Validation of the Spanish version of the fibromyalgia rapid screening tool to detect fibromyalgia in primary care health centres

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ABSTRACT

Objective. *To investigate the reliability and validity of the Spanish version of the Fibromyalgia Rapid Screening Tool (FiRST), a brief questionnaire for the detection of fibromyalgia (FM) in patients with diffuse chronic pain seen at primary care health centres.*

Method. *The original FiRST French questionnaire was adapted to a Spanish version following the guidelines of the Rheumatology Spanish Society Study Group of FM, and the help provided by professors of French and Spanish Language. In a prospective and multicentre study, patients with chronic pain were initially divided into two groups: a group that included patients that had been diagnosed with FM according to the 1990 ACR criteria and the 2010 ACR preliminary criteria (n=404), and a non-FM (control) group composed of rheumatoid arthritis (RA) (n=147) and osteoarthritis (OA) (n=219) patients. Patients from the FM group were evaluated by assessing tender point assessment, Widespread Pain Index (WPI), Symptom Severity Scale (SSS), FiRST questionnaire and Fibromyalgia Impact Questionnaire (FIQ). The non-FM group was evaluated by means of FiRST, WPI and SSS. Sensitivity, specificity and predictive value as well as the correlation between the global score and other parameters were assessed.*

Results. *356 of 404 FM (88.1%) patients who met the 1990 ACR criteria and the ACR 2010 preliminary criteria had a positive FiRST. In the control group (AR plus OA), only 16 (4.4%) subjects had a positive FiRST. The sensitivity value was 92% (95% confidence interval CI: 88.9-95.1), specificity 87.4% (95% CI: 80.8-94.0), positive predictive value 95.7% (95% CI: 93.3-98.1), and negative predictive value 78.2% (95% CI: 70.6-85.9). A significant correlation between the total FiRST score (patients with score 5 or 6) and WPI ($p<0.0001$), SSS ($p<0.0001$), time to disease progression ($p<0.0001$) and FIQ ($p<0.0001$) was found.*

Conclusion. *FiRST questionnaire is a useful tool for the detection of FM in primary care health centres.*

Introduction

Fibromyalgia (FM) is a chronic disorder characterised by widespread pain accompanied by fatigue, non-satisfying sleep and cognitive symptoms (1). Although its pathophysiology is not fully understood, abnormalities in pain processing related to central sensitisation and a reduced descending pain modulation with sensory amplification have been recognised as components of FM (2, 3). The clinical diagnosis is usually performed following the 1990 classification criteria established by the American College of Rheumatology (ACR), which require a history of widespread pain for at least 3 months, and tenderness in at least 11 of 18 specific tender points (4). Widespread pain was defined as axial pain, both left and right sided and with upper and lower segment pain lasting for at least 3 months. Using this definition, FM prevalence in Spain was reported to be 4.2% in women and 0.2% in men over 20 years (5). However, these criteria were developed by rheumatologists principally for research and classification purposes. As pointed out by some authors, these criteria are often difficult to be used in the daily clinical practice because they require a specific examination of tender points that cannot be carried out without some training (6, 7).

In addition, extra-pain symptoms are a major source of FM manifestations that are not included in the 1990 ACR classification criteria (8). To improve these shortcomings, experts in the field developed the 2010 ACR Preliminary Diagnostic Criteria for FM. These new criteria integrate variations in symptoms with a severity scale (1). According to them, a patient is considered to have FM if he/she fulfills the following three conditions: 1- Widespread Pain Index (WPI) ≥7, and Symptom Severity Score (SSS) ≥5, or WPI of 3 – 6 and SSS ≥9; 2- the symptoms must be present to a similar level for at least three months; and 3- the patient does not have any disorder that may otherwise explain the pain. Attempts to validate the 2010 ACR preliminary diagnostic criteria for FM in the Spanish population have recently been reported (9, 10). They may be useful in the longitudinal evaluation and therapy response of patients with marked symptom variability (1, 11).

