

Translation of English Version of WOMAC Questionnaire into Marathi Language and Analysis of Its Reliability

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Abstract- Knee osteoarthritis (OA) is one of the most common degenerative joint diseases, leading to pain, stiffness, and functional disability. Patient-reported outcome measures such as the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) are widely used for assessing disease severity. However, language barriers can limit accurate assessment. This study aimed to translate the English version of the WOMAC questionnaire into Marathi and evaluate its reliability.

I. INTRODUCTION

Osteoarthritis of the knee is a chronic, progressive musculoskeletal disorder characterized by degeneration of articular cartilage, subchondral bone remodeling, synovial inflammation, and osteophyte formation⁵. It is a major cause of pain, disability, and reduced quality of life among older adults⁶. Epidemiological studies report a prevalence of knee OA ranging from 22–30% in the Indian population, with higher incidence in females⁷⁻⁸. Assessment of pain, stiffness, and physical function is essential for diagnosis, treatment planning, and outcome evaluation in knee OA⁹. WOMAC is one of the most widely used disease-specific questionnaires and has been translated and validated in more than 65 languages¹⁰. Marathi is the primary language spoken in Maharashtra, one of the most populous states in India. The lack of a validated Marathi version of WOMAC limits accurate clinical assessment and research in this population¹¹. Therefore, this study aimed to translate the WOMAC questionnaire into Marathi language and assess its reliability in patients with knee osteoarthritis.

II. AIM

To develop a Marathi version of the WOMAC questionnaire and evaluate its reliability in patients with knee osteoarthritis.

III. OBJECTIVES

1. To translate the English version of the WOMAC questionnaire into Marathi language.
2. To assess the internal consistency reliability of the Marathi version of WOMAC.

IV. METHODOLOGY

Study Design: Experimental study

Study Setup: Pune

Sampling Method: Purposive sampling.

Inclusion Criteria included male and female patients aged 45–80 years, radiologically diagnosed with knee osteoarthritis (Kellgren–Lawrence grade II–IV), and literate in Marathi language. Individuals with recent knee surgery or replacement, active knee infection, and associated neurological or other musculoskeletal conditions were excluded.

Outcome Measure

Western Ontario and McMaster Universities (WOMAC Marathi version), which demonstrates good reliability ($\alpha=0.710$)

Procedure: The WOMAC questionnaire was translated using a forward-backward translation method. Two forward translators independently translated the English version into Marathi, followed by two backward translators translating it back into English. An expert committee reviewed all versions to develop a pre-final version, which was then pilot tested.

V. STATISTICAL ANALYSIS

A total of 49 participants aged 45-80 years were included in the data analysis. Data were analyzed using SPSS version 20.0. Descriptive statistics were used to summarize the data. The internal consistency of the Marathi version of the WOMAC questionnaire was assessed using Cronbach's alpha, which demonstrated acceptable reliability ($\alpha = 0.71$).

VI. RESULT

A total of 49 participants were included in the study, of which 33 (66%) were females and 16 (34%) were males. The mean age of participants was 70 years. The Marathi WOMAC questionnaire was successfully administered to all participants. The mean scores for WOMAC domains were: Pain = 65 ± 8.5 , Stiffness = 5.4 ± 1.3 , Function = 37.5 ± 5.2 , and Total WOMAC score = 107.9 ± 14.3 .

Reliability analysis revealed Cronbach's alpha values of 0.271 for Pain, 0.700 for Stiffness, 0.814 for Function, and 0.710 for the Total WOMAC score. These findings indicate acceptable overall reliability, with good internal consistency for the functional domain.

VII. DISCUSSION

The present study focused on translation and reliability assessment of the WOMAC questionnaire into Marathi language. The findings demonstrate acceptable overall internal consistency, similar to previously validated language versions such as Persian⁸, Gujarati⁹, Nepali¹⁰, and Arabic¹¹.

The functional domain showed good reliability, reflecting consistent patient responses, which is comparable with other cross-cultural adaptations. The stiffness domain also demonstrated acceptable internal consistency. However, the pain subscale exhibited poor reliability. Cultural variations in pain perception, linguistic nuances, and differences in symptom

expression may contribute to this finding¹⁸. Similar challenges have been reported in other translation studies, emphasizing the need for linguistic refinement and cognitive debriefing. Despite these limitations, the Marathi WOMAC scale remains clinically valuable for assessing functional disability and stiffness in knee OA patients.

VIII. CONCLUSION

The Marathi version of the WOMAC questionnaire demonstrates acceptable reliability for total score and good reliability for functional assessment in knee osteoarthritis. Although pain items require further refinement, the translated scale can be effectively used in clinical practice and research among Marathi-speaking populations.

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