Predictors of the Pain Perception and Self-Efficacy for Pain Control in Patients with Fibromyalgia

Ana I. Sánchez, M. Pilar Martínez, Elena Miró, and Ana Medina

Universidad de Granada (Spain)

Objective: This study analyzes the role of a number of cognitive-affective dimensions in the experience and coping of pain in patients with fibromyalgia (FM). Specifically, it was examined whether anxiety, depression, pain catastrophizing and pain-related anxiety predict the pain perception and the self-efficacy expectations in these patients. *Method:* Seventy-four fibromyalgia patients were asked to complete a questionnaire survey including the *Chronic Pain Self-Efficacy Scale,* the *Hospital Anxiety and Depression Scale,* the *Pain Anxiety Symptoms Scale-20,* the *Pain Catastrophizing Scale,* and the *Short-form McGill Pain Questionnaire. Results:* Some relevant correlation and predicting patterns were identified. Physiological anxiety was the best predictor of the sensorial dimension of pain. Pain fear was a significant predictor of the pain intensity. Helplessness was the best predictor of the affective dimension of pain, whereas depression was a significant predicting variable of the self-efficacy expectations. *Conclusions:* This study shows the relevance of the pain-related anxiety in the pain perception, and of the depression in the self-efficacy expectations in FM patients. Clinical applications of the findings and further research lines in this area are discussed.
Keywords: fibromyalgia, anxiety, depression, catastrophizing, pain anxiety, self-efficacy expectations.

En este estudio se analiza el rol de diversas dimensiones cognitivo-afectivas en la experiencia y afrontamiento del dolor de personas con fibromialgia (FM). Específicamente, se examina si la ansiedad, la depresión, la catastrofización del dolor y la ansiedad ante el dolor predicen la percepción del dolor y las expectativas de autoeficacia en estos pacientes. Método: 74 pacientes con FM completaron una batería de cuestionarios entre los que se incluía el Cuestionario de Autoeficacia en Dolor Crónico, la Escala de Ansiedad y Depresión en el Hospital, la Escala de Síntomas de Ansiedad ante el Dolor-20, la Escala de Catastrofización del Dolor y la versión corta del Cuestionario de Dolor de McGill. Resultados: Se identificaron algunos patrones correlacionales y predictivos relevantes. La ansiedad fisiológica fue el mejor predictor de la dimensión sensorial del dolor. El miedo al dolor fue un predictor significativo de la intensidad del dolor. La indefensión fue el mejor predictor de la dimensión afectiva del dolor, mientras que la depresión fue una variable predictora significativa de las expectativas de autoeficacia. Conclusiones: Este estudio pone de manifiesto la relevancia de la ansiedad ante el dolor en la percepción del dolor y de la depresión en las expectativas de autoeficacia en pacientes con FM. Se discuten las aplicaciones clínicas de los resultados y se señalan futuras líneas de investigación en este área.
Palabras clave: fibromialgia, ansiedad, depresión, catastrofización, ansiedad ante el dolor, expectativas de autoeficacia.

Fibromyalgia (FM) is a chronic pain condition characterized by different symptoms, including chronic diffuse pain, and increased sensitivity to pain at certain characteristic points of the body. The etiology of FM is unknown. Studies performed in chronic pain patients, including FM sufferers, have highlighted the role performed by certain variables in pain perception, including most notably pain catastrophizing, fear of pain, expectations of self-efficacy, emotional alterations, and personality profiles (Hassett, Cone, Patella & Sigal, 2000; Pérez-Pareja et al., 2004; Samwel, Evers, Crul & Kraaimaat, 2006). In this last variable Herrero, Ramírez-Maestre and Gónzalez (2008) observed that certain clinical personality patterns were associated with poor adjustment to chronic pain.

The relationship between FM and psychological distress (anxiety and depression) has been studied by different researchers. Gormsen, Rosenberg, Bach and Jensen (2009) observed that chronic pain patients with FM and neuropathic pain (NP) had significantly more depression than healthy controls. However, very few patients were depressed according to Major Depression Inventory (MDI). Máñez, Fenollosa, Martínez-Azucena and Salazar (2005) when comparing FM patients with control subjects, observed significant differences in depression and also reported higher depression scores the more time had elapsed since diagnosis of FM. Hassett et al. (2000) reported higher total depression and cognitive depression scores in FM patients, compared with patients with rheumatoid arthritis (RA). Malt, Olafsson, Lund and Ursin (2002) also observed significantly higher depression scores in FM patients than in a control group, though in the last study the differences in depression between FM patients and RA patients were not significant. However, other studies have not found statistical differences in depression between patients with FM, patients with non-fibromyalgic chronic pain and healthy subjects (Pérez-Pareja et al., 2004).

