

## Original Article

Validity and Reliability of the Persian Version of the *Utian Quality of Life Scale (UQOL)*Sahar Balanian<sup>1\*</sup>, Hossein Fallahzadeh<sup>2</sup>, Mohammad Ali Morowati Sharifabad<sup>3</sup><sup>1</sup>School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.<sup>2</sup>Department of Statistics and Epidemiology, Faculty of Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.<sup>3</sup>Department of Ageing Health, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

## ARTICLE INFO

## ABSTRACT

Received 05.09.2019  
 Revised 16.10.2019  
 Accepted 10.11.2019  
 Published 03.12.2019

**Key words:**

Reliability;  
 Validity;  
 menopausal women;  
 Quality of life;  
*Utian quality of life scale*;  
 Persian version

**Background:** Menopause can have adverse effects on the quality of life of postmenopausal women. The main purpose of this study was to determine the Validity and Reliability of the Persian version of the *Utian Quality of Life Scale (UQOL)* in Iranian postmenopausal women in 2019

**Methods:** The questionnaire was first translated into Persian. After its adaptation with the original version and backward translating it into English, the face and content validity were assessed by a group of experienced experts. To this end, exploratory factor analysis was performed by Principal Factor Analysis method with varimax rotation. Convergent validity was assessed by correlating the Persian version of UQOL and the *36-Item Short Form Health Survey (SF-36)*. Finally, the mean quality of life score of postmenopausal women in different domains as well as its mean in different domains based on age, education level, menopausal age, and number of children were calculated.

**Results:** Regarding reliability, the alpha coefficient was obtained 0.66 for occupation domain, 0.52 for health domain, 0.50 for emotional domain, and 0.90 for sex domain. There was a significant relationship between quality of life and age, menopausal age, occupation and number of children in all domains in menopausal women. There was a significant relationship between BMI and quality of life score in postmenopausal women only in physical health domain.

**Conclusion:** It seems this questionnaire can't be used in research on the quality of life of postmenopausal women

**Introduction**

Menopause is defined as the permanent cessation of ovarian function and the termination of reproductive potential in women. Definite menopause is determined by a TSH test or measurement of vaginal pH, or not having any vaginal bleeding for one year (1).

Menopause occurs in women of advanced ages as a result of physiological changes caused by loss of ovarian function and hormonal changes, causing symptoms and complications that can affect women's lives as they get older (2, 3).

The most common and obvious menopausal symptoms include periodic abnormalities, hot flashes, and sudden sweating accompanied by chills, tachycardia, anxiety, feelings of heaviness in the head and chest, burning sensations, nausea, suffocation, and lack of

concentration (4). Studies have shown that hot flashes affect work social activities, leisure time, sleep, mood, concentration, communication with others, sexual activity and overall quality of life (5). Quality of life is a subjective and abstract concept, and refers to the subjective judgment of one's life or overall status of life (6). Quality of life is a multidimensional concept. It is measured in five domains, ie, physical health, physical wellbeing, social health, emotional wellbeing, and sexual wellbeing (7).

Studies have shown that variables such as age, marital status, education, number of children, sexual activity, and menopausal symptoms play an important role in women's quality of life (8). Various studies in Iran and other countries have shown that menopause has an adverse impact

\* . Corresponding Author Email: sahar.balanian@gmail.com

on quality of life of postmenopausal women (9). Studies have also shown that menopause mainly influences the physical, psychological, and sexual aspects of women (10). A new and rational approach to menopause makes it possible to seek out the ways to resolve many of its physical and psychological consequences (11).

The Quality of Life Scale has an important potential for measuring treatment and serves as a research instrument. Measuring perceptions of wellbeing and combining them into a women's care plan helps to improve their health. Despite the importance of the issue, little epidemiological research has been done on quality of life after menopause, in part because of a lack of scales and measurement instruments. Among the available instruments, the most practical instrument that can be validated by standard scientific methods and easily used in studies is the questionnaire. The quality of life of menopausal women has also been measured by questionnaire.

Questionnaires including quality of life after menopause (Utian, 2002)<sup>1</sup>, Quality of Life Index Questionnaire (Becker, 1999)<sup>2</sup>, 63-Item Health-related Quality of Life Questionnaire (Oxford University, 1992)<sup>3</sup>, Quality of Menopausal Life Questionnaire (McGill, 1992)<sup>4</sup> and Quality of Life and General Life Issues (World Health Organization, 1992)<sup>5</sup> are currently used to assess the quality of life.

