

Original Research Article

## Translation and Validation of Gujarati Version of Patient-Rated Tennis Elbow Evaluation (PRTEE)

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### ABSTRACT

Lateral Epicondylitis (LE) is a common injury of the forearm generally termed as “Tennis Elbow” for which there is no reliable and valid measure exists to determine severity in the Gujarati language. The Patient-Rated Tennis Elbow Evaluation (PRTEE) is the first questionnaire specifically designed for LE but in English. The study aimed to translate the English version of PRTEE into Gujarati language and validate a translated Gujarati version of PRTEE. The English version of PRTEE was translated into Gujarati language using the forward-translations and back-translation method according to WHO. After translation, the questionnaire was completed by 30 individuals (18 males and 12 females) aged 18–52 years (mean age: 31.53±9.80 years). Unpaired t-test was done to compare the results of two questionnaires. The results on the reliability and validity of the Gujarati version of PRTEE were measured using Internal reliability index Cronbach’s alpha and Pearson Correlation coefficient test. All the questions of PRTEE showed no statistically significant difference between the English version of PRTEE and the translated Gujarati version of PRTEE. Results of Unpaired t-test ( $P = 0.7804$ ) were statistically insignificant. The results on the reliability and validity of the PRTEE were satisfactory as the internal reliability index Cronbach  $\alpha$  was 0.98 and Pearson Correlation coefficient was 0.965 suggesting that the translated Gujarati version was highly correlated to the original English version. The translated Gujarati version of PRTEE demonstrated good reliability and validity. Its sufficient discriminative and evaluative psychometric properties provide the theoretical evidence for further use in research study among Gujarati population.

**Key Words:** Validity, Reliability, Patient-Rated Tennis Elbow Evaluation.

### INTRODUCTION

Lateral Epicondylitis (LE), also commonly known as tennis elbow, is the most common injury of the forearm with a high prevalence especially in a 40–50 year old population.<sup>[1,2]</sup> The prevalence of LE in the general population ranges from 25–64 years and generally 1.3% for males and 1.1% for females.<sup>[3]</sup> The main cause of LE is tendinitis of the Extensor Carpi Radialis

Brevis tendon due to overuse of the extensor tendons of the forearm<sup>[4]</sup> with predominating symptoms of pain and tenderness over the lateral epicondyle of the humerus with weak and painful grip and pain with wrist extension and third metacarpal extension.<sup>[5]</sup> Despite the prevalence of LE, little consensus exists on its treatment.<sup>[6,7]</sup> Some of the treatments generally practiced for LE are taping, deep

friction massage, exercise programs (eccentric), acupuncture, injections and extracorporeal shockwave therapy. Thus, further randomized and controlled studies with reliable outcome measures including questionnaires are required to determine the optimal treatment strategy.

The first questionnaire specifically designed for LE known as Patient-Rated Forearm Evaluation Questionnaire (PRFEQ) was developed in Canada in 1999.<sup>[8]</sup> The PRFEQ was developed with the main aim of providing a brief, uncomplicated and standardized quantitative description of pain and functional ability for use in patients with LE, which can assess severity. and Several studies proved that the scale was reliable and sensitive.<sup>[8,9]</sup> PRFEQ was modified in the year 2005 with minor changes in the wording along with change in the name PRTEE (Patient-Rated Tennis Elbow Evaluation) to improve the questionnaire.<sup>[10]</sup> The developers stated that published reliability and validity data still apply as the changes, which were made in PRFEQ, were minor. The English-language PRTEE version has already been translated and cross-culturally adapted in Italian, Swedish, Turkish and Canadian-French and Hong Kong Chinese.<sup>[11-15]</sup> After searching the literature databases such as Pubmed, Scopus, Sciencedirect, Ebscohost, etc. didn't found any study on the translated Gujarati version of PRTEE. As a result this scale was not able to be used in Gujarati population who knows only Gujarati language. Therefore, the present study was taken up to translate the PRTEE from English to Gujarati language. Thus, this Gujarati version of PRTEE would be useful to measure the self-esteem of Gujarati population, who understands only Gujarati language. Also, in Gujarati language, there is no questionnaire for the upper extremity which exists. The Gujarati Version of the PRTEE would provide such a questionnaire and this would be another step for a universally accepted outcome measure for LE. Therefore, the main aim of this study is to translate into Gujarati and validate the

