

# Reliability and Validity of Gujarati Version of the Vertigo Symptom Scale – Short form in Menopausal Women

Dr. Nandini Kuldeep Gehlot<sup>1</sup>, Dr. Gira Thakrar<sup>2</sup>

<sup>1</sup>1<sup>st</sup> Year MPT Student, <sup>2</sup>Senior Lecturer,  
JG College of Physiotherapy, Gujarat University, Ahmedabad, India.

Corresponding Author: Dr. Nandini Kuldeep Gehlot

DOI: <https://doi.org/10.52403/ijshr.20240247>

## ABSTRACT

**Background:** Vertigo, a sensation of dizziness and spinning, can occur in menopausal women due to hormonal changes. To measure these vertigo symptoms, a tool called the Vertigo Symptom Scales Short-form (VSS-SF) is commonly used. The VSS-SF is currently not available in Gujarati language so there is a need to develop a scale which can be used by the Gujarati language speaking population.

**Material & method:** An observational study was conducted, translating the scale VSS-SF comprises 15 items, each scored on a 5-point scale (0–4) into Gujarati through double forward and backward translation. Experts scored each question as accepted or rejected. The finalized Gujarati version's reliability were assessed with a sample of 20 menopausal women.

**Result:** Result calculated by using SPSS. The Gujarati version of the VSS-SF has high internal consistency (Cronbach's  $\alpha=0.873$ ).

**Conclusion:** The translation of the VSS-SF into Gujarati successfully maintained the semantic and measurement properties of the original version. The resulting Gujarati version proved to be a valid and reliable scale for assessing vertigo symptoms in the Gujarati population.

**Keywords:** VSS-sf, Menopausal women, Reliability, Validity

## INTRODUCTION

The menopausal transition, encompasses that period of time during which physiologic changes mark progression toward a woman's final menstrual period (FMP).

This stage begins with menstrual irregularities and lasts until a woman approaches menopause.<sup>(1)</sup> Menopause symptoms include hot flashes, headaches, sweating, inadequate sleep, vertigo, stress, anxiety, exhaustion, and dizziness.<sup>(2)</sup> Indian women were found to have a natural menopause age of  $46.2 \pm 4.9$  years.<sup>(3)</sup> Physiologically, During this phase, which lasts for several years and is defined by noticeable swings in sex hormone levels, oestrogen falls off significantly. Compared to the menstrual cycle, this period has more drastic variations. A significant reduction in oestrogen during menopause, particularly in the form of an oestrogen receptor, can interfere with otoconial metabolism and increase the incidence of vertigo.<sup>(4)</sup>

The VSS-SF is composed up of fifteen items. It was developed by Yardley *et al.* VSS-sf is a self-report tool used to assess the frequency of vertigo, dizziness, unsteadiness, and

concurrent autonomic/anxiety symptoms. Every item has a 5-point rating (range 0-4); the item scores are added up to determine

the severity of the symptoms. From 0 to 60 is the entire scale score. Higher scores indicate higher symptoms. The total scale score runs from 0 to 60. > 12 points on the whole dizziness scale is considered severe dizziness. Two subscales are proposed for the scale: eight items related to vertigo-balance (VSS-V, score 0–32) and seven items related to autonomic-anxiety symptoms (VSS-A, score 0–28). There are Dutch, French, German, Spanish, Swedish, Turkish and Malay versions of the VSS-sf that are already published.

There are no Gujarati translations available for the vertigo symptoms scale - short form.

The purpose of this study was to translate the short form of the Vertigo Symptoms Scale from the original English language to Gujarati, cross-culturally adapt the VSS-sf into Gujarati, and produce a valid and reliable Gujarati version of the VSS-sf.

