




Fibromyalgia and nonfibromyalgia chronic pain: Differences in psychological characteristics and treatment outcomes

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Abstract

The aim of this study was to explore differential psychological profiles among patients with chronic pain with and without fibromyalgia, and to determine the results of the cognitive behavioral therapy (CBT) for pain. Thirty patients with chronic pain and 60 patients with fibromyalgia were referred to 10 weekly sessions of CBT in a general hospital and were evaluated in pain-related variables, psychopathological symptoms, coping strategies, resilience, and quality of life. The program was implemented in specific groups for patients with fibromyalgia and nonfibromyalgia chronic pain. After the intervention, patients with fibromyalgia showed higher levels of psychopathology, rated their health status as poorer, and presented larger amplification of symptoms, higher levels of somatization, a more ruminating style of thinking and greater distress. Patients without fibromyalgia achieved better therapeutic results in both pain intensity ($d = 0.39$ vs. $d = 0.12$) and psychopathological distress ($d = 0.77$ vs. $d = 0.11$) compared to patients with fibromyalgia. Therefore, differential profiles and limited therapeutic results in fibromyalgia patients suggest the need to outline differentiated treatments and include other therapeutic strategies.

KEYWORDS

chronic pain, cognitive behavioral therapy, fibromyalgia, treatment outcomes

INTRODUCTION

Chronic pain affects one in five Europeans (19%), with a prevalence in Spain of 11% (Breivik et al., 2006). It is one of the main causes of medical consultation, it affects women more than men, of working age, and it is associated with high personal, social, and economic costs (Hayes et al., 2012).

The psychological repercussions of chronic pain are diverse, such as sleep disturbances, high levels of anxiety and depression (Woo, 2010), and alterations in social relations (Lledó et al., 2013) and economic repercussions.

There are various pathologies that cause chronic pain, such as migraine, lower back pain, osteoarthritis, rheumatoid arthritis, fibromyalgia, and so on, but few studies have established differential profiles among the various patients who have chronic pain (Porter-Moffitt et al., 2006).

From a psychopathological viewpoint, fibromyalgia, included in rheumatic disorders that present chronic pain, seems

to have some differential characteristics when compared to the other pathologies accompanied by pain, such as arthritis, lumbago or lower-back pain, lupus, osteoarthritis, and rheumatoid arthritis (Carmona et al., 2016). Patients with fibromyalgia are characterized by widespread musculoskeletal pain with no tissue damage or inflammation. This seems to be more related to an abnormal response of the nervous system to peripheral stimulation, which is why it is considered a central sensitization syndrome. In addition to pain, patients with fibromyalgia have sleeping problems, fatigue, demotivation, cognitive difficulties, and various somatic symptoms (Gelonch et al., 2013).

When comparing patients with chronic pain with and without fibromyalgia, the former have reported higher levels of pain and dysfunction, more somatic complaints, more psychopathological symptoms of anxious hypersensitivity, rate their lives as poorer, and on many occasions, they settle in a sick-role seeking the recognition of others (Pérez-Pareja et al., 2010). Thus, patients with fibromyalgia have physical and functional

difficulties similar to patients with lower back pain, lower limb pain, and chest pain, but they have more psychosocial problems (Porter-Moffitt et al., 2006).

In a recent comparative study conducted in Brazil with patients with knee osteoarthritis, chronic lumbago or lower back pain, and fibromyalgia (Oliveira et al., 2019), patients in the latter condition had a greater pain intensity and spread as well as worse quality of life than did patients in the other two groups; additionally, they presented more affective symptoms. Therefore, this differential profile of people with fibromyalgia and nonfibromyalgia chronic pain should certainly be taken into consideration when designing specific interventions for this population.

From a therapeutic viewpoint, cognitive behavioral therapy (CBT) has shown its effectiveness in the treatment of chronic pain—both associated or not associated with fibromyalgia—in various studies, although the size of the effect was moderate (Eccleston & Crombez, 2017; Ehde et al., 2014). It also appears that the long-term results are worse if the chronic pain is associated with fibromyalgia (Glombiweski et al., 2010; Hauser et al., 2009).

There are hardly any comparative studies of the effectiveness of CBT according to the profile of patients with chronic pain and based on whether it is associated or not associated with fibromyalgia and levels of psychopathology (Martinez et al., 2021). In a recent meta-analysis of randomized controlled trials, on the treatment of chronic pain, Khoo et al., 2019 found 13 studies on the effectiveness of CBT compared to a control group, seven studies on mindfulness-based therapy compared to a control group, and only one study compared the two therapeutic strategies. The results showed no significant differences between the two types of therapy, and neither are there any comparative studies depending on the type of pain, with or without fibromyalgia.