Gujarati version of PRTEE according to WHO guidelines.<sup>[16]</sup>

## MATERIALS AND METHODS

An observational study design was adopted. As there was no experimental human intervention to be undergone ethical approval was not taken for the study. The participants were selected based on the inclusion and exclusion criteria designed for the study. These participants were registered for the study after obtaining the written informed consent form. The participants were provided with a participant information sheet. The samples included in our study were 30 individuals. The mean age of the participants was  $31.53 \pm 9.80$  (Table 2). The inclusion criteria were subjects aged 18 years and above and knowledge of both English and Gujarati language. Subjects who were not willing to take part in the study were excluded.

### Process of translation of questionnaire:

For translation of PRTEE from English language to Gujarati language permission for the translation & validity of the PRTEE to Gujarati was obtained from the developer of the PRTEE (personal communication through E-mail, Dr. J.C. MacDermid) and forward-translations and back-translation method according to WHO<sup>[16]</sup> was used. This method included forward translation, expert panel, back-translation and testing of the questionnaire.

#### Step 1: Forward translation

Two translators (one with the background of medical field and other with no background of medical field) who knew both English and Gujarati language were chosen to translate the questionnaire from English to Gujarati language.

#### Step 2: Synthesis

Both the Gujarati versions were combined and two professionals who had knowledge of medical terminologies and were known to both the languages (English & Gujarati) developed a synthesised version.

#### Step 3: Back-translation

The synthesised version of the questionnaire was back translated into English language by an independent translator, who knew both English and Gujarati language and had no information of the original questionnaire which was in English language.

#### Step 4: Expert panel

A bilingual (in English and the Gujarati language) expert panel was convened which included the forward translator, health experts, as well as professionals with skill in questionnaire development and translation. The changes were done in the translated questionnaire based on the suggestions of the expert panel.

#### Step 5: Testing of the questionnaire

A Pre Final Gujarati version of PRTEE was given to 30 participants who fulfilled the inclusion and exclusion criteria. After a week, the same participants were also given the English version of PRTEE.

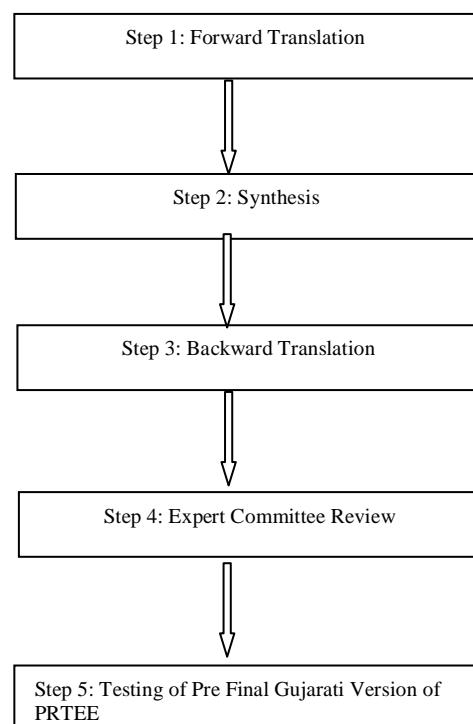


Figure 1: Flow Chart of the Study Design

## RESULTS

### Descriptive statistics:

The subjects recruited in the study were 30 individuals out of which 19 were males and 11 were females (Table 1). The age of the

sample ranged from 18–52 years with mean age of 31.53±9.80 years (Table 2).