The UQOL questionnaire has been translated into Portuguese (12) and has been used in various studies on Spanish, Greek and South African women (13-15). Among these questionnaires, the UQOL questionnaire has been comparably more frequently used in other countries and more different studies on the quality of life after menopause.

This questionnaire consists of four domains: physical, emotional, sexual, occupational, and was nativized by Utian in 21 regions of the USA including east, west, and middle with diverse samples including private places, gynecology clinics, and general hospital (16).

In Iran, adequate instruments are not available to measure postmenopausal quality of life and the Menqol questionnaire has been used more frequently. The validity and reliability of the Persian version of this questionnaire was also assessed by Fallahzadeh (2010). This

questionnaire focuses more on the physical and psychological domains and does not address the emotional and occupational domains (17). However, in addition to examining physical, psychological, emotional and occupational domains, the UQOL questionnaire has more complete items on sexuality, so the UQOL questionnaire has more complete items and therefore higher preferability than the MenQOL questionnaire.

Given the importance of this questionnaire and the physical, psychological and social consequences of menopause on menopausal women's quality of life, this study aimed to validate the UQOL questionnaire and then to evaluate the quality of life of menopausal women aged over 50 years (the average age of menopausal women in Yazd) in Yazd.

### Materials and Methods

This study has two stages of instrumental psychometric evaluation and quality of life assessment of postmenopausal women aged over 50 years in Yazd (one of the major cities of central Iran) in 2019.

The UQOL questionnaire has 23 four-choice items in four domains: occupational (7 items) sexual (3 items), physical (7 items), and emotional (5 items). The study was conducted on 230 eligible postmenopausal women in Yazd.

Menopause was confirmed to have either a progesterone test of 30 international units per millimeter and higher, and not having any vaginal bleeding for one year.

In addition to definitive menopause and over the age of 50 years, women must also reside in Yazd, having normal menopause and no hormone replacement therapy in the past 6 months, no special herbal and chemical medications, no mental problems (alzheimer's, dementia, and schizophrenia), Removal of the uterus or ovaries.

The number of our samples for this study was 230 of postmenopausal women. To determine the sampling adequacy of the dataset, the Kaiser-Meyer-Olkin (KMO) was applied, as a rule of thumb this value should be greater than 0.6 (18). In our study the KMO was 0.72, so our sampling was adequate.

For completing the questionnaire, 10 health centers were randomly selected and 23 qualified postmenopausal women were

randomly assigned to study. As a result, the questionnaire was completed by 230 postmenopausal women.

Questionnaires were completed by trained interviewers after establishing relationship with eligible postmenopausal women, explaining the purpose of the research to them, answering their questions and uncertainties, and obtaining their informed consent, giving tips on how to answer and ensuring confidentiality of their answers.

The following steps were taken to determine the Validity and Reliability Characteristic of quality of life in postmenopausal women.

#### **Translation:**

First two English speakers independently translated the English version of the questionnaire into Persian and all Persian equivalents and sentences of the questionnaire were recorded. The translators were selected, one with medical knowledge and the other with no knowledge of medical sciences. Finally, the Persian version of the questionnaire was prepared.

#### **Combining and matching translations:**

In the next step, the Board of Directors and Executives and Translators held a session to review the two translated versions. After discussing the inconsistencies between the two translations and overcoming the existing differences and selecting appropriate equivalents for the terms, a Persian version of the questionnaire was prepared.

#### **Return the final translated version from the target language to the original language (Backward translation):**

Next, two English experts who were blind to the English version of the questionnaire translated the obtained Persian version into English. The two English versions were combined after making necessary revisions and corrections by the authors and the English version obtained was compared with the original version of the questionnaire.

The main purpose of this phase was to determine the psychometric properties of the UQOL questionnaire. Psychometric analysis means to validate a research instrument consisting of validity and reliability. For this purpose, the Persian version of the Uqol questionnaire was prepared based on the guidelines issued by the World Health

Organization, which included the following steps (19).

#### **Internal consistency**

In statistics and research, internal consistency is typically a measure based on the correlations between different items on the same test (or the same subscale on a larger test). It measures whether several items that propose to measure the same general construct produce similar scores. For example, if a respondent expressed agreement with the statements "I like to ride bicycles" and "I've enjoyed riding bicycles in the past", and disagreement with the statement "I hate bicycles", this would be indicative of good internal consistency of the test

After initial extraction, the pool of items was subjected to Cronbach's  $\alpha$  analysis to ensure that each item contributed positively to the factor on which it loaded. Cronbach's  $\alpha$  analysis failed to eliminate any items for which inclusion would have reduced the communality estimate.