PURPOSE OF THE PRESENT STUDY

Therefore, considering the aforementioned information, the purpose of this study was twofold: (a) to explore the differential psychopathological profile among patients with fibromyalgia and nonfibromyalgia chronic pain, and (b) to determine the results of a hospital-based cognitive behavioral treatment, specifically designed for chronic pain, on patients with fibromyalgia and nonfibromyalgia chronic pain. In this regard, we hypothesized that fibromyalgia patients would present higher levels of psychopathology as well as worse therapeutic results than would patients with nonfibromyalgia chronic pain.

METHOD

Sample

The convenience sample consisted of patients with nononcological chronic pain referred from the Rheumatology Services of the Hospital of Zumarraga (Guipúzcoa) to the psychological

treatment program during 2016, 2017, and 2018. The hospital's rheumatologists were informed about the implementation of a CBT program for chronic pain in routine care. They were requested to refer patients who met the following criteria: (a) were 18 years old or older; (b) presenting chronic pain for over a 6-month period; (c) not suffering current severe comorbid medical conditions; (d) not suffering from a severe mental illness (psychosis, bipolar disorder, major depressive disorder) nor an addictive disorder; (e) being able to complete the questionnaires; and (f) not in psychological treatment.

Patients who were referred received an explanation of the treatment program, and informed consent was obtained. Patients met the admission criteria, 30 of which presented with a diagnosis of chronic pain not associated with fibromyalgia and constituted a mixed group (mainly arthritis, cervical pain, lower back pain, sciatica, spondylitis, lupus, and consequences of spinal operations); 60 patients presented with fibromyalgia. Subsequently, assessment questionnaires were applied before starting the treatment. Psychological treatment was then applied and reevaluated in posttreatment. Both the assessment and the treatment were carried out by a doctor in psychology with experience in group treatments and training in CBT. All procedures performed in this study were in accordance with the ethical standards of the Research Committee of Euskadi (CEIm-E#PI201862) and with the 1964 Helsinki Declaration and its later amendments.

Measures

Demographic and pain-related variables

Each participant was asked to provide information about several demographic and pain-related variables such as age, civil status, work status, duration of pain, medications, family relations, and self-perceived health.

Pain severity

The McGill Pain Questionnaire (MPQ, Spanish version, Lazaro et al., 1994) measures of pain severity with chronic pain patients. It consists primarily of three types of descriptors—sensory words, affective words, and evaluative words—which are used by patients to specify subjective pain experience. It also contains an intensity scale and other items to determine the properties of pain experience; the higher the score, the higher the pain intensity. The MPQ has been found to offer adequate psychometric guarantees, and preliminary analyses carried out with the Spanish adaptation has indicated very similar reliability and validity results to those of the original questionnaire.

The Lattinen Index (González-Escalada et al., 2012) consists of five Likert-type subscales which score from 0 to 4 for the following items: Pain Intensity, from 0 (*no pain*) to 4 (*unbearable*), Pain Frequency, from 0 (*no*) to 4 (*continuous*), Use of Painkillers, from 0 (*no*) to 4 (*a lot*), Degree of Incapacity, from 0 (*none*) to 4 (*total*), and Hours of Sleep,

from 0 (*as usual*) to 4 (*need of hypnotics*) in addition to a total score; the higher the score, the worse the assessment of the pain. The average score for the Spanish validation of the Lattinen Index is 11.73. Internal and temporal consistency analyses showed α coefficients of $>.70$ and an intraclass correlation coefficient of $>.85$, respectively. This questionnaire was applied with fibromyalgia patients instead of the MPQ at the request of the hospital's rheumatologists.

Psychopathological symptoms

The Brief Symptom Check List (LSB-50; De Rivera & Abuín, 2012) contains nine clinical scales (psychoreactivity, hypersensitivity, obsession-compulsion, anxiety, hostility, somatization, depression, sleep disturbance, expanded sleep disturbance), a psychopathological risk index, three global indices (frequency of symptoms, intensity, and global impact), and two validity scales (minimization and magnification). It consists of 50 descriptive items on various psychological and psychosomatic symptoms. Higher scores indicate high levels of psychopathological distress. Alpha coefficients range from $.79$ to $.90$. The scale has normative data for the general and clinical population.