Anxiety is another variable that has been studied, albeit to a lesser extent in literature. Pérez-Pareja et al. (2004) observed that FM patients displayed considerably higher levels of trait anxiety and physiology anxiety and motor anxiety than subjects with non-fibromyalgic chronic pain and healthy people (controls). White, Nielson, Harth, Ostbye and Speechle (2002) also reported higher levels of anxiety in FM patients compared with patients with non-fibromyalgic chronic pain. Finally, in a recent study Gormsen et al. (2009) observed that patients with FM had significantly higher scores than patients with NP in different subscales of anxiety.

The role of pain catastrophizing in pain perception has also been documented in literature. Several studies show that in *musculoskeletal* pain patients, pain catastrophizing is associated with a greater intensity of pain and disability, and that intervention aimed at reducing the alarming thoughts about pain is crucial for improvement (Rodero, García-

Campayo, Casanueva, & Sobradiel, 2008). It is postulated that adaptation to pain will depend, among other factors, on patients' belief in their capacity to control pain, as well as the strategies they use to manage pain. For example, it has been observed that catastrophic thoughts have an unfavourable influence on pain coping. Pain catastrophizing includes, among other symptoms, magnification, rumination and helplessness. Hassett et al. (2000) did not observe any differences in terms of pain perception between FM patients and RA patients. However, they did observe differences in catastrophizing according to the type of chronic pain. The scores of FM patients were higher than those observed in RA patients, and catastrophizing was also identified as the best predictor of pain perception.

More recently, Samwel et al. (2006) in a heterogeneous sample of patients with chronic pain, reported that while helplessness was the best predictor of pain level, helplessness and passive behavioural pain-coping strategies of resting significantly predicted disability. These authors also showed that worrying (passive cognitive pain-coping strategy) is the best predictor of depression. However, in the aforementioned study fear of pain was not a significant predictor of any of the variables evaluated. Turk, Robinson and Burwinkle (2004) reported that FM patients with greater fear of pain and activity also displayed greater incapacity, pain severity and depression symptoms, and were more likely to be diagnosed with a depressive disorder than patients with low fear of pain.

Finally, another cognitive variable of special interest in adaptation to pain are self-efficacy expectations. It has been hypothesized that person displaying a better perception of control of their pain display greater adaptation to pain and lower pain intensity. Specifically, it has been observed that in chronic pain patients (without depression), self-efficacy expectations were partially related between pain intensity and incapacity accounting for 47% of the variance in incapacity (Arnsteins, Caudill, Mandle, Norris, & Beasley, 1999). Sardá, Nicholas, Asghari and Pimenta (2009) reported that self-efficacy beliefs made a significant contribution to disability in patients with chronic pain. Finally, and also in a recent study Vallejo, Comeche, Ortega, Rodríguez and Díaz (2009) found that self-efficacy expectations are related negatively with the anxiety and depression.

Pain catastrophizing, pain severity, fear of pain, and escape/avoidance behaviour are some of the components of the fear-avoidance model of pain model proposed by Vlaeyen and Linton (2000). The pain-related fear is associated with pain catastrophizing, hypervigilance, increased escape and avoidance behaviors, as well as with intensified pain intensity and functional disability. According to the recent review by Leeuw et al. (2007) there is scientific support for this conceptual approach in chronic musculoskeletal pain problems. Different studies have highlighted the role of different cognitive-affective dimensions (Hassett et al.,

2000; Samwel et al., 2006; Turk et al., 2004) although results have not been as conclusive with respect to the relative weight of each of these dimensions in pain perception and coping in patients with chronic pain. This research study therefore had the following objectives:

1. Analyse whether pain perception was correlated with catastrophizing, pain anxiety, and emotional variables (anxiety and depression) and identify which of these variables predicted the experience of pain in FM patients.

2. Study the relationship between self-efficacy expectations and the variables of pain and emotional state, respectively, and also determine which of these variables predicted the self-efficacy expectations in FM patients.