#### **Questionnaire reliability:**

Repeatability or test-retest reliability is the closeness of the agreement between the results of successive measurements of the same measurand carried out under the same conditions of measurement. In other words, the measurements are taken by a single person or instrument on the same item, under the same conditions, and in a short period of time. A less-than-perfect test-retest reliability causes test-retest variability. Such variability can be caused by, for example, intra-individual variability and intra-observer variability. A measurement may be said to be repeatable when this variation is smaller than a pre-determined acceptance criterion(19)

In our study In order to confirm the internal reliability of the postmenopausal women quality of life questionnaire, a pilot study was carried out on 30 people who were eligible to participate. the sample size for internal consistency or test-retest reliability was calculated by formula and amount of coefficient reported from the main Statistical book and the power of 80% and alpha 5% (20). First the questionnaire was filled out by 30 postmenopausal women and 2 week later , the questionnaire was filled out by them again . This interval was chosen to improve the likelihood of compliance and was considered acceptable for the purpose of addressing the reliability of an instrument assessing QOL, which is a more state than trait

construct. Moreover, as the items are scaled using a Likert-type 1 to 5 rating, the likelihood is that participants would not recall their responses as long as 14 days after initially having completed the scale (19). Then positive and negative questions were scored and internal reliability of the items was calculated by using ICC (Intraclass correlation coefficient).

Validity refers to whether or not the researchers actually measured what they wanted to do. In fact, validity determines the consistency in answering the questionnaire items. In this step, the validity was assessed by various methods including face, content and construct validity (21).

#### **Content and face validity:**

After translating, the content and face validity of the questionnaire should be qualitatively performed. It should be noted that after translating the instrument, there is no need to quantify the face and content validity.

Face validity addresses the question whether the appearance of the instrument is appropriate for evaluating the purpose of the subject it aims to study.

Face validity is also related to the formal attractiveness and strength of the instrument or method of data collection, and is achieved when lay people, including subjects, recognize that the instrument is appropriate for measuring the characteristics in question (21).

#### **Face validity**

In this study, participants (n: 10) were asked questions about the instrument's validity, reasonableness, appropriateness, attractiveness and logical sequence of items.

Difficulty study <sup>6</sup>- meaning identifying items, phrases, or words that are difficult to understand

Appropriateness study - The existence of a proportionality between the items for the purpose of the questionnaire

Ambiguity study <sup>8</sup>- The existence of misconceptions about items, or the semantic deficiency of words

#### **Content validity**

The tool was given to 15 experts (gynecologist, geriatrician, psychologist) and they were asked to present their feedback after qualitatively examining the questionnaire in terms of grammatical criteria, appropriate words, and appropriate wording (21).

Exploratory factor <sup>9</sup> analysis was performed to investigate the construct validity of the questionnaire. The generation of hidden factors was performed using principal components <sup>10</sup> analysis and varimax rotation.

The presence of an item was determined to be approximately 0.3 based on the formula  $CV = 5.152 \div \sqrt{(n-2)}$ , (CV is the extractable factor and n is the sample size). (22) Steven believes a valid hidden variable is a factor which has 150 research unit and at least 10 items with a load of 0.4 (23). According to the three-pointer law, There should be at least three observed variables (items) for each hidden variable (24). Sharing of items with a value less than 0.5 were excluded from the EFA (25).

#### **Convergent Validity**

For convergent validity, SF-36 was used. To this end, 20 questionnaires were completed simultaneously with filling out the UQOL questionnaire, and correlation <sup>11</sup> between the domains of the SF-36 questionnaire and the UQOL questionnaire was assessed using correlation test.

After validation of the questionnaire, the mean score of postmenopausal quality of life in different domains and the mean score of quality of life in different domains based on age, education level, menopausal age, and number of children were calculated. All data were analyzed by SPSS-AMOS16 software. The significance p-value was considered to be less than 0.5 in all tests.

#### **Results**

The mean age of menopausal women was  $62 \pm 5.891$  years, and the mean age at menopause was  $60 \pm 5.579$  years and the mean BMI was  $30 \pm 4.119$ . The majority of the women studied were illiterate, housewives, and had at least five children (Table 1).