Coping strategies

The Chronic Pain Coping Questionnaire (CAD; Soriano & Monsalve, 2002) is a 31-item questionnaire that assesses various pain-coping strategies such as religion (Items 1–5), catharsis (Items 6–10), distraction (Items 11–16), mental self-control (Items 17–21), self-affirmation (Items 22–26), and search for information (Items 27–30) that are rated on a scale of 0 (*totally disagreeing*) to 4 (*fully agreeing*). Internal consistency coefficients ranged from $.94$ to $.77$. Distraction, Information-Seeking, Self-Control, and Self-Affirmation scales relate to active coping strategies and the scales of Religion and Catharsis or Emotional Support to passive coping strategies that relate to an increased pain intensity.

Resilience

The Spanish adaptation of the Connor-Davidson Resilience Scale (Crespo et al., 2014) consists of 25 items that are rated on a scale of 0 (*not at all*) to 4 (*almost always*). The score ranges from 0 to 100; the higher the score, the greater the resilience. The average score for a sample of caregivers to the dependent elderly suffering chronic stress was 63.84 ($SD = 14.61$, Cronbach's $\alpha = .89$).

Health-related quality of life

The Medical Outcomes Survey 36-item Short-Form Survey (SF-36, Spanish version, Vilagut et al., 2008) is a 36-item questionnaire that assesses health-related quality of life, both

physical and mental, from the point of view of the healthcare recipient. It has eight different scales, as well as two standardized summary scales, the Mental Component scale (MCS) and the Physical Component scale (PCS). Both the MCS and the PCS correspond, respectively, to patients' overall sense of mental and physical well-being. The SF-36 has been found to have high test-retest reliability coefficients, and examination of internal consistency has found Cronbach's α exceeding $.70$ and usually above $.80$.

The SF-12 Questionnaire (Spanish version, Vilagut et al., 2008) was used for fibromyalgia patients. It is composed of 12 items that assess the degree of well-being and functional capacity, based on eight dimensions regarding physical and mental health. The score ranges from 0 to 100. The internal consistency for the physical dimension is $.63$ and the mental dimension $.72$; the higher the score, the higher the quality of life.

Psychological treatment

All participants underwent a CBT program at Zumarraga Hospital, consisting of 10 weekly 1½ hr sessions of group CBT. Groups consisted of 6–8 patients and a therapist. Therapy was implemented in specific groups for patients with fibromyalgia and with chronic nonfibromyalgia pain, without mixing them. The treatment was carried out following the manual for chronic pain of Moix and Kovacs (2009) which describes the content of each of the sessions. Its main components are briefly described next:

- Session 1: psychoeducation on pain, CBT, and group rules
- Session 2: breathing and relaxation training
- Session 3: attention management, distraction, and imagination
- Sessions 4 and 5: cognitive restructuring
- Session 6: problem-solving
- Session 7: assertiveness
- Session 8: values and setting targets
- Session 9: time management and positive activities
- Session 10: physical exercise, postural hygiene, sleep, and relapse prevention.

Each session begins with the review of homework and provides patients with reading material as well as audio material with relaxation and breathing exercises. All participants continued to receive usual medical care throughout the intervention.

Design

This study uses a cross-sectional descriptive design to assess and compare the psychopathological profile of patients with fibromyalgia and nonfibromyalgia chronic pain. In addition, a pre-/postdesign was used to assess and compare the impact of CBT on participants. All subjects gave written informed

consent to participate in the study in accordance with the Declaration of Helsinki, and the Research Ethics Committee approved the study.

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS, Version 23). Data were first explored using descriptive statistics: means and *SD*s for quantitative variables, and frequencies and percentages for qualitative variables. Differences between two groups were analyzed using a χ^2 test (or Fisher's test where $n < 5$) for categorical variables and *t* test for independent measures. The Kramer's *V* and the Hedges' *g* were calculated to estimate the magnitude of the differences between groups. Within-group differences between pre- and posttreatment were explored through *t* test for repeated measures, and the standardized change score index (Morris & De Shon, 2002) was carried out to calculate effect sizes.

RESULTS

Differential profile

The sample consisted of 90 subjects, 80 women (88%), with a mean age of 58.17 in the nonfibromyalgia group and 54.83 in the fibromyalgia group. Most are married or coupled, have children, and have completed primary or secondary education. There were no differences between the two groups regarding the various sociodemographic variables that were assessed.