Method

Participants and procedure

Seventy-four FM subjects (70 women and 4 men) from a fibromyalgia association (AGRAFIM) in Granada (Spain) were invited to participate in this study. The fulfilment of the following criteria was required for all participants: 1) age range from 18 to 65 years; 2) no history of alcoholism or drug addiction; and 3) current absence of cognitive impairment and psychotic ideation. Those subjects who met the mentioned criteria were asked to participate in a psychological study of the opinions of people in relation to pain problem. All the participants gave their signed consent to collaborate in the study. The mean age of the subjects was 46.54 years (SD = 8.13; range = 24-62). More than half the participants were unemployed at the time of the study. The mean duration of the illness was 4.11 years (SD = 3.07), although the mean onset of symptoms was greater (M = 10.35 years; SD = 8.19). 94.6% of the subjects were receiving pharmacological treatment, mainly analgesics, anxiolytics, anti-inflammatory, skeletal muscle relaxants and anti-depressants, and 93.2% also received other therapeutic strategies (physical exercise, acupuncture, oxygen therapy, psychotherapy).

Individual interviews were held with each participant in which socio-demographic information and data on pain were gathered, and different self-reports were completed. Interviews had an average duration of 45 minutes.

Measurements

Chronic Pain Self-Efficacy Scale (CPSS) (Anderson, Dowds, Pelletz, Edwards, & Peeters-Asdourian, 1995). The CPSS is a scale that measures efficacy expectations for coping with pain. The scale assesses three 3 factors: self-efficacy for pain management, self-efficacy for coping with symptoms, and self-efficacy for physical function. This

test offers good overall internal consistency and acceptable test-retest reliability (Anderson et al., 1995). For this study, the Spanish adaptation and validation proposed by Martín-Aragón et al. (1999) was used.

The *Hospital Anxiety and Depression Scale* (HAD) (Zigmond & Snaith, 1983). The HAD is a self-report rating scale of 14 items on a 4-point Likert scale (range 0 -absence of symptoms- to 3 -maximum symptomatology-). It consists of two 7-item subscales measuring depression and anxiety. The Spanish version of this scale offers good internal consistency and external validity (Herrero et al., 2003). For this study, the Spanish adaptation of the HAD scale proposed by Caro and Ibáñez (1992) was used.

The *Pain Anxiety Symptoms Scale-20* (PASS-20) (McCracken & Dhingra, 2002). The PASS-20 assesses four components of pain-related anxiety: fear of pain, cognitive anxiety, escape/avoidance behaviour, and physiology anxiety. This is a 20-item where subjects respond on a 6-point Likert scale ranging from 0 (never) to 5 (always). Coons, Hadjistavropoulos and Asmundson (2004) reported that this scale offered good reliability (internal consistency and test-retest). The Spanish translation of the PASS-20 scale was used by the authors in this research study. In the present study the Cronbach alpha of the PASS-20 was .88.

The *Pain Catastrophizing Scale* (PCS) (Sullivan, Bishop, & Pivik, 1995). The PCS assesses three factors: rumination, magnification and helplessness associated to pain. It includes 13 items measured on a 5-point Likert scale ranging from 0 (not at all) to 4 (all the time). This scale offers high internal reliability (Sullivan et al., 1995). The Spanish translation of the PCS was made by the authors of this research study. The Cronbach alpha of the PCS was .93. Recently, García-Campayo et al. (2008) reported that this Spanish version of the PCS shows appropriate psychometric properties, similar to the English original scale.

Short-form McGill Pain Questionnaire (SF-MPQ) (Melzack, 1987). This consisted of 15 descriptors of the pain experience (11 sensory and 4 affective), as well as a visual analogue scale to quantify pain intensity during the last week according to a scale of 1 (without pain) to 10 (extreme pain). Several studies have reported the reliability and validity of the Spanish version of the MPQ (e.g., Lázaro et al., 2001).

Data analyses

The SPSS-14.0 statistical package was used to carry out the analyses. Pearson's correlation coefficient was employed to study the relationships between the different variables selected. Additionally, a series of stepwise multiple linear regression analyses were performed to identify which of the pain cognitive-affective dimensions (PASS-20 and PCS) and emotional distress (HAD) predicted pain perception (SF-MPQ), and to identify which of the emotional (HAD) and pain variables (SF-MPQ, PASS-20 and PCS) predicted self-efficacy expectations (CPSS).

