

# Translation, Reliability, and Validity Test of Gujarati Version of Menopause Rating Scale in Postmenopausal Women for Menopause-Related Symptoms

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## Abstract

**Background:** Women's health has been a global concern for many decades. As menopause is midway between the challenges of adulthood and despair of old age, comes the changes of menopause in women. The menopause rating scale (MRS) is widely used to assess menopause-related symptoms. The MRS was first published in 1990 for assessing menopause symptoms. However, no reliable and valid tools are available in the Gujarati language to assess the individuals with menopause symptoms. **Aim:** The aim of the study was to translate and find out reliability and validity of the Gujarati version of MRS in postmenopausal women. **Methods:** The study was carried out in three phases: The first phase was the translation of scale into the Gujarati language; the second phase was a pilot study on 30 postmenopausal women age assesses the comprehensibility of the prefinal version; and the third phase was to find out the reliability and validity of the final version of scale. **Results:** The total value of intraclass correlation coefficient of test–retest reliability was 0.88, with the all items having individual intraclass correlation coefficients score ranging from 0.74 to 0.92. Reliability estimated by internal consistency reached a Cronbach's alpha of 0.94 and ranging from 0.85 to 0.95 test–retest. **Conclusion:** The Gujarati version of MRS is a reliable and valid tool for assessing the menopausal symptoms and health-related quality of life in Gujarati-speaking populations.

**Keywords:** Gujarati version, hot flushes, menopause, menopause rating scale, mood changes, postmenopausal women, reliability and validity, sleep disturbances, translation

## INTRODUCTION

Women's health has been a global concern for many decades. The focus of women's health researchers has also shifted toward postmenopausal women since recent trends suggest an increase in their numbers and life expectancy. Reproductive aging in women is a dynamic process occurring over a period of time, culminating in menopause. Menopause defines as a permanent cessation of menstruation, which occurred after 12 consecutive months of amenorrhea without any pathology or other physiological cause.<sup>[1]</sup> Women may experience menopause around 40s to mid-50s, with the overall mean age of natural menopause 51.4 years.<sup>[2]</sup> One hundred thirty million Indian women were expected to live beyond menopause by 2015.<sup>[3]</sup> Women will spend at least half of their adult life with decreased levels of circulating estrogen.<sup>[4]</sup> The Menopause Rating Scale (MRS) is a health-related quality of life scale (HRQoL) and was developed in response to the

lack of standardized scales to measure the severity of aging symptoms and their impact on the HRQoL in the early 1990s.<sup>[5]</sup> Actually, the first version of the MRS was to be filled out by the treating physician, but methodological critics lead to a new scale which can easily be completed by women, not by their physician.<sup>[4]</sup> The MRS was formally standardized according to psychometric rules and initially published in German.<sup>[6]</sup> During the standardization of this instrument, three independent dimensions were identified, explaining 59% of the total variance (factor analysis): psychological,

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somato-vegetative, and urogenital subscale. The MRS consists of a list of 11 items. Each of the 11 symptoms contained in the scale can get 0 (no complaints) or up to 4 scoring points (severe symptoms) depending on the severity of complaints perceived by women completing the scale. The respondent provides her personal perception by checking one of five possible boxes of “severity” for each of the items. The composite scores for each of the dimensions (subscales) are based on adding up the scores of each item of the respective dimensions. The first translation was into English,<sup>[7]</sup> other translations followed,<sup>[8]</sup> i.e., taking international methodological recommendations into consideration.<sup>[9]</sup> Currently, the following versions are available: Brazilian, English, French, German, Indonesian, Italian, Mexican/Argentine, and Spanish, Swedish, and Turkish language.<sup>[4,10]</sup> The reliability is defined as the extent to which measurements can be replicated.<sup>[11]</sup> In other words, it reflects not only the degree of correlation but also the agreement between measurements<sup>[12]</sup> and it shows the stability and consistency of score over time or across the rater.<sup>[13]</sup> There are mainly two types of reliability: (1) inter-rater reliability –it reflects the variation between the two or more raters who measure the same group of subjects and (2) intra-rater (test-retest) reliability – it reflects the variation of data measured by the 1 rater across 2 or more trials.<sup>[14,15]</sup>

Validity is defined as the extent to which the instrument measures what it purports the instrument measure.<sup>[11]</sup> Content validity is “the degree to which an instrument has an appropriate sample of items for the construct being measured.<sup>[16]</sup> It is also known as content-related validity, representative validity, and logical or sampling validity.<sup>[17]</sup> Face validity is defined as to researchers“ subjective assessment of the presentation and relevance of measuring instrument as whether the item in the instrument appears to the relevant, reasonable, and clear.”<sup>[18]</sup> The MRS was designed to assess the menopausal symptoms and HRQoL and is considered an accurate outcome measure. English is not commonly followed in most of the regions of India. As per the ENCARTA 2007 estimate, there are 46.1 million Gujarati speakers worldwide. Here, the language is a barrier putting a restraint of usage among Gujarati population, so the utility of MRS is limited. If the scale is converted in Gujarati language, it will provide expansion of use to get benefit by reducing systemic bias and will become easy to understand widely in Gujarati-speaking population.

