-0.507
SF22	-0.659	-0.625	-0.550	-0.572	-0.501	-0.620	**-0.945**	-0.583
SF23	-0.623	-0.556	-0.468	**-0.793**	-0.526	-0.595	-0.580	-0.676
SF24	0.337	0.322	0.319	0.461	**0.665**	0.418	0.276	0.359
SF25	0.382	0.363	0.425	0.566	**0.834**	0.558	0.379	0.452
SF26	-0.352	-0.373	-0.418	-0.556	**-0.732**	-0.561	-0.392	-0.465
SF27	-0.559	-0.560	-0.520	**-0.772**	-0.659	-0.617	-0.620	-0.663
SF28	0.347	0.388	0.393	0.542	**0.737**	0.473	0.350	0.413
SF29	0.384	0.455	0.458	**0.777**	0.638	0.466	0.368	0.525
SF30	-0.351	-0.367	-0.390	-0.466	**-0.712**	-0.474	-0.432	-0.471
SF31	0.411	0.426	0.358	**0.863**	0.516	0.483	0.392	0.482
SF32	0.534	0.523	0.437	0.619	0.612	**0.902**	0.548	0.575
SF33	0.522	0.539	0.455	0.607	0.554	0.599	0.550	**0.788**
SF34	-0.472	-0.358	-0.336	-0.427	-0.336	-0.436	-0.398	**-0.726**
SF35	0.412	0.309	0.255	0.456	0.376	0.404	0.349	**0.736**
SF36	-0.534	-0.386	-0.373	-0.644	-0.512	-0.474	-0.452	**-0.878**

*- Pearson linear correlation

Table 9. Test-retest reliability

SF-36 domains	Mean test	Mean retest	Test-retest reliability *	p value**
Physical functioning	65.22	64.96	0.990	0.749
Role limitations due to physical health	53.51	54.03	0.987	0.742
Role limitations due to emotional problems	52.63	52.81	0.995	0.875
Energy/fatigue	52.74	53.58	0.970	0.130
Emotional well-being	63.75	65.86	0.945	0.131
Social functioning	63.82	63.82	0.987	1.000
Pain	60.92	61.45	0.978	0.630
General health	49.40	49.04	0.972	0.723

*- Pearson Correlation test; **- Paired samples t test

Appendix 1. Original english and Serbian translation version of SF-36 questionnaire

1.	Уопштено говорећи, како бисте проценили своје здравље In general, would you say your health is	Одлично (Excellent) Јако добро (Very good) Добро (Good) Слабо (Fair) Лоше (Poor)	1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( )
2.	У поређењу са претходном годином, како бисте оценили своје здравње сада? Compared to one year ago, how would you rate your health in general now?	Много боље него пре годину дана (Much better now than one year ago) Нешто мало боље него пре годину дана (Somewhat better now than one year ago) Скоро да је исто (About the same) Нешто горе него пре годину дана (Somewhat worse now than one year ago) Много горе него пре годину дана (Much worse than one year ago)	1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( )
	Следеће реченице се односе на разне активности које можда радите сваког дана. Да ли Вас Ваше здравље ограничава сада у овим активностима? Ако да, у којој мери? The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?		
		Да, много ме ограничава (Yes, limited a lot)	Да, мало ме ограничава (Yes, limited a little)	Да, не ограничава ме уопште (No, not limited at all)
3.	Теже физичке активности, као што су трчање, подизање тешких ствари, учествовање у захтевним спортовима (Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports)	( )	( )	( )
4.	Умерене активности, као што су померање стола, гурање усисивача, пеглање и сл. (Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf)	( )	( )	( )
5.	Подизање или ношење ствари из продавнице. (Lifting or carrying groceries)	( )	( )	( )
6.	Пењање неколико спратова. (Climbing several flights of stairs)	( )	( )	( )
7.	Пењање на један спрат. (Climbing one flight of stairs)	( )	( )	( )
8.	Савијање или клечање. (Bending, kneeling, or stooping)	( )	( )	( )
9.	Шетња дужа од 1,5 km. (Walking more than a mile)	( )	( )	( )
10.	Ходање у дужини неколико аутобуских станица. (Walking several blocks)	( )	( )	( )
11.	Ходање у дужини једне станице. (Walking one block)	( )	( )	( )
12.	Купање и облачење. (Bathing or dressing yourself)	( )	( )	( )
	Током протекле 4 недеље, да ли сте имали било који од наведених проблема са Вашим послом или неким другим свакодневним активностима као резултат Вашег физичког здравља?		

