DE SALUT

ISSN: 2443-9827. DOI: http://dx.doi.org/10.6035/AgoraSalut.2015.1.11 - pp. 151-162

# Spanish version of the survey of pain attitudes (SOPA-B) in patients with fibromyalgia

## Preliminary data

GUADALUPE MOLINARI
molinari@uji.es

EVA DEL RÍO
Eva.delrio@uji.es

ALBERTO GONZÁLEZ ROBLES
al117136@uji.es

ROCÍO HERRERO CAMARANO
rherrero@uji.es

CRISTINA BOTELLA ARBONA
botella@uji.es

**Abstract**

**Introduction:** Fibromyalgia (FM) is a chronic musculoskeletal pain condition of unknown etiology, often accompanied by fatigue, sleep disturbance and depressed mood. It is a complex syndrome involving biological, psychological and social factors which causes a negative impact in the patient´s quality of life. Biopsychosocial models of pain hypothesize that patient attitudes and beliefs about pain play a key role in the adjustment to chronic pain. For that reason, a number of self-report instruments have been developed to assess those constructs. The Survey of Pain Attitudes (SOPA) is one of the most commonly used measures of pain beliefs having shown good psychometric properties. For this study, we used the SOPA-B (brief version) to preliminary test its validity in a sample of Spanish women diagnosed with FM. **Aim:** To develop a Spanish adaptation of the SOPA-B and examine its factor structure preliminarily **Methods:** 258 female patients with FM (ACR, 1990) were administered the SOPA-B. **Results:** Factor analyses supported a six-factor structure: Solicitude, Emotion, Disability, Harm, Control and Medical Procedures, consisting of 28 items. The Spanish-SOPA-B showed to be a reliable measure as demonstrated by the scales Cronbach's alpha (ranging from 0.83 to 0.60). **Conclusions:** The adaptation and translation process of the SOPA, led to the confirmation of five of the original scales of this questionnaire in a different cultural group. These findings are promising and indicate that the Spanish-SOPA-B has good reliability and validity properties. Further studies are needed to confirm these preliminary findings.

**Keywords:** Fibromyalgia, Attitudes, Assessment, Spanish Validation, Survey of Pain Attitudes.

**Introducción:** La fibromialgia (FM) es una condición de dolor musculoesquelético crónico de etiología desconocida, a menudo acompañado de fatiga, alteraciones del sueño y estado de ánimo depresivo. Es un síndrome complejo que involucra factores biológicos, psicológicos y sociales que provoca un impacto negativo en la calidad de vida del paciente. Modelos biopsicosociales del dolor tienen la hipótesis de que las actitudes del paciente y sus creencias acerca del dolor juegan un papel clave en la adaptación al dolor crónico. Por esa razón, una serie de instrumentos de autoinforme se han desarrollado para evaluar aquellos constructos. El Cuestionario de Actitudes hacia el Dolor (SOPA) es una de las medidas más utilizadas para evaluar las creencias hacia el dolor y ha demostrado tener buenas propiedades psicométricas. Para este estudio, se utilizó la versión breve del SOPA-B para evaluar su validez en una muestra de mujeres españolas con diagnóstico de FM. **Objetivo:** Desarrollar una adaptación española del cuestionario SOPA-B y examinar su estructura factorial de manera preliminar. **Método:** A 258 mujeres con FM (ACR, 1990) se les administró el cuestionario SOPA-B. **Resultados:** Los análisis factoriales dieron como resultado una estructura de seis factores: Solicitud, Emoción, Discapacidad, Daño, Control y Procedimientos Médicos, que consta de 28 ítems. La versión española del SOPA-B demostró ser una medida fiable como lo demuestran las escalas alfa de Cronbach (que van desde 0,83 hasta 0,60). **Conclusiones:** El proceso de adaptación y traducción del cuestionario SOPA confirmó cinco de las escalas originales de este cuestionario en un grupo cultural diferente. Estos hallazgos son prometedores e indican que la versión en español del SOPA-B es un instrumento fiable y válido. Se necesitan más estudios para confirmar estos hallazgos preliminares.

**Palabras clave:** fibromialgia, actitudes, evaluación, validación, Cuestionario de Actitudes hacia el Dolor.

## Introduction

Fibromyalgia (FM) is a chronic musculoskeletal pain condition of unknown etiology, often accompanied by fatigue, sleep disturbance and depressed mood. The American College of Rheumatology (ACR, Wolfe, Smythe, Yunnus, *et al.*, 1990) FM classification criteria require tenderness on pressure in at least 11 of 18 specified sites and the presence of widespread pain, although these criteria are being revised and there has been already a publication with recommendations for the improvement of the diagnosis of FM (Wolfe *et al.*, 2010). This condition is becoming an important public health problem, because FM sufferers are high users of health care services (Bombardier & Buchwald, 1996; Penrod, et. al., 2004). It is estimated that between 2 and 4 % of the general population suffer FM (Mease, 2005).