Regarding health, fibromyalgia patients perceived their health as worse and used statistically significantly more tobacco. There were no differences regarding the use of opiates nor the years since diagnosis, which were mostly more than 10 (Table 1).

For pain assessment, patients with chronic pain presented an average pain intensity score on the McGill scale of 2.65 (*SD* = 1.09). Patients with fibromyalgia presented a score on the Lattinen scale that was above the average of the Spanish validation study (13.66 vs. 11.73).

From a psychopathological standpoint, and comparing the results of LSB-50 with the normative data from the general population, scores in both groups were above the 85th percentile on the Clinical scales, on the 45th percentile on the Magnification scale, and on Percentile 1 in minimization, which means very high use of somatosensory amplification. Compared to the clinical normative data, scores of the chronic pain group were around the 45th percentile, and yet the scores in the group with fibromyalgia are around the 55th percentile, with equivalent scores in somatization on the 70th and on the 60th percentiles for obsession-compulsion (related to a ruminating style of thinking).

Regarding the differential psychopathological profiles, people with fibromyalgia presented with a higher symptom magnification pattern, $t = 2.62$, $p > .01$, more rumination, $t = 2.43$, $p > .01$, more anxiety, $t = 2.03$, $p < .04$, and more somatization, $t = 4.24$, $p < .00$ than did patients with chronic nonfibromyalgia pain. In addition, they had a higher number of symptoms, $t = 2.54$, $p < .01$, as well as a higher overall psychopathological index, $t = 2.03$, $p > .04$. These differences between the two groups of patients are

moderate in size, except in somatization, with a large size difference (Figure 1).

There were no differences in the pain coping strategies used between the two samples. The most commonly used strategy by patients in both groups was self-affirmation, and the least used was mental self-control.

Regarding resilience, patients with chronic nonfibromyalgia pain had higher scores, although without significant differences as compared to the fibromyalgia group. However, comparing the average score obtained by the study participants, with the average sample score of the Spanish adaptation ($M = 63.84$), the patients in the study had a lower level of resilience.

Taking into consideration the quality of life related to health, the scores of patients with nonfibromyalgia chronic pain were around the 90th percentile for the physical component, and around the 20th percentile for the mental component. For fibromyalgia patients, scores were around the 10th percentile for the physical component and the 20th percentile for the mental component—always in relation to scores for the general Spanish population (Table 2; Vilagut et al., 2008).

Treatment outcome

First, note that there were no differences in the treatment dropout rate between nonfibromyalgia chronic pain and fibromyalgia patients, which were 6 and 16, respectively, $\chi^2(1) = 0.48$, $p = .48$, $V = 0.07$.

Regarding the efficacy of the therapy, patients with chronic pain presented improvements on the McGill scale when assessing pain and the intensity of pain, which was reduced after treatment with a moderate effect size, $d = -.39$. From a psychopathological standpoint, they improved in psychoreactivity, $d = -.61$, hypersensitivity, $d = -.46$, somatization, $d = -.44$, depression, $d = -.72$, sleep disturbances, $d = -.43$, as well as in the intensity and overall index of symptoms, $d = -.77$, with a moderate to large effect size. They used more self-affirmation strategies after the treatment, $d = .48$, and increased their quality of life related to health, with this improvement greater in the mental component, $d = .75$. The effect of the cognitive behavioral treatment in this group of patients was moderate to large in size (Table 3).

Patients with fibromyalgia had a different improvement pattern: Sleep difficulties and pain assessment decreased with a moderate effect size; however, there was no improvement in the presence of psychopathological symptoms or quality of life regarding health. That is, the treatment did not influence the psychopathological variables with which they presented. For coping with pain, they use more distraction, $d = .49$, and information-seeking strategies, $d = .38$, at the end of therapy and had greater resilience, $d = .54$, with a moderate effect size (Table 4).