	(During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?)		
		Да (Yes)	Не (No)
13.	Били сте приморани да смањите количину времена коју иначе проводите у послу или другим активностима. (Cut down the amount of time you spent on work or other activities)	( )	( )
14.	Постигли сте мање него што сте желели. (Accomplished less than you would like)	( )	( )
15.	Били сте ограничени у одређеној врсти посла или другим активностима. (Were limited in the kind of work or other activities)	( )	( )
16.	Било Вам је тешко да урадите нешто (на пример, захтевало је улагање додатног напора). (Had difficulty performing the work or other activities (for example, it took extra effort))	( )	( )
	Током протекле 4 недеље, да ли сте имали било који од наведених проблема са Вашим послом или неким другим свакодневним активностима као резултат било каквог емотивног проблема (попут тога да сте били депресивни или напети/нервозни). (During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?)		
		Да (Yes)	Не (No)
17.	Били сте приморани да смањите количину времена коју иначе проводите у послу или другим активностима. (Cut down the amount of time you spent on work or other activities)	( )	( )
18.	Постигли сте мање него што сте желели. (Accomplished less than you would like)	( )	( )
19.	Нисте радили онолико пажљиво као што обично радите. (Didn't do work or other activities as carefully as usual)	( )	( )
20.	У којој су мери ваше физичко здравље или емотивни/психички проблеми утицали на Ваше уобичајене друштвене активности са породицом, пријатељима, комшијама или другим групама? (Emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?)	Нимало (Not at all) Помало (Slightly) Умерено (Moderately) Прилично (Severe) Веома (Very Severe)	1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( )
21.	Током прошле 4 недеље колико сте болова у телу имали? (How much bodily pain have you had during the past 4 weeks?)	Никаквих болова (None) Врло благе болове (Very mild) Благе (Mild) Умерене (Moderate) Тешке (Severe) Јако тешке (Very severe)	1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( )
22.	Током протекле 4 недеље, колико су Вас болови ометали да обављате Ваше уобичајене послове (укључујући и послове у кући и напољу) (During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?)	Нимало (Not at all) Мало (A little bit) Умерено (Moderately) Прилично (Quiet a bit) Јако су ме ометали (Extremely)	1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( )
	Следећа питања односе се на то како се осећате и како Вам иде у прошле 4 недеље. Молим Вас да на свако питање дате по један одговор који најбоље описује како се осећате. (These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling.)		

		Све време (All of the time)	Скоро све време (Most of the time)	Већи део времена (A good Bit of the Time)	Неко време (Some of the time)	Мали део времена (A little bit of the time)	Ни у једном тренутку (None of the Time)
23.	Да ли сте осећали да сте пуни духа/елана? **(**Did you feel full of pep?)	( )	( )	( )	( )	( )	( )
24.	Да ли сте били јако нервозни? (Have you been a very nervous person?)	( )	( )	( )	( )	( )	( )
25.	Да ли сте осећали толико нерасположено да ништа није могло да Вас развесели? (Have you felt so down in the dumps that nothing could cheer you up?)	( )	( )	( )	( )	( )	( )
26.	Да ли сте се осећали спокојно и мирно? (Have you felt calm and peaceful?)	( )	( )	( )	( )	( )	( )
27.	Да ли сте имали пуно енергије? (Did you have a lot of energy?)	( )	( )	( )	( )	( )	( )
28.	Да ли сте се осећали „на крај срца“ и тужно? (Have you felt downhearted and blue?)	( )	( )	( )	( )	( )	( )
29.	Да ли сте се осећали истрошено? (Did you feel worn out?)	( )	( )	( )	( )	( )	( )
30.	Да ли сте били срећни? (Have you been a happy person?)	( )	( )	( )	( )	( )	( )
31.	Да ли сте осећали умор? Did you feel tired?	( )	( )	( )	( )	( )	( )

32.	Током прошле 4 недеље, колико времена су Вас Ваше физичко здравље или емотивни-психички проблеми ометали у Вашим друштвеним активностима (попут посећивања, пријатеља, рођака, и сл)? (During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?)		Све време (All of the time) Већину времена (Most of the time) Неки део времена (Some of the time) Мало времена (A little bit of the time) Ни у једном тренутку (None of the Time)			1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( )
	Колико је свака од следећих реченица ТАЧНА или НЕТАЧНА за Вас. (How true or false is each of the following statements for you?)					
		Дефинитивно тачна (Definitely true)	Већином тачна (Mostly true)	Не знам (Don't know)	Углавном нетачна (Mostly false)	Дефинитивно нетачна (Definitely false)
33.	Чини ми се да се лакше разболим. (I seem to get sick a little easier than other people)	( )	( )	( )	( )	( )
34.	Здрав сам као и други које познајем. (I am as healthy as anybody I know)	( )	( )	( )	( )	( )
35.	Очекујем да ће се моје здравље погоршати. (I expect my health to get worse)	( )	( )	( )	( )	( )
36.	Моје здравље је одлично. (My health is excellent)	( )	( )	( )	( )	( )

CONCLUSION

The findings of our study confirmed the cross-cultural validity of the SF 36 for hypertensive patients, with good reliability and validity. According to that, we believe the Serbian version of the SF 36 is suitable for measurement of the quality of life in hypertensive patients.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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