FM is a complex condition involving biological, psychological and social factors which causes a negative impact in the patient–s quality of life. Biopsychosocial models of pain (Flor & Turk, 2011) integrate behavioural, affective and cognitive variables and hypothesize that patient–s attitudes and beliefs about pain play a key role in adjustment to chronic pain (Engel, Jensen, Ciol & Bolen, 2012; Jensen *et al.*, 1994). Patients– beliefs about their symptoms have shown to affect their behavior, physical function status, pain severity, pain tolerance, mood, coping, adaptation and the number of physician visits even when no objective differences in physical pathology were found (Flor & Turk, 1988, 2011; Jensen *et al.*, 1999; Turner, Jensen &

Romano, 2000; Turk, Okifuji, Starz & Sinclair, 1996). In studies of patients with FM two cognitive factors, locus of pain control and catastrophizing have been associated with affect, symptom severity and disability. Apparently, in comparison with other chronic pain conditions, FM patients have a more external locus of control what causes more disability, symptom severity and affective distress (Burckhardt & Bjelle, 1996; Gustafsson & Gaston-Johansson, 1996; Mccarberg, Wolf, Oliver, Fakhry, Walen & Cronan, 2002; Pastor, Salas, Lopez, Rodriguez, Sanchez & Pascual, 1993). Catastrophizing is one of the strongest pain predictors (Sorbi *et al.*, 2006) and in patients with FM, catastrophizing is strongly correlated with increased attention to pain and greater vigilance to bodily sensations (Edwards, Bingham, Bathon & Haythornthwaite, 2006). These factors and their influences have been studied especially when it comes to treatment outcomes. Individual´s beliefs about pain can importantly influence adherence to treatment, treatment response, and long term outcomes to both physical and psychologically oriented treatments (Jensen, Turner & Romano, 2007; Stroud, Thorn, Jensen & Boothby, 2000; Williams & Claw, 2009; Williams & Keefe, 1991; Williams, Robinson, & Geisser, 1994). For that reason, research suggests that in addition to pain, the assessment of FM should include other measures that impact the patient´s quality of life such as physical function, fatigue, sleep, mood, cognitive dysfunction, tenderness and patient global impression of wellbeing (Mease *et al.*, 2007; Mease *et al.*, 2008). These findings have been supported by organizations such as The Outcomes Measures in Rheumatology (OMERACT) (Tugwell *et al.*, 2007) and the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) (Dworkin *et al.*, 2008). This initiative is also focused upon validating assessment instruments that capture domains of relevance that exceed a specific focus on pain (Williams & Clauw, 2009).

To assess pain-related cognitions a number of instruments have been developed like the Cognitive Errors Questionnaire (Lefebvre, 1981), the Pain Beliefs and Perceptions Inventory (PBPI; Williams & Thorn, 1989) and the Survey of Pain Attitudes (SOPA, Jensen *et al.*, 1987) among others. The SOPA is one of the most commonly used measures to assess beliefs in studies of patients with chronic pain. The original SOPA contains 57 items that assess 7 pain-related beliefs: the extent to which patients believe they can control their pain (Pain Control), the extent to which patients believe they are unable to function because of pain (Disability), the extent to which patients believe that pain means they are doing exercise that is damaging themselves and that they should avoid that activity (Harm), the extent to which patients believe that their emotions impact their pain (Emotion), the extent to which patients believe that medications are an appropriate treatment for chronic pain (Medication), the extent to which patients believe that others should be solicitous in response to their experience of pain (Solicitude), and the extent to which patients believe in a medical cure for their pain problem (Medical Cure). Many adaptations of the SOPA have been developed, including brief versions to address the issue that its length might limit its utility in some research and clinical settings (Tait & Chibnall, 1997; Jensen, Turner & Romano, 2000; Jensen *et al.*, 2003). The SOPA has showed good psychometric properties in English-speaking populations (Jensen *et al.* 1987, 1994, 2000; Tait & Chibnall, 1997), Portuguese-speaking populations (Pimenta & Cruz, 2006; Pimenta, Kurita, Silva, & Cruz, 2009), French-speaking populations (Duquette, McKinley & Litowski, 2005; Grisart, Masquelier & Ophoven, 1999) and has recently demonstrated its validity in Chinese-speaking populations (Wong, Jensen, Mak & Fielding, 2011).

The aim of the present study was to assess the applicability of a Spanish version of the SOPA-B to patients with FM, a specific subsample of patients with chronic pain, by measuring its psychometric properties. Therefore, there were two goals of the present study: first, to translate and validate the SOPA-B in the Spanish language and, second, given that all the previous adaptations of the SOPA have been made on mixed chronic pain populations, to examine the utility of this version in a specific chronic pain population, FM patients.

## Method

### *Participants*

The sample was composed of 258 participants suffering from FM. Participants were recruited partly (N=128) from the Rheumatology Unit of Castellón General Hospital. The rest of the sample (N=130) was recruited from an online survey.