## METHODS

Purposive sampling was used for the selection of samples which were postmenopausal women with menopause-related symptoms. Inclusion criteria were age between 40 and 60 years, women with postmenopausal phase up to 3 years, and individuals who can speak, read, and understand the Gujarati language.<sup>[3,19]</sup> Exclusion criteria were illiterate or lack of understanding of Gujarati language.<sup>[20]</sup>

## Procedure

The study was carried out in the following three phases:

## Translation and cultural adaptation

For the translation, the recent guidelines for cross-cultural adaptation were used which was the method currently used by the American Association of Orthopedic Surgeons (AAOS) Outcomes Committee [Figure 1] as they coordinate the translation of the different components of their outcomes battery.<sup>[21,22]</sup>

### Stage 1: Forward translation

In the process of adaptation, the first stage was the forward translation. At least two forward translations are made of the instrument from the original language to the target language (Gujarati) by bilingual translators whose mother tongue was Gujarati allowing detection of errors and different interpretations of items with unclear meaning in the original instrument.

### Stage 2: Synthesis of the translations

To produce a synthesis of the two translators, a third, unbiased person was added to the team. Both the translations or third person were then compared for the discrepancy and the first translator (T1) and the second translators(T2) versions were synthesized. From that one common translation (T-12) created. The next stage is completed with this T-12 version of this questionnaire.

### Stage 3: Back translation

From the T-12 version of the questionnaire and totally blind to the original version, a translator then translates the questionnaire back into the original language. Back translation is only one type of validity check and was best at highlighting gross variability or conceptual errors in the translation.

The back translations (BT1 and BT2) were created by two bilingual individuals. The two translators should neither be aware nor be informed of concepts of the questionnaire and without a medical background. The main reasons for this are to avoid information bias and to elicit unexpected meanings of the items in the translated questionnaire.

### Stage 4: Expert Committee

The formation of the Expert Committee is crucial to achieving cross-cultural equivalence of translated instruments. The minimum composition of the Expert Committee includes methodologist, health professional, language professional, as well as translators and translation synthesis recorder and if possible, developers of the original questionnaire.

The Expert Committee’s role is to synthesize all versions and components of the questionnaire including the original instrument, instructions, and all translated versions and develop the prefinal version of the questionnaire for field testing. Critical decisions are made by the Expert Committee in finalizing the translated instrument that will achieve equivalence between the source and target version in four areas: semantic equivalence, idiomatic equivalence, conceptual equivalence, and experiential equivalence.<sup>[23,24]</sup>

### Test of the prefinal version

The final stage of adaptation process was the pretest. A pilot

study was done on 30 postmenopausal women. Women were asked to fill the questionnaire and give feedback and comments regarding questions and to identify words that were difficult to understand at the end of filling the questionnaire. On the basis of their reviews, the final version was developed which was again and approved by the committee.

**Reliability and validity testing**

**Reliability**

The test–retest reliability of scale was assessed by the 250 postmenopausal women who were asked to complete MRS Gujarati version twice with the same RATER at the time (RATER A1) and after 7 days (RATERA2) of the time interval.

**Face validity**

Face validity was assessed by asking one question to each patient “do you think this questionnaire is relevant to your condition.” For the assessing face validity, the answer noted as “Yes” and “No.”<sup>[18]</sup>

**Content validity**

For content validity of MRS Gujarati version was revised by 8 health care professional and panel content expert. They were asked to rate to each scale item in term of its relevance, clarity, simplicity, ambiguity on the four-point scale. Content validity index (CVI) was calculated at both item level (I-CVI) and scale level (S-CVI). I-CVI is computed as the number of experts giving a rating 3 or 4 to the relevancy of the item, divided by the total number of experts. S-CVI is calculated by using the average calculation method (S-CVI/Ave). I-CVI of the item should be at least 0.78 (Lynn 1986), and S-CVI/Ave should  $\geq 0.90$ .<sup>[25,26]</sup>

**RESULTS**

All the statistical analysis was done by the Statistical Package for the Social Sciences (SPSS) software version 20.0. Armonk,NY:IBM crop.