Table 1: Frequency of Gender

Gender	Frequency (N=30)	Percentage
Male	19	63.33
Female	11	36.66

Table 2: Age Group

	N	Minimum	Maximum	Mean	Std. Deviation
Age (Years)	30	18	52	31.53	9.80

### Analysis of Dependence:

All the questions showed no statistically significant difference between the English version of PRTEE and the translated Gujarati version of PRTEE. The results of Unpaired t-test were statistically insignificant ( $P = 0.7804$ ) (Table 3, 4).

Table 3: Unpaired samples t-test

	N	Mean	S.D.	95% CI	
				Lower	Upper
English questionnaire	30	20.06	6.80	19.20	20.92
Gujarati questionnaire	30	20.23	6.55	19.40	21.06

Table 4: Comparison of means with Unpaired samples t-test

Mean difference	S.D.	95% CI of difference		t	df	P value
		Lower	Upper			
0.16	0.60	-1.02	1.36	0.27	482	0.78

### Inferential statistics

The convergent validity and reliability analysis were done.

#### Convergent validity

The Pearson Correlation Coefficient was 0.965 which suggests that the two questionnaires were significantly positively correlated (Table 5).

Table 5: Pearson Correlation Coefficient

N	Correlation coefficient r	95% CI for r		P value
		Lower	Upper	
30	0.965	0.95	0.97	$P<0.0001$

### Reliability analysis:

The internal reliability of the tool was evaluated with Cronbach's alpha. This analysis showed high consistency of the tool, as the index had a value of 0.9825 which is larger than 0.7 necessary for the overall consistency of each instrument (Table 6).

**Table 6: Internal reliability consistency Cronbach's alpha**

N	Cronbach's alpha	95% lower confidence limit
30	0.9825	0.9784

## DISCUSSION

The aim of this study was to translate and validate PRTEE in a sample of Gujarati population. The results show that the scale presents excellent levels of internal reliability. The samples recruited in the study were 30 individuals out of which 19 were males and 11 were females ([Table 1](#)). The age of the sample ranged from 18–52 years with mean age of 31.53+9.80 years ([Table 2](#)).

Unpaired t-test was done to compare the means of the two questionnaires. There was no statistically significant difference in all the questions between the English version of PRTEE and the translated Gujarati version of PRTEE. The results of Unpaired t-test were statistically insignificant ( $P = 0.7804$ ) ([Table 3, 4](#)).

The results demonstrated a high and considerable positive association between the two questionnaires in terms of construct validity. The Pearson Correlation Coefficient was 0.9656 which suggests that the two questionnaires were significantly positively correlated ([Table 5](#)). The present study corroborates the results of validation studies carried out in other countries and with altered self-concept tools. [\[11-15\]](#)

The internal reliability of the tool was assessed with Cronbach's alpha. This analysis showed high consistency of the tool, as the index had a value of 0.9825 which is larger than 0.7 necessary for the overall consistency of each instrument ([Table 6](#)).

Further studies should be undertaken to learn the dynamic configuration of PRTEE in Gujarati people taking into consideration the sex variable to find out whether there are diverse structures according to sex. On the former side, it would be exciting to contrast a positive version of the tool with the original version and a negative version in diverse samples (clinical, educational, and work settings). It is obligatory to carry out cross-cultural

studies with similar samples by means of different variables for instance self-perception, age, sex, or level of studies to set up the construct validity of the tool and its effectiveness to recognize dissimilarities in self-esteem in diverse socio-cultural context.

Our results validate the uni-dimensional construction of the PRTEE planned by J.Macdermid (1989). Internal reliability and test-retest association were excellent, supporting the consistency of the scale. Additionally, we deem that there is adequate proof to support the construct validity of the scale. Therefore, the results give validation to make use of PRTEE in the Gujarati population to measure self-esteem.

## CONCLUSION

The translated Gujarati version of PRTEE confirmed excellent consistency and strength. Its satisfactory discriminative and evaluative psychometric properties offer the hypothetical evidence for further application in research study among Gujarati adults.

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