SPINE Volume 31, Number 1, pp 104–110

Psychometric Characteristics of the Spanish Version of the FAB Questionnaire

Francisco M. Kovacs, MD, PhD,* Alfonso Muriel, MSc,† José María Medina, MD,‡ Víctor Abraira, PhD,† María Dolores Castillo Sánchez, MD,§ Javier Olabe Jaúregui, MD, PhD,‖ and the Spanish Back Pain Research Network¶

Study Design. Validation of a translated, culturally adapted questionnaire.

Objectives. To translate and culturally adapt the Spanish version of the Fear Avoidance Beliefs Questionnaire (FABQ), and to validate its use in Spanish-speaking patients with low back pain (LBP).

Summary of Background Data. The FABQ is a reliable evaluation instrument for fear avoidance beliefs, which includes two subscales (FAB-Work and FAB-Phys). No validated Spanish version was available.

Methods. Translation/retranslation of the English version of the FABQ was done blindly and independently by a multidisciplinary team. The study was done in 12 primary care centers and 9 hospital outpatient clinics from seven regions in Spain, with 209 acute, subacute, and chronic patients who visited their physician for LBP: 53 in the pilot phase and 156 in the validation phase. Subjects were given the FABQ, two VAS for LBP and referred pain, and the Roland-Morris and SF-12 Questionnaires on their first visit and 14 days later. In the pilot phase, on day 1 test-retest reliability was estimated by giving a second FABQ in which the name and order of the items had been changed.

Results. Time necessary to complete the FABQ was [median, P25, P75] 10 minutes (5,15). FABQ values were not normally distributed. *Comprehensibility*: No request for aid in interpretation was made during the validation phase and no item was left unanswered by $\geq$ 10% of patients. *Reliability*: Scores [median, P25, P75] of the two FABQ were: 72.00 (47.25, 82.00) and 72.00 (49.50, 83.75), with an intraclass correlation coefficient of 0.9668 (95% confidence interval, 0.9421,0.9823). Mean of kappa values for all items was 0.743. *Internal Consistency*: Cronbach's α was 0.9337. *Validity*: Values of FAB and FAB-Work were >37% higher for patients on sick leave. For FAB-Phys differences were below 8%. FABQ, FAB-Work and FAB-Phys strongly correlated with disability on days 1 and 15.

Conclusions. The Spanish version of the FABQ has good comprehensibility, internal consistency, and reliability. It cannot be analyzed parametrically, but only nonparametrically. The total FABQ is at least as valid as its subscales and simpler to score, making it more suitable for routine clinical use.

Key words: low back pain, Fear Avoidance Beliefs Questionnaire, Spanish version, validation, questionnaire. **Spine 2006;31:104–110**

From the *Departamento Científico, Fundación Kovacs, Palma de Mallorca, Spain; †Unidad de Bioestadística Clínica, Hospital Ramón y Cajal. Madrid, Spain; ‡Centro de Salud Gran Capitán, Granada, Spain; §Delegación Provincial de Asuntos Sociales de Granada, Spain; and ‖Servicio de Neurocirugía, Hospital de Son Dureta, Palma de Mallorca, Spain. ¶Other members of the Spanish Back Pain Research Network who authored this study are as follows: José Luis Martín Ruíz, Carmen Fernández, Monserrat Núñez, Patricia Ibáñez Gómez, Antonio López Bermejo, Luis Cuesta Villa, Pablo Tobajas Ruber, Mateo Seguí Díaz, Luis González Luján, Ferrán Pellisé Urquiza, Lourdes Ortigosa, Luis Alvarez Galovich, Joan Bago Granell, Monserrat Cañellas Arsegol, Juan Femenías Rosselló, Violeta González Urzelai, MŞ Teresa León Espinosa de los Monteros, Guillermo Ripoll Estela, Manel Carro Presedo, MŞ Angeles Usero Martín, Agustín Martín Martín, Montserrat Calatayud, Elena Rodríguez Bohorquez, Angeles San Juan Castillo, Jordi Troy Ferrarons, Catalina Mateu Serra, José Muñoz Gómez, Loreto Palacio Elua, Pedro Berjano Coquillat, Jaume Ripoll Sánchez, Jenny Moix Queraltó, Pablo Lázaro, Miguel Rubí Jaume, Jon Olabe Goxencia, Antoni Bernat Escudero, Pedro Vidal Taberner, Margarita Goméz, Marina Goméz, Lourdes Perelló, María Teresa Gil del Real, Mario Gestoso, Margarita Martín Pino, and Nicole Mufraggi Vechierinni.

Acknowledgment date: October 15, 2004. First revision date: January 27, 2005. Acceptance date: February 3, 2005.

Supported by the Kovacs Foundation and a grant from the Directorate General of Research and Development, from the Regional Ministry of Economy, Treasury and Innovation of the Government of the Balearic Islands.