Of the 258 participants (254 women and 4 men), aged 18-77 (mean 46.9; SD= 10.1 years). 82.9 % of the sample were from Spain, 6.2 % from Argentina, 3.5 % from México, 1.9 % from Venezuela, 1.6 % from Colombia, 0.8 % from Chile, Uruguay and Peru, and a 0.4 % from Andorra, Honduras, Panama and Puerto Rico. Most of the sample (39.1 %) had an elementary level of education. 3.6 % had not finished the elementary studies, 28.1 % had finished high school, and 29.2 % had a university degree. Regarding work status, 69.8 % were active workers, 18.3 % were housewives, 0.9 % were students and 5.1 % did not work. Of those who were not working, 2.1 % were on sick leave, 3.6 % were receiving a pension because of disability and 2.4 % were retired.

On average, patients who participated in the study had suffered from FM a mean of 10.6 years (SD = 9.5), ranging from 1 to 48 years.

In order to be included in the study, patients had to fulfill the American College of Rheumatology criteria for primary FM (Wolfe *et al.*, 1990), according to a diagnosis made by a rheumatologist. All the participants signed a consent form stating their willingness to participate.

### *Translation of the SOPA-B*

Permission to translate and validate the SOPA-B was obtained from the original authors (Jensen *et al.*, 1987). A native Spanish speaker, who was aware of the objective of the SOPA-B, first translated the SOPA-B to Spanish. Then, a bilingual in Spanish and English, who was not familiar with the SOPA-B, performed a back-translation from Spanish to English. Any discrepancies between the Spanish and English translators were solved by agreement. The Spanish version was judged to be an accurate translation of the original English version. The final Spanish version was approved by the original authors.

### *Measures*

The SOPA-brief contains 30 items that correspond to seven domains of beliefs and attitudes towards pain: Pain Control, Disability, Harm, Emotion, Medication, Solicitude and Medical Cure (Tait & Chibnall, 1997). The SOPA has demonstrated good criterion validity, internal consistency and test-retest stability (Jensen *et al.*, 1987, Jensen & Karoly, 1991; Strong, Ashton & Chant, 1992). This instrument was administered as part of an assessment batery.

### *Procedure*

From the total sample of participants, some were recruited from The General Hospital of Castellón, in Spain. Our research team at Labpsitec (Universitat Jaume I) offers psychological treatment and participation in research studies to FM sufferers attending the Rheumatology service of the main public hospital in our area. The rheumathologists gave general information

about the studies conducted at Labpsitec and referred FMS patients interested in participating. All participants attended voluntarily. Once the participants gave written informed consent, the SOPA-B (Tait & Chibnall, 1997) was administered as part of the assessment protocol administered at Labpsitec.

The rest of the sample was recruited online. A link to the study was published in different FM forums and various FM Associations that supported this research by sending a request to participate to their members. Also, public social networks served as a platform to disseminate the information of the study. In order to participate in the study, participants gave informed consent of their willingness to participate. Before the survey was administered, demographic data and information regarding FM diagnosis and symptoms were collected. Participants who did not have a FM diagnosis made by a rheumatologist were excluded from the study. In 12 cases, participants did not have FM diagnosis made by a rheumatologist, resulting in patient exclusion from the study.

### *Data analysis*

Construct validity of the Spanish SOPA-B questionnaire was estimated by an exploratory factor analysis.

Subsequently, internal consistency of the Spanish SOPA-B subscales was assessed using Cronbach's alpha coefficient. This coefficient varies from 0 to 1; the higher the value, the better the reliability. The analysis considered the correlation of each item with the subscale, as well as the change in the Cronbach's alpha coefficient for the event of exclusion of an item.

All statistical analyses were performed with SPSS software, version 15 (SPSS Inc., Chicago, Illinois).

## Results

### *Exploratory factor analysis and Criterion validity of the Spanish version of SOPA-B*

The Factorability of the intercorrelation matrix was measured by the Kaiser-Meyer-Olkin test of Sampling Adequacy (KMO). The results obtained from the test revealed that the factor model was appropriate (0.769). An exploratory factor analysis using a Varimax rotation was performed. The factor analysis of the Spanish SOPA-B items yielded 8 factors. The criterion to retain a factor was obtaining an eigenvalue of 1 or higher complemented by the scree test. Together, these factors accounted for 61.695 % of the total variance in the original items (Table 1). Inspection of the varimax rotated solution showed factors to be reasonable representations of five of the seven original SOPA-B subscales: Solicitude (Factor 1), Emotion (Factor 2), Harm (Factor 3), Pain Control (Factor 4), and Disability (Factor 6). Seven items loaded highly on more than one factor. Factor 5 was comprised of medication and medical cure items. Factor 7 also contained a set of medication and medical cure items, as well as items 23 and 26 that belong to the Disability subscale. Finally, Factor 8 was comprised of 3 items that in accordance with the original English version were allocated in the Medical Cure (items 4 and 29) and Medication (item 5) domains. Items 4 and 24 were the only items from these last factors that did not load in any other subscale (see Table 2).