## **MATERIALS & METHODS**

An Institutional Ethical Committee approved a cross-sectional observational study conducted in Ahmedabad, Gujarat, India. The research comprised two meticulously executed phases: the translation phase and the validation phase. Careful attention was given to each phase to eliminate bias and ensure the reliability of the results. Prior permission from one of the authors, was secured for participant involvement. The translation of the Vertigo Symptoms Scale Short Form (VSS-sf) from its original English version to Gujarati followed the forward/backward translation guidelines. This method aimed to guarantee grammatical soundness and accuracy in the terminology used in the translated version, while simultaneously preserving the original meaning and content of the VSS-sf. In the initial translation into Gujarati, two independent native speakers were engaged—T1, with familiarity in healthcare and its terminologies, and T2, without familiarity with healthcare terminologies. Subsequently, a version combining both initial translations (T1/T2) was written, based on consensus of the two initial

translators. Subsequently, a version that combined both initial translations (T1/T2) was generated based on the consensus of the two initial translators. Following this, the synthesized version underwent back-translation into English by two independent professional translators (BT1 and BT2). This back-translation process aimed to verify the consistency of the synthesized version with the original English text. The resulting back-translations (BT1 and BT2) were then subjected to a comparative analysis alongside the original version by experts from the committee responsible for disseminating content in the Gujarati language. Each item underwent analysis and was categorized as either accepted, accepted with modifications, or rejected. The reviews and feedback provided were carefully taken into account, and adjustments were made accordingly to incorporate the suggested modifications.

The pre-final version of the questionnaire, after incorporating feedback and modifications, underwent a clarity assessment with a group of 10 menopausal women. For the initial validation of the 15-item VSS-sf, a sample size of 20 respondents was targeted, selected through simple random sampling. The participants, within the age group of 45-55 years and from Ahmedabad city, were required to be proficient in reading and understanding Gujarati. Inclusion criteria considered menopausal women meeting the specified age and language requirements, while exclusion criteria were established to exclude individuals with any neurological conditions. Eligible participants were briefed on the study's purpose and methodology before their involvement in the research. Written informed consent was obtained from the participants before handing over the questionnaire for completion. Each patient was asked to confirm their understanding of the items and their ability to interpret the questionnaire accurately. Scores were calculated for each participant and recorded, with a guarantee of study confidentiality. This process was

repeated after a week with the same participants to assess the test-retest reliability of the VSS-sf. The completed questionnaires were scrutinized for missing responses and language difficulties, but no specific issues were found with the translated VSS-sf. Consequently, this version was deemed suitable for use in a larger patient population. The final Gujarati version of the VSS-sf was then approved by the expert committee, and its validation involved appropriate statistical analyses,

including assessments of test-retest reliability using SPSS version 20.

## RESULT

All 15 items included in the VSS-sf questionnaire were validated for the assessment of vertigo symptoms. Reliability, which assesses the consistency of results when measurements are repeated, was found to be high in the Gujarati version of the VSS-sf, with a Cronbach's alpha value of 0.890 indicating strong internal consistency.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
0.873	0.902	15

## DISCUSSION

The research was undertaken due to the necessity for an instrument to assess vertigo symptoms, with a specific focus on the VSS-sf within the Gujarati population. Given its nature as a self-reported questionnaire, the VSS-sf holds significant relevance in clinical and educational contexts. Hence, the utilization of a validated health-related outcome measure becomes crucial. Adaptations were essential to guarantee cultural and linguistic appropriateness within the Gujarati population. In the validation procedure for the Gujarati adaptation of the Vertigo Symptoms Scale - Short Form, thorough discussions were conducted concerning the translation and implementation of specific questionnaire items. Adaptations were introduced to guarantee cultural and linguistic relevance. The principal objective of this study was to develop a dependable and valid Gujarati version of the VSS-sf through meticulous translation and adaptation processes. No challenges emerged during the translation phase, as the original structure of the VSS-sf was preserved, and all items were retained without any rejection. Furthermore, there were no alterations made to the sequence of item presentation.

In the future, it would be beneficial for researchers to include a larger group of people from various situations to get a better grasp of vertigo. Checking how well the VSS-sf Gujarati version connects with different measures of well-being is also important. Investigating how vertigo symptoms change over time and if the Gujarati version of VSS-sf can detect these changes could be useful. Understanding how people in Gujarat interpret and answer these questions would further improve the questionnaire. By using a larger sample size, these recommendations can make the questionnaire more effective in understanding vertigo in the Gujarati community.

## CONCLUSION

The translation process of VSS-sf into Gujarati has been accomplished with success, maintaining the semantic and measurement features of the original VSS-sf scale. The resulting Gujarati version has proven to be a valid and reliable scale, making it well-suited for application in the Gujarati population.

