Translation and reliability analysis of menopause rating scale (MRS) in Urdu language

Urooj Sadiq,[1] Khawer Bilal Baig,[2] Neelum Mustafa[3]

Abstract

Objectives: To establish the psychometric properties of the Urdu version of Menopause Rating Scale.

Methods: The study was conducted at Lahore from 1, 2017 to 10, 2017. In first phase, the Menopause Rating Scale was forward and backward-translated and linguistic equivalence was checked by using it on a sample of bilingual respondents. In the second phase, reliability estimation of the scale was established over separate sample. Psychometric properties of the Urdu version were checked by using alpha index, split-half reliability, test-re-test reliability, exploratory and confirmatory factor analyses.

Results: There were 130 women with a mean age of 50.94±4.71 years (range: 40-55 years). Linguistic equivalence was significantly high ($p<0.01$). High Cronbach's alpha value ($p<0.001$) indicated high internal consistency reliability. Exploratory factors analysis structured 3 original factors of the Urdu version of the scale and confirmatory factor analysis value 0.965 indicated that the structured model was acceptable with good fit. Test re-test reliability was 0.991 ($p<0.01$).

Conclusion: Urdu version of Menopause Rating Scale was found to be highly reliable with a valid measure for Pakistani culture.

Keywords: Linguistic equivalence, Reliability, Exploratory and confirmatory analysis. (JPMA 69: 224; 2019)

Introduction

Menopause refers to the cessation of menstruation that women face in their midlife.[1] It is a universal phenomenon and natural biological event. As a woman undergoes transition from the reproductive years through menopause and beyond, she experiences many physical as well as psychological changes. Interestingly, each woman experiences menopause in a unique way; for some women menopause means a transitional phase leading to a new dimension of life which contains confidence and empowerment than younger years, while for some other women menopause is a reminder that they are aging which may cause distress and decrease their psychological well-being. Sometimes a slight change in lifestyle, eating habits and general health practice may improve health-related quality of women's life going through menopause, but at times it is difficult to manage without seeking any treatment.

[1]Department of Professional Psychology, Bahria University Lahore, [2]Riphah Institute of Clinical and Professional Psychology (RICPP), Riphah International University Lahore, [3]University of Central Punjab, Lahore, Pakistan.
Correspondence: Urooj Sadiq. e-mail: uroojsadiq_icp@yahoo.com

During menopause, women experience vasomotor, urogenital, psychological symptoms and also sexual dysfunctions that result in menopausal symptoms.[2,3] Some complications may occur because of hormonal changes at midlife and some health-related risks factors may expose at this stage as well i.e. oestrogen secretion, metabolic changes, general health etc.[4-6] In several women, these menopausal symptoms are so severe that they affect their social and individual lives.[7] During menopause phase, various symptoms have been observed such as neurological symptoms (i.e. memory impaired), depressive symptoms (i.e. insomnia, fatigue, low energy etc.), anxiety-related symptoms (i.e. poor concentration, anxiousness, nervousness, sweating or hot flushes) and physical symptoms (i.e. joint pain, headache, muscle contraction etc.).[8,9]

The purpose of the Menopause Rating Scale (MRS) was to establish an instrument that will help measure the symptoms purely related to menopause among women. A study involving follow-up of 306 women from the original study showed correlation from scores on two occasions and yielded a significant test-retest reliability.

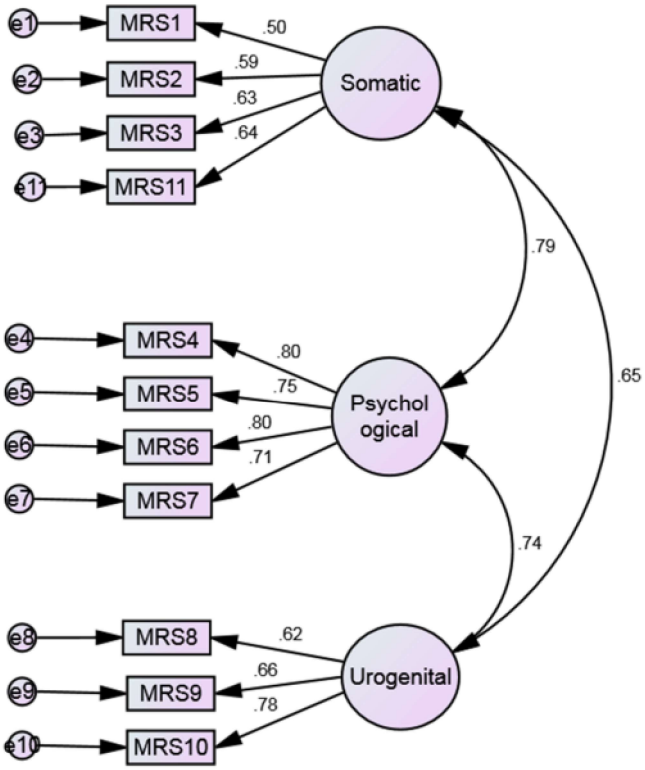

Figure: Structured model diagram of factors and item loading of Menopause Rating Scale.