Table 1
*8 Factor solution by Principal Items loading and Varimax rotation for the Spanish version of the SOPA-B*

| | INITIAL EIGENVALUES | | | EXTRACTION SUMS OF SQUARED LOADINGS | | | ROTATION SUMS OF SQUARED LOADINGS | | |
|---|---|---|---|---|---|---|---|---|---|
| C | Total | % of variance | Cum % | Total | % of variance | Cum % | Total | % of variance | Cum % |
| 1 | 4,979 | 16,596 | 16,596 | 4,979 | 16,596 | 16,596 | 3,294 | 10,980 | 10,980 |
| 2 | 4,087 | 13,624 | 30,220 | 4,087 | 13,624 | 30,220 | 3,010 | 10,033 | 21,013 |
| 3 | 2,189 | 7,296 | 37,517 | 2,189 | 7,296 | 37,517 | 2,784 | 9,279 | 30,292 |
| 4 | 1,950 | 6,501 | 44,017 | 1,950 | 6,501 | 44,017 | 2,735 | 9,117 | 39,409 |
| 5 | 1,594 | 5,313 | 49,330 | 1,594 | 5,313 | 49,330 | 2,127 | 7,091 | 46,500 |
| 6 | 1,409 | 4,696 | 54,026 | 1,409 | 4,696 | 54,026 | 1,724 | 5,747 | 52,246 |
| 7 | 1,206 | 4,021 | 58,047 | 1,206 | 4,021 | 58,047 | 1,555 | 5,184 | 57,430 |
| 8 | 1,094 | 3,648 | 61,695 | 1,094 | 3,648 | 61,695 | 1,279 | 4,264 | 61,695 |
| 9 | ,946 | 3,154 | 64,849 | | | | | | |
| 10 | ,868 | 2,892 | 67,741 | | | | | | |
| 11 | ,837 | 2,788 | 70,530 | | | | | | |
| 12 | ,783 | 2,609 | 73,139 | | | | | | |
| 13 | ,742 | 2,474 | 75,613 | | | | | | |
| 14 | ,727 | 2,424 | 78,037 | | | | | | |
| 15 | ,680 | 2,267 | 80,304 | | | | | | |
| 16 | ,642 | 2,141 | 82,445 | | | | | | |
| 17 | ,579 | 1,932 | 84,376 | | | | | | |
| 18 | ,521 | 1,735 | 86,112 | | | | | | |
| 19 | ,505 | 1,683 | 87,795 | | | | | | |
| 20 | ,461 | 1,538 | 89,332 | | | | | | |
| 21 | ,443 | 1,476 | 90,808 | | | | | | |
| 22 | ,421 | 1,403 | 92,211 | | | | | | |
| 23 | ,375 | 1,250 | 93,461 | | | | | | |
| 24 | ,363 | 1,211 | 94,672 | | | | | | |
| 25 | ,334 | 1,112 | 95,784 | | | | | | |
| 26 | ,313 | 1,044 | 96,828 | | | | | | |
| 27 | ,282 | ,941 | 97,769 | | | | | | |
| 28 | ,255 | ,848 | 98,618 | | | | | | |
| 29 | ,229 | ,763 | 99,381 | | | | | | |
| 30 | ,186 | ,619 | 100,000 | | | | | | |

C= Component
Cum= Cumulative

The following criterion was adopted for an item to be retained in the factor: a minimum factorial load of 0.3 or more in the domain (Gorsuch, 1983), so that its presence could improve, or at least did not critically worsen, the internal consistency assessed by the Cronbach's alpha.