MRS was taken on day 1 and day 8. Mean value and standard deviation for day 1 were 18.54 and 6.46 and for day 8, they were 18.57 and 6.40, respectively.

**Test–retest reliability of menopause rating scale Gujarati version**

Test–retest reliability of the MRS Gujarati version was examined by intraclass correlation coefficients (ICC). The ICC values range from 0 to 1.<sup>[27]</sup> Interpretations of ICC value were 1 – perfect reliability, 0.90–0.99 – very high correlation, 0.70–0.89 – high correlation, 0.50–0.69 – moderate orrelation, 0.26–0.49 – low correlation, and 0.00–0.25 – little.

**Internal consistency of menopause rating scale Gujarati version**

Internal consistency is an assessment of how reliable test items that are designed to measure the same construct actually do so. A high degree of internal consistency indicates that items meant to assess the same construct yield similar scores. Cronbach’s alpha is one commonly used measure. Cronbach’s

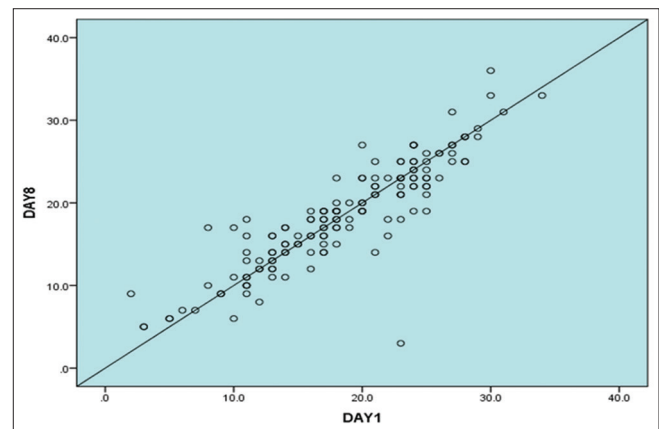
alpha values range from 0 to 1 where values above 0.7 indicate acceptable internal consistency. Interpretations of internal consistency were  $\alpha \geq 0.9$  – excellent,  $0.9 > \alpha \geq 0.8$  – good,  $0.8 > \alpha \geq 0.7$  – acceptable,  $0.7 > \alpha \geq 0.6$  – questionable,  $0.6 > \alpha \geq 0.5$  – poor.

ICC of test–retest reliability of day 1 and day 8 total score of MRS Gujarati version (N = 250) was 0.88 and Cronbach’s alpha was 0.94.

Graph 1 interpretation: The above table 1 and graph show the overall G-MRS score. The ICC value is 0.88 that suggested high correlation and Cronbach’s alpha value is 0.94 that suggested excellent homogeneity.

Table 2 interpretations: Interpretation of I-CVIs: If the I-CVI is higher than 79%, the item will be appropriate. If it is between 70% and 79%, it needs revision. If it is <70%, it is eliminated.

The S-CVI is calculated by using the average calculation method (S-CVI/Ave). The I-CVI of the item should be at least 0.78<sup>[28]</sup> and S-CVI/Ave should  $\geq 0.90$ .<sup>[25,26]</sup> Content validity for the overall scale MRS Gujarati version (S-CVI) is 0.93.



**Graph 1:** Test–retest reliability of day 1 versus day 8

**Table 1:** Intraclass correlation coefficient of test-retest reliability of day 1 and day 8 score of menopause rating scale Gujarati version