Table 1 .Demographic characteristics of the study population

Variable	Condition	Number	Percentage
Education level	Illiterate	196	78
	Guidance school completion	13	5.2
	Secondary school completion	10	4
	diploma	16	6.4
	Academic	15	6
Marital status	Married	204	81.6
	Widow/widower	46	18.4
Occupation	Housewife	217	86.8
	Retired	33	13
BMI	18-25	37	14.8
	25-30	123	49.2
	Higer than 30	90	36
Menopausal age	Middle age(30-64)	173	69.2
	Younger elderly(65-75)	74	29.6
	Older elderly(76-85)	3	1.2
Number of children	1children	8	3.2
	2children	75	30.0
	3children	96	38.4
	4children	37	14.8
	5children	34	13.6

**Questionnaire reliability test**

Cronbach's alpha was obtained for each domains of the questionnaire and it was 0.66 for occupational domain, 0.52 for health domain, 0.50 for emotional domain, and 0.90 for sexual

domain. Then, the intra-class correlation coefficient (ICC) between the Domains of the quality of life questionnaire was calculated (Table 2).

Table 2 . Test-retest correlations and Cronbach's a of the Persian version of the Utian Quality of Life Scale

	First exam N=30			Two week later exam N=30		
	Test-retest correlation	Cronbach a	95% Conf. Interval	Test-retest correlation	Cronbach a	95% Conf. Interval
Factor 1: Occupational	0.742	0.665	0.420,0.956	0.712	0.668	0.423,0.856
Factor 2: Health	0.734	0.528	0.345,0.945	0.754	0.523	0.335,0.940
Factor 3: Emotional	0.563	0.505	0.235,0.845	0.593	0.509	0.221,0.826
Factor 4: Sexual	0.651	0.908	0.436,0.984	0.622	0.901	0.440,0.979
Total score	0.574	0.651	0.234,0.856	0.670	0.650	0.212,0.889

**Construct validity**

The validity of the Persian version of the UQOL questionnaire was investigated using exploratory factor analysis. For this purpose, a

questionnaire was randomly distributed among 230 postmenopausal women (UQOL questionnaire has 23 items, 10 questionnaires per each item) based on inclusion criteria.

Exploratory factor analysis was performed using Principal Factor Analysis using Varimax rotation. The items with the factorial loading of

at least 0.3 in the exploratory factor analysis were maintained (Table 3).

Table 3. Structure validity of the Persian version of the UQOL questionnaire using exploratory factor analysis

Number	Variable	Questions	Factorial loading	Variance percent	p- value
1	occupational	2. I feel challenged with my work.	0.809	24.41	0.02
		23. I continue to create new occupational goals for myself.	0.940	17.10	0.93
		18. I examine the stimuli of my life.	0.986	1.35	0.01
		19. I continue to create new personal goals for myself.	0.898	2.70	0.02
		16. I believe I have no control over my physical health.	0.988	2.19	0.05
		21. I feel that I am in good shape physically.	0.738	3.31	0.02
		22. I feel I'm physically fit.	0.794	5.20	0.20
		Total items of occupational domain	6.153	56.24	0.03
2	Health	7. I'm dissatisfied with my shape and appearance.	0.956	1.23	0.08
		8. My diet is not nutritionally appropriate.	0.906	1.13	0.06
		9. I feel I have control over my eating behavior.	0.799	0.57	0.03
		10. Normally, I get involved in serious exercise three or more times a week	0.799	0.37	0.18
		12. I am constantly anxious and experiencing anxiety.	0.905	8.87	0.04
		13. Most things that happen to me are out of my control.	0.653	1.21	0.09
		3. I believe that my work benefits society.	0.882	1.88	0.33
		Total items of health domain	5.900	15.26	0.05
3	Emotional	1. I can control the things that matter to me in life.	0.901	37.42	0.05
		11. My mood is generally depressed.	0.788	0.22	0.25
		15. At present, I experience pain or physical discomfort during sexual activity.	0.687	0.11	0.02
		20. I expect that good things will happen in my life.	0.946	0.07	0.01
		6. I have gained much individual recognition in the community or at work.	0.782	1.52	0.51
		17. I am proud of my occupational achievements and accomplishments	0.827	7.20	0.65
		Total items of emotional domain	4.931	46.54	0.3
4	Sexual	4. I am not happy with my marital life.	0.962	12.74	0.03
		5. I am satisfied with my life.	0.912	3.18	0.73
		14. I am happy with the frequency of my sexual intercourse with a sexual partner.	0.861	0.04	0.01
		Total items of sexual domain	2.55	15.96	0.2

### Convergent validity

The 36-item Short Form Health Survey questionnaire (SF-36) was used to assess concurrent criterion validity.

Spearman correlation coefficients between the domains of UQOL and SF-36 were calculated (Table 4).