The manuscript submitted does not contain information about medical device(s)/drug(s).

Foundation funds were received in support of this work. No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this manuscript.

Address correspondence and reprint requests to Francisco M. Kovacs, MD, Departamento Científico, Fundación Kovacs, Paseo de Mallorca 36, E-07012 Palma de Mallorca, Spain. E-mail: kovacs@kovacs.org

Nonspecific or common low back pain (LBP) is defined as pain between the costal margins and the inferior gluteal folds, usually accompanied by painful limitation of movement. It is often influenced by physical activities and postures, and may be associated with referred pain. Diagnosing common LBP implies that the pain is not related to conditions such as fractures, spondylitis, direct trauma, or neoplastic, infectious, vascular, metabolic, or endocrine-related processes.[1,2]

Patients' quality of life and costs to society are more dependent on disability deriving from LBP than on pain itself (Kovacs *et al*, in press).[1–7] Disability is influenced by pain and especially by its duration,[5–7] but also by psychosocial factors.[2] Among psychosocial factors, fear avoidance behavior and beliefs about the potential effect of work and physical activity on pain have been shown to influence disability.[8]

For measuring fear avoidance and beliefs, the Fear Avoidance Beliefs Questionnaire (FABQ) has shown to be a valid and reliable instrument.[8] It consists of 16 sentences related to physical activity (first 5 items) and work (last 11 items). The patient has to rate each sentence from 0 (totally disagree) to 6 (totally agree). The score range is 0 to 96, with a higher value reflecting a higher degree of fear avoidance beliefs. Within the FABQ, two subscales are defined. "Factor 1" ("FAB-Work") is composed of items 6, 7, 9, 10, 11, and 12 and reflects fear-avoidance

beliefs about work. "Factor 2" ("FAB-Phys") is composed of items 2 to 5 and reflects fear-avoidance beliefs about physical activities.[8]

The authors of the original version of the FABQ suggested the need to assess it with both acute and chronic patients.[8] To date, no Spanish version of the FABQ has been validated. Therefore, the objectives of this study were to translate into Spanish and culturally adapt the FABQ, and to validate its use among Spanish speaking acute and chronic back pain patients.

■ Methods

The study was carried out in three phases: the first was translation into Spanish and cultural adaptation of the questionnaire; the second was a pilot study to assess the comprehensibility and reproducibility of the Spanish version; and the third was a validation study to determine its metric characteristics.

Translation Phase. The questionnaire was translated into Spanish by two different and independent native Spanish speakers, who had no medical knowledge and were both unaware of the purpose of the translation and of the fact that another translator was doing the same task. Both Spanish translations were then compared for inconsistencies. The two translations were then retranslated, also blindly and independently, into English by two native English speakers. Each of the English translations was then compared with the original English FABQ and checked for inconsistencies.

The Spanish version was then jointly reviewed and fine tuned by a bilingual team including the four translators, eight primary care physicians, four back specialists, one health economist and three methodologists.

Pilot Phase. The pilot phase was performed in 12 health care centers of four different regions in Spain. All the centers belonged to the Spanish National Health System and were involved in the Spanish Back Pain Research Network. Participating centers included 5 primary care centers and 7 hospital outpatient clinics in orthopedic surgery, rheumatology, and neurosurgery.

The pilot study was carried out with patients who consulted their physician for LBP between December 20, 2002 and February 7, 2003. Inclusion criteria were LBP, with or without referred pain, having a potentially active work situation (*i.e.*, employed or on sick leave, but not unemployed, retired, or disabled), and being able to read Spanish.

Exclusion criteria were: Functional illiteracy (mental status insufficient to be able to complete the Spanish version of the Roland-Morris Questionnaire),[9] treated or untreated central nervous system impairment, direct trauma to the spine, criteria for referral to surgery, and "red flags" for potential systemic disease. Criteria for referral to surgery were defined as progressive motor deficit lasting 6 weeks or more, sphincter impairment of neurologic cause, disabling sciatic pain (in the absence of backache) caused by a compromised nerve root demonstrated by magnetic resonance (MRI) or computed tomography (CT) studies, or symptomatic spinal stenosis as defined by claudication unrelated to peripheral vascular disease with evidence of stenosis on MRI or CT scans.[2] "Red flags" for potential systemic disease were defined as oncologic disease during the previous 5 years, constitutional symptoms (unexplained weight loss, fever, chills), recent urinary tract infection, history of intravenous drug use, or immunocompromised host.[2]

To ensure a sufficient number of acute, subacute, and chronic patients, the sample size of the pilot study was established at 50 patients with a minimum of 10 in each subgroup. The limit between acute and subacute pain was established at 14 days[6,7] and the limit between subacute and chronic at 90 days.[10]

Patients were seen on the day of admission to the study (day 1) and 14 days later (day 15). At the first visit, the following variables were recorded on the data collection form: sex, age, sociocultural level, family situation, type of job, working situation, sick leave, results of straight leg raising test, duration of pain when entering the study, chronicity (acute/subacute/chronic), and treatment when entering the study. Treatment was recorded as drug treatment (indicating each kind of drug, and recoded as "yes" or "no" at the analysis phase), traditional biomechanic education, specific education on active management, passive physiotherapy (electrotherapy or massage, recorded separately and recoded as "yes" or "no" at the analysis phase), exercise, rehabilitation, surgery (recording the different techniques used and recoded as "yes" or "no" at the analysis phase), and other treatments (Table 1). At day 15 visit, treatments received between the first and second visit were also recorded.