Table 2
*Correlations between items and factors of the Spanish SOPA-B*

| | FACTORS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Ítem 1 | ,152 | ,409 | –,007 | ,447 | ,168 | ,057 | –,130 | ,096 |
| Ítem 2 | ,259 | ,175 | ,230 | –,356 | ,329 | ,063 | –,391 | ,156 |
| Ítem 3 | ,811 | ,211 | ,009 | –,075 | –,067 | –,008 | –,036 | ,179 |
| Ítem 4 | ,065 | –,049 | –,056 | ,103 | ,054 | –,133 | ,121 | –,774 |
| Ítem 5 | ,150 | –,046 | –,193 | ,156 | ,430 | –,063 | ,108 | ,473 |
| Ítem 6 | ,214 | ,773 | –,031 | ,028 | –,025 | ,034 | ,037 | ,072 |
| Ítem 7 | ,824 | ,214 | ,060 | –,067 | –,006 | ,080 | ,034 | –,028 |
| Ítem 8 | –,311 | ,002 | –,003 | –,188 | ,605 | ,008 | ,057 | –,228 |
| Ítem 9 | ,614 | ,023 | ,127 | ,080 | ,082 | ,005 | –,133 | –,180 |
| Ítem 10 | ,106 | ,717 | ,018 | ,110 | –,119 | ,133 | –,019 | ,059 |
| Ítem 11 | ,068 | –,153 | ,796 | –,122 | –,003 | ,050 | ,138 | ,057 |
| Ítem 12 | ,054 | ,236 | –,285 | ,578 | –,009 | ,098 | ,110 | –,131 |
| Ítem 13 | ,114 | –,027 | –,053 | ,063 | ,787 | ,000 | –,010 | ,064 |
| Ítem 14 | ,731 | ,202 | ,074 | ,067 | –,023 | ,191 | –,030 | –,026 |
| Ítem 15 | ,242 | ,788 | –,008 | –,100 | ,055 | –,039 | –,050 | –,075 |
| Ítem 16 | ,191 | ,145 | ,669 | –,020 | –,057 | ,122 | –,111 | ,050 |
| Ítem 17 | ,075 | ,226 | –,124 | ,702 | ,063 | –,079 | ,090 | –,035 |
| Ítem 18 | ,709 | ,290 | –,141 | ,057 | ,023 | ,115 | –,056 | ,057 |
| Ítem 19 | ,141 | ,118 | ,190 | –,054 | ,080 | ,633 | –,121 | ,225 |
| Ítem 20 | –,071 | –,076 | –,002 | ,741 | –,080 | –,097 | –,080 | ,119 |
| Ítem 21 | ,007 | –,020 | ,001 | ,114 | ,784 | –,007 | –,036 | ,045 |
| Ítem 22 | ,022 | –,034 | –,154 | ,711 | ,129 | –,230 | ,099 | –,104 |
| Ítem 23 | ,057 | ,059 | ,172 | –,286 | –,032 | ,578 | ,395 | ,043 |
| Ítem 24 | –,153 | –,134 | –,090 | ,161 | –,024 | –,069 | ,759 | –,121 |
| Ítem 25 | ,216 | ,789 | –,070 | ,164 | ,009 | ,081 | –,033 | –,032 |
| Ítem 26 | ,113 | ,174 | ,108 | –,424 | ,013 | ,355 | ,487 | –,033 |
| Ítem 27 | –,026 | ,002 | ,775 | –,095 | –,006 | –,023 | –,139 | –,112 |

Table 2 (Continuation)
*Correlations between items and factors of the Spanish SOPA-B*

| | FACTORS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Ítem 28 | –,075 | –,090 | ,856 | –,208 | –,048 | ,056 | ,019 | –,018 |
| Ítem 29 | –,144 | ,054 | –,106 | ,016 | ,357 | –,253 | ,497 | ,380 |
| Ítem 30 | ,112 | ,046 | –,076 | –,085 | –,064 | ,763 | –,082 | –,079 |

In order to make the decision regarding the adequate position of an item in a domain, the factorial loads achieved and internal consistency analysis were considered. In the case of items that loaded in more than one factor, if it was possible, the criterion was to support the original English version and to maintain those items in their original subscale. This was the case for items 23 and 26. Following this decision, Factor 7 remained with 3 items: 2, 24 and 29. Alpha´s coefficient analysis of Factors 5, 7 and 8 were performed considering different combination of items as well as the possible elimination of those items that loaded in more than one subscale. Hence, the internal consistency analysis, together with the factorial loads achieved, allowed for the decision that the best solution was to allocate items 2, 5 and 29 in Factor 5 and create a new subscale named –Medical Procedures–. This subscale comprises medication and medical cure´s items. Also, items 4 (–I do not expect a medical cure for my pain–) and 24 (–My physical pain will never be cured–) were excluded in the Spanish version of the SOPA-B. This decision was taken following several reasons: 1) these items remained alone in a factor (Factor 7 and Factor 8, respectively); 2) these two items did not load in any of the other subscales; and 3) besides analyzing subscales reliabilities, examining meanings of items 4 and 24 revealed that in this specific population of FM patients, those items may not be appropriate (see discussion section).

Table 3 presents the final results of the factorial analysis performed with the 28 items of the first preliminary study for the SOPA-B in the Spanish language.

Table 3
*Final factor solution of the Spanish SOPA-B*

| Factors | Items |
|---|---|
| Solicitude | 3,7,9,14,18 |
| Emotion | 6, 10, 15, 25 |
| Harm | 11,16,27,28 |
| Pain Control | 1,12,17,20,22 |
| Medical Procedures | 2, 5,8,13,21,29 |
| Disability | 19,23,26,30 |

*Internal consistency*

Table 4 shows the internal consistency (Cronbach's alpha coefficient) of the Spanish SOPA-B and the comparison of our results with the studies in English-speaking populations. The

internal consistency coefficients for the subscales varied from excellent to good (0.83-0.60): *Solicitude* (0.83), *Emotion* (0.82), *Harm* (0.81), *Pain Control* (0.71), *Medical Procedures* (0.61) and *Disability* (0.60).