Table 4. Pearson correlation between the domains of the Utian Quality of Life Scale and the 36-Item Short Form Health Survey questionnaire

Factors SF-36	Domain 1: Occupational	Domain 2: General Health	Domain 3: Emotional	Domain 4: Sexual
Physical Functioning	0.161 <sup>b</sup>	0.262 <sup>b</sup>	0.211 <sup>b</sup>	0.202
Role Physical	0.019 <sup>a</sup>	0.023 <sup>a</sup>	0.066 <sup>a</sup>	0.004 <sup>c</sup>
Role Emotional	0.121 <sup>a</sup>	0.111 <sup>a</sup>	0.110 <sup>a</sup>	0.091 <sup>a</sup>
Vitality	0.081 <sup>a</sup>	0.122 <sup>a</sup>	0.101 <sup>a</sup>	0.019 <sup>a</sup>
Emotional	0.042 <sup>a</sup>	0.066 <sup>a</sup>	0.077 <sup>a</sup>	0.082
Social Functioning	0.223 <sup>a</sup>	0.017 <sup>a</sup>	0.071 <sup>a</sup>	0.171 <sup>a</sup>
Bodily Pain	0.072 <sup>a</sup>	0.029 <sup>a</sup>	0.028 <sup>a</sup>	0.091 <sup>a</sup>
General Health	0.109 <sup>a</sup>	0.220 <sup>a</sup>	0.121 <sup>a</sup>	0.001 <sup>a</sup>

Pearson correlation

n sample of uqol =230

n sample of sf-36 =20

<sup>a</sup>P<0/001<sup>b</sup>0/001<P<0/01<sup>c</sup>0/01<P<0/05

After determining the psychometric properties of the Persian duplicate of the UQOL questionnaire, the mean score of quality of life in different domains in postmenopausal women was studied. The mean score of quality of life was 55.42±6.362 in the occupational domain,

50.67±7.476 in the health domain, 42.06±5.259 in the emotional domain, and 55.61±6.817 in the sexual domain. The mean score of quality of life of menopausal women was also calculated based on age, education, menopausal age, and number of childre (Table 5).

Table 5. The mean scores of quality of life in different domains in menopausal women

Variable	Status	mean occupational domain (mean ± SD)	Mean health Domain (mean ± SD)	Mean emotional Domain (mean ± SD)	Mean sexual domain (mean ± SD)
Education level	Illiterate	55.92 ±6.40	51.20 ±7.48	42.54± 5.36	56.20± 6.89
	Guidance school	54.31 ±6.38	48.15 ±7.54	40.62± 5.81	54.08± 7.41
	Secondary school	54.60 ±5.50	51.00 ±6.46	40.70± 2.16	54.22± 4.54
	diploma	50.80 ±5.45	51.50 ±7.15	42.12± 4.70	55.50± 6.17
	Academic	55.42 ±6.36	44.87± 6.06	38.00± 3.40	50.20± 4.82
	Total	55.43± 6.36	50.67 ±7.47	42.06± 5.25	55.61± 6.81
	p-value	<sup>1</sup> 0.03	<sup>1</sup> 0.03	0.18	0.17
BMI	18-25	55.54 ±5.46	51.71 ±6.80	41.95± 4.69	55.76 ±5.81
	25-30	54.89 ±6.41	49.77± 7.56	41.47± 5.31	54.96 ±6.95
	Higer than 30	56.11 ±6.62	51.46 ±7.54	42.92± 5.33	56.43± 6.98
	Total	55.42± 6.36	50.67 ±7.47	42.06± 5.25	55.61± 6.81
	*p-value	0.26	<sup>2</sup> 0.002	0.10	0.60
Age (yr)	Middle-aged(30-64)	54.05 ±6.37	48.60± 7.40	40.57 ±5.03	53.81 ±6.70
	Younger elderly(65-75)	57.25± 5.92	53.41± 6.65	44.04± 4.87	57.99 ±6.22
	Older elderly(76-85)	52.43 ±6.50	46.43± 7.36	38.86± 4.56	51.57 ±6.07
	Older>85	55.50 ±6.36	51.00± 9.31	42.50 ±9.19	56.50± 9.60
	Total	55.42 ±6.36	50.67± 7.47	42.06 ±5.25	55.61 ±6.81
	*p-value	<sup>1</sup> 0.02	<sup>1</sup> 0.01	<sup>1</sup> 0.03	<sup>1</sup> 0.01