At both visits, patients were given two separate Visual Analogue Scales (VAS)[11] for measuring low back and referred pain, the validated Spanish versions of the Roland-Morris Questionnaire for measuring disability associated with low back pain (Roland-Morris Questionnaire [RMQ]),[9] the SF-12 questionnaire for measuring general quality of life,[12] and the FABQ.

All self-assessment questionnaires were given by administrative staff, and the patients filled them out on their own and alone, without the presence of staff or accompanying persons. Requests for aid in interpretation of the items in the FABQ were registered. The completed instruments were then given to the treating physician, who stapled scales and questionnaires to the patient's data collection form.

Patients were told that several questionnaires were going to be given, and were asked to notify the staff in case that any of them was given twice. On day 1, each patient was given a first FABQ, which was identified as the "FAB questionnaire." The time needed for answering it was recorded. To assess repeatability, 30 minutes after filling out the VAS, RMQ, and SF-12, the patient was given a second FABQ, printed in differently colored paper, and titled "Questionnaire on activity and pain." This questionnaire listed the items in a different order. Finally, the clinician filled out a standardized questionnaire asking each patient about his or her interpretation of the meaning of each one of the items in the FABQ.

It was decided that sentences for which more than 10% of patients in the pilot study needed clarification or misinterpreted the meaning would be reviewed before undertaking the validation study. Such review would be made by the bilingual team that developed the first version, based on the patients' suggestions and on the comments from the clinicians administering the questionnaire and interviewing the patients. It was also decided that, if that team felt that potential modifications in the questionnaire were relevant enough, data gathered from patients included in the pilot phase would not be used for the objectives of the validation phase.

Table 1. Characteristics of Study Participants

Variable	Pilot Phase n (%)	Validation Phase n (%)	All Study Participants
Gender:			
Female	26 (49.1)	95 (60.9)	121 (57.9)
Male	27 (50.9)	61 (39.1)	88 (42.1)
Age; median (P25, P75)	45.3 (37.7–54.8)	45.7 (38.9–54.3)	45.7 (38.8–54.3)
Duration (d); median (P25, P75)	30.0 (11.0–730.0)	15.0 (5.0–90.0)	20.0 (7.0–180.0)
Chronicity			
Acute (1–14 d)	15 (28.3)	49 (31.4)	64 (30.6)
Subacute (14–90 d)	13 (47.2)	34 (21.8)	47 (22.5)
Chronic (>90 d)	25 (24.5)	73 (46.8)	98 (46.9)
Family situation			
Single	10 (18.9)	27 (17.3)	37 (17.7)
Married	38 (71.7)	109 (69.9)	147 (70.3)
Widowed	1 (1.9)	5 (3.2)	6 (2.9)
Divorced	3 (5.7)	11 (7.1)	14 (6.7)
Other	1 (1.9)	1 (0.6)	2 (1.0)
Missing		3 (1.9)	3 (1.4)
Academic level			
Incomplete elementary school	11 (20.8)	24 (16.0)	35 (16.8)
Elementary school	21 (39.6)	50 (32.1)	71 (34.0)
High school	13 (24.5)	43 (27.6)	56 (26.8)
University	8 (15.1)	33 (21.2)	41 (19.6)
Missing		6 (3.8)	6 (2.9)
Working situation			
Self-employed	8 (15.1)	18 (11.5)	26 (12.4)
Employed	44 (83)	119 (76.3)	163 (78.0)
Other	1 (1.9)	8 (5.1)	9 (4.3)
Missing		11 (7.1)	11 (5.3)
Sick leave			
No	31 (58.5)	90 (57.7)	121 (57.9)
Yes	21 (39.6)	61 (39.1)	82 (39.2)
Missing	1 (1.9)	5 (3.2)	6 (2.9)
Straight leg raising			
Not performed	8 (15.1)	30 (19.2)	38 (18.2)
<30°	5 (9.4)	25 (16.0)	30 (14.4)
30–60°	13 (24.5)	30 (19.2)	43 (20.6)
>60°	24 (45.3)	44 (28.2)	68 (32.5)
Missing	3 (5.7)	27 (17.3)	30 (14.4)
Drug treatment			
No	3 (5.7)	11 (7.1)	14 (6.7)
Yes	50 (94.3)	145 (92.9)	195 (93.3)
Education (traditional biomechanic)			
No	33 (62.3)	110 (70.5)	143 (68.4)
Yes	20 (37.7)	46 (29.5)	66 (31.6)
Education (active management)			
No	50 (94.3)	144 (92.3)	194 (92.8)
Yes	3 (5.7)	12 (7.7)	15 (7.2)
Physiotherapy (passive)			
No	36 (67.9)	123 (78.8)	159 (76.1)
Yes	17 (32.1)	33 (21.2)	50 (23.9)
Exercise			
No	42 (79.2)	131 (84.0)	173 (82.8)
Yes	11 (20.8)	25 (16.0)	36 (17.2)
Rehabilitation			
No	43 (81.1)	140 (89.7)	183 (87.6)
Yes	10 (18.9)	16 (10.3)	26 (12.4)
Surgery			
No	43 (81.1)	145 (92.9)	188 (89.9)
Yes	10 (18.9)	11 (7.1)	21 (11.1)
Other treatments			
No	50 (94.3)	150 (96.1)	200 (95.7)
Yes	3 (5.7)	6 (3.9)	9 (4.3)
X-rays			
No	7 (13.2)	58 (37.2)	65 (31.1)
Yes	46 (86.8)	98 (62.8)	144 (68.9)
CT scan			
No	44 (83.0)	132 (84.6)	176 (84.2)
Yes	9 (17.0)	24 (15.4)	33 (15.8)
MRI			
No	26 (49.1)	97 (62.2)	123 (58.9)
Yes	27 (50.9)	59 (37.8)	86 (41.1)
Neurophysiological tests			
No	47 (88.7)	146 (93.6)	193 (92.3)
Yes	6 (11.3)	10 (6.4)	16 (7.7)
Blood analyses			
No	35 (66.0)	127 (81.4)	162 (77.5)
Yes	18 (34.0)	29 (18.6)	47 (22.5)

