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Original Article

Reliability and validity of the Turkish version of the fibromyalgia rapid screening tool (FiRST)

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Abstract. [Purpose] An easy-to-use, psychometrically validated screening tool for fibromyalgia is needed. This study aims to evaluate the reliability and validity of the Turkish version of the Fibromyalgia Rapid Screening Tool by correlating it with 2013 American College of Rheumatology alternative diagnostic criteria and the Hospital Anxiety and Depression Scale. [Subjects and Methods] Subjects were 269 Physical Medicine and Rehabilitation clinic outpatients. Patients completed a questionnaire including the Fibromyalgia Rapid Screening Tool (twice), 2013 American College of Rheumatology alternative diagnostic criteria, and the Hospital Anxiety and Depression Scale. Scale reliability was examined by test-retest. The 2013 American College of Rheumatology alternative diagnostic criteria was used for comparison to determine criterion validity. The sensitivity, specificity, and positive and negative likelihood ratios were calculated according to 2013 American College of Rheumatology alternative diagnostic criteria. Logistic regression analysis was conducted to find the confounding effect of the Hospital Anxiety and Depression Scale on Fibromyalgia Rapid Screening Tool to distinguish patients with fibromyalgia syndrome. [Results] The Fibromyalgia Rapid Screening Tool was similar to the 2013 American College of Rheumatology alternative diagnostic criteria in defining patients with fibromyalgia syndrome. Fibromyalgia Rapid Screening Tool score was correlated with 2013 American College of Rheumatology alternative diagnostic criteria subscores. Each point increase in Fibromyalgia Rapid Screening Tool global score meant 10 times greater odds of experiencing fibromyalgia syndrome. [Conclusion] The Turkish version of the Fibromyalgia Rapid Screening Tool is reliable for identifying patients with fibromyalgia.

Key words: Fibromyalgia syndrome, Fibromyalgia Rapid Screening Tool, The Hospital Anxiety and Depression Scale

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INTRODUCTION

Fibromyalgia syndrome (FMS) is a prevalent chronic pain condition among middle-aged females and is characterized by chronic widespread pain. Various comorbid symptoms of FMS include fatigue, cognitive disturbances, depression, sleep impairments, and weight gain, to name but a few. It is a challenging disorder, and thus assessment and diagnosis might pose some difficulties in various health care settings. Patients may visit their general practitioners repeatedly with numerous symptoms before a diagnosis of FMS is made[1, 2].

Patients are encountered at not only primary but also secondary health care settings and by various subspecialities including rheumatologists, pain specialists, physiatrists, and psychologists. This has led to debate about whether FMS is a clinical or epidemiological disease[3].

The 1990 American College of Rheumatology (ACR) criteria included 2 major sections: history of widespread pain and pain in 11 of 18 tender points on digital palpation. Debates over reliability, validity, and number of tender points required to make a diagnosis were settled. Many controversies arose over tender points[4], and some authors argued against tender points, claiming that they are a measure of general stress[3, 5, 6]. It was then suggested that dealing with the symptoms rather than tender points would be more realistic and that use of 1990 criteria should be stopped[7].

The ACR 2010 criteria eliminated the controversial tender point examination and included the following headings: Widespread Pain Index, including 19 pain locations, and Symptom Severity Score for 3 symptoms plus the extent of 41 somatic symptoms in general. 2010 criteria further modified to the 2011 modified criteria (2011ModCr) with 6 self-reported symptoms instead of 41 somatic symptoms. The most recently developed criteria are the alternative diagnostic criteria (ACR 2013AltCr), which include more pain locations than the 2011ModCr (28 instead of 19) and 10 symptoms instead of 6. Compared to the 2011ModCr, the ACR 2013AltCr have comparable diagnostic sensitivity, better specificity, and a smaller number needed to diagnose[8].

In addition to the search for best criteria, some other tools were developed for epidemiological studies such as the London Fibromyalgia Study Screening Questionnaire or "Survey Criteria." However, they included only items related to pain and fatigue, neglecting other aspects of the condition[9]. To address these problems, some screening procedures have been suggested; however, they have been argued against due to psychometric validation problems and sensitivity and specificity issues[10].

Thus, a need for a short, easy-to-use, psychometrically validated screening tool has arisen in both clinical and research settings. The French Rheumatic Pain Study Group decided to develop a short, psychometrically sound, self-reported screening tool considering the major symptoms and aspects of FMS[9]. The original version of the Fibromyalgia Rapid Screening Tool (FiRST) was demonstrated to have excellent discriminative properties, especially divergent validity in terms of psychological aspect, which is an important property for an FMS screening tool[9]. The Spanish version of the FiRST was also demonstrated to have acceptable internal consistency, reliability, and criterion validity[10].

We aimed to study the reliability and validity of the Turkish version of the FiRST by correlating this tool with the ACR 2013AltCr and the Hospital Anxiety and Depression Scale (HADS).

