

# The reliability and validity of the Turkish version of the Fibromyalgia Participation Questionnaire

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## Abstract

**Objective:** The objective of this study was to test the reliability and validity of the Turkish version of the Fibromyalgia Participation Questionnaire (FPQ).

**Methods:** One hundred and eighty-four female patients with fibromyalgia syndrome were included in the study. All patients filled out the Turkish FPQ (FPQ-T) questionnaire, which was obtained by translation from German according to the guideline for the process of cross-cultural adaptation. The patients filled out the revised Fibromyalgia Impact Questionnaire (FIQ) and reevaluated the FPQ-T two hours later. Internal consistency reliability of the FPQ-T was assessed by calculating the “if item deleted” using Cronbach’s alpha and the “item-total correction” coefficient for each item of the questionnaire. The consistency of the subscales and the correlation of the test-retest values were assessed. The test-retest values were compared using the Wilcoxon test. Criterion validity was measured using FIQ scales by Spearman’s rank correlation coefficient.

**Results:** For internal reliability, Cronbach’s alpha coefficient was calculated as 0.957 for nonworking patients and 0.958 for working patients. Cronbach’s alpha values of 0.939, 0.871, and 0.914 were obtained for daily, social, and work life, respectively. Correlation coefficients were 0.888 for daily life, 0.859 for social life, and 0.901 overall in the nonworking group versus 0.896 in the working group. The comparison of scores obtained from test-retest measurements showed no significant difference except for Item 3. The correlation of the symptom severity score (SSS) and the FPQ-T was  $r=0.385$  ( $p<0.001$ ) and  $r=0.390$  ( $p<0.001$ ) for the nonworking and working subgroups, respectively. The evaluation of construct validity showed a significant correlation between the SSS and FPQ-T.

**Conclusion:** The results of our study showed that the FPQ-T is reliable and valid for assessing participation and social functioning in fibromyalgia patients in Turkish society.

**Keywords:** Fibromyalgia, fibromyalgia participation questionnaire, Turkish

## Introduction

Fibromyalgia syndrome (FMS) is a chronic health problem characterized by a wide range of physical and psychological symptoms such as chronic widespread pain, tender points, sleep disturbance, unrelenting fatigue, cognitive dysfunction, and substantial mood alterations that may lead to anxiety and depression (1, 2).

Early efforts at developing specific questionnaires for FMS have mostly focused on detecting these diverse and overwhelming symptoms and have emphasized the affected body functions and the activities of the patients at home (3, 4). The Fibromyalgia Impact Questionnaire (FIQ), which is regarded as the sole disease-specific tool for FMS and has been the gold standard in FMS studies for more than 20 years, and Brief Pain Inventory (BPI), Quality of Life Scale (QOLS), and Patient-Reported Outcomes Measurement Information System (PROMIS), which were later developed and used in those studies, have indeed contributed to the understanding and description of FMS (4-7). However, the FIQ has been criticized for failing to address the complex aspects of participation and lack of the evidence of factorial validity (8). More recently, several authors have emphasized that there is a need for a more specific instrument to document the participation in social functions by patients that may become impaired as a result of the above-mentioned symptoms, creating even more debilitating social problems for FMS patients (9, 10).

Farin et al. (11) designed the Fibromyalgia Participation Questionnaire (FPQ) as an instrument for measuring the participation and social functioning of FMS patients. They suggested the FPQ as a psychometrically val-

idated disease-specific tool for capturing these two outcome variables in therapy evaluations and clinical studies. The FPQ contained a total of 27 items divided into three scales (participation in social life, [FPQ-S], 11 items; participation in daily life, [FPQ-D], 11 items; participation in work life, [FPQ-W], 5 items). The authors noted indications of construct validity based on the observed correlation between the FPQ with FIQ, PDI, and PROMIS and demonstrated content validity by linking the FPQ items to the categories of the International Classification of Functioning, Disability, and Health. Since they found that the FPQ captured participation in social functions with good psychometric properties and that the FPQ scales generally revealed greater responsiveness than other instruments, they recommended this new questionnaire for use in clinical trials.

The clinics involved in our study are prominent reference centers for FMS patients coming from all over the country. We support the need for a specific questionnaire focusing on the participation in social functions of these patients and think that the FPQ is a valuable contribution to the ongoing research for understanding different aspects of FMS. Thus, we designed this study to test the reliability and validity of the Turkish version of the FPQ (FPQ-T) and to investigate if any cross-cultural differences could arise from its application in our society.

## Methods

### Patients

Included in the test study were 184 female patients aged 20-80 years (mean  $\pm$  standard deviation [SD]: 46.86 $\pm$ 11.97) who were admitted to nine different clinics in Turkey with a confirmed diagnosis of FMS according to the ACR 2011 diagnosis criteria. Since only a small minority of the patients were males during the first screening, only female patients were included. Patients who had social phobia or any accompanying musculoskeletal disorder and who were unable to understand or reply to the questionnaire were also excluded after screening. The age, marital status, level of education, and employment status of each patient were recorded. They were thoroughly informed about the purpose of the study, and the approval of the local ethics committee was obtained.