It added to the temporal stability of the scale. The scale total correlation of the three factors is also significant showing strong internal consistency,[10] with the scores on two standardised measures of health-related quality of life (HRQoL) that is, Kupperman index (KI)[11] and the Short Form (SF-36).[12] The scores on MRS well correlated with KI and thus showed a high degree of association between the results of both the scales. Interestingly, the results were more significant for the comparison of MRS and SF-36. Those sub-scales of Sf-36 highly correlated with MRS which was more relevant to women's health and symptoms during menopause. As a result, the scale was declared as a measure of Global Quality of Life (GQoL) as the total score on the scale was evaluated as a single factor.[11,12]

The MRS covers objectives like establishing symptoms' comparison in women having various conditions. Further, to evaluate the intensity of symptoms with the passage of time and, additionally, to assess the variation in pre- and post-testing when comparison is required.[13] This scale was developed primarily in 1996. It is based on the data collected from a sample of 683 women aged 40-60 years.[14]

The technique of factor analysis was utilised and it structured 3 original factors such as somato, vegetative and urogenital factors. The responses on the scale are scored on a five-point Likert scale.

The MRS is a very simple and easy measurement that comprehensively measures the symptoms of menopause among women. Cross-cultural assessment has become a sensitive issue due to specific concerns regarding the use of standardised tests across cultures.[15] Many of the tests and scales used in psychological research in Pakistan have been developed in Western settings. There are questions as to how applicable or relevant these psychological instruments would be in a primarily non-English speaking eastern nation like Pakistan. Cultural difference has restricted the use of these questionnaires and scales, as our environment shapes the person that we are and our viewpoints concerning many different essential aspects of life, such as norms, values and ideas.[16] Viewing the menopausal phase in different cultures it can be seen that the nature, frequency, severity and phases of menopausal symptoms differ between the individuals of different cultures within different countries. Therefore these symptoms need to be studied in individuals of different cultures to get a better understanding of these differences.[17]

The MRS comprised 11 items.[18] It has three dimensions; somatic, psychological and urogenital. Somatic includes hot flushes, heart discomfort, sleeping, muscles and joint problems (items 1, 2, 3 and 11). Psychological dimension includes depressive mood, irritability, anxiety and physical and mental exhaustion (item 4, 5, 6 and 7), and urogenital dimension includes sexual problems, bladder problems and dryness of vagina (item 8, 9 and 10). Each score is rated on a 0-4 scale where 0 represents no or little complaints, 1 represents mild, 2 is moderate, 3 is severe, and 4 is very severe. In order to facilitate analysis and interpretation of the result, total MRS score is calculated by adding the three subscales. The scale has Cronbach's alpha=0.83 to 0.87, showing adequate internal consistency.

There is a clear need for valid and reliable instrument if it needs to be studied in Pakistani culture that can assess the construct of menopausal symptoms of Pakistani middle-aged women. For this purpose it needs to be translated into Urdu for studying their issues by taking into account their cultural context and for reducing the effects of language barrier as well. By translating into Urdu language, women can get enhanced vision of the problem

researcher is seeking for without speculating into complications of language as well as can express their perceptions in a perceptive way. Therefore, the current study was planned to translate and adapt the valuable MRS in Urdu language.

Subjects and Methods

The study was conducted in Lahore, from 1, 2017 to 10, 2017. For forward translation, a group of translators is usually preferred.[19] Therefore, MRS translation was done by bilingual experts; two were related to academia and two were language experts with vast experience. Forward translations were reviewed by committee members and revisions in the items were made according to their suggestions and comments.

After completion of the forward translation, a panel of six experts evaluated the different versions of forward translations. After this process, the draft was arranged for back-translation of MRS. The members on the committee had familiarity with both cultures, the construct measured in the test, the basic principles along with the linguistic expertise, as suggested.[20]

In backward translation from Urdu to English, a bilingual expert who had not seen the original version of the test before, translated the Urdu version of MRS back into English, the source language.

The committee of experts then examined and reviewed the back-translation. Judgments were made about their equivalence and the translated items were revised where necessary. Some of the items after back-translation did not relate to the original concepts, therefore they were modified and rephrased by the experts. Then the scale was finally reviewed by the panel of experts for translation inaccuracies and a final draft was prepared for a linguistic study with consensus.