SUBJECTS AND METHODS

Two hundred and sixty-nine patients (257 females and 12 males) with an average age (years) of 48.29 ± 12.78 (range 22–79) were included in the study. This study was conducted between March of 2014 and March of 2015. The principles of the Declaration of Helsinki were followed and the study protocol was approved by the Uludag University Ethical Committee (no: FR-HYH-19). Subjects were recruited from outpatient Physical Medicine and Rehabilitation clinics from 9 medical faculty hospitals and Ministry of Health research and training hospitals.

A convenience sample of patients with chronic diffuse pain was included in the study. Literate patients who could read and understand Turkish and who were able to complete the questionnaire were invited to participate in the study. All participants were informed that the questionnaires were collected for research purposes. Neither investigators nor subjects were compensated for participation in the study.

Patients with psychiatric disorders (severe depression, schizophrenia) or systemic or neurological disorders that could adversely affect quality of life or social functioning (such as end-stage heart failure, hemiplegia, spinal cord injury, etc.) were excluded from the study.

We obtained permission from MAPI Research Trust (contact information and permission to use: Mapi Research Trust, Lyon, France. E-mail: PROinformation@mapi-trust.org-Internet: www.proqolid.org.) Cross-cultural adaptation was accomplished according to the suggestions of the MAPI research institute in 3 steps: forward translation, backward translation, and patient testing.

The FiRST was translated into Turkish by 2 professional native Turkish speakers bilingual in Turkish and English. They discussed on the translated forms with the local project manager (R.C.) to resolve discrepancies and produced a pooled version, which is the first version of the translation (Step 1). Then, English back-translation was done by the professional native English-speaking translator bilingual in English and Turkish. He translated the first version of the questionnaire back

Table 1. Sensitivity, specificity, and positive and negative likelihood ratios of the FiRST to discriminate patients with and without FMS according to the 2013 AltCr

	Value	Confidence Interval
Sensitivity	83.82	76.5–89.6
Specificity	68.42	59.8–76.2
+LR	2.65	2.3–3.0
−LR	0.24	0.1–0.4

LR: likelihood ratio

Table 2. The coefficient of determinations between FiRST total score and ACR 2013 subscores (PLI and SIQR score) and HADS scores.

	PLI	SIQR	HADS
FiRST total score	0.383*	0.166*	0.18*
PLI		0.196*	0.131*
SIQR			0.194*

Data expressed as squared Spearman's rho correlation coefficients. FiRST: Fibromyalgia Rapid Screening Tool; HADS: Hospital Anxiety and Depression Scale; PLI: Pain Location Inventory; SIQR: Symptom Impact Questionnaire, *p<0.001 statistically significant

to English without access to the original questionnaire. The local project manager compared the backward version with the original during a meeting with the backward translator and prepared the second version (Step 2). The second version was tested on 5 patients, all of whom were native Turkish speakers, and comprehension was determined through face-to-face interviews. After this final step, a third version of the questionnaire was produced (Step 3) and used throughout the study.

Patients were asked to complete the questionnaire including the FiRST, 2013AltCr, and HADS. They completed the FiRST twice; the time interval for the 2 FiRST scales was 6 hours. The FiRST includes 6 items, and a score of 1 is given for the response of "Yes" and 0 if the response is "No" for each item. The total score is calculated as the sum of scores; the cut-off value is designated as 5/6[9].

The examiners were physiatrists and they were blinded to the results of FiRST and HADS. We used the ACR 2013AltCr[8], which includes the Pain Location Inventory (PLI) including 28 sites and the Symptom Impact Questionnaire (SIQR) consisting of 10 symptom items (pain; energy; stiffness; sleep; depression; memory problems; anxiety; tenderness to touch; balance problems; and sensitivity to loud noises, bright colors, odors, and cold). PLI score is between 0 and 28, and the SIQR range is 0–100 divided by 2. For a patient to fulfill the ACR 2013AltCr criteria, the symptoms and pain locations should have been persistent for at least 3 months, PLI≥17 and SIQR≥21.

The HADS is a 14-item scale consisting of two 7-item subscales—one for anxiety and the other for depression—and is a questionnaire completed by the patient. Each item has 4 possible answers (range 0–3), and the maximum possible score is 21. The validity and reliability of the Turkish version of the HADS was demonstrated previously[11]. Concurrent validity of anxiety subscale with Spielberger's Trait Anxiety Inventory, correlation coefficient was 0.7544 and of depression subscale with Beck Depression Inventory it was 0.7237. Testing the reliability of HAD scale, Cronbach alfa coefficient for anxiety subscale was 0.8525 and for depression subscale it was 0.7784[11].

We analyzed the data using the Statistical Package for the Social Sciences (SPSS) version 16 (Chicago, IL, USA). We used a Kolmogorov-Smirnov test to analyze variable distribution. We used nonparametric tests for the variables that were not distributed normally.

The reliability of the FiRST was examined by test–retest method. The reliability of the HADS was tested using Cronbach's alpha coefficient. For criterion validity of the FiRST, we used the ACR 2013AltCr for comparison. The cut-off value for the FiRST was 5. The concordance between the ACR 2013AltCr and the FiRST was evaluated using a McNemar test. The relationships between variables were examined using Spearman's rank correlation coefficient. The sensitivity, specificity, and positive and negative likelihood ratios of the FiRST were calculated according to ACR 2013AltCr criteria.