### Cross-cultural adaptation

Permission to use the questionnaire was requested from and granted by the developer. Cross-cultural adaptation was accomplished according to the suggestions of the MAPI re-

search institute in three steps: forward translation, backward translation, and patient testing (1-3). The FPQ was translated into Turkish by two professional native Turkish speakers bilingual in German. They discussed the FPQ translations with the local project manager to resolve discrepancies and produced a pooled version, which is the FPQ-T version of the translation (step 1). Next, German back-translation was done by the professional native German speaker bilingual in Turkish. He translated the FPQ-T version of the questionnaire back into German without access to the original questionnaire. During a meeting with the backward translator, the local project manager compared the backward version with the original version and prepared the second version (step 2). The second version was tested on five patients who were all native Turkish speakers, and comprehension was discussed through face-to-face interviews, thus producing the third version of the questionnaire (step 3), which was used throughout the study.

### Measurements

All patients filled out the FPQ-T questionnaire. The FPQ-T is a scale that estimates the social participation, daily life, and work life of the patients over the previous four weeks. The questionnaire consists of 27 items. The first 16 items concern daily life, and the following 6 items concentrate on the social lives of the patients. In the 23<sup>rd</sup> item, the patients are asked whether they have been currently working and a reply of "yes" or "no" is obtained. The patients who replied affirmatively were asked in five separate items about the level of difficulties they experienced in work life. The FPQ-T allows patients to rate these levels from 1 to 5. The total score is calculated as the sum of the first 22 items for the patients who had no work life and as the sum of all 27 items for the patients who had a work life.

Next, the patients were asked to fill out the revised FIQ. Similar to the original FIQ, the Turkish version of the FIQ consists of 10 items. The first item contains 10 questions on daily activities, each of which is scored according to the Likert scale from 0 (always able to do) to 3 (never able to do). The sum of the scores is divided by the number of valid scores to yield a single score for physical functioning. Item 2 asks how many days (0-7) the patients felt good, and Item 3 asks how many off-work days the patients had during the previous week. Items 4-10; ability to do her job, pain, fatigue, morning tiredness, stiffness, anxiety, and depression are measured by the visual analogue scale of 0 to 100 mm. The scores from each item are standardized on a scale ranging from 0 to 10, with higher scores

indicating more severe impairment. The sum of the 10 subitems is divided by the number of valid scores to yield one physical functioning score. Finally, the patients were asked to reevaluate the FIQ two hours after they had filled out the first form without access to the first form that they had already completed.

### Statistical analysis

The data analysis was performed with the Statistical Package for Social Sciences 23.0 (IBM Corp.; Armonk, NY, USA) statistics software package. The reliability of the internal consistency of the FPQ-T was assessed by calculating the "if item deleted" using Cronbach's alpha and the "item-total correction" coefficient for each item of the questionnaire (Table 1). Item 23 was excluded from the calculations because it sought a "yes" or "no" answer to the inquiry about work life. The consistency of the subscales was assessed using Spearman's rank correlation coefficient. Spearman's rank correlation test was performed to analyze the correlation between the test values and the retest values. The test-retest values were compared using the Wilcoxon test to assess changes in the replies given to each item. Criterion validity of the scale was measured using the FIQ scales by Spearman's rank correlation coefficient. The evaluation of the construct validity of the FPQ-T was performed based on the correlation of FPQ-T with the symptom severity score (SSS) used in the diagnosis of the patients and the assumption that more severe symptoms would result in higher FPQ-T scores. A  $p=0.05$  was accepted as the level of statistical significance.

## Results

### Internal consistency

The internal consistency of the FPQ-T for individual items and subscales is shown in Table 1. Since not all patients had a work life, after calculating the subgroup analyses for each subgroup, the total scores were tested as the sum of daily life and social life for the nonworking group and as the sum of daily life, social life, and work life for the working group. From the overall assessment of the scale, Cronbach's alpha coefficient was calculated as 0.957 for the nonworking and 0.958 for the working group. Cronbach's alpha coefficient values of 0.939, 0.871, and 0.914 were obtained for daily life, social life, and work life, respectively.