Therefore, the cognitive behavioral treatment offered contributes in a differential manner depending on the origin of the chronic pain presented by patients. It was more effective with larger effect sizes in pain intensity, $d = -.39$ vs. $d = -.12$,

TABLE 1 Fibromyalgia and non-fibromyalgia patients' socio- demographic profile, clinical data, health and quality of life

Variables	Pain <i>N</i> = 30	Fibro <i>N</i> = 60	χ^2 (df)	<i>p</i>	<i>V</i>
Sex			3.60 (1)	.06	.20
Female	24	56			
Male	6	4			
Address			2.53 (1)	.11	.17
Rural	6	5			
Urban	24	55			
Civil status			4.60 (3)	.20	.23
Single	2	12			
Married-coupled	23	37			
Divorced-separated	1	6			
Widow/er	4	5			
Children			0.07 (1)	.79	.03
Yes	27	52			
No	3	7			
Education			0.94 (4)	.92	.10
No schooling	4	6			
Primary	11	19			
Secondary	7	14			
Professional training	7	17			
University studies	1	4			
Work status			4.64 (3)	.20	.22
Working	8	20			
Unemployed	8	9			
Retired	11	16			
Disabled	3	15			
Incomes			7.70 (4)	.17	.29
<€1000	11	13			
€1000–2000	12	21			
€2000–2500	4	21			
€2500–3000	2	4			
>€3000	1	1			
Relationship with partner	<i>N</i> = 26	<i>N</i> = 48	4.89 (2)	.08	.25
Good	20	44			
Fair	2	3			
Bad	4	1			
Relationship with children	<i>N</i> = 28	<i>N</i> = 52	3.88 (2)	.14	.22
Good	24	47			
Fair	2	5			
Bad	2	0			
Disability	<i>N</i> = 30	<i>N</i> = 60	0.20 (1)	.65	.05
Yes	15	27			
No	15	33			
Self-perceived health	<i>N</i> = 30	<i>N</i> = 60	9.37 (3)	.02	.32
Bad	8	35			
Fair	18	21			
Good	3	4			
Very good	1	0			

(Continues)

TABLE 1 (Continued)

Variables	Pain <i>N</i> = 30	Fibro <i>N</i> = 60	χ^2 (df)	<i>p</i>	<i>V</i>
Tobacco use	<i>N</i> = 26	<i>N</i> = 59	8.03 (1)	.00	.31
Yes	0	15			
No	26	44			
Opiates	<i>N</i> = 30	<i>N</i> = 55	0.02 (1)	.87	.01
Yes	12	23			
No	18	32			
Years since diagnosis	<i>N</i> = 30	<i>N</i> = 60	0.58 (2)	.74	.08
<5 years	11	18			
5–9 years	6	11			
≥10 years or more	13	31			
			Student's <i>t</i>	<i>p</i>	Cohen's <i>d</i>
Age					
<i>M</i> (<i>SD</i>)	58.17 (9.49)	54.83 (10.94)	-1.42	.16	-0.32
No. of children					
<i>M</i> (<i>SD</i>)	1.66 (1.15)	1.81 (1.03)	0.59	.55	0.14

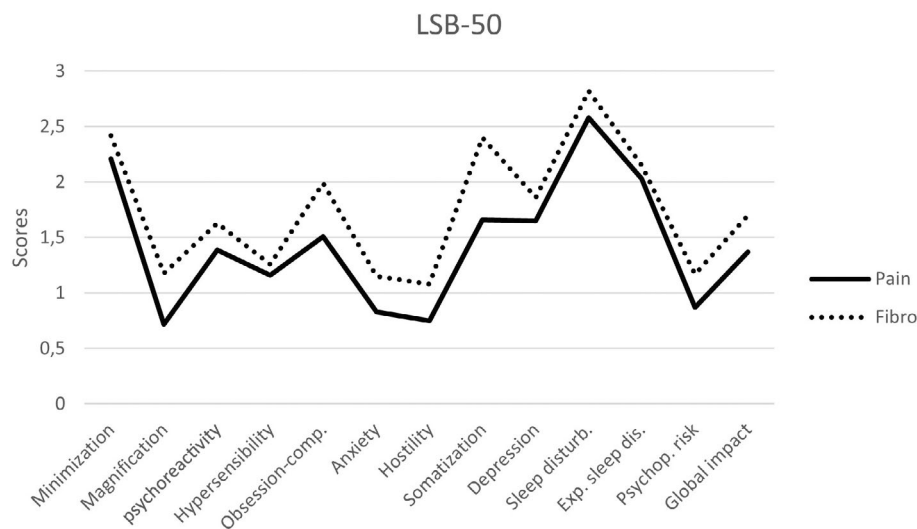


FIGURE 1 Fibromyalgia and nonfibromyalgia patients' psychopathological profiles. Obsession-comp., obsession-compulsion; Sleep disturb., sleep disturbance; Exp. sleep dis., expanded sleep disturbance; Psychop. risk, psychopathological risk

and decreased psychopathology of patients with chronic nonfibromyalgia pain, $d = -.77$ vs. $d = -.11$. On the contrary, treatment had a lower incidence for patients with fibromyalgia because there are no differences between pre- and posttreatment in psychopathology, pain intensity, or quality of life, which indicates the need for a therapeutic to rethink both the treatment components and their format.