Data were entered in the database at a centralized coordination office by two administrative assistants who double-checked that the entered data coincided with the scores of the two VAS scales, the RMQ, the SF-12, and the two FABQs.

Validation Phase. The validation phase was performed in 21 health care centers from seven different regions in Spain, including all those which participated in the pilot phase. All the centers belonged to the Spanish National Health System and are involved in the Spanish Back Pain Research Network. Participating centers included 13 primary care centers and 9 hospital outpatient clinics in orthopedic surgery, rheumatology, and neurosurgery.

The validation study was carried out with the final Spanish version of the FABQ, with subjects that consulted for LBP between February 10, 2003 and July 19, 2004. Recruitment was performed in the same manner and using the same inclusion criteria as the pilot study. The sample size was established at 150 with a minimum of 30 in each of the three subgroups (acute, subacute, and chronic).

Patients were seen on the day of admission to the study (day 1) and 14 days later (day 15). At both visits, they were given one FABQ, two VAS for LBP and referred pain, and the Spanish versions of the RMQ and SF-12 scales. Questionnaires, scales, and the data collection form were filled out in the same manner as in the pilot study, and the information was similarly introduced in the database. As opposed to the pilot study, time needed to fill out the FABQ was not registered, patients were not asked about their comprehension of the meaning of each item in the FAB, and the "Questionnaire on activity and pain" was not given.

Analysis. Comprehension was determined in the pilot study by the patients' answers to the questions exploring their understanding of each item on the questionnaire, and was measured in both the pilot and validation studies by the patients' requests for aid in interpretation and by the number of items which were not rated.

The distribution of answers across categories was assessed for each item, and potential ceiling and floor effects were estimated by calculating the percentage of subjects indicating the maximum and minimum possible scores for the FAB scale and its two factors (FAB-Phys and FAB-Work).

Test-retest reliability was measured in the pilot study, comparing the results of the first and second FABQs, identified, respectively, as "FAB" and "Activity and pain" questionnaires. As was done in the original study,[8] reliability was assessed by quantifying the number of items that were rated exactly in the same manner in both questionnaires, as well as through the kappa index. To avoid too low marginal frequencies when calculating kappa values, answers to each item were recoded in three categories (0–1, 2–4, 5–6). Bisquare weights proposed by Fleiss and Cohen[13] were used. The reliability of the total score was assessed through the intraclass correlation coefficient[14] and the Bland-Altman method.[15]

Cronbach's alpha[16] was used to evaluate internal consistency. Validity was measured by Spearman's correlation coefficients between pain, disability, quality of life (separately for physical and mental components of SF-12), and FABQ, FAB-Work and FAB-Phys, for days 1 and 15.[17] Values of FAB, FAB-Phys, and FAB-Work on days 1 and 15 were compared between patients who were and were not on sick leave using the Mann-Whitney test.[17]

■ Results

A total of 209 patients was eligible and none were excluded. Fifty-three patients were recruited for the pilot study and 156 for the validation study. For the pilot study, 27 patients were recruited from primary care centers and 26 from the hospital setting. For the validation study, 66 patients were recruited from primary care centers and 90 from the hospital setting.