Table 4
*Cronbach´s Alpha Coefficient of the Spanish version of the SOPA-B*

| Subscales | Spanish SOPA-B |
|---|---|
| Solicitude | 0.83 |
| Emotion | 0.82 |
| Harm | 0.81 |
| Pain Control | 0.71 |
| Medical Procedures | 0.61 |
| Disability | 0.60 |

Most of the subscales had good alpha coefficients, three could be considered excellent (> 80) and one could be considered adequate (Jensen, 2003). *Medical Procedures* subscale had a marginal alpha coefficient (0.61) as well as the *Disability* subscale (0.60).

## Discussion

The present study was conducted to explore preliminary the utility of the Spanish SOPA-B on a Spanish-speaking sample of patients with FM, a specific subtype of patients with chronic pain. The importance of this study is that it is the first time that the SOPA, one of the most commonly used questionnaires for assessing patient´s attitudes and beliefs about pain, has been applied to FM, a prevalent chronic pain disease.

The adaptation and translation process of the SOPA-B led to the confirmation of five of the scales of this questionnaire in a different cultural group: *Solicitude*, *Emotion*, *Harm*, *Pain Control,* and *Disability*. The exploratory factor analysis revealed that items that represent *Medication* and *Medical Cure* subscales behaved differently than they did in another studies. Our results indicate that these items conceptualization, in a Spanish FM population, seem to overlap in one domain. For this reason, we decided to cluster them in one subscale: *Medical Procedures*. One important difference between the Spanish and English versions of the SOPA-B is that items number 4 and 24 («I do not expect a medical cure for my pain» and «My physical pain will never be cured») in the Spanish version showed weak item-scale correlation. This result indicates the need to review the formulation of these items or eliminate them from the Spanish version of the questionnaire. It is not clear if this finding differ from previous studies because of differences in population (patients with chronic pain and patients with FM) or to language, or to cultural issues. Further research is needed in order to contrast these differences.

The Spanish-SOPA-B showed to be a reliable measure as demonstrated by the scales' Cronbach's alpha (ranging from 0.60 to 0.83).

However, our study has some limitations. We used two administration methods: face-to-face vs web-delivered. This may have influence some of the results. However, several studies have administered the SOPA via mail or via telephone with good results (Engel *et al.*, 2012; Jensen *et al.*, 2000). Besides, online surveys had shown their efficacy as an assessment method in chronic pain populations and professionals (Kurita, Sjøgren, Juel, Højsted & Ekholm, in press; Varrassi & Müller-Schwefe, 2012) and specifically in FM sufferers (Bennett, Jones, Turk, Russell & Matallana, 2007; Hauser, Zimmer, Felde & Kollner, 2008).

Overall, we believe these findings are promising and indicate that the Spanish-SOPA-B has good reliability and validity. Further studies are needed in order to study other psychometric properties of the instrument.

Acknowledgements

The authors thank Javier García Campayo, the Asociación Aragonesa de Fibromialgia (ASAFA) and the Asociación de Enfermos y Familiares de Fibromialgia y Síndrome de Fatiga Crónica de Salamanca (AFIBROSAL) for its collaboration. We also thank Veronica Todd for her work in the retrotranslation of the SOPA. The research presented in this paper was funded in part by Fundació La Marató de TV3 (Ajuts de la Marató de TV3 2006), Ministerio de Educación y CIEncia. Spain. PROYECTOS CONSOLIDER-C (SEJ2006-14301/PSIC) and by Fundació Caixa Castelló-Bancaixa (P11B2009-30).

## References

Bennet, R., Bushmakin, A., Cappelleri, J., Zlateva, G. & Sadosky, A. (2009). Minimal clinically important difference in the fibromyalgia impact questionnaire. *The Journal of Rheumatology, 36* (6), 1304-1311. doi: 10.3899/jrheum.081090.

Bennett, R. M., Jones, J., Turk, D. C., Russell, I. J. & Matallana, L. (2007). An internet survey of 2,596 people with fibromyalgia. *BMC musculoskeletal disorders*, *8*, 27. doi:10.1186/1471-2474-8-27.

Boomershine, C. S. (2012). A Comprehensive Evaluation of Standardized Assessment Tools in the Diagnosis of Fibromyalgia and in the Assessment of Fibromyalgia Severity. *Pain Research and Treatment. 2012*, 653714. doi:10.1155/2012/653714.

Burckhardt, C. S. & Bjelle, A. (1996). Perceived control: A comparison of women with fibromyalgia, rheumatoid arthritis, and systemic lupus erythematosus using a Swedish version of the Rheumatology Attitudes Index. *Scandinavian Journal of Rheumatology, 25* (5), 300-306.

