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Psychometric Evaluation of Gujarati Version of Fall Efficacy Scale-International in Community Dwelling Older Individuals: A Cross-Sectional Study

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Abstract

Background: The Fall Efficacy Scale–International (FES-I) is a self-reported questionnaire used to assess fear of falling in community-dwelling older adults. It consists of 16 items related to concerns about falling during daily activities. Fear of falling is a common and multifactorial problem associated with activity limitation, reduced functional mobility and decreased quality of life (QOL). The FES-I is brief, easy to administer and suitable for clinical and research settings. It helps healthcare professionals identify fear of falling and plan preventive or rehabilitative interventions. The aim of the study is to find out the reliability and validity of the Gujarati version of the Fall Efficacy Scale-International (FES-I) in community dwelling older adults.

Methods: The cross-sectional study was conducted among various community-dwelling older individuals in Ahmedabad.The Fall Efficacy Scale-International was translated into Gujarati language according to Beaton guideline after obtaining permission from the author. A Total 160 participants and 10 professionals in the field of physiotherapy and healthcare area were involved in the examination of each item of the Gujarati version of Fall Efficacy Scale-International (FES-I).The statistical package for social sciences (SPSS) version 26.0 was used for the statistical analysis.

Results: The Content Validity Ratio (CVR) for item 11 was 0.62 and for item 2, 3, 7, 8, 9 was 0.8 and for item 1, 4, 5, 6, 10, 12, 13, 14, 15, 16 the value was 1. CVR ratio value 0.60 was authorized by table of lawshe.Internal consistency was calculated through cronbach's alpha ($\alpha = 0.999$)suggesting high internal consistency.test-retest reliability was calculated through the inter class correlation coefficient (ICC = 0.997) suggesting excellent test-retest reliability.

Conclusion: The FES-I Gujarati is proved as an easy-to-administer, reliable, valid and reproducible tool for the assessment of fear of fall among Gujarati community dwelling older adults. Its use is recommended in both clinical practice and research settings for Gujarati-speaking populations.

Keywords: Fall Efficacy Scale-International, Fear of fall, Reliability and Validity, Translation

INTRODUCTION:

Fear of falling is a common problem in older people [1]. when fear of falling results in avoidance of activities [2,3,4] and reducing physical fitness, it is a risk factor for future (recurrent) falls [5] and associated

mortality, dysfunctioning, loss of balance confidence. There is need for a measure of fear of falling that assesses both easy and difficult physical activities and social activities and is suitable for use in a range of languages and cultural contexts, permitting direct comparison between studies and populations in different countries and setting [6].

Falls efficacy can be better addressed among older adults to maximise their independence, promote maintenance of an active lifestyle and counter burdensome associations [7]. Falls efficacy as a latent construct in community-dwelling older adults has been widely studied in research and clinical practice [8] . Commonly-used self-reported instruments used to measure falls efficacy include the Falls Efficacy Scale (FES) [9].

Fall Efficacy Scale-International Validity and Reliability is available in English version. The Gujarati version of Fall Efficacy Scale-International is not available. It can be assessed by a single categorical question [10], or by multi-item questionnaires, such as the Falls Efficacy Scale International (FES-I) [11], the Fear of Falling Avoidance Behavior Questionnaire [12], the Activities Specific Balance Confidence Scale [13], and the Geriatric Fear of Falling Measurement [14]. The Fall Efficacy Scale-International (FES-I) is self-reported questionnaire to fear of fall. The questionnaire consists of 16 questions designed to fear of fall in community-dwelling older people.

Fear of falls is a common and significant health concern among older adults. However, Language and cultural differences can limit the use of existing tool in regional population. Therefore, translating and validating the Fall Efficacy Scale-International into Gujarati is necessary to ensure accurate and culturally relevant fear of fall assessment among Gujarati- speaking older adults.

MATERIALS AND METHODS:

A methodological, cross-sectional study was conducted to translate the original English version of the Fall Efficacy Scale–International (FES-I) into Gujarati and to evaluate its validity and reliability. The study was carried out among community-dwelling older adults aged 60-95 years residing in Ahmedabad City, Gujarat, India, from September -December 2025. After obtaining written informed consent, eligible participants were recruited using convenience sampling and administered the Gujarati version of the FES-I.