Table 1 shows the characteristics of the study subjects, and Table 2 contains values for scores on the VAS, RMQ, and SF-12 and FABQ scales and subscales, for days 1 and 15. Data are given as median (P25, P75) since only those from the RMQ had a distribution complying with criteria for normality.

The time needed to fill out the Spanish version of the FAB was 10 minutes (P25, P75: 5, 15). At the end of the pilot study, patients had not requested aid in interpretation of the questionnaire, except for question 8 (6 patients). Results from the interview showed that all the patients understood properly the meaning of items 1, 2, and 7. Items 10, 11, 12, and 13 were misunderstood by 1 patient (1.9% of included patients); items 3 and 4 by 2 patients (3.8%); items 9, 14, and 15 by 3 patients (5.7%); items 5, 6, and 16 by 4 patients (7.5%); and item 8 by 10 patients (18.9%). Therefore, the wording of item 8 was modified to define the final version of the questionnaire (Appendix 1, available on ArticlePlus). In the validation study, only item13 was scored by all the patients; however, none was left unanswered by 10% or more of patients. Since only minor rewording of item 8 was modified after the pilot phase, all the study subjects were included in the analyses on distribution of answers and validity.

No patient notified the staff of having identified the FAB and the "Questionnaire on activity and pain" as being the same. Cronbach's alpha was 0.9337 for the FABQ and 0.9392 for the "Questionnaire on activity and pain." A comparison of the scores of both questionnaires yielded: FABQ: 72.00 (47.25, 82.00), "Questionnaire on activity and pain": 72.00 (49.50, 83.75), with 69% of answers being identical in both questionnaires, and an intraclass correlation coefficient for both of 0.9668 (95% confidence interval, 0.9421, 0.9823). The mean of bisquare weighted kappa values for all items was 0.743. Two items (2 and 4) had a moderate concordance of 0.41 to 0.60, nine (3, 5, 8, 10–14, 15) had a substantial concordance of 0.61 to 0.80, and 5 had a close to complete concordance of greater than 0.80.[18] These results were similar for acute, subacute, and chronic patients (data not shown).

The answers to all 16 individual items were distributed across all seven categories. Less than 10% of patients rated the FABQ and its subscales with the minimum or maximum possible scores, except for the FAB-Phys, values of which were negatively skewed and were rated by 23.9% of patients with the maximum possible score (Table 3).

Values of FAB, FAB-Phys, and FAB-Work were significantly higher for patients on sick leave than for those who were not, and those differences were higher on day

Table 2. Pain, Disability, Quality of Life and Fear Avoidance in Study Participants

	Day 1		Day 15	
Variable	N	Value	N	Value
FAB total score*	176	66.0 (44.3, 80.8)	167	61.0 (41.0, 83.0)
FAB-Phys*	199	21.0 (17.0, 24.0)	201	20.0 (16.0, 23.5)
FAB-Work*	195	29.0 (19.0, 36.0)	186	27.0 (18.0, 37.0)
Low back pain (VAS)	205	6.2 (3.7, 8.0)	199	5.5 (2.0, 7.5)
Referred pain (VAS)	146	5.9 (3.0, 8.0)	139	5.5 (2.0, 7.6)
Disability (RM)	204	12.0 (7.0, 16.0)	201	11.0 (4.3, 16.5)
Quality Life Physical (PCS-12)	198	32.2 (27.6, 40.0)	172	32.6 (28.0, 39.5)
Quality Life Mental (MCS-12)	198	47.2 (33.4, 54.6)	172	46.5 (31.0, 55.2)

*Only for patients who answered all the items in the corresponding questionnaire or subscale.
FAB (total score) indicates sum of scores of the 16 items in the scale; FAB Phys, factor 2: fear avoidance beliefs, physical activity: sum of the scores of items 2, 3, 4 and 5; FAB Work, factor 1: fear avoidance beliefs, work: sum of the scores of items 6, 7, 9, 10, 11 and 12; VAS, visual analog scale; RM, Roland Morris questionnaire; PCS-12, physical component summary of SF-12; MCS-12, mental component summary of SF-12.

Table 3. Maximum and Minimum Scores: Floor and Ceiling Effects

	Minimum Score Recorded	Patients With Minimum Score (Floor Effect)	Maximum Score Recorded	% Patients With Maximum Score (Ceiling Effect)
FAB-Phys	0	3 (1.4%)	24	50 (23.9%)
FAB-Work	0	6 (2.9%)	42	18 (8.6%)
FAB (total score)	2	2 (1.0%)	96	7 (3.3%)

FAB Phys indicates factor 2: fear avoidance beliefs, physical activity: sum of the scores of items 2, 3, 4 and 5; FAB Work, factor 1: fear avoidance beliefs, work: sum of the scores of items 6, 7, 9, 10, 11 and 12; FAB (total score), sum of scores of the 16 items in the scale.