Results

Descriptive statistics

Table 1 shows a summary of the descriptive statistics of the variables included in the study. When comparing the average scores with the cut-off scores of the HAD (Zigmond & Snaith, 1983) (greater than or equal to 11 clinical problems), it was concluded that in the case of depression ($M = 9.20$) no clinical problems were observed. However, in this study the scores for anxiety were within the range of clinical problems ($M = 11$).

With regard to the PCS, the FM patients obtained a mean score in the PCS total (25.35) slightly higher to that observed by García-Campayo et al. (2008) in a sample of FM patients selected from primary care centers (24.42). In the PASS-20, the FM patients obtained a mean score higher in both subscales and total score on the PASS-20 to that observed by Roelofs et al. (2004) in a Dutch sample of FM patients.

The FM patients obtained a mean score in the global scale of CPSS (88.56) lightly higher to that of a Spanish sample composed by FM women from a Rheumatology Service (72.96) (Martín-Aragón et al., 2001). Finally, the mean scores of the FM group in pain intensity, sensory and affective dimensions (SF-MPQ) were higher than those observed by Menzies, Taylor and Bourguignon (2006).

Correlational analyses

Table 2 shows the results of the correlation analysis between the different study variables. In terms of pain perception, the data revealed a significant correlation between the sensorial dimension and all the PASS-20 subscales (r between .39 and .52, $p < .01$), with the exception of the escape/avoidance behaviour subscale, as well as all the PCS subscales (r between .24 and .43, $p < .01$). Similar results were obtained for the affective dimension, also revealing significant correlations with all

Table 1

Means (M) and standard deviations (SD) of the FM sample in the variables analysed

Variables	Fibromyalgia subjects n = **74** M (SD)
SF-MPQ	
Sensory	17.10 (7.65)
Affective	6.15 (3.76)
Pain intensity (VAS)	7.38 (1.65)
PASS-20	
Fear of pain	10.07 (6.01)
Cognitive anxiety	16.22 (5.17)
Escape/avoidance behaviour	13.59 (4.77)
Physiology anxiety	12.42 (5.90)
PASS-20-total	52.42 (17.4)
PCS	
Rumination	9.28 (4.28)
Magnification	4.62 (2.94)
Helplessness	11.45 (5.81)
PCS-total	25.35 (11.8)
CPSS	
Self-efficacy for coping with symptoms	42.04 (16.90)
Self-efficacy for physical function	33.24 (15.86)
Self-efficacy for pain management	12.54 (9.27)
CPSS-total	88.56 (35.42)
HAD	
Anxiety	11 (4.52)
Depression	9.20 (4.74)

Abbreviated version of the McGill Pain Questionnaire (SF-MPQ); Pain Anxiety Symptoms Scale-20 (PASS-20); Pain Catastrophizing Scale (PCS); Chronic Pain Self-Efficacy Scale (CPSS); Hospital Anxiety and Depression Scale (HAD)
** $p < .01$

the PASS-20 subscales (*r* between .37 and .45, *p* < .01), except the escape/avoidance behaviour subscales and with all the PCS subscales (*r* values between .34 and .55, *p* < .01). The pain intensity was significantly correlated with all the PASS-20 subscales (*r* between .38 and .48, *p* < .01), with the exception of the escape/avoidance behaviour subscale, and also correlated with helplessness (*r* = .37, *p* < .01) and PCS total (*r* = .28, *p* < .01). Lastly, all the SF-MPQ dimensions obtained significant correlations with the emotional variables (*r* between .23 and .42, *p* < .01).

Self-efficacy expectations coping with symptoms were negatively and significantly correlated with pain-related anxiety of the PASS-20 (*r* between -.22 *p* < .05, and -.48, *p* < .01), catastrophizing (*r* between -.23 and -.44, *p* < .05), pain perception (*r* between -.40 and -.45, *p* < .01), and emotional discomfort (*r* = -.50 and -.61, *p* < .01). In terms of self-efficacy expectations for physical function, similar results were observed to those obtained previously; specifically, significant negative correlations between this variable and pain-related anxiety (*r* values between -.25 and -.48, *p* < .01), catastrophizing (*r* between -.30 and -.50. *p* < .01), pain perception (*r* between -.36 and -.48, *p* < .01) and emotional discomfort (*r* = -.35 and *r* = -.53, *p* < .01).