### Test-retest reliability

Tables 2 and 3 show the test-retest reliability for all the individual items and subscales. The correlation coefficients were found to be as high as 0.888 for daily life, 0.859 for social life in both working and nonworking groups,

**Table 1.** Internal consistency reliability of FPQ-T (Turkish version of the Fibromyalgia Participation Questionnaire) for subscales

Item number	FPQ-DL		FPQ-SL		FPQ-WL		FPQ-DL+SL		FPQ DL+SL+WL	
	Item- total correction	Cronbach's alpha if item deleted	Item- total correction	Cronbach's alpha item if deleted	Item- total correction	Cronbach's alpha if item deleted	Item- total correction	Cronbach's alpha if item deleted	Item- total correction	Cronbach's alpha if item deleted
1	0.654	0.936					0.657	0.955	0.468	0.959
2	0.582	0.937					0.584	0.956	0.590	0.958
3	0.739	0.934					0.731	0.954	0.653	0.957
4	0.666	0.935					0.666	0.955	0.631	0.957
5	0.616	0.937					0.616	0.956	0.584	0.958
6	0.784	0.933					0.773	0.954	0.701	0.957
7	0.699	0.935					0.715	0.954	0.666	0.957
8	0.714	0.934					0.733	0.954	0.571	0.958
9	0.767	0.933					0.769	0.954	0.729	0.956
10	0.683	0.935					0.690	0.955	0.717	0.957
11	0.594	0.937					0.584	0.956	0.486	0.959
12	0.765	0.933					0.774	0.954	0.709	0.957
13	0.770	0.933					0.787	0.953	0.786	0.956
14	0.592	0.937					0.603	0.956	0.631	0.957
15	0.634	0.936					0.642	0.955	0.742	0.956
16	0.583	0.937					0.616	0.956	0.662	0.957
17			0.609	0.862			0.662	0.955	0.774	0.956
18			0.618	0.858			0.645	0.955	0.671	0.957
19			0.792	0.827			0.803	0.953	0.761	0.956
20			0.712	0.842			0.741	0.954	0.657	0.957
21			0.644	0.853			0.692	0.955	0.774	0.956
22			0.673	0.849			0.746	0.954	0.716	0.957
24					0.642	0.921			0.543	0.958
25					0.810	0.889			0.660	0.957
26					0.765	0.900			0.663	0.957
27					0.857	0.880			0.691	0.957
28					0.843	0.882			0.717	0.956
Cronbach's alpha	0.939		0.871	0.914	0.957	0.958				

FPQ-DL: Fibromyalgia Participation Questionnaire, daily life; FPQ-SL: Fibromyalgia Participation Questionnaire, social life; FPQ-WL: Fibromyalgia Participation Questionnaire, work life

and 0.901 for daily+social life in the nonworking group versus 0.896 overall in the working group. A comparison of the scores obtained from the test-retest measurements showed no significant difference, except for Item 3. However, this difference did not have an effect on the total scores, nor did it affect the reliability of the subgroup comparisons.

#### Criterion/construct validity

The daily-life subscale, social subscale, and the overall score from the FPQ showed significant

correlations with the FIQ score ( $p < 0.001$ ) for both working and nonworking patients, as shown in Table 4. The evaluation of construct validity was done on the basis of correlation of the FPQ-T with the symptom severity score (SSS), as defined by ACR 2011 classification criteria, depending on the assumption that the higher the severity of the symptoms, the higher the FPQ scores would be. Significant correlation was found between the SSS and FPQ-T scores in both the working and nonworking groups. The correlation coefficients for the SSS

and FPQ-T were found to be  $r = 0.385$  ( $p < 0.001$ ) and  $r = 0.390$  ( $p < 0.001$ ) for the nonworking and working groups, respectively. As a result of the evaluation of construct validity, a significant correlation was found between the SSS and FPQ-T for both the working group ( $r = 0.390$ ,  $p < 0.001$ ) and the nonworking group ( $r = 0.385$ ,  $p < 0.001$ ).

#### Correlation of the subgroups of the FPQ

Significant correlation was found between the subscales of the scale (Table 5).

**Table 2.** The test-retest reliability for all the individual items

Item number	Test median (minimum-maximum)	Retestmedian (minimum-maximum)	p
1	2 (1-5)	2 (1-5)	0.440
2	1 (1-5)	2 (1-5)	0.102
3	3 (1-5)	3 (1-5)	0.019
4	3 (1-5)	3 (1-5)	0.384
5	3 (1-5)	3 (1-5)	0,718
6	3 (1-5)	3 (1-5)	0.066
7	3 (1-5)	3 (1-5)	0.901
8	3 (1-5)	3 (1-5)	0.611
9	3 (1-5)	3 (1-5)	0.152
10	3 (1-5)	3 (1-5)	0.311
11	4 (1-5)	4 (1-5)	0.404
12	3 (1-5)	3 (1-5)	0.060
13	2 (1-5)	2 (1-5)	0.864
14	3 (1-5)	3 (1-5)	0.337
15	2 (1-5)	2 (1-5)	0.250
16	2 (1-5)	2 (1-5)	0.618
17	3 (1-5)	3 (1-5)	0.215
18	3 (1-5)	3 (1-5)	0.800
19	2 (1-5)	2 (1-5)	0.637
20	3 (1-5)	2 (1-5)	0.315
21	3 (1-5)	3 (1-5)	0.441
22	2 (1-5)	2 (1-5)	0.299
24	3 (1-5)	3 (1-5)	0.350
25	3 (1-5)	3 (1-5)	0.175
26	2 (1-5)	2 (1-5)	0.653
27	3 (1-5)	3 (1-5)	0.600
28	3 (1-4)	2 (1-5)	0.822