In the clinical practice the diagnosis of FM is often delayed. It usually takes time and generates major costs for the healthcare system (12). Interestingly, a group of rheumatologists and pain experts elaborated a questionnaire to disclose FM in patients with diffuse chronic pain. They designed the Fibromyalgia Rapid Screening Tool (FiRST), a brief, simple and straightforward self-administered questionnaire with excellent discriminative value (13). It consists of a series of items requiring "yes/no" responses that are related to the most relevant clinical characteristics of FM. It has been found to be of potential value for the detection of FM in the daily clinical practice in patients with diffuse chronic pain (13, 14).

The purpose of our study was to evaluate the usefulness of a Spanish version of the FiRST questionnaire for the detection of FM in primary care health centers.

Table I. FiRST Questionnaire. English version.

The Fibromyalgia Rapid Screening Tool (FiRST)

You have been suffering from joint, muscle or tendon pain for at least the past 3 months. Please, answer this questionnaire in order to help your doctor evaluate your pain and symptoms more effectively. Please, fill in this questionnaire by answering either yes or no (only 1 answer: YES or NO) to each of the following statements. Put a cross in the box that corresponds to your answer.

	Yes	No
I have pain all over my body		
My pain is accompanied by a continuous and very unpleasant general fatigue		
My pain feels like burns, electric shocks or cramps		
My pain is accompanied by other unusual sensations throughout my body, such as pins and needles tingling or numbness		
My pain is accompanied by other health problems such as digestive problems, urinary problems, headache or restless legs		
My pain has a significant impact on my life, particularly on my sleep and my ability to concentrate, making me feel slower generally		

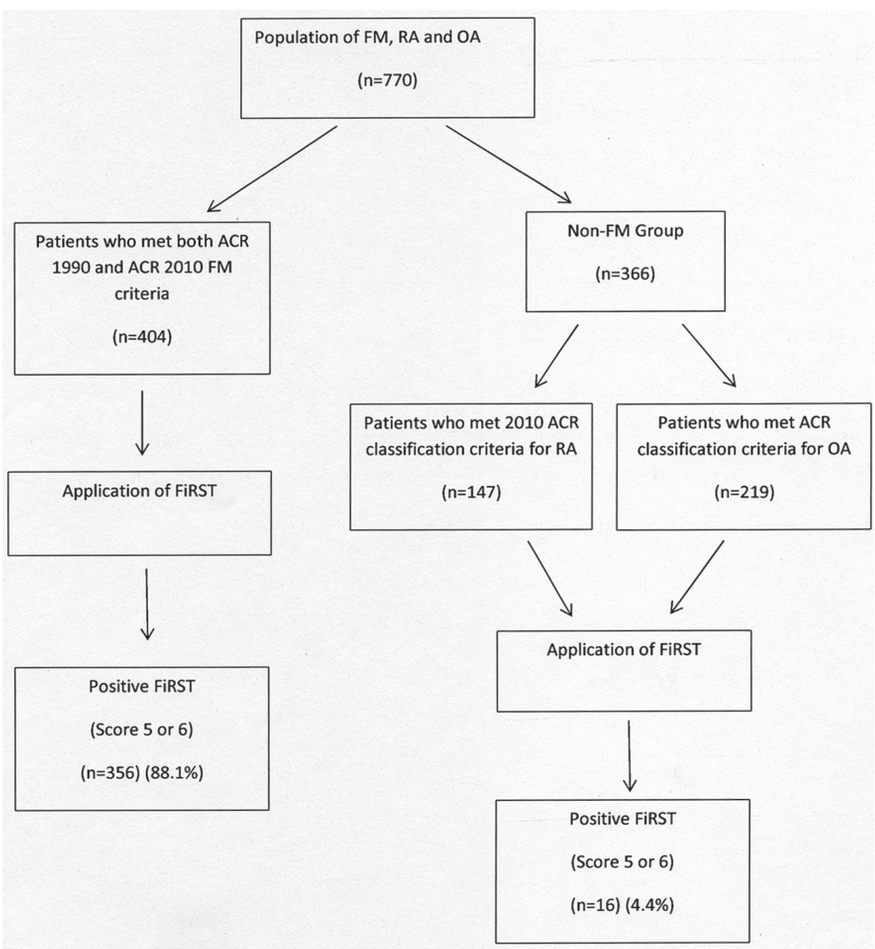

Fig. 1. Flow chart of the study.