Duquette, J., McKinley, P. A. & Litowski, J. (2005). Test-retest reliability and internal consistency of the Quebec-French version of the Survey of Pain Attitudes. *Archives of physical medicine and rehabilitation*, *86* (4), 782-788. doi:10.1016/j.apmr.2004.10.024

Dworkin, R. H., Turk, D. C., Wyrwich, K. W., Beaton, D., Cleeland, C. S., Farrar, J. T., Haythornthwaite, J. A., Jensen, M. P., Kerns, R. D., Ader, D. N., Brandenburg, N., Burke, L. B., Cella, D., Chandler, J., Cowan, P., Dimitrova, R., Dionne, R., Hertz, S., Jadad, A. R., Katz, N. P., Kehlet, H., Kramer, L. D., Manning, D. C., McCormick, C., McDermott, M. P., McQuay, H. J., Patel, S., Porter, L., Quessy, S., Rappaport, B. A., Rauschkolb, C., Revicki, D. A., Rothman, M., Schmader, K. E., Stacey, B. R., Stauffer, J. W., von Stein, T., White, R. E., Witter, J. & Zavisic, S. (2008). Interpreting the clinical importance of treatment outcomes in chronic pain clinical trials: IMMPACT recommendations. *Journal of Pain, 9* (2), 105-121.

Edwards, R. R., Bingham, C. O., Bathon, J. & Haythornthwaite, J. A. (2006). Catastrophizing and pain in arthritis, fibromyalgia, and other rheumatic diseases. *Arthritis & Rheumatism*, *55* (2), 325-332. doi: 10.1002/art.21865.

Engel, J. M., Jensen, M. P., Ciol, M. A. & Bolen, G. M. (2012). The development and preliminary validation of the pediatric survey of pain attitudes. *American journal of physical medicine & rehabilitation, 91* (2), 114-121.

Flor, H. & Turk, D. C. (1988). Rheumatoid arthritis and back pain: Predicting pain and disability from cognitive variables. *Journal of Behavioral Medicine*, *11*, 251-265.

Flor, H. & Turk, D. C. (2011). *Chronic Pain: an integrated biobehavioral approach*. IASP Press.

Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Grisart, J., Masquelier, E. & Ophoven, E. (1999). [Adaptation et validation en français d'un questionnaire d'attitudes vis-à-vis de la douleur chronique: étude préliminaire]. *Douleur et Analgésie, 12* (4), 299-303.

Gustafsson, M. & Gaston-Johansson, F. (1996). Pain intensity and health locus of control: A comparison of patients with fibromyalgia syndrome and rheumatoid arthritis. *Patient Education and Counseling, 29* (2), 179-188.

Hauser, W., Zimmer, C., Felde, E. & Kollner, V. (2008). What are the key symptoms of fibromyalgia? Results of a survey of the German Fibromyalgia Association. *Schmerz, 22* (2), 176-183.

Jensen, M. P. (2003). Questionnaire validation: a brief guide for readers of the research literature. *Clinical Journal of Pain, 19* (6), 345-352.

Jensen, M. P., Karoly, P. & Huger, R. (1987). The development and preliminary validation of an instrument to assess patient´s attitudes toward pain. *Journal of Psychosomatic Research, 31*, 393-400.

Jensen, M. P., Keefe, F. J., Lefebvre, J. C., Romano, J. M. & Turner, J. A. (2003). One- and two-item measures of pain beliefs and coping strategies. *Pain*, *104* (3), 453-469. doi:10.1016/S0304-3959(03)00076-9.

Jensen, M. P., Romano, J. M., Turner, J. A, Good, A. B. & Wald, L. H. (1999). Patient beliefs predict patient functioning: further support for a cognitive-behavioural model of chronic pain. *Pain*, *81* (1-2), 95-104. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10353497.

Jensen, M. P., Turner, J. A. & Romano, J. M. (2007). Changes after multidisciplinary pain treatment in patient pain beliefs and coping are associated with concurrent changes in patient functioning. *Pain, 131*, 38-47.

Jensen, M. P., Turner, J. A., Romano, J. M. & Lawler, B. (1994). Relationship of pain-specific beliefs to chronic pain adjustment. *Pain, 57*, 301-309.

Kurita, G. P., Sjøgren, P., Juel, K., Højsted, J. & Ekholm, O. (in press). The burden of chronic pain: a cross-sectional survey focussing on diseases, immigration, and opioid use. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22959600

Lefebvre, M. F. (1981). Cognitive distortion and cognitive errors in depressed psychiatric and low back pain patients. *Journal of Consulting and Clinical Psychology*, *49* (4), 517-525. doi:10.1037/0022-006X.49.4.517

Mccarberg, B., Wolf, J., Oliver, K., Fakhry, F., Walen, H. & Cronan, T. (2002). The relationship between health locus of control and well-being in fibromyalgia patients. *Journal of Pain, 3*, 14-14.

Mease, P., Arnold, L. M., Bennett, R., Boonen, A., Buskila, D., Carville, S., Chappell, A., Choy, E., Clauw, D., Dadabhoy, D., Gendreau, M., Goldenberg, D., Littlejohn, G., Martin, S., Perera, P., Russell, I. J., Simon, L., Spaeth, M., Williams, D. & Crofford L. (2007). Fibromyalgia syndrome. *Journal of Rheumatology*, *34* (6), 1415-1425.