RESULTS

The test-retest reliability coefficient of the FiRST was r=0.875 (p<0.001). We compared the 2 FiRST measurements using Wilcoxon signed rank test, and the 2 measurements were statistically similar (p=0.169).

One hundred fifty-six (58%) patients had score of 5, which is the cut-off score for the FiRST; 116 of these patients (74.4%) were diagnosed as having FMS according to ACR 2013AltCr criteria. One hundred thirteen patients (42%) had FiRST scores lower than 5, and 93 of these patients (82.3%) did not meet the 2013AltCr criteria. The FiRST was not statistically different from the ACR 2013 AltCr in defining patients with FMS (Table 1). Likelihood ratios and confidence intervals are reported in Table 1. FiRST total score was correlated with subscores of the ACR 2013AltCr, namely PLI (r=0.619, p<0.001) and SIQR scores (r=0.408, p<0.001). Similarly, the FiRST and HADS were significantly correlated (r=0.424, p<0.001) (Table 2).

Logistic regression analysis was carried out to find the confounding effect of the HADS on the FiRST to discriminate the patients with FMS. The model was able to discriminate patients with fibromyalgia and without fibromyalgia (−2 log likelihood=274.82; χ^2=95.29, d.f=2; p< 0.001; Nagelkerke R^2= 0.4). The FiRST global score explained 30% of the proportion of uncertainty; each point increase in FiRST global score meant 10 times greater odds of experiencing FMS.

DISCUSSION

In this study, we showed that the Turkish version of the FiRST is a reliable patient-completed instrument for identifying patients with FMS. The ACR 2013AltCr was used for comparison, and the FiRST was similar to the ACR criteria in terms of defining patients with FMS. The FiRST demonstrated high correlation with ACR 2013AltCr subscores and HADS scores. In our study, we examined the consistency of the FiRST over time. The test-retest reliability coefficient of the FiRST scale was r=0.875.

We used the ACR 2013AltCr because these criteria were equally efficient with somewhat better specificity, and a smaller number was needed to diagnose than in the 2011ModCr[8]. The ACR 2013AltCr were also marginally more efficient in differentiating common chronic pain disorders from FMS[8]. Torres et al.[10] used ACR 1990 criteria, and Perrot et al.[9] stated that they diagnosed patients on the basis of ACR criteria, referring to the article by Wolfe et al., who used the symptom intensity scale, which is a combination of pain counts in 19 nonarticular regions with a visual analogue scale for fatigue[12].

Torres et al. reported the sensitivity of the FiRST as 90.5% and its specificity as 85.7%. The Turkish version demonstrated similar sensitivity and specificity. In this study by Torres et al. positive likelihood ratio was calculated as 1.99 and negative likelihood ratio as 0.2 for cut-off point of 5 which is the established score for the original version of FiRST. In our study positive and negative likelihood ratio values were 2.65 and 0.24 respectively, with fairly narrow confidence intervals. Our study group was similar to Torres et al.[10]; the majority of the patients in the study by Torres were female, as in our study group. In the original study of the FiRST by Perrot et al.[9], FiRST total score was not significantly correlated with the Beck Depression Inventory, HADS-depression, and HADS-anxiety scores. In our study, we were able to demonstrate that FiRST scores are correlated with HADS scores; however, despite the correlation of FiRST with HADS scores, the FiRST was still able to discriminate between patients with and without FMS.

Different from previous studies, we included patients with various chronic pain problems at a tertiary care level. Fitzcharles et al. argued that, if patients in a study have an established diagnosis of FMS, they may express symptom severity at the extreme end of the spectrum, thus increasing construct validity[13]. Similar to our study, Bennett et al.[8] included a wide range of common pain disorders as the dominating principle of their study and claimed to simulate everyday clinical practice.

Both rehabilitation specialists and physical therapists are dealing with various pain conditions. Among these disorders FMS is a prevalent condition and can be encountered secondarily as in case of rheumatologic disorders. FiRST includes 6 items with either yes or no answer, thus enables easy and quick scoring. It can be used as an adjunct to physical examination or evaluation of patients undergoing physical therapy.

The study has certain limitations. This version of FiRST is applicable for Turkish speaking patient population. Patients were recruited from tertiary care hospitals however study population is not limited to patients referred from primary care clinics.

An important consideration for the FiRST is ease of use and scoring in the settings involved with chronic pain patients. It is an easy-to-administer, time-sparing instrument. It can be completed in less than 3 minutes and seems to be acceptable and relevant for the patients[10]. Since it is a single page and evaluation requires simple addition, use of the FiRST may be advantageous in a busy clinical setting such as surgical units. Fibromyalgia can be easily overlooked under such circumstances. It was demonstrated that patients with FMS were more likely to have surgical interventions including back or neck surgery[14]. Surgeons and interventionalists may also benefit from using an easy-to-administer patient-completed screening tool to avoid unnecessary procedures.

Conflict of interest

The authors have declared no conflicts of interest.

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