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Translation and Psychometric Validation of Women Health Questionnaire (WHQ) in Persian Language

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ABSTRACT

Menopause is not a disease; however the somatic and psychological symptoms that accompany it affect the life of women. Women health questionnaire (WHQ) is a self-administered questionnaire that measures the physical and mental health of women ages 40 to 65 years. The purpose of this study is to provide psychometric documentation details of the translation of WHQ into the Persian language. A total of 350 peri and postmenopausal women were recruited from urban health centers in the city of Tabriz, between March and October 2015. The validity of WHQ was assessed using construct and discriminate validity. The reliability of questionnaire was assessed by test retest reliability and measuring internal consistency. The KMO was 0.791, and the Bartlett's test of Sphericity was significant. Principle component analysis (PCA) resulted in 9 factors which explained up to 55.4% of the total variance. Cronbach's coefficient was 0.799 and the Intraclass correlation coefficient (ICC) of the Persian translation scale was 0.712. Evaluation of the psychometric properties showed that the Persian language translation of the 36-item version of the WHQ was appropriate when applied to middle aged women.

Key words: Women Health Questionnaire, Menopause, Psychometric Properties, Factor Analysis

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INTRODUCTION

According to the latest statistics of world health organization (WHO) the average life expectancy of Iranian women is 76 years(http://who.int/countries/irn/en/).The age of menopause however, has not changed and a woman spends almost one third of her life in menopausal period [1].

Even though menopause is not a disease and is a normal physiological phenomenon, it accompanies somatic and psychological symptoms that affect the life of a woman [2]. The Quality of Life (HR-QOL) will be affected negatively if the menopausal symptoms aren't managed properly [3]. Therefore, it is important to develop instruments that measure the consequences of menopause on quality of life. Several generic HR-QOL have been

developed and validated such as SF-36, SIP, NHP etc. [4]. In fact generic HR-QOL instruments are designed to be applicable across a wide range of populations and interventions. However they were not able to measure special aspects of the menopause, and a more specific tool has to be developed to address these issues.

WHQ is the first instrument reviewed in the phase I of the WHO International HRQL Outcome Database Program [5](IQOD). It is a self-administered questionnaire that measures the physical and mental health of women ages 40 to 65 years. It was developed in England, and designed specifically to study changes that may occur during menopause [4, 6].

It has been translated into several languages, and validated in many countries, including Italy, Brazil (Portuguese version), Norway, Turkey and Korea [7- 11]

WHQ has not been ever validated in the Persian language. The purpose of this study was to provide psychometric documentation for the details of the translation of the WHQ into Persian.

MATERIAL AND METHODS

A multi central, cross sectional study was conducted in Tabriz, East Azerbaijan province, between March and October 2016. After obtaining permission from the Ethics Committee of the Research Deputy of Tabriz University of Medical Sciences (ethical code, 5.4.12759) sampling was started. The research settings were 11 urban health centers chosen randomly by using Random.org among 33 urban health centers and indicated as the cluster sampling within clusters was performed by quota method.

Study population

A total of 350peri and postmenopausal women were recruited by healthcare providers from urban health centers for this study. Participants were recruited using the WHQ criteria for number of participants necessary to achieve optimal results when using explanatory factorial analysis (EFA). Since the WHQ consisted of 36 items, it was calculated that the sample for analysis should include about 180 subjects (6 participants for each item)[12]. Considering design effect 1.5 in cluster sampling and drop out, the final sample size was considered 350.

Inclusion criteria

postmenopausal and peri-menopausal women ages 45-60 years with no history of endocrine disorders, hysterectomy, oophorectomy, psychological disorders and using hormone replacement therapy within the last 6 months.

Exclusion criteria

Exclusion criteria included inability to participate or to complete the questionnaire by reason of cognitive or linguistic reasons.

Translation process

The authors obtained permission to translate, adapt and use the WHQ from the MAPI Research Institute. The instrument was then translated and adapted according to their recommendations using forward-backward translation [13].

In the first stage of translation two translators, with high proficiency in both languages (English and Persian), did the first translation from English to Persian. After discussing the translation and agreement on one version, a different translator, with no access to the original questionnaire, translated it back into English. The result was compared to the original questionnaire and the discrepancies were identified. At this point, a panel composed of one gynecologist, one specialist in reproductive health and one psychiatrist met and discussed the discrepancies, until they agreed to a final version of the translation. The final version of the questionnaire was tested on 10 subjects that met the condition investigated in the questionnaire to identify any difficulty in understanding the statements of the questionnaire.

Validity

The validity of WHQ was assessed using construct and discriminate validity.

Construct validity

The dimensionality of the scale was determined by performing exploratory factor analysis (EFA) using the Varimax Rotation. Factor loadings equal or greater than 0.3 were considered appropriate and eigenvalues above 1 were used to determine the number of factors. The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were used to assess the appropriateness of the sample for the factor analysis [14,12].