Mease, P. J., Arnold, L. M., Crofford, L. J., Williams, D. A., Russell, I. J., Humphrey, L., Abetz, L. & Martin, S. A. (2008). Identifying the clinical domains of fibromyalgia: contributions from clinician and patient Delphi exercises. Arthritis & Rheumatology, *59* (7), 952-960.

Pastor, M. A., Salas, E., Lopez, S., Rodriguez, J., Sanchez, S. & Pascual, E. (1993). Patients' beliefs about their lack of pain control in primary fibromyalgia syndrome. *British Journal of Rheumatology*, *32* (6), 484-489.

Pimenta, C. A. M. & Cruz, D. A. L. M. (2006). Crenças em dor crônica: validação do Inventário de Atitudes frente à Dor para a Língua Portuguesa. *Revista da Escola de Enfermagem da USP*, *40* (3), 365-373.

Pimenta, C. A. M., Kurita, G. P., Silva, E. M. & Cruz, D. A. L. M. (2009). Validity and reliability of the Survey of Pain Attitudes (SOPA-28 items) in the portuguese language. *Revista da Escola de Enfermagem da USP*, *43* (spe), 1071-1079. http://dx.doi.org/10.1590/S0080-62342009000500011.

Podichetty, V. K., Weiss, L. T., Fanciullo, G. J. & Baird, J. C. (2007). Web-based health survey systems in outcome assessment and management of pain. *Pain Medicine, 8* (3), 189-98.

Ruiz Pérez, I., Ubago Linares, M. C., Bermejo Pérez, M. J., Plazaola Castaño, J., Olry de Labry-Lima, A. & Hernández Torres, E. (2007). Diferencias en características sociodemográficas, clínicas y psicológicas entre hombres y mujeres diagnosticados de fibromialgia. *Revista Clínica Española, 207* (9), 433-439. doi:10.1157/13109832

Stroud M. W., Thorn B. E., Jensen M. P., Boothby J. I. (2000). The relation between pain beliefs, negative thoughts, and psychosocial functioning in chronic pain patients. *Pain, 84* (23), 347-352.

Tait, R. C. & Chibnall, J. R. (1997). Development of a brief version of the Survey of Pain Attitudes. *Pain*, *70*, 229-235.

Tugwell, P., Boers, M., Brooks, P., Simon, L., Strand, V. & Idzerda, L. (2007). OMERACT: An international initiative to improve outcome measurement in rheumatology. *Trials, 8* (38). doi:10.1186/1745-6215-8-38

Turner, J. A., Jensen, M. P. & Romano, J. M. (2000). Do beliefs, coping, and catastrophizing independently predict functioning in patients with chronic pain? *Pain, 85*, 115-125.

Turk, D. C., Okifuji, A., Starz, T. W. & Sinclair, J. D. (1996). Effects of type of symptom onset on psychological distress and disability in fibromyalgia syndrome patients, *Pain*, *68* (2), 423-430.

Turk, D. C. & Gatchel, R. J. (2002). *Psychological Approaches to Pain Management: A Practitioner's Handbook (2nd ed.)*. New York: Guilford.

Tuzun, E. H., Albayrak, G., Eker, L., Sozay, S. & Daskapan, A. (2004). A comparison study of quality of life in women with fibromyalgia and myofascial pain syndrome. *Disability and Rehabilitation, 26* (4), 198-202.

Varrassi, G. & Müller-Schwefe, G. H. H. (2012). The international CHANGE PAIN physician survey: does specialism influence the perception of pain and its treatment? *Current Medical Research and Opinion, 28* (5), 823-831.

Williams, D. A., Clauw, D. J. (2009). Understanding fibromyalgia: Lessons from the broader pain research community. *Journal of Pain, 10* (8*)*, 777-791. doi:10.1016/j.jpain.2009.06.001

Williams, D. A. & Keefe, F. J. (1991). Pain beliefs and the use of cognitive-behavioral coping strategies. *Pain, 46* (2), 185-190.

Williams, D. A., Robinson, M. E. & Geisser, M. E. (1994). Pain beliefs: Assessment and utility. *Pain, 59*, 71-78.

Wolfe, F., Smythe, H. A., Yunus, M. B., Bennett, R. M., Bombardier, C. & Goldenberg, D. L. (1990). The American College of Rheumatology 1990 criteria for the classification of fibromyalgia: report of the Multicenter Criteria Committee. *Arthritis & Rheumatism., 33*, 160-72.

Wong, W. S., Jensen, M. P., Mak, K. H. & Fielding, R. (2011). Pain-related beliefs among Chinese patients with chronic pain: the construct and concurrent predictive validity of the Chinese version of the Survey of Pain Attitudes-14 (ChSOPA-14). *Journal of pain and symptom management*, *42* (3), 470-478. doi:10.1016/j.jpainsymman.2010.12.009