## Validity and Reliability of the Persian Version of the Utian Quality of Life Scale

Menopausal age	Middle age(30-64)	55.00 ±6.43	49.83± 7.47	41.29± 5.12	54.84 ±6.77
	Younger elderly(65-75)	56.45± 6.10	52.61± 7.14	43.84 ±5.19	57.39 ±6.60
	Older elderly(76-85)	54.67 ±7.57	51.67± 9.45	42.67 ±6.02	56.00 ±8.54
	Total	55.42± 6.36	50.67± 7.47	42.06± 5.25	55.61 ±6.81
	*p-value	0.35	0.13	<sup>1</sup> 0.02	0.15
Occupation	Housewife	55.86 ±6.31	51.10 ±7.41	42.39± 5.30	56.07± 6.81
	Retired	52.58 ±6.00	47.85 ±7.34	39.94 ±4.48	52.58 ±6.07
	Total	55.42 ±6.36	50.67 ±7.47	42.06 ±5.25	55.61 ±6.81
	*p-value	<sup>2</sup> 0.002	<sup>2</sup> 0.001	<sup>2</sup> 0.004	<sup>2</sup> 0.003
Number of children	1children	62.75 ±2.37	57.75± 1.58	46.88± 2.10	62.63± 2.72
	2children	54.32 ±6.60	49.92 ±7.90	41.91± 5.53	55.03 ±7.25
	3children	56.06 ±6.23	51.36 ±7.35	42.46± 5.36	56.20± 6.71
	4children	57.51 ±4.95	53.05 ±6.26	43.16± 4.82	57.43± 5.73
	5children	52.06± 5.85	46.12 ±6.30	38.97± 3.68	51.59± 5.60
	Total	55.42± 6.362	50.67± 7.476	42.06 5.259	55.61± 6.817
*p-value	<sup>2</sup> 0.002	<sup>2</sup> 0.001	<sup>2</sup> 0.001	<sup>2</sup> 0.004	

\*P values calculated using paired t-test

1: 0.01 ≤ P &lt; 0.05

2: 0.001 ≤ p &lt; 0.01

SD: standard deviation

## Discussion

The purpose of this study was to investigate the Validity and Reliability of the Persian version of the menopausal women UQOL Quality of Life Questionnaire. The results of this study showed that the questionnaire is the next one.

Our study also didn't show the reliability of the instrument as appropriate. Internal consistency of the instrument was calculated by Cronbach's alpha for all domains, and the highest coefficient (0.90) was obtained for sexual domain and the lowest (0.50) for general health. These values indicate the appropriateness of the internal consistency of the questionnaire and the correlation between the items, and that the questionnaire's items measure a similar concept, without conceptual dispersion.

Utian *et al.* (2002) reported the overall reliability of the original version of the questionnaire using Cronbach's alpha as being 0.83 (16). Since the validity of the Persian version of the UQOL in Iran has not yet been assessed, no reliability-related findings have yet been reported for the Persian version of the questionnaire.

And currently the quality of life in menopausal women is investigated by scales such as Menqol and SF-36. Lyons *et al.* calculated the Cronbach's alpha of the original version at 0.8 for each domain of the SF-36 (26).

In the study of Montazeri *et al.* (2005), in which the Persian version of the SF-36 was psychometrically investigated, all eight domains were found to have satisfactory reliability and Cronbach's alpha coefficient, except for the vitality domain with a reliability of 0.65. Other domains had a reliability of 0.77-0.90.

In the study of Fallahzadeh (2010), the internal consistency of the four components studied (physical, vasomotor, psychological and sexual) in the translated Menqol questionnaire was calculated using Cronbach's alpha coefficient. The Cronbach's alpha coefficient in this study was obtained 0.77 for the vasomotor component, 0.86 for the physical component, 0.79 for the psychological domain, and 0.92 for the emotional and sexual components (17).

In evaluating the construct validity of this study using exploratory factor analysis, four domains with factor loading higher than one were extracted, among which the highest factor loading was obtained for the occupational domain with the factor loading of 6.153 and the least factor loading for me last (sexual) domain with the factor loading of 2.55. The first to fourth domains were identified as occupational, general health, emotional health, and sexual health, respectively. Other studies have different domains, some of which are more

complete and some suffer from certain defects. Lyons *et al.* identified physical activity, physical restraint, pain, general, social, and emotional health, and emotional limitations for the SF-36 (26). The scope of this questionnaire is comparably more complete to assess physical domain but not the sexual domain.

To assess the criterion validity, a 36-item Quality of Life Questionnaire (SF-36) was used simultaneously. Correlations between the domains of UQOL and SF-36 were calculated. The highest correlation was found between the physical activity domain of the SF-36 and the physical health domain of the UQOL (0.26) and the lowest correlation between the UQOL's sexual domain and the SF-36's general health (0.00), which was predictable due to lack of sexual domain in the SF-36. For the original version of the UQOL, the correlation between its domains and those of the SF-36 was measured, with the highest and lowest correlations between these domains (28).