Linguistic equivalence included translation of the script to ensure that the translation was serving the same purpose as the source text was serving. The translator followed the way as if they were writing the script in the native language.[21] For evaluating the linguistic equivalence of two different language versions of a test is to administer the separate language versions to a group of test-takers who are fluent in both languages (bilinguals). The logic underlying this approach is that by using a single group of test-takers, "language group" effects are eliminated, and full scale equivalence can be achieved. Thus, observed differences in test or item performance across languages can be attributed to the linguistic differences between the tests or item. For the process of linguistic equivalence, a sample of 50 middle-aged, educated, menopausal women were enrolled from the community after due consent.

For the purpose of reliability estimation of the Urdu version of MRS, another sample of respondents (10 participants or more per item of scale) was raised from different hospitals and community health centres of Lahore, Pakistan, through purposive sampling technique.

Internal consistency was computed to assess the consistency of results across items within a test. There are several indices that can be used to measure the internal consistency but the most popular index is Cronbach's alpha.

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (KMO) and Bartlett's test of sphericity were used to investigate the adequacy of the sample size.

Confirmatory factor analysis (CFA) was used to confirm if the structure model was adequate or not. CFA statistics was used by using AMOS-V22 to test the structured components of Urdu version of MRS. In CFA, the most suitable model fit indices include Root Mean Square Error of Approximation (RMSEA) index of residual model fit and its value falls between 0 and 1, and the lowest value indicates better model fit. Comparative Fit Index (CFI) values close to 1 indicate better model fit.

The reliability study comprised test-retest reliability. Estimate of internal consistency was obtained through Cronbach's alpha. For the interpretation of results, SPSS 21 was used. Pearson Product Moment Correlation and Cronbach's alpha were calculated for the presentation of results.

Results

There were 130 women with a mean age of 50.94±4.71 years (range: 40-55 years). Linguistic equivalence was significantly high ($p<0.01$). High Cronbach's alpha value ($p<0.001$) indicated high internal consistency reliability (Table-1).

Exploratory factors analysis structured 3 original factors of the Urdu version of the scale and CFA value 0.965 indicated that the structured model was acceptable with good fit. Test re-test reliability was 0.991 ($p<0.01$) (Table-2).

Table-1: Estimation of Linguistic Equivalence, Reliability Analysis, Test-Retest Reliability and Factor Analysis of Urdu version of Somatic, Psychological and Urogenital and total Menopause Rating Scale (MRS).

Subscales	Linguistic Equivalence	Reliability Analysis			Factor Analysis	
	Urdu & English (n=50)	Cronbach's Alpha (n=130)	Split-Half (n=130)	Test-Retest (n=50)	KMO	x^2
SS	.940**	.684**	.658**	.998**	.732**	76.65
PS	.957**	.848**	.834**	.979**	.810**	213.99
US	.967**	.721**	.770**	.999**	.664**	79.17
MRS Total	.960**	.869**	.837**	.991**	.868**	529.23

Note: SS: Somatic Subscale; PS: Psychological Subscale; US: Urogenital Subscale; MRS: Menopause Rating Scale; KMO: Kaiser-Meyer-Olkin Measure of Sampling Adequacy; x^2= Chi-Square; Linguistic Equivalence and Test Re-test was measured with One Week Interval.

Table-2: Exploratory Factor Analysis for Overall Items of Urdu Version of Menopause Rating Scale (MRS) Using Varimax Rotation Method (n=130).

No. of Items	Component			Item-Total
	Psychological Subscale	Urogenital Subscale	Somatic Subscale	Correlation b/w Urdu & English
MRS-6	.815			.923**
MRS-4	.803			.942**
MRS-5	.735			.943**
MRS-7	.619			.834**
MRS-10		.779		.910**
MRS-8		.736		.954**
MRS-9		.717		.955**
MRS-1			.809	.855**
MRS-3			.652	.942**
MRS-2			.539	.936**
MRS-11			.516	.808**
Eigenvalues	4.829	1.115	.979	
% of Variance	43.898	10.137	8.900	
Cumulative %	43.898	54.036	62.936	

Note: Values < .40 are suppressed

Table-3: Confirmatory factor analysis for the Urdu Version of Menopause Rating Scale (MRS).

CMIN	RMSEA	GFI	NFI	IFI	TLI	CFI
1.422	0.057	0.910	0.894	0.966	0.953	0.965

CMIN: Minimum Value of the Discrepancy, RMSEA: Root Mean Square Error of Approximation, GFI: Good Fit Index, NFI: Normed Fit Index, IFI: International Friction Index CFI: Comparative Fit Index, TLI: Tucker Lewis Index

KMO value of overall items of Urdu version of MRS was 0.868 (p<0.01), which indicated high sampling adequacy of the scale. Bartlett's test of sphericity showed the sample was suitable for factor analysis (p<0.001). The test-retest reliability estimate for the Urdu version of MRS (Annexure) was 0.991 (p<0.01).