INCLUSION AND EXCLUSION CRITERIA:

Community-dwelling older adults aged ≥ 60 years, including both males and females who are willing to participate in the study and are able to read, understand and communicate in the Gujarati language. Individuals with severe neurological, musculoskeletal and cardiovascular condition and any surgical/fracture history in past 6 months were excluded.

The sample size was determined based on the number of items in the questionnaire. The FES-I consists of 16 items, and a total of 160 community-dwelling older adults were recruited to evaluate the validity and reliability of the Gujarati version of the FES-I.

STUDY PROCEDURE:

Language Translation and Adaptation process

Permission to translate of the Fall Efficacy Scale-International in Gujarati was obtained from the original developer. The original English version of the instrument was translated and cross-culturally adapted using a standardized protocol.

Stage 1 : Forward Translation -The translation was performed according to the Beaton guidelines. Two independent bilingual translators conducted forward translations, which were reconciled into a single version. The original English version of the FES-I was independently translated into Gujarati whose native language was Gujarati. A independently translated the Fall Efficacy Scale-International (FES-I) from English into Gujarati, a resulting into two separate versions (T1 and T2).

Stage 2 : Synthesis of the Forward Translations -The original English version and the two forward-translated Gujarati versions (T1 and T2) were carefully evaluated and a single reconciled version (T12) was created through mutual agreement among the translators and the research team.

Stage 3 : Back Translation -The synthesized Gujarati version (T12) was independently back-translated into English by two bilingual translators whose native language was English, resulting in two back-translated versions (BT1 and BT2). This process was undertaken to verify that the Gujarati version retained the conceptual meaning of the original instrument.

Stage 4 : Expert Committee Review-An expert committee of eight professionals from physiotherapy and healthcare reviewed the translated and back-translated questionnaires. The committee assessed the wording, content, format, scoring and clarity of the questionnaire. Necessary revisions were made to ensure that the Gujarati version was accurate, easy to understand and consistent with the original instrument.

Stage 5 : Final Version - The final stage of the translation and adaptation process involved pretesting the questionnaire. The final Gujarati version was administered to the expert committee and 10 randomly selected older adults from the total sample of 160 participants. They were asked to complete the questionnaire to assess the clarity and understanding of each item and to record the time required to complete the questionnaire.

FACE AND CONTENT VALIDITY:

Gujarati FES-I scale was given to 10 professionals with mean expertise 10.5 years in the field of physiotherapy and healthcare area. For face and content validity, the consensus method was used. Every item of the Gujarati FES-I scale was assessed for wording, content, format, scoring and ease of administration. With consideration of various suggestions from professionals, an 80% consensus was gained. All 10 professionals accepted all items of the Gujarati FES-I scale.

For calculating content validity, each item of the scale was graded by the ten professionals on a scale of 1 to 3, in which:

1 = Accepted

2 = Accepted with modifications

3 = Rejected

Where, Ne=Number of professionals scoring each question of the scale as "accepted"
N=Total number of professionals

Content validation ratio value 0.60 was authorised by table of lawshe. [15]

RELIABILITY:

A total of 160 participants were enrolled to find out the reliability of the Gujarati FES-I scale. Cronbach's alpha was used to calculate the internal consistency of the Gujarati FES-I scale. Cronbach alpha values of 0.70 were regarded as acceptable consistency and 0.90 as excellent consistency [16]. The ICC was used to

calculate the test-retest reliability of the Gujarati FES-I scale. For test-retest reliability, the Gujarati FES-I scale was administered twice with an interval of two Days [17].

STATISTICAL ANALYSIS

The Statistical Package for the Social Sciences (SPSS) version 26.0 was used for the statistical analysis. Descriptive data of participants was presented as mean and Standard Deviation (SD). Cronbach's alpha was used to calculate the internal consistency of the Gujarati FES-I scale. The ICC was used to calculate the test-retest reliability of the Gujarati FES-I scale. The level of significance was kept as p-value <0.05.