Discriminate validity

To determine discriminate validity, participants completed both the WHQ questionnaire and the Short Form Health Survey (SF-12), which is a well-known generic health related quality of life [15] which includes 8 subscales, psychometric properties that have been well documentedfor the Persian version of the SF-12[16].

Reliability

Internal consistency

The internal consistency of questionnaire was estimated by measuring Cronbach alpha coefficient.

Test re-test reliability

Test retest reliability was assessed by using the intra class correlation coefficient (ICC) and applied to the 30 participants at urban health centers between day 1 and day 10[17].

Table 1: socio- demographic and clinical characteristics of participants (n=350)

Characteristics	
Age	
Mean (SD)	54.2 (4.7)
Range	47-60
Level of education	
Illiterate	157(44.9)
Primary school	128(36.6)
Secondary school	27(7.4)
College diploma and university	38(10.9)
Employment status	
Housewife	300 (85.7)
Employed	50 (14.3)
Marital status	
Married	305(87.1)
Single/divorced	5(1.5)
Widow	40(11.4)
Number of gestation	
0	9(2.6)
1-2	77(22)
3-4	156(44.6)
>5	108(30.8)

RESULTS

Table 2. Rotated component matrix results for the WHQ items (N = 350)

Factor	loading	item	Original dimension
Mental health 21%	0.384	2 I get very frightened or panic feelings for apparently no reason at all	Anxiety
	0.488	3 I feel miserable and sad	Depressed mood
	0.630	5 I have lost interest in things	Depressed mood
	0.457	6 I get palpitations or a sensation of "butterflies" in my stomach or chest	Anxiety
	0.639	8 I feel life is not worth living	Anxiety
	0.649	9 I feel tense or "wound up"	Anxiety
	0.324	30 I often notice pins and needles in my hands and feet	Somatic symptoms
Factor 2 Sleep problems 6.4%	0.577	1 I wake early and then sleep badly for the rest of the night	Sleep problems
	0.376	11 I am restless and can't keep still	Sleep problems
	0.646	29 I have difficulty in getting off to sleep	Sleep problems
	0.651	14 I have headaches	Somatic symptoms
	0.456	15 I feel more tired than usual	Somatic symptoms
Factor3 General health 5.3%	0.421	13 I worry about growing old	-
	0.397	16 I have dizzy spells	Somatic symptoms
	0.433	20 I am more clumsy than usual	Memory/ concentration
	0.511	22 I have abdominal cramps or discomfort	Menstrual symptoms
	0.523	35 I need to pass urine/water more frequently than usual	Somatic symptoms
Factor 4 Attractiveness 4.9%	0.497	7 I still enjoy the things I used to	Depressed mood
	0.343	12 I am more irritable than usual	Depressed mood
	0.670	21 I feel rather lively and excitable	Attractiveness
	0.708	32 I feel physically attractive	Attractiveness
Factor5 Vasomotor Problems 4.2%	0.623	19 I have hot flushes	vasomotor problems
	0.593	27 I suffer from night sweats	vasomotor problems
Factor 6 Sexual Problems 3.8%	0.701	17 My breasts feel tender or uncomfortable	Menstruation problems
	0.364	24 I have lost interest in sexual activity	Sexual problems
	0.304	31 I am satisfied with my current sexual relationship	Sexual problems
	0.494	34 As a result of vaginal dryness sexual intercourse has become uncomfortable	Sexual problems
Factor 7 Memoryproblems 3.6%	0.590	33 I have difficulty in concentrating	Memory problems
	0.756	36 My memory is poor	Memory problems
Factor 8 Menstruation problems 3.1%	0.543	4 I feel anxious when I go out of the house on my own	Anxiety/fear
	0.721	26 I have heavy periods	Menstruation problems
		28 My stomach feels bloated	Menstruation problems
Factor 9 Well being3.4%	0.722	10 I have a good appetite	Depressed mood
	0.330	18 I suffer from backache or pain in my limbs	Somatic symptoms
	0.469	23 I feel sick or nauseous	Somatic symptoms
	0.722	25 I have feelings of well-being	Depressed mood

The total number of participants in this study was 350 women. Table 1 shows the socio-demographic and clinical characteristics of participants. The mean (SD) age of participants was 54.2 (4.7) years.

The KMO was 0.791, and the Bartlett's test of Sphericity was significant (P<0.001). Table 2 shows rotated component matrix results with specific variance explained.

PCA resulted in 9 factors which explained up to 55.4% of the total variance.

The first factor contained 7 items and explained 21% of total variance. It was included items that described anxiety and depression. Therefore this factor may represent "mental health". All of the three items from the original sleep problems dimension and 2 items of the somatic dimension emerged in the second factor.As the somatic disorders emerged in this factor were related with sleep problems, consequently, factor two may represent sleep problems. The third factor consisted of items taken from different dimensions. So, it may represent general health. The high loading items on factor 4 described attractiveness. Factor 5 contained items of vasomotor dimension. Factor 6 and 7 represented sexual and memory problems respectively. Factor 8 represented menstruation problems and the final factor included a range of items from somatic symptoms and depressed mood. So it could be nominated wellbeing.