Comparative Fit Index (CFI) was 0.965, the Normed Fit Index (NFI) was 0.894, Tucker Lewis Index (TLI) was 0.953, and the RMSEA was 0.057 (Table-3).

Annexure:

ذیل میں سے کن علامت پر آپ پورا ترتے ہیں؟ برائے مہربانی ان علامت کی نشاندہی کریں اور علامت کی موجودگی نہ ہونے پر "کوئی نہیں" پر نشان لگائیں۔

کوئی نہیں =0، بہت کم =1، درمیانہ =2، شدید =3، بہت زیادہ شدید=4،

☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0

جزنمبر	علامات
1.	گرمی لگنا، پسینہ آنا (بار بار پسینہ آنا)
2.	دل سے متعلقہ بے آرامی (غیر معمولی دل کی دھڑکن کا پتا چلنا، سانس لینے میں مشکل، دل کی دھڑکن کا تیز ہونا، سینے میں کھچاؤ)
3.	نیند کے مسائل (نیند آنے میں مشکل، نیند پوری کرنے میں دقت، جلدی جاگ جانا)
4.	افسردہ مزاج (بد دلی محسوس کرنا، اداسی، رونے کے قریب ہونا، تحریک میں کمی، مزاج میں اتار چڑھاؤ)
5.	چڑچڑا پن (گھبراہٹ محسوس کرنا، اندرونی تناؤ، غصہ محسوس کرنا)
6.	پریشانی / تشویش (اندرونی بے چینی، خوف زدہ محسوس کرنا)
7.	جسمانی اور ذہنی تھکاوٹ (کارکردگی میں عام طور پر کمی، یاداشت میں خرابی، توجہ مرکوز کرنے میں کمی، بھول جانا)
8.	جنسی مسائل (جنسی خواہش میں تبدیلی، جنسی عمل اور تسکین میں تبدیلی)
9.	مثانے کے مسائل (پیشاب کرنے میں مشکل، پیشاب کرنے کی ضرورت میں اضافہ، پیشاب کا نکل جانا)
10.	نسوانی شرمگاہ میں خشکی (شرمگاہ میں خشکی یا جلن محسوس کرنا، جنسی عمل میں دشواری)
11.	جوڑوں اور پٹھوں میں بے آرامی (جوڑوں میں درد، جوڑوں کی سوجن کی شکایات)

Discussion

The present study examined the psychometric properties of the Urdu version of MRS in a representative sample of menopausal females. The translation from English to Urdu of MRS has proved to be a challenging and time-consuming process.[22] Our study supports the reliability and validity of MRS Urdu. The current study reported preliminary evidence for the reliability estimation of MRS

Urdu in Pakistan. In the first phase of the study, forward and backward translation procedures were completed and there was a high positive strong correlation between Urdu and English versions of MRS, indicating adequate cross-language validation. Similarly, there was a high positive correlation between Urdu and English items. In the second phase, scale reliability estimation was established. Cronbach's alpha was close to 1 which indicates high internal consistency. Moreover, exploratory factor analysis (EFA) structured the three original factors of somatic, psychological and urogenital. CFA findings reported structured model was adequate and showed good fit.

MRS has been used world widely across different cultures. It has been used in different non-English-speaking countries and translated in German, English, Swedish, French, Mexican, Brazelian, Indonesian, Spanish and Turkish languages. Due to its vast utilisation, MRS was translated and adapted in Urdu language. The Urdu version of MRS is compatible with the original. MRS as a measure of health-related quality of life is considered helpful in measuring severity of menopausal symptoms. And it is also convenient for the participants or the clients to comprehend and respond in a familiar language that is essential for the practitioners to understand the problems of the client. MRS is a brief scale and is convenient in terms of quick administration and scoring. Therefore, it can be used in a variety of settings, especially for the quick screening of the problems.

Before handling such a target, it is important to consider the time factor, and to assign continuous periods of time for the translation procedure. Another basic point is the convenience of the expert board; the work asks for adequate, trustworthy relationship and coordinated effort.

The psychometric properties of MRS Urdu were adequate. Scale linguistic equivalence indicated strong positive association between both versions. Further, scale reliability estimation was also found consistent and exploratory and confirmatory factor analysis showed the structured model as adequate and a good fit. CFI, NFI, TLI, and RMSEA values also indicated that the translated version of MRS was a valid measure for Pakistani culture, with the structured model being a good fit.[23]

Conclusion

MRS Urdu scale can be used indigenously and Pakistani women would also have an opportunity to talk about their issues that arise during the transitional phase of menopause.

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