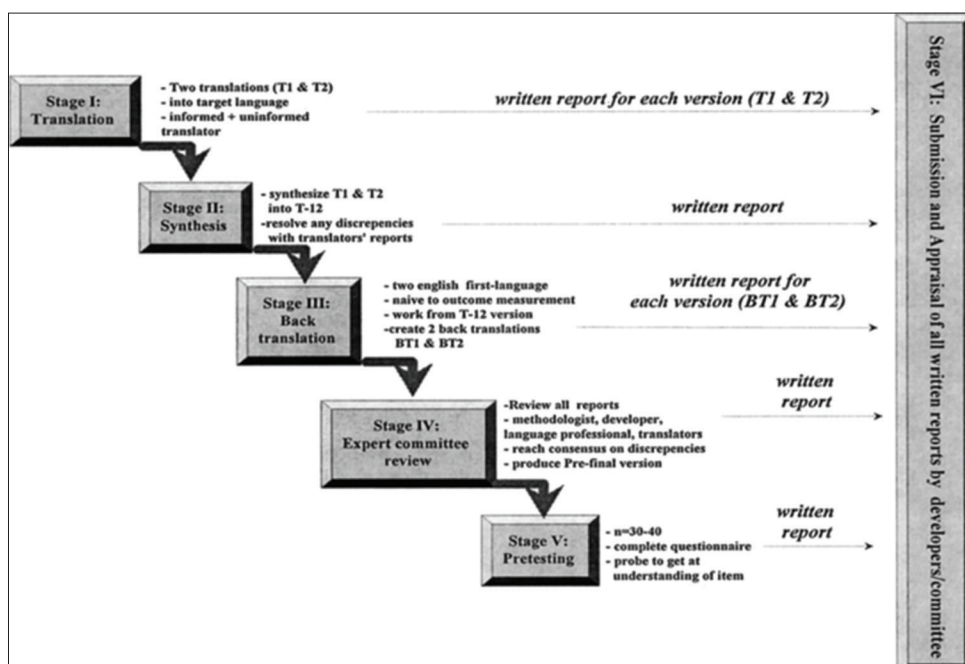
| Items                          | ICC  | Cronbach’s $\alpha$ |
|--------------------------------|------|---------------------|
| Hot flashes, sweating          | 0.92 | 0.95                |
| Heart discomfort               | 0.87 | 0.93                |
| Sleep problems                 | 0.86 | 0.92                |
| Depressive mood                | 0.86 | 0.92                |
| Irritability                   | 0.74 | 0.85                |
| Anxiety                        | 0.74 | 0.85                |
| Physical and mental exhaustion | 0.76 | 0.86                |
| Sexual problems                | 0.85 | 0.92                |
| Bladder problems               | 0.80 | 0.89                |
| Dryness of vagina              | 0.84 | 0.91                |
| Joint and muscular discomfort  | 0.85 | 0.92                |

ICC: Intraclass correlation coefficient

**Table 2: Calculation of item-level-content validity index and scale-level-content validity index by scale-level-content validity index/average for items**

| Item | Relevant (rating 3 or 4) | Not relevant (rating 1 or 2) | I-CVIs | Interpretation    |
|------|--------------------------|------------------------------|--------|-------------------|
| 1    | 8                        | 0                            | 1      | Appropriate       |
| 2    | 7                        | 1                            | 0.75   | Need for revision |
| 3    | 7                        | 1                            | 0.75   | Need for revision |
| 4    | 7                        | 1                            | 0.75   | Need for revision |
| 5    | 8                        | 0                            | 1      | Appropriate       |
| 6    | 8                        | 0                            | 1      | Appropriate       |
| 7    | 8                        | 0                            | 1      | Appropriate       |
| 8    | 8                        | 0                            | 1      | Appropriate       |
| 9    | 8                        | 0                            | 1      | Appropriate       |
| 10   | 8                        | 0                            | 1      | Appropriate       |
| 11   | 8                        | 0                            | 1      | Appropriate       |

I-CVI: Item-level-content validity index



**Figure 1:** Guideline processes of translation of scale 26

## DISCUSSION

The aim of the present study was to translate and find out the reliability and validity of the Gujarati version of MRS for postmenopausal women in the Gujarati population. Two hundred fifty postmenopausal women who understood the Gujarati language were included in the study. The reliability of the scale was checked by the same RATER at the time (RATER A1) and after 7 days (RATER A2). According to the AAOS guidelines of translation and cultural adaptation, MRS was translated. The results of test-retest reliability suggested an excellent positive correlation with RATER A1 and RATER A2 which suggested that MRS was reliable to measure menopausal symptoms and HRQoL of postmenopausal women. The value of ICC 0.88 test-retest reliability was more than the original German version of the MRS (0.60). It is seen that ICC values decrease with an increase in the time interval between two

administrations of the questionnaire. Thus, similarly, Dwi Susanti *et al.* (Indonesian version)<sup>[10]</sup> found that high test-retest reliability compares to the original value. Face validity assessed by asking, “do you think this scale is relevant to your condition” to each patient. The answer was noted “yes” or “no;” among them, 248 women answered “yes” which indicate that the MRS Gujarati version is relevant and clear. The value of I-CVI for 11 items ranged from 0.83 to 1.00 and S-CVI/Ave of 0.95 showed excellent content validity. On the other hand, the study done by Marx *et al.*<sup>[29]</sup> has shown similar results in which reliability was checked within the 48 h of the time interval. This suggested that testing of reliability within a short time interval gives a minimal clinical status of patients. A recent study shows reliability testing within 1 day for registration of step time symmetry during stair descent after ACLR.<sup>[30]</sup>

## CONCLUSION

The MRS Gujarati version is proved as a reliable and valid tool for assessing menopausal symptoms and HRQoL of postmenopausal women. Hence, MRS Gujarati version can be used as a quick screening tool for postmenopausal women in the Gujarati population.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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