Then the mean score of quality of life in different domains in postmenopausal women was studied. The sexual domain ( $55.61 \pm 6.817$ ) had the highest mean score and emotional domain ( $42.06 \pm 5.259$ ) had the lowest mean score. This indicates that the postmenopausal women in this study have high quality of life in the sexual domain and low quality of life in the emotional domain.

In another study of *shobeiri et al* (2016) about the quality of life of menopausal women, the Menqol was used. The results showed that the highest mean score of quality of life was obtained for physical domain ( $39.12 \pm 1.95$ ) and the lowest score for sexual domain ( $11.02 \pm 5.66$ ). In the study, however, the higher QOL scores were worse, that is, the postmenopausal women in the study of *Shobeiri et al.* had a very low quality of life in the physical domain and a high quality of life in the sexual domain. However, these results are somewhat similar to those of our study, but these results may be inconsistent depending on the culture and lifestyle of postmenopausal women in different regions (29).

Concerning the mean score of quality of life in different domains in postmenopausal women according to age, education, menopausal age,

number of children and BMI, our results showed that there was a significant relationship between education and quality of life in occupational and physical health domains but education level was not significantly associated with postmenopausal women's quality of life score in emotional and sexual domains. In this study, there was a significant relationship between BMI and quality of life only in the physical domain. *Daley et al.* (2007) also reported that obese women had substantial vasomotor and somatic symptoms than women with normal weight (30). A review article also showed that obesity is associated with poor health in postmenopausal women (31).

Besides, a significant relationship was observed between quality of life and age, menopausal age, occupation and number of children in all domains. A similar result was found in the study of *Shobeiri et al.* (2016) regarding the significant relationship between quality of life in postmenopausal women and age, education level, financial status, number of children, employment and body mass index (BMI). However, the relationship between menopausal duration and quality of life in menopausal women was not statistically significant (29). But the study of *Caylan et al.* (2011) showed that menopausal duration was associated with higher scores in the psychological and physical domain, and it appears that low levels of quality of life more than four years after menopause is due to various factors such as race, age, and culture (32).

### Conclusion

The UQOL, as a research instrument, has not acceptable reliability and validity to assess quality of life in postmenopausal women and is sensitive to changes in quality of life in these women. The brevity of the UQOL, its convenient administration and the inclusion of different aspects of quality of life in postmenopausal women allow researchers to evaluate the impact of health care organizations' actions on women's health.

### Limitations

1. The sampling method in this study was available and consequently, certain groups of postmenopausal elderly such as postmenopausal elderly in sanatoriums or hospitalized postmenopausal elderly were not

included in this study. Therefore, this study was recommended to be done in these groups.

2. In addition, due to the specific living conditions of postmenopausal elderly over 80 years old, few of them participated in this study, so it is recommended to validate this questionnaire for this particular group of the population as well

3. There are some conditions that can affect the quality of life after menopause in the pre-menopausal period, but no relevant information was available in this study. Prospective cohort studies are recommended to examine more closely the factors affecting the quality of life in postmenopausal women.

#### Acknowledgements

We gratefully thank the cooperation of the Health Center and all those who assisted the authors in conducting this study.