**Acknowledgement:** The authors express gratitude for generously permitting the translation of the VSS-sf scale into Gujarati.

They extend sincere thanks to the senior faculty members for their valuable assistance during the validation process. Heartfelt appreciation is conveyed to all the participants for their substantial support and enthusiastic involvement in the study

## REFERENCES

1. Kondo M Kiyomizu K Goto F Kitahara T Imai T Hashimoto M Shimogori H Ikezono T Nakayama M Watanabe N Akechi. Analysis of vestibular-balance symptoms according to symptom duration: dimensionality of the Vertigo Symptom Scale-short form. *J Clin Transl Res.* 2015;1(4):233–40
2. Wilhelmsen K Strand LI, Nordahl SHG Eide GE Ljunggren AE. Psychometric properties of the Vertigo Symptom Scale - Short form. *BMC Ear Nose Throat Disord.* 2008;8(2):2
3. Yusoff MSB. ABC of content validation and content validity index calculation. *Education in Medicine Journal.* 2019;11(2):49–54
4. Kaur H, Vohra S, Kaur RS (2019) Cross-Cultural Adaptation of English version of Vertigo Symptom Scale in Punjabi. *Brain Disord Ther* 8:254. doi: 10.35248/2168-975X.19.8.254
5. Lee H Caguicla JM Park S Kwak DJ Won DY Park Y Kim J Kim M. Effects of 8-week Pilates exercise program on menopausal symptoms and lumbar strength and flexibility in postmenopausal women. *Journal of Exercise Rehabilitation.* 2016 Jun; 12(3):247.
6. Karmakar N Majumdar S Dasgupta A Das S. Quality of life among menopausal women: A community-based study in a rural area of West Bengal. *Journal of mid-life health.* 2017 Jan;8(1):21.
7. World Health Organization. Research on Menopause in the 1990s: Report of WHO Scientific Group. WHO Technical Report Series 866. Geneva: World Health Organization; 1996.
8. Ahuja M. Age of menopause and determinants of menopause age: A PAN India survey by IMS. *J Mid-life Health* 2016;(7):126-31
9. Jeong, S.-H. (2020). Benign Paroxysmal Positional Vertigo: Risk Factors Unique to Perimenopausal Women. *Frontiers in Neurology,* 11:589605. doi: 10.3389/fneur.2020.589605
10. Wilhelmsen K Strand LI, Nordahl SHG Eide GE Ljunggren AE. Psychometric properties of the Vertigo Symptom Scale - Short form. *BMC Ear Nose Throat Disord.* 2008;8(2):2
11. Castillo-Bustamante M Çelebisoy N Echavarría LG et al. Balance in Transition: Unraveling the Link Between Menopause and Vertigo. *Cureus.* 2024 Apr 29;16(4)
12. Terauchi M, Odai T, Hirose A, Kato K, Akiyoshi M, Masuda M, Tsunoda R, Fushiki H, Miyasaka N. Dizziness in peri- and postmenopausal women is associated with anxiety: a cross-sectional study. *Biopsychosoc Med.* 2018 Dec 12;12:21. doi: 10.1186/s13030-018-0140-1. PMID: 30559834; PMCID: PMC6291970.
13. Ogun OA, Büki B, Cohn ES, Janky KL, Lundberg YW. Menopause and benign paroxysmal positional vertigo. *Menopause.* 2014 Aug;21(8):886-9. doi: 10.1097/GME.000000000000190. PMID: 24496089; PMCID: PMC4110114.
14. Terauchi M, Odai T, Hirose A, Kato K, Akiyoshi M, Masuda M, Tsunoda R, Fushiki H, Miyasaka N. Dizziness in peri- and postmenopausal women is associated with anxiety: a cross-sectional study. *Biopsychosoc Med.* 2018 Dec 12; 12:21. doi: 10.1186/s13030-018-0140-1. PMID: 30559834; PMCID: PMC6291970.

How to cite this article: Nandini Kuldeep Gehlot, Gira Thakrar. Reliability and validity of Gujarati version of the vertigo symptom scale – short form in menopausal women. *International Journal of Science & Healthcare Research.* 2024; 9(2): 369-372. DOI: <https://doi.org/10.52403/ijshr.20240247>

\*\*\*\*\*