Subjects and methods

The translation and cultural adaptation process of the original FiRST French questionnaire was adapted to a Spanish version according to the Rheumatology Spanish Society Study Group of Fibromyalgia, with the authors' permission, and the help provided by Professors of French and Spanish Language. The translation was performed using a second person to enable self or hetero application. The English version of the Fibromyalgia Rapid Screening Tool is shown in Table I.

We underwent a prospective and multicenter study recruiting two groups of patients: A group of patients that had previously been diagnosed with FM

Table II. Demographic and clinical characteristics of the fibromyalgia and the non-fibromyalgia group of patients.

Group	FM (n=404)	Non-FM (n=366)	
		RA (n=147)	OA (n=219)
Age (years), mean ± SD	51.7 ± 9.7	49.6 ± 9.8	57.5 ± 8.8
Sex (female), n (%)	396 (98%)	143 (97.2%)	214 (97.7%)
FIQ, median (IQR)	74 (64-87)	-	-
Tender points, median (IQR)	16 (14-18)	-	-
FM symptoms (years), median (IQR)	12 (6-21)	-	-
WPI, median (IQR)*	15 (11-18)	5 (4-6)	7 (5-14)
SSS, median (IQR)*	8 (6-10)	4 (3-5)	5 (3-8)

ACR: American College of Rheumatology; FIQ: fibromyalgia impact questionnaire; FM: fibromyalgia; IQR: interquartile range; n: number; OA: osteoarthritis; RA: rheumatoid arthritis; SD: standard deviation; WPI: widespread pain index; SSS: symptom severity scale.
*$p<0.05$.

by rheumatologists. These patients met the 1990 ACR 1990 at the time of disease diagnosis. Also, they fulfilled 2010 ACR preliminary criteria when these criteria were tested, either at the time of disease diagnosis or during their follow-up if these criteria were not available at the time of disease diagnosis (1, 4). FM patients with severe psychiatric disorders according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) were excluded (15). As a control group, we assessed patients of similar age and sex, who had not been previously diagnosed with FM and had diseases associated with chronic pain, such as rheumatoid arthritis (RA) and osteoarthritis (OA). RA and OA were diagnosed according to the 2010 RA classification criteria (16) and the American College of Rheumatology criteria for classification of OA (17-19), and reported OA of the hands (17) hips (18) or knees (19).
The number of tender points was evaluated, the ACR 1990 classification criteria and the preliminary 2010 ACR criteria applied, and the FiRST questionnaire and Fibromyalgia Impact Questionnaire (FIQ) completed. Informed consent was obtained from all the participants. Ethical Committee approval was obtained.

Statistical analysis

Results were expressed as mean and standard deviation (SD), median and interquartile range (IQR), and compared with the Mann-Whitney U-test. Sensitivity, specificity, predictive values and the area under the receiver-operating characteristics (ROC) curve (along with 95% confidence intervals-CI) were calculated. Assessment of each one of the 6 items of the FiRST questionnaire and of the global score (5 or 6 positive items) as well as the correlation between the global score and other parameters was performed. A *p*-value less than 0.05 was considered statistically significant. Analyses were conducted using SPSS 15.0.

Results

The different steps of the study are shown in Figure 1. Seven hundred and seventy patients, divided into the FM group (n=404) and the non-FM group of patients with chronic pain (n=366; 147 patients with RA, and 219 with OA) were included in the study.
The mean age of patients with FM was 51.7 years, and the median FIQ score was 74. The median disease duration and the median of tender points were 12 years and 16 points, respectively. Three hundred and fifty-six of the 404 (88.1%) patients diagnosed as having FM according to the 1990 ACR criteria and the 2010 preliminary ACR criteria had a positive FiRST (score 5 or 6). In the control group (AR plus OA) only 16 (4.4%) subjects had a positive FiRST, and the remaining 350 had a negative FiRST (score 4 or less).
Baseline demographic and clinical characteristics of both groups are shown in Table II.
The clinimetric properties of the Spanish version of the FiRST, including sensitivity, specificity, and positive and negative predictive value for each of the 6 items, and for the global score (5 or 6 positive items) are shown in Table III. Briefly, the sensitivity value was 92% (95% CI: 88.9–95.1), specificity 87.4% (95% CI: 80.8–94.0), positive predictive value 95.7% (95% CI: 93.3–98.1), and negative predictive value 78.2% (95% CI: 70.6-85.9). A significant correlation between the total FiRST score (patients with score 5 or 6) and WPI ($p<0.0001$), SSS ($p<0.0001$), time to disease progression ($p<0.0001$) and FIQ ($p<0.0001$) was found. The area under curve (AUC) of the ROC curve for the Spanish version of FiRST total score was 0.90.