#### References

- Sherman S. Defining the menopausal transition. *The American journal of medicine*.2005;118(12):3-7
- Ryan K, Bercowitz R, Barbieri R, Kistners. *Gynecology&womens health* 7th ed.1999. p504.
- Mayer BH, Munden J. *Womens health*. Williams & Wilkings. philadelphia. 2005; 357-359.
- Jenkinson C, Peto V, Fitzpatrick R, Greenhall R, Hyman N. Self-reported functioning and wellbeing in patients with Parkinson's disease: comparison of the short-form health survey (SF-36) and the Parkinson's Disease Questionnaire (PDQ-39). *Age and ageing*. 1995;24(6):505-9.
- Carpenter J. The Hot Flash Related Daily Interference Scale... *Journal of Pain and Management*.2001; 22: 979-989.
- Barcaccia B, Esposito G, Matarese M, Bertolaso M, Elvira M, De Marinis MG. Defining quality of life: a wild-goose chase? *Europe's Journal of Psychology*. 2013;9(1):185-203.
- Felce D, Perry J. Quality of life: Its definition and measurement. *Research in developmental disabilities*. 1995;16(1):51-74.
- Blumel JE, Castelo-Branco C, Binfa L, Gramegna G, Tacla X, Aracena B, et al. Quality of life after the menopause: a population study. *Maturitas*. 2000;34(1):17-23.
- Karacam Z, Seker SE. Factors associated with menopausal symptoms and their relationship with the quality of life among Turkish women. *Maturitas*.2007; 58(1):75-82.
- Poomalar G, Arounassalame B. The quality of life during and after menopause among rural women. *Journal of clinical and diagnostic research: JCDR*. 2013;7(1):135.
- Mehrabian f , negaresh novin be yaeseqi ,esfahan Medical Sciences university ,autumn 1379;(5).[persian]
- Galvão LLLF. Tradução, adaptação e validação da versão brasileira do questionário utian quality of life (uqol) para avaliação da qualidade de vida no climatério: Universidade Federal do Rio Grande do Norte; 2007.
- Julia Molla MD, Garcia-Sanchez Y, Romeu Sarrio A, Perez-Lopez FR. Cimicifuga racemose treatment and health related quality of life in post-menopausal Spanish women. *Gynecological Endocrinology*. 2009;25(1):21-6.
- Giannouli P, Zervas I, Armeni E, Koundi K, Spyropoulou A, Alexandrou A, et al .Determinants of quality of life in Greek middle-age women: A population survey. *Maturitas*. 2012;71(2):154-61.
- Smith A, Hall D, Grové D. Postmenopausal hormone therapy and quality of life. *International Journal of Gynecology & Obstetrics*. 2006;95(3):2.67-71
- Utian WH, Janata JW, Kingsberg SA, Schluchter M, Hamilton JC. The Utian Quality of Life (UQOL) Scale: development and validation of an instrument to quantify quality of life through and beyond menopause. *Menopause*. 2002;9(6):402-10.
- Fallahzadeh H. Quality of life after the menopause in Iran: a population study. *Quality of Life Research*. 2010;19(6):813-9.
- Kaiser HF. The varimax criterion for analytic rotation in factor analysis. *Psychometrika*. 1958; 23:187–200. 10.1007/BF02289233
- Bujang MA, Baharum N. A simplified guide to determination of sample size requirements for estimating the value of intraclass correlation coefficient: a review. *Archives of Orofacial Science*. 2017;12(1).

20. Armitage P, Berry G, Matthews JNS. *Statistical methods in medical research*: John Wiley & Sons; 2008.
21. Colton D, Covert RW. *Designing and constructing instruments for social research and evaluation*. first ed. San Francisco: John Wiley & Sons, Inc; 2007.
22. Fok D. *Development and Testing of a Low Vision Product Selection Instrument (LV-PSI): A Mixed-Methods Approach*. Ontario, Canada: The University of Western Ontario London, 2011.
23. Stevens JP. *Applied multivariate statistics for the social sciences*. 5th ed. UK: Routledge; Abingdon; 2009.
24. Munro BH. *Statistical Methods for Health Care Research*: Lippincott Williams & Wilkins; 2005.
25. Samitsch C. *Data Quality and its Impacts on Decision- Making: How Managers can benefit from Good Data*: Springer Fachmedien Wiesbaden, 2014. 51.
26. Lyons RA, Perry IM, Littlepage BN. Evidence for the validity of the Short-form 36 Questionnaire (SF-36) in an elderly population. *Age and ageing*. 1994;23(3):182-4.
27. Montazeri A, Goshtasebi A, Vahdaninia M, Gandek B. The Short Form Health Survey (SF-36): translation and validation study of the Iranian version. *Quality of life research*. 2005;14(3):875-82.
28. Jafari H, Lahsaeizadeh S, Jafari P, Karimi M. Quality of life in thalassemia major: reliability and validity of the Persian version of the SF-36 questionnaire. *Journal of postgraduate medicine*. 2008;54(4):273.
29. Shobeiri F, Jenabi E, Hazavehei SMM, Roshanaei G. Quality of life in postmenopausal women in Iran: a population-based study. *Journal of menopausal medicine*. 2016;22(1):31-8.
30. Daley A, Macarthur C, Stokes-Lampard H, McManus R, Wilson S, Mutrie N. Exercise participation, body mass index, and health-related quality of life in women of menopausal age. *Br J Gen Pract* 2007;57:130–135.
31. Jones GL, Sutton A. Quality of life in obese postmenopausal women. *Menopause Int* 2008;14:26–32.
32. Caylan A, Aydemir I, Dagdeviren N, Akturk Z, Set T, Oztora S, et al. Evaluation of health related quality of life among perimenopausal Turkish women. *Health Med* 2011;5:741–752.