DISCUSSION

The participants of this study are mostly middle-aged women, married with children and who have suffered chronic pain for more than 10 years. This profile is similar to the one found in

other studies in which women were also predominant (Boersma et al., 2019).

Patients' differential profile

From a psychopathological viewpoint, the results of this study are similar to those found in the study by Pérez-Pareja et al. (2010), in which patients with fibromyalgia also had higher levels of psychopathology than did patients with nonfibromyalgia chronic pain. Concerning the level of pain and quality of life, patients with fibromyalgia rated their health status as poorer (Rodero et al., 2010). At the cognitive level, they presented an amplification of symptoms, higher levels of

TABLE 2 Fibromyalgia and nonfibromyalgia patients' differential profile

Variables	Chronic pain <i>n</i> = 30		Fibromyalgia <i>n</i> = 59		Student's <i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Psychopathology (LSB-50)							
--Minimization	2.21	0.87	2.42	0.76	1.17	.24	0.26
--Magnification	0.72	0.64	1.18	0.83	2.62	.01	0.59
--Psychoreactivity	1.39	0.73	1.62	0.87	1.27	.21	0.27
--Hypersensitivity	1.16	0.78	1.26	0.99	0.48	.63	0.10
--Obsession-compulsion	1.51	0.84	1.99	0.89	2.43	.01	0.55
--Anxiety	0.83	0.59	1.15	0.87	2.03	.04	0.41
--Hostility	0.75	0.72	1.08	0.96	1.62	.10	0.37
--Somatization	1.66	0.85	2.40	0.74	4.24	.00	0.95
--Depression	1.65	1.02	1.86	1.03	0.90	.36	0.20
--Sleep disturbance	2.58	1.10	2.82	1.07	0.99	.32	0.22
--Expanded sleep disturbance	2.03	0.94	2.15	0.83	0.62	.53	0.14
--Psychopathological risk index	0.87	0.64	1.17	0.83	1.70	.09	0.39
--Global impact	1.37	0.64	1.70	0.75	2.03	.04	0.46
--Intensity of symptoms	2.66	0.60	2.57	0.62	-0.66	.50	-0.15
--Frequency of symptoms	25.96	10.44	31.64	9.71	2.54	.01	0.57
Chronic pain coping (CAD)							
--Religion (0–20)	7.53	8.44	6.04	6.89	-0.68	.49	-0.2
--Catharsis (0–20)	6.61	5.48	8.79	6.10	1.32	.19	0.37
--Distraction (0–24)	10.84	6.23	10.79	7.72	-0.03	.97	-0.01
--Mental self-control (0–20)	5.27	5.88	4.66	5.68	-0.36	.71	-0.10
--Self-affirmation (0–20)	14.11	4.71	16.21	4.59	1.58	.11	0.45
--Information-seeking (0–20)	12.84	7.54	13.16	4.85	0.17	.86	0.05
Resilience	60.04	18.36	55.25	16.10	-1.18	.24	-0.28

Abbreviations: CAD, Chronic Pain Coping Questionnaire; LSB-50, Brief Symptom Check List.

somatization, and a more ruminating style of thinking, which leads to greater distress (Donoso & Lorenzo, 2016). Perhaps these components are related to hypersensitivity that can contribute to overassessing the somatic, emotional, and psychological sensations (Yunus, 2007) or to a tendency to manifest discomfort through the body by mechanisms of somatization (Lakhan & Schofield, 2013), but may also be related to the need to demonstrate discomfort in the absence of organic indicators.

Thus, from a phenomenological viewpoint, today, fibromyalgia can be considered a rheumatic disease, a central sensitivity syndrome, or a somatization disorder. A suitable option would be to generate differential profiles within this group of patients to design better adjusted therapeutic strategies (Porter-Moffitt et al., 2006).

Therapeutic results

From a therapeutic viewpoint, patients with chronic nonfibromyalgia pain achieve better therapeutic results, with moderate to large effect sizes in pain variables, psychopathological distress, and quality of life, as compared to