Table 3: Intra class correlation coefficient (ICC) and Cronbach`s alpha internal consistency

Sub scale	Number of items	ICC	Cronbach`s Alpha
Mental health	7	0.771	0.743
Sleep problems	5	0.723	0.739
General health	5	0.695	0.753
Attractiveness	4	0.682	0.781
Vasomotor problems	2	0.861	0.755
Sexual problems	4	0.649	0.780
Memory problems	2	0.722	0.786
Menstruation	3	0.721	0.797
Well being	4	0.656	0.793
Total	36	0.712	0.799

Discriminant validity
Correlations between the WHQ subscales and SF-12 are presented in Table 4.

Multitrait approach was employed to assess discriminant validity. All sub scales ofSF12 and Persian version of WHQ exceptfor two were significant and negatively correlated (-0.464< r <-0.084).

Reliability
Cronbach's coefficient for the WHQ ranged from 0.739 (sleep problems) to 0.797 (menstruation problems).

A total of 30 participants were evaluated for test-retest reliability. TheICC for each subscale is shown in Table 2.

Results showed high test-retest reliability for all of 9 dimensions and for the global questionnaire.

Table 4: Correlation between WHQ subscale and SF12

	Factors of Persian version of WHQ								
	mental health	sleep problem	general health	attractiveness	vasomotor problems	sexual problems	memory problems	menstruation problems	wellbeing
	SF-12 total score								
Physical function	-0.345	-0.356	-0.323	-0.281	-0.260	-0.364	-0.201	-0.112	-0.245
Role physical	-0.407	-0.464	-0.442	-0.330	-0.273	-0.351	-0.214	-0.132	-0.277
Bodily pain	0.374	0.359	0.383	0.261	0.233	0.307	0.201	0.175	0.170
General health	0.304	0.303	0.217	0.247	0.324	0.326	0.202	0.126	0.146
Social function	0.397	0.312	0.229	0.443	0.226	0.328	0.164	0.169	0.105
Role emotional	-0.407	-0.464	-0.422	-0.330	-0.273	-0.351	-0.214	-0.132	-0.277
Mental health	-0.257	-0.233	-0.288	-0.345	-0.084	-0.146	-0.135	-0.176	-0.107

DISCUSSION

This study was conducted on 350 post and peri menopausal women. During translation, the WHQ required some simple modifications. Some of English expressions were adapted, including "sensation of butterflies in stomach or chest". Near 4% of WHQ questionnaires had missing data but that was acceptable according to user manual of WHQ. In any questionnaire the number of missing items related to each dimension was not higher than indicated rate mentioned in the instructions for the WHQ [18].

The result of KMO test showed that the sample size was large enough to perform factor analysis, In addition, the Bartlett's Test of Sphericity was significant, therefore scale is appropriate for factor analysis [12]. Using factor analysis and based on Eigenvalue greater than 1 and original questionnaire, 9 factors emerged. Mental health, sleep problems, general health, attractiveness, vasomotor problems, sexual problems, memory problems, menstruation problems and wellbeing were identified subscales. Theses 9 factors explained the total of 55.7% of variance. The measured variance was greater than other studies [7,9,19, 11].To our surprise, the total variance of original scale developed by Hunter was exactly 55.7% [6].

In the present study, the original factor structure was not exactly identified. Additionally, the presented factors in this study were not similar to other studies [7,9, 19, 11] As women experience menopausal differently based on their cultural background [20] and their unique personal experiences [1], this result is not surprising. Else of original version of WHQ, when Persian scale compared with other scales, total scale was found similar to Turkish version of WHQ [11]. With regards to geographically position to both of countries, similar cultural norms and according to result of this research, it is possible that Iranian women have menopause experiences similar to Turkish women.

In this study the first factor, included items that identified depressed mood and anxiety/fear. Consequently this subscale was nominated mental health. The subscale was obtained using the highest variance (21%).This result was in line with other studies [7, 19]. Since anxiety and depression are correlated to a large degree, [21], it is likely that depressed mood and anxiety were loaded on the same factor. The items of the original somatic symptoms dimensions were regrouped on 4 factors.

The internal consistency of the total WHQ and 9 subscales were greater than 0.7 and demonstrating an acceptable reliability [22]. Cronbach alpha values of newly developed subscales including general health, wellbeing were 0.753, and 0.793 respectively. Comparing other versions of WHQ, the Persian version of scale showed better internal consistency [7,9].
The intraclass correlation coefficient (ICC), in test-retest of each subscale for the Persian version of WHQ, ranged from 0.64 to 0.89, and total of 0.72. (95% CI: 0.54-0.93).

CONCLUSION

Evaluation of the psychometric properties showed that although the Persian translation of the 36-item version of the WHQ had different slightly from the original questionnaire, it is appropriate when applied to peri menopausal and post-menopausal women.

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