Finally, the results showed significant negative correlations between self-efficacy for pain management and fear of pain (*r* = -.22, *p* < .05) helplessness (*r* = -.22, *p* < .05), affective description of pain (*r* = -.39, *p* < .01), pain intensity (*r* = -.31, *p* < .01) and depression (*r* = -.43, *p* < .01).

Predictive analyses

Table 3 shows the results of the regression analyses performed to predict the perception of the pain and the self-efficacy expectations.

First, and in order to determine which of the cognitive-affective dimensions (PASS-20 and PCS) and emotional distress (HAD) predicted pain perception (SF-MPQ), the stepwise multiple linear regression analysis was performed (see Table 3). The potential predictor variables selected were those that displayed significant correlations with pain perception. The results showed that physiology anxiety of the PASS-20 was the significant predictor of the sensorial description of pain, accounting for 25% of variance. In terms of the affective description of pain, the significant predictor was helplessness, accounting for 28% of variance, and finally, in terms of pain intensity, the results showed

Table 2
Pearson's correlation coefficient between the different variables analysed in the study

VARIABLES	SF-MPQ Sensory	SF-MPQ Affective	SF-MPQ Pain intensity (VAS)	CPSS Self-efficacy for coping with symptoms	CPSS Self-efficacy for physical function	CPSS Self-efficacy for pain management
PASS-20						
Fear of pain	.39**	.38**	.48**	-.48**	-.43**	-.22*
Cognitive anxiety	.39**	.37**	.38**	-.36**	-.48**	-.15
Escape/avoidance behaviour	.19	.18	.07	-.22*	-.25*	-.07
Physiology anxiety	.52**	.45**	.40**	-.41**	-.36**	-.13
PASS-20 total	.48**	.44**	.43**	-.46**	-.47**	-.18
PCS						
Rumination	.37**	.41**	.12	-.24*	-.34**	-.05
Magnification	.24**	.34**	.22	-.23*	-.30**	-.11
Helplessness	.43**	.55**	.37**	-.44*	-.50**	-.22*
PCS total	.41**	.51**	.28**	-.36**	-.44**	-.15
HAD						
Anxiety	.40**	.34**	.31**	-.50**	-.35**	-.16
Depression	.23**	.31**	.42**	-.61**	-.53**	-.43**
SF-MPQ						
Sensory				-.40**	-.36**	-.16
Affective				-.43**	-.48**	-.39**
Pain intensity (VAS)				-.45**	-.41**	-.31**

Pain Anxiety Symptoms Scale-20 (PASS-20); Pain Catastrophizing Scale (PCS); Abbreviated version of the McGill Pain Questionnaire (SF-MPQ); Hospital Anxiety and Depression Scale (HAD); Chronic Pain Self-Efficacy Scale (CPSS)
* *p* < .05; ** *p* < .01

that fear of pain of the PASS-20 was a significant predictor, accounting for 22% of variance.

To determine whether catastrophizing, pain-related anxiety, emotional discomfort and pain intensity predicted self-efficacy expectations, the stepwise multiple linear regression analysis was also performed. In terms of expectations of self-efficacy for coping with symptoms, the significant predictors were depression and pain intensity, both factors accounting for 41% of variance. Depression and total PASS-20 were the significant predictors of self-efficacy for physical function, accounting for 31% of variance. Finally, the significant predictor of self-efficacy for pain management was depression, accounting for 18% of variance.

Discussion

The results of the correlational analysis in FM patients showed that pain perception, both the sensorial and the affective dimensions (SF-MPQ) were significantly correlated with pain-related anxiety (PASS-20) and catastrophizing (PCS), revealing that both negative catastrophic thoughts of pain and fear of pain made patients' experience of pain more intense, unpleasant and aversive. Gracely et al. (2004) found that patients with FM with high scores in catastrophizing scored significantly higher in all the dimensions of the SF-MPQ. In terms of pain intensity, the results showed significant correlations, although in this case not with all the subscales of the tests applied; specifically,

with fear of pain, cognitive anxiety, physiology anxiety, and helplessness. One noteworthy finding was that escape/avoidance behaviour was not correlated with any of the pain dimensions evaluated, despite this being an important component in the fear avoidance model (Leeuw et al., 2007), which may indicate that despite the intensity and severity of pain and the limitations it may cause in the life of patients, the latter do not adopt escape/avoidance behaviour.

The emotional variables (anxiety and depression) significantly correlated with pain perception, revealing a positive relationship between emotional discomfort experienced by patients, and severity and pain intensity; hence, the greater the anxiety and depression, the more intense the pain experienced by the patient.