RESULT

The study enrolled 160 participants with a mean age of 72.1±6.91 years. Out of 160 participants, 84 were females (52.5%) and 76 were males (47.5%).

FACE AND CONTENT VALIDITY:

For evaluating face validation, all 10 experts shared their feedback on the words, content, format, scoring, and overall ease of understanding of each question. They agreed that all items were clear, suitable and could be used to assess fear of falling in community-dwelling older adults.

For content validity, the group of ten experts reviewed each item of the Gujarati version of the Fall Efficacy Scale-International (FES-I) and reached a common agreement. All items were marked as either "accepted" or "accepted with modification." The Content Validity Ratio (CVR) for item 11 was 0.62 and for item 2, 3, 7, 8, 9 was 0.8 and for item 1, 4, 5, 6, 10, 12, 13, 14, 15, 16 the value was 1. CVR ratio value 0.60 was authorised by table of lawshe [15] .

TEST-RETEST RELIABILITY:

Internal consistency of the Gujarati Fall Efficacy Scale-International (FES-I) well-being scale was calculated through Cronbach's alpha (α = 0.999) suggesting high internal consistency. Test-retest reliability of the Gujarati Fall Efficacy Scale-International (FES-I) well-being scale was calculated through the Intra class Correlation Coefficient (ICC = 0.997) suggesting excellent test-retest reliability.

DISCUSSION:

The Gujarati version of the Falls Efficacy Scale demonstrated excellent psychometric properties. Content validity was supported by a CVR >0.60 for all items, based on evaluation by ten professionals. Test-retest reliability was exceptionally high (ICC = 0.997), comparable to or slightly higher than the original FES reported by Tinetti ME et al. [18] and similar to the Falls Efficacy Scale International (FES-I) developed by Yardley L et al. [19] Translated versions, including Turkish [20], Persian [21], and Chinesel [22] adaptations, have also demonstrated good to excellent reliability (ICC range 0.84-0.99). Overall, the Gujarati FES demonstrates psychometric properties comparable to established international versions, supporting its clinical and research use among Gujarati-speaking older adults.

The face and content validity of the Gujarati version of the Fall Efficacy Scale-International (FES-I) were established through expert review and feedback from community-dwelling older adults. The experts agreed that the translated items were clear, relevant and appropriate for the Gujarati-speaking population. The reliability analysis demonstrated excellent internal consistency (Cronbach's α = 0.999) and excellent test–retest reliability (ICC = 0.997), indicating that the questionnaire provides highly consistent and stable

results over time.

These findings suggest that the Gujarati version of the FES-I is a dependable instrument for assessing concern about falling among Gujarati-speaking older adults. The systematic translation and cross-cultural adaptation process ensured that the questionnaire retained the meaning of the original version while remaining easy to understand and culturally appropriate. The study included a sufficient number of participants and followed established guidelines for translation and validation. Future studies should include participants from different regions of Gujarat and evaluate additional psychometric properties, such as construct validity, criterion validity and responsiveness, as well as compare the FES-I-Gujarati with other measures of balance, mobility and fall risk. Overall, the Gujarati version of the Fall Efficacy Scale-International is a valid, reliable and culturally appropriate instrument for assessing concern about falling in community-dwelling older adults and can be used confidently in both clinical practice and research.

CONCLUSION:

The Gujarati version of the Fall Efficacy Scale-International is an easy-to-administer, reliable, valid and reproducible tool for assessing fear of falling among Gujarati-speaking community-dwelling older adults. The findings of this study suggest that the use of the Gujarati FES-I will assist clinicians, researchers, policymakers, and healthcare professionals in accurately identifying fear of falling and planning appropriate fall prevention and rehabilitation strategies. This tool may play an important role in reducing fear of falling and its associated adverse outcomes in the elderly population.

LIMITATIONS:

The cross-sectional design restricts the assessment of responsiveness and changes in fear of falling over time. The sample consisted only of community-dwelling older adults, limiting generalizability to institutionalized or hospitalized elderly populations. The sample size may not represent the entire Gujarati-speaking elderly population, affecting external validity. The study did not compare the Gujarati version with objective balance or performance-based measures, limiting the establishment of concurrent validity.

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