Discussion

Recent guidelines suggest that the optimal treatment of FM consists of a multidisciplinary approach with a combination of pharmacological and non-

Table III. Clinimetric properties of the Fibromyalgia Rapid Screening Tool Spanish version.

Values	item 1	item 2	item 3	item 4	item 5	item 6	Global Score (5-6)
Sensitivity (95% CI)	99.4 (98.4-100)	95.2 (90.4-96)	72.5 (67.6-77.4)	93.2 (90.4-96)	96.1 (93.9-98.4)	99.7 (98.9-100)	92.0 (88.9-95.1)
Specificity (95% CI)	57.1 (47.5-66.8)	47.3 (37.6-57)	82.1 (74.6-89.7)	42.9 (33.3-52.5)	81.3 (73.6-88.9)	47.3 (37.6-57)	87.4 (80.8-94)
Positive predictive (95% CI)	87.5 (84.1-90.9)	84.2 (80.4-88.1)	92.5 (89.1-95.8)	83.1 (79.2-87)	93.9 (91.3-96.6)	85.1 (81.5-88.7)	95.7 (93.3-98.1)
Negative predictive (95% CI)	96.9 (92.1-100)	69.7 (58.8-80.7)	49.7 (42.3-57.2)	67.6 (56-79.2)	87.5 (80.7-94.3)	98.2 (93.6-100)	78.2 (70.6-85.9)
ROC area (95% CI)	0.78 (0.74-0.83)	0.70 (0.65-0.75)	0.77 (0.73-0.82)	0.68 (0.63-0.73)	0.88 (0.86-0.92)	0.74 (0.69-0.78)	0.90 (0.87-0.93)

CI: Confidence interval.

pharmacological treatment modalities (11). Because of that, FM is a common condition that is seen not only by rheumatologists and pain specialists but also by general practitioners (20). This fact makes necessary a valid reliable and straightforward screening tool to help identify FM patients. The French Rheumatic Pain Study Group developed the FiRST; a brief, psychometrically sound, self-reported screening tool for detecting FM in patients with chronic diffuse musculoskeletal pain (13).

A former attempt using another Spanish version of the FiRST that included 257 patients (67% of them with FM) showed that the FiRST yielded a moderate specificity to differentiate FM patients from non-FM patients (21). Unlike that report, using a new Spanish version of the FiRST, in our study we excluded FM patients with psychiatric disorders and high levels of anxiety and depression. Following this procedure, in our hands, using a large series of patients with chronic pain, the FiRST questionnaire was a useful tool for the detection of FM with high sensitivity and high positive predictive value. It is worth noting that in our series of Spanish patients with FM who met the 1990 ACR criteria and the 2010 modified ACR criteria, the overall sensitivity of the Spanish translation of the FiRST (92%) and the specificity (87.4%) was slightly higher than in the original report (90.5% and 85.7%, respectively) (13). It was also the case for the positive predicative value for a total score cut-off of 5 corresponding to the number of positive items (95.7% versus 89.5% in the original study), whereas the negative predictive value was slightly lower than in the original study (78.2% versus 87.5%). Interestingly, the ROC curve of our new Spanish version for the FiRST total score (score 5 or 6) was similar to that found in the original study (AUC=0.90 versus 0.93 in the French assessment) (13).

Our results indicate that FM patients present specific clinical characteristics different from those of patients with other rheumatic diseases, and that it is possible to discriminate FM from other entities using the FiRST questionnaire. A potential limitation of our study, however, was that we compared FM patients with those with two well-defined rheumatic diseases. Therefore, future studies would be conducted to confirm the validity of the FiRST to discriminate FM from non-rheumatic chronic pain syndromes, including complex clinical syndromes with both multiple types of pain and multiple pain locations.

In conclusion, our results support the claim that the Spanish version of the FiRST is a useful tool for the detection of FM patients in primary care health centers.

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