As regards the regression analyses, physiology anxiety was the significant predictor of the sensorial dimension, while helplessness was the significant predictor of the affective dimension. Finally, the analysis showed that fear of pain was the predictor of pain intensity. De Gier, Peters and Vlaeyen (2003) observed that patients with high scores in fear of pain expressed greater monitoring of pain, catastrophizing, incapacity, negative emotions and severity of pain, than the patients with low fear of pain. At the same time, fear of pain was associated with an increase in pain, and the severity of pain.

Lastly, the results showed significant negative relationships between self-efficacy expectations and the emotional variables analysed. Similar results were found for Vallejo et al. (2009); in other words, the greater the anxiety

Table 3

Regression analyses to predict emotional state and pain variables

Independent variable	Adjusted R^2	F	β	t
Dependent variable: Sensory dimensions				
Physiology anxiety	.25	24.46***	.51	4.95***
Dependent variable: Affective dimensions				
Helplessness	.28	28.87***	.54	5.42***
Dependent variable: Pain intensity				
Fear of pain	.22	20.98***	.48	4.58***
Dependent variable: Self-efficacy for coping with symptoms				
1.- Depression	.36		-.51	-5.18***
2.- Pain intensity	.41	25.62***	-.25	-2.51*
Dependent variable: Self-efficacy for physical function				
1.- Depression	.25		-.36	-3.23**
2.- PASS-20 total	.31	16.8***	-.30	-2.76**
Dependent variable: Self-efficacy for pain management				
Depression	.18	16.49***	-.43	-4.12***

* $p < .05$; ** $p < .01$; *** $p < .001$

Pain Anxiety Symptoms Scale-20 (PASS-20)

Note: The F and *beta* values are from the last model.

and depression, the fewer expectations patients had about being able to control their symptoms, pain and physical function, although depression was significantly correlated with expectations regarding pain control. Additionally, patients with fewer expectations about controlling their symptoms and physical function expressed greater intensity and severity of pain, greater anxiety of pain and greater catastrophizing. Some differences were observed regarding their expectations in terms of pain management; specifically, this variable was only correlated with the affective dimension of pain, pain intensity, depression, fear of pain, and helplessness.

In the case of self-efficacy expectations for coping with symptoms, depression and pain intensity were identified as predictors. For the self-efficacy expectations for physical function, depression and the total PASS-20 were identified as significant predictors. Finally, in self-efficacy expectations for pain management, the results showed that depression was a significant predictor, revealing the close relationship between symptoms of depression and the perception of self-efficacy in FM patients. Arnsteins et al. (1999) observed that both pain intensity and self-efficacy contribute to the development of incapacity and depression in chronic pain patients; in other words, the lack self-efficacy expectations for pain management, as well as being able to function despite persistent pain, is a significant predictor of the degree of incapacity and/or disability, as well as depression in chronic pain patients. Despite the foregoing, these mediators do not eliminate the strong impact of high pain intensity on incapacity and depression. Martín-Aragón et al. (2001) observed that self-efficacy expectations were negatively and significantly correlated with pain, anxiety and depression. Nelson and Tucker (2006) reported a significant and negative correlation between depression and the self-efficacy for pain management subscale.

As a final conclusion, it is worth noting the relevance of anxiety pain compared with other variables in the perception of pain of FM patients, and the depression in the self-efficacy of the patients. Additionally, and as the results showed, anxiety scores were clinically significant, although not in the case of depression, which was essential with respect to psychological intervention of the patients. Another noteworthy aspect worth analysing in greater depth in future research is the fact that the emotional state of patients with FM did not seem to influence the escape activities or conduct that they may adopt, and these types of behaviour were not correlated with any of the dimensions of pain evaluated. Given the relevance of these factors in the pain experience, future research could also be focused on analyzing if the association between pain-related anxiety and pain perception is mediated by pain catastrophizing, and if pain catastrophizing and pain-related fear mediate the relationship between depression and self-efficacy expectations in FM patients.

It is important to recognise various additional limitations in the interpretation of the results obtained in this study. Firstly, the FM patients in the sample were selected from an association, although all the patients had been diagnosed with FM either by either a Pain Unit or a Rheumatology Unit. Only self-report measures were used. This was also a transversal study, which meant that causal relationships could not be established.

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