



Research Article

RELIABILITY AND VALIDITY OF GUJARATI VERSION OF PAIN FREQUENCY SEVERITY DURATION SCALE IN ADULT PATIENTS WITH MUSCULOSKELETAL DISEASES

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ABSTRACT

Introduction: Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Typically, pain is measured by intensity and sensory characteristics. Although intensity is one of the most common dimension, it has been suggested that measuring pain intensity in isolation does not measure pain accurately. The PFSD scale assesses multiple aspects of pain such as frequency, severity/intensity, and duration. The need of study is to translate PFSD in Gujarati language and find the reliability and validity in adult patients with musculoskeletal disorders.

Methodology: The PFSD scale was translated in Gujarati language and face validity was established. To find concurrent validity fifty patients with musculoskeletal disorders like neck, shoulder, back and knee pain were taken in the study. Patients were asked to complete a standard NPRS scale and then gujarati version of PFSD scale was administered. Validity was assessed using correlation and reliability was determined using intra-class correlation coefficient (ICC).

Results: The spearman's correlation for validity was found to be 0.87 ($p < 0.01$). The intraclass correlation coefficient for intra rater reliability was found to be 0.79 (ICC = 0.79, 0.45-0.90).

Conclusion: The study concludes that gujarati version of PFSD scale has good validity and intra rater reliability.

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INTRODUCTION

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. It is mainly due to firing of nociceptive neurons.^[1] Typically, pain is measured by intensity and sensory characteristics. Although intensity is one of the most common dimension of pain assessment, it has been suggested that measuring pain intensity in isolation is only capturing part of pain experience and may not lead to an accurate measurement. At one level, pain forms an important part of the diagnostic assessment. It is suggested that a simple, reliable and quantitative pain measure be used in patients who present with routine problems. At another level, when the therapist is presented with clients in whom pain does not make sense in terms of its pattern, distribution, history or features, it is advisable to go beyond a simple pain intensity measure.^[2] Youth with chronic pain can have decreased social functioning, increased school absenteeism, and decreased quality of life.^[3,4]

The PFSD scale assess multiple aspects of pain such as frequency, severity/ intensity, and duration. This scale is self reported questionnaire validated in pediatric population.^[5]

It also has been validated in community young adults.^[6] However the PFSD scale is not validated in gujarati language.

The aim of current study is to translate the questionnaire in Gujarati language and to find reliability and validity in adult patients with musculoskeletal diseases. This would facilitate research in musculoskeletal disorders as well as help in everyday clinical practice.

METHODS

Questionnaire

The pain-frequency-severity-duration scale assess multiple aspects of pain and to broaden the focus to capture more than pain intensity. The PFSD consists of five questions. The first question asked that participants circle the number of days in the past two weeks that they have experienced pain (0–14). The second and fourth questions asked to rate usual and worst pain intensity over the last two weeks using a Likert scale ranging from 0 (no pain) to 10 (worst pain). Questions three and five assessed the average duration of usual and worst pain by asking indicating the length of pain in hours: 1-2, 3-5, 6-8, 9-12, 12-18, and 18-24. A composite score was derived by multiplying the number of days of pain, the level of usual pain, and the level of worst pain and then dividing the product by 10. For example, if a person reported 10 days of pain over the

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14 day period, a level 6 out of 10 usual pain level, and 9 out of 10 worst pain level, that participant's PFSD score would be 54. Higher the score indicate worse the pain.^[5]

A Cross sectional study was conducted at OPD setting of Physiotherapy department of SBB College of Physiotherapy, Ahmedabad. Initially PFSD scale was translated in Gujarati language. Its validity and reliability was established. For these subjects with musculoskeletal diseases like neck, shoulder, back and knee pain who were referred from Orthopedic OPD and referred to Physiotherapy department were included.

For translation of the scale and establishing face validity following steps were followed:^[7]

The translation and cultural adaptation processes were started after obtaining approval from the author of PFSD scale. Gujarati version of PFSD scale was developed in accordance with published guidelines

Step 1-Forward translation

University approved Gujarati translator who was fluent in both English and Gujarati language was approached. PFSD scale was given to him and asked for translation into Gujarati language.

Step 2-Backward translation

The PFSD Gujarati version was given to university approved English translator who was also fluent in both Gujarati and English language for backward translation. He was blinded to the original version.

Step 3-Expert committee review

The scale was given to an expert panel for their suggestions and modifications. The expert panel consisted of two senior Orthopaedic Surgeons who had more than 10 years of experience and three Senior Physiotherapists who were not the part of the study and are working with musculoskeletal physiotherapy since more than 11 year. PFSD Gujarati version and original scale was given to them. As per their suggestions and few modifications, a pre-final Gujarati version of PFSD scale was developed.

Step 4-Pre testing and final version

The last step of the translation procedure was the pre-testing of the translated instrument in a small population of patients who understand Gujarati language and were having musculoskeletal diseases like neck, shoulder, back and knee pain. This process refers to an in-depth interview of patients about their understanding of the questionnaire and translation alternatives. After completing the questionnaire participants gave their general impression on the clarity of the items. Finally, the final PFSD scale was then developed.