**Table 3.** The test-retest reliability for the subscales of the FPQ-T (Turkish version of the Fibromyalgia Participation Questionnaire)

	r	p
Daily life	0.888	<0.001
Social life	0.859	<0.001
Work life	0.758	<0.001
Daily + social life	0.901	<0.001
Overall	0.896	<0.001

**Table 4.** Criterion validity of FPQ-T (Turkish version of the Fibromyalgia Participation Questionnaire) against the FIQ (Fibromyalgia Impact Questionnaire)

FPQ-T		Daily life	Social life	Work life	Daily + social life	Overall
FIQ	r	0.576	0.531	0.452	0.582	0.558
	p	<0.001	<0.001	<0.001	<0.001	<0.001

FPQ-T: Turkish version of the Fibromyalgia Participation Questionnaire; FIQ: Fibromyalgia Impact Questionnaire

**Table 5.** Correlation between the subscales of the FPQ-T (Turkish version of the Fibromyalgia Participation Questionnaire)

	r	p
Daily life -social life	0.874	<0.001
Daily life- work life	0.641	<0.01
Social life work life	0.649	<0.001

**Discussion**

The results of our study showed that the FPQ-T is a reliable and valid measurement instrument for assessing the participation in social functions of fibromyalgia patients. The original FPQ developed by German authors recently has been shown to have an advantage over the disease-specific FIQ because it more strongly captures relevant participation domains such as contact with friends and family members, leisure activities, and work life (11). Thorough psychometric examination, greater responsiveness, and the absence of differential item functioning have been cited by these authors as the other advantages of the FPQ over the FIQ and FIQ-R. Since all of the items in the FPQ are derived from FMS patients in focus groups, FPQ has specificity for FMS. FPQ also allows assessment of employment in FMS patients by inclusion of a separate job-related scale (11).

Since we have a growing number of FMS patients in our clinics and have been constantly observing how the social and work lives of these patients are affected by the disease during treatment and follow-up, we decided to perform a much-anticipated cross-cultural adaptation of the FPQ into Turkish. We are also aware of the fact that translation and cross-cultural adaptation of such a measure of health status will contribute to its generalization and a better understanding of the different aspects of FMS once the questionnaire proves to be an appropriate instrument that can be reliably used in our country.

In a recent study protocol developed for the validation and cross-cultural adaptation of the FPQ into the Spanish (7), the authors of that study have thoroughly reviewed the methodology of such translations and included a flow-chart of the process. We designed our study on the basis of the methodology described in the German and Spanish studies mentioned above and our experience with our past efforts in studying reliability and validity of the Turkish version of the patient-related tennis elbow evaluation (12).

In our study, the reliability of our scale was tested using Cronbach's alpha coefficient,

which is accepted as a valid method for estimating internal consistency when the items are scored within a numerical range (such as from 1 to 10, as was done in our study) rather than as “true” or “false.” We found Cronbach’s alpha coefficient for internal consistency 0.958 for evaluation of the whole scale. This value is comparable to that of the original German article and shows the high internal reliability of the Turkish version.

One significant modification in our version is the separate calculations for the working and nonworking patients. Due to this heterogeneity of the patient groups, evaluation was done in the daily-life and social-life sections for the nonworking groups and in all three sections for the working patients. We believe that such a modification does not diminish the strength of the questionnaire, and the working status of each patient is a significant parameter that should be considered in designing the study in other countries with social and cultural characteristics similar to ours.

The test-retest result was found to be different than the German study in Item 3: difficulty going to a birthday party with many people. While birthday celebrations are not uncommon in our country, birthday parties or gatherings are done almost only for children. We think that this a good example showing how certain traditions and habits may affect cross-cultural adaptation, although it was observed in a relatively less significant item of a questionnaire in that case and it was not necessary to omit that item since it did not affect the overall reliability.

The original FPQ has been accepted as a valid and reliable instrument to test participation in social functions of FMS patients and has been welcomed as an important contribution to the evaluation of these aspects of the disease. The results of our study have shown that the FPQ-T, which was prepared and processed in accordance with the content and methodology of

the original questionnaire, can be valid and reliable. We believe that the FPQ-T will contribute substantially to understanding and treatment of FMS-related problems in our patients and provide a trusted future standard for both national and international studies.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Uludağ University.

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

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