Table 4. Values of FAB, FAB-Phys, and FAB-Work on Days 1 and 15 in Patients who Were and Were Not on Sick Leave

	Patients Not on Sick Leave		Patients on Sick Leave		*P*
	N	Value	N	Value	Mann-Whitney
Day 1: FAB total score; median (P25, P75)	103	54.0 (37.0, 71.0)	68	75.5 (62.0, 85.3)	0.000
Day 1: FAB-Phys; median (P25, P75)	117	20.0 (15.0, 23.0)	74	21.0 (19.0, 24.0)	0.009
Day 1: FAB-Work; median (P25, P75)	112	24.0 (14.0, 34.0)	76	33.0 (28.0, 37.8)	0.000
Day 15: FAB total score; median (P25, P75)	93	49.0 (31.0, 72.0)	68	71.0 (55.3, 86.0)	0.000
Day 15: FAB-Phys; median (P25, P75)	114	19.0 (14.8, 23.0)	78	20.5 (18.8, 23.3)	0.001
Day 15: FAB-Work; median (P25, P75)	107	22.0 (13.0, 33.0)	72	32.0 (24.3, 37.8)	0.000

FAB (total score) indicates sum of scores of the 16 items in the scale; FAB Phys, factor 2: fear avoidance beliefs, physical activity: sum of the scores of items 2, 3, 4 and 5; FAB Work, factor 1: fear avoidance beliefs, work: sum of the scores of items 6, 7, 9, 10, 11 and 12.

15 than on day 1. The magnitude of the differences was similar for FABQ and FAB-Work (37%–38% for day 1 and 44%–45% for day 15), and lower for FAB-Phys (5% for day 1 and 7.9% for day 15) (Table 4).

Correlations of the scores of VAS for LBP, VAS for referred pain, RMQ on disability, SF-12 (Physical and Mental) on quality of life, and FAB, FAB-Phys, and FAB-Work are shown in Table 5 (day 1) and Table 6 (day 15). On both days 1 and 15, values of FAB, FAB-Work, and FAB-Phys correlated more strongly with disability than with pain or quality of life, although correlations with all three of them were significant at $P < 0.004$. A detailed analysis of the correlation of the VAS, RMQ, SF-12, and FAB, FAB-Phys and FAB-Work scales was not the objective of this study, and will be described in a forthcoming paper.

■ Discussion

The results of this study indicate that the Spanish version of the FABQ is a reliable and valid instrument for the measurement of fear avoidance beliefs in Spanish-speaking patients with LBP. It is also comprehensible and fast to fill out, making it suitable for use in routine health care. Comprehensibility, reliability, and concurrent validity with disability and sick leave of the Spanish version of the FABQ are similar to those of the original British version.[8] Distribution of values of the Spanish version of the FABQ departed from normality. Therefore, it cannot be analyzed parametrically, but only nonparametrically.

In the original study, reliability was measured by repeating the questionnaire 48 hours later.[8] However, in contrast to what was usual when the original study was conducted, changing fear avoidance beliefs is currently a part of routine treatment, and it is even a major goal of the treatment in some cases.[19] Therefore, the time elapsed between the two questionnaires used for assessing reliability had to be as short as possible, to prevent interpreting actual changes in beliefs as a lack of reliability of the questionnaire. For that reason, reliability was measured by repeating the questionnaire on the same visit. To prevent recall bias, the second FABQ was given at least 30 minutes after the first one, other scales were completed meanwhile (VAS, RMQ, and SF-12), and both questionnaires were printed in differently colored paper, were identified with different titles, and listed the items in a different order. These measures have proven to prevent recall bias in our setting,[9] and, indeed, in the current study no patient identified both questionnaires as being the same. Test-retest reliability of the Spanish version of the FABQ over longer intervals is unknown and should be explored in future studies. Although in theory the change in the order of the questions might alter the results, because a patient may consider a previous question in answering the next, it was felt that this risk was worthwhile in order to avoid recall bias. Indeed, the

Table 5. Spearman Correlation Coefficients of Fear Avoidance With Pain, Disability, and Quality of Life (Day 1)

	FAB-Phys	FAB-Work	Low Back Pain (VAS)	Referred Pain (VAS)	Disability (RM)	Quality Life Physical (PCS-12)	Quality Life Mental (MCS-12)
FAB (total score)	0.746	0.954	0.398	0.320	0.522	−0.432	−0.361
P value	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	176	176	175	123	172	169	169
FAB-Phys		0.614	0.324	0.251	0.412	−0.304	−0.201
P value		0.000	0.000	0.003	0.000	0.000	0.007
N		190	196	140	194	189	189
FAB-Work			0.381	0.323	0.467	−0.386	−0.320
P value			0.000	0.000	0.000	0.000	0.000
N			192	137	190	186	186