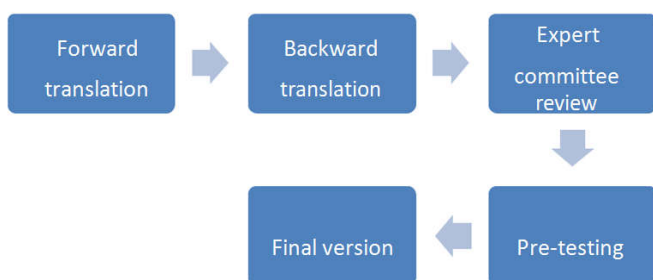


Fig 1 steps of translation process

Procedure for establishing Concurrent Validity

For establishing concurrent validity Gujarati version of PFSD scale was compared with standardized numerical pain rating scale (NPRS).

NPRS is a unidimensional measure of pain intensity in adults. The participant will indicate their pain intensity on a scale of 0 to 10, with 0 (no pain) and 10 (worst pain). They used to give three rating of the pain intensity. Pain intensity at its best, worst and at present. Then the mean of three values is calculated. Higher the score indicate worse the pain.^[8]

To find concurrent validity fifty patients of the age group 20 to 60 years of age with musculoskeletal diseases like neck, shoulder, back and knee pain and who were willing to participate in the study are selected. Informed consent was taken from them. Patients with a history of surgery in past 3 months like joint replacement, arthroscopy or spinal surgery, subjects with malignancy, pregnancy, lactation, cognitive impairment and patients with neurological disorder were excluded from study. Patients were asked to complete a standard numerical pain rating scale (NPRS) and Pain Frequency Severity Duration scale (PFSD) Gujarati version. PFSD composite score and NPRS score were calculated and Spearman's Correlation Coefficient was found.

Reliability

To find test-retest reliability same patients were given the PFSD Gujarati Version scale after 48 hours and composite score was calculated. Intra class correlation coefficient was found out between the two composite score and reliability was established.

Statistical analysis

SPSS version 16 was used to analyze the data obtained. The concurrent validity was established using Spearman's correlation coefficients and test-retest reliability was determined by using intra-class correlation coefficient (ICC).

RESULTS

Total 50 patients, 24 males and 26 females between the age 20-60 years with the mean age 47.78 years participated in the study

Out of them 16 had knee pain, 13 had back pain, 11 with shoulder pain and 10 had neck pain.

Concurrent validity was established using Spearman's correlation coefficients and it was found to be 0.87 (p<0.01) which suggested good concurrent validity.

Table 1 Spearman's correlation

Spearman's rank correlation Coefficient between PFSD and NPRS	Level of significance (p)
0.87	0.01

The intraclass correlation coefficient for intra rater reliability was found to be 0.79 (ICC = 0.79, 0.45-0.90) which suggested good intra tester reliability.

Table 2 Test-retest reliability

Cronbach's alpha	Intraclass Correlation	Lower Band	Upper Band
0.919	0.790	0.457	0.905
95% Confidence Interval			

DISCUSSION

This is the first study that translated and cross culturally adapted the PFSD into Gujarati language and validity, reliability were tested. The scale was originally designed for pediatric population which was tested for its validity and reliability in adult population. PFSD incorporates multiple aspects of pain, in order to better capture the impact of the pain experience and the PFSD composite score is thought to be more reflective of the overarching experience on the youth's life than assessing pain intensity in isolation. It is important to note that the standard 10-point pain scale assessing usual and worst pain is imbedded within the measure and could be used separately. The PFSD scale includes other questions to compute a composite score in order to assess the impact of pain beyond intensity. It is developed and validated by Katherine *et al* in pediatric chronic pain sample.^[5]

The concurrent validity of Gujarati version of PFSD scale was established by comparing it with standardized NPRS scale. NPRS has excellent reliability (0.96) and construct validity (correlations range from 0.86 to 0.95) so it is considered as gold standard measure of pain.^[9] The concurrent validity in the present study was found to be 0.87 ($p < 0.01$) which shows significant correlation coefficients with standard NPRS scale. High correlation coefficient obtained between both the scales is because NPRS scale indicate pain intensity at its best, worst and at present and the average of three values is calculated. PFSD composite score also measure the pain intensity at best and worst level.

For reliability, questionnaire was again given after 48 hours to avoid memory problems and give wash out period. After applying it second time on patient's intraclass correlation coefficient (ICC) was calculated. The reliability was found to be 0.79 which shows good reliability.

The present study was done with the smaller sample size. Further studies can be done over larger population with different age group. Also inter-rater reliability can be determine.

CONCLUSION

The Gujarati version of PFSD is reliable and valid instrument to measure pain status in Gujarati speaking adult patients with musculoskeletal diseases. It is simple and easy to use and now can be applied in clinical settings and future outcome studies in Gujarati speaking communities.

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