FAB (total score) indicates sum of scores of the 16 items in the scale; FAB Phys, factor 2: fear avoidance beliefs, physical activity: sum of the scores of items 2, 3, 4 and 5; FAB Work, factor 1: fear avoidance beliefs, work: sum of the scores of items 6, 7, 9, 10, 11 and 12; VAS, visual analog scale; RM, Roland Morris questionnaire; PCS-12, physical component summary of SF-12; MCS-12, mental component summary of SF-12.

Table 6. Spearman Correlation Coefficients of Fear Avoidance With Pain, Disability, and Quality of Life (Day 15)

	FAB-Phys	FAB-Work	Low back pain (VAS)	Referred pain (VAS)	Disability (RM)	Quality Life Physical (PCS-12)	Quality Life Mental (MCS-12)
FAB (total score)	0.778	0.965	0.564	0.457	0.637	−0.503	−0.372
P value	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	167	167	161	113	162	147	147
FAB-Phys		0.677	0.406	0.300	0.482	−0.423	−0.204
P value		0.000	0.000	0.000	0.000	0.000	0.008
N		183	193	136	195	168	168
FAB-Work			0.550	0.449	0.599	−0.453	−0.385
P value			0.000	0.000	0.000	0.000	0.000
N			179	126	180	162	162

FAB (total score) indicates sum of scores of the 16 items in the scale; FAB Phys, factor 2: fear avoidance beliefs, physical activity: sum of the scores of items 2, 3, 4 and 5; FAB Work, factor 1: fear avoidance beliefs, work: sum of the scores of items 6, 7, 9, 10, 11 and 12; VAS, visual analog scale; RM, Roland Morris questionnaire; PCS-12, physical component summary of SF-12; MCS-12, mental component summary of SF-12.

intraclass correlation coefficient between both questionnaires showed very good reliability despite the different order of the questions, and the number of items showing moderate, considerable, and almost complete concordance was virtually the same as that in the original British version, despite differences in the method of reliability assessment used in both studies and the fact that the sample used for that purpose in this study was twice as large as the one in the original one (53 *vs.* 26 patients).[8]

Answers were observed across the seven existing categories for all items, as compared with four categories in the original British version.[8] FAB-Phys values suggest a potential "ceiling effect" problem for that subscale (Table 3). However, because of the nature of the questionnaire, in which the maximum score for any individual item is "I completely agree," this may also simply reflect that most patients believe that LBP is closely related to physical activity.

In the original study, regression models were used to assess the percentage of variance in work loss during the last year explained by FAB-Work, and analysis of present work loss produced results similar to those on total work loss in the past year. In this study, gathering information on work loss attributed to LBP during the past year was not feasible because of Spanish data protection laws and the way in which the information is registered. Therefore, values of the FABQ and its subscales were compared between patients on current sick leave and those who were not, showing those of FABQ and FAB-Work to be more than one third higher in patients on current sick leave (Table 4).

The Spanish version of the FABQ requires only 10 minutes to be completed and the patient can do it on his own, along with other questionnaires and scales. Despite patients having to fill out two VAS scales, the RMQ and the SF-12 in addition to the FABQ, no patient left the questionnaire unanswered. Based on the results shown in Tables 4 to 6, the total FAB score seems more suitable for being used in routine clinical practice. In addition, it does not have the potential "ceiling effect" that affects FAB-Phys, and its score is easier to calculate, since it only requires the addition of the scores of all the items.

As inclusion criteria, all patients had to be in a potentially active working situation. This fact might compromise the generalizability of these findings to the not working population (*e.g.*, elderly or retired population), in which only items 1 to 5 of FABQ are applicable. The study was conducted in primary care and hospital settings of the Spanish National Health Service. Although the Spanish National Health Service is free and available to all residents of Spain, in theory this might compromise generalizability to the small minority of patients seeking health care only in the private sector. However, representativeness of the sample among the Spanish working population seeking health care for low back pain in the Spanish National Health Service is not a major concern. The seven Spanish regions from which patients were recruited represent the entire cultural and economic spectrum of the 17 regions in the country, participants were recruited both in the primary care and the hospital setting, no data suggest that patients from the rest of the country are different, and the treatment they were having was consistent with the one that is routinely used within the Spanish National Health Service (Table 1).[19] In addition, all patients complying with inclusion criteria were included and none was excluded, they represent different socioeconomic strata, and the sample was balanced for acute, subacute, and chronic patients (Table 1). Although the cutoff point between "acute" and "subacute" LBP is often arbitrarily placed at 45 days, in this study it was established at 14 days according to the evidence suggesting that to be the suitable cutoff point based on the evolution of determinants of quality of life and the risk of developing chronic disability.[6,7]

The National Spanish Academy of the Language is a multinational agency integrated by both Castillian and Mexican Spanish experts, and is committed to maintaining the unity of the Spanish language throughout the world. It ensures that academic language, dictionaries, and semantic and grammatical rules are homogeneous throughout the Spanish-speaking world. Therefore, this

version of the FABQ may be used in any Spanish-speaking country, although some minor fine-tuning may be necessary to adapt it to the specific terms that may be more commonly used in informal language in some specific cultural environments.

■ Conclusion

This study shows that the Spanish version of the FABQ is comprehensible, valid, and reliable. It cannot be analyzed parametrically, but only nonparametrically. The complete questionnaire (FAB) is as good as, or better than, its subscales (FAB-Work or FAB-Phys) for determining fear avoidance beliefs related to work and physical activity, and it is easier to score, making it more suitable for routine clinical practice when applicable.

Acknowledgments

The authors thank Dr. Gordon Waddell for his permission for translation of the FABQ into Spanish.

■ Key Points

- The Fear Avoidance Beliefs Questionnaire (FABQ) is a valid and reliable instrument for measuring fear avoidance beliefs. The questionnaire was translated into Spanish and retranslated into English blindly and independently by a multidisciplinary team.
- The study was carried out in 12 primary care centers and 9 hospital outpatient clinics from seven regions in Spain, with acute, subacute, and chronic patients who visited their physician for low back pain. Subjects were given the FABQ, two visual analog scales (VAS) for low back and referred pain, and the Roland Morris and SF-12 questionnaires on their visit and 14 days later. In the pilot phase, on day 1 they were given a second FABQ.
- The Spanish version of the FABQ is easy to understand, has good comprehensibility, internal consistency, and reliability, and is an adequate and useful instrument for the assessment of fear avoidance beliefs caused by low back pain in Spanish-speaking patients.

References

1. Deyo RA, Cherkin D, Conrad D, et al. Cost, controversy, crisis: low back pain and the health of the public. *Annu Rev Publ Health* 1991;12:141–56.
2. Waddell G. *The Back Pain Revolution*. Edinburgh: Churchill Livingstone, 1998.
3. Van Tulder MW, Koes BW, Bouter LM. A cost-of-illness study of back pain in The Netherlands. *Pain* 1995;62:233–40.
4. Nachemson AL, Jonsson E, eds. *Neck and Back Pain*. Philadelphia: Lippincott Williams & Wilkins, 2000.
5. Rainville J, Ahern DK, Phalen L, et al. The association of pain with physical activities in chronic low back pain. *Spine* 1992;17:1060–4.
6. Kovacs FM, Abraira V, Zamora J, et al. Correlation between pain, disability and quality of life in patients with common low back pain. *Spine* 2004;29:206–10.
7. Kovacs FM, Abraira V, Zamora J, et al. The transition from acute to subacute chronic low back pain: a study based on determinants of quality of life and prediction of chronic disability. *Spine* 2005;30:1786–92.
8. Waddell G, Newton M, Henderson I, et al. A fear-avoidance beliefs questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain* 1993;52:157–68.
9. Kovacs FM, Llobera J, Gil del Real MT, et al. Validation of the Spanish version of the Roland-Morris questionnaire. *Spine* 2002;27:538–42.
10. Merskey H, Bogduk N. Description of chronic pain syndromes and definitions of pain terms. In: *Classification of Chronic Pain*, 2nd ed. Seattle: IASP Press, 1994.
11. Huskisson EC. Measurement of pain. *Lancet* 1974;2:1127–31.
12. Gandek B, Ware JE, Aaronson NK, et al. Cross validation of items selection and scoring for the SF-12 health survey in nine countries: results from the IQOLA project. *J Clin Epidemiol* 1998;51:1171–8.
13. Fleiss JL, Cohen J. The equivalence of weighted kappa and the intraclass correlation coefficient as measures of reliability. *Educ Psychol Meas* 1973;33:613–9.
14. Bartko JJ. The intraclass correlation coefficient as a measure of reliability. *Psychol Rep* 1966;19:3–11.
15. Bland JM, Altman DG. Statistical methods for assessing agreement between two methods of a clinical measurement. *Lancet* 1986;1:307–10.
16. Bland JM, Altman DG. Cronbach's alpha. *BMJ* 1997;314:572.
17. Feinstein AR. *Principles of Medical Statistics*. Washington, DC: Chapman & Hall, 2002.
18. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics* 1977;33:159–74.
19. González-Urzelai V, Palacio-Elua L, Lopez de Munain J. Routine primary care management of acute low back pain: adherence to clinical guidelines. *Eur Spine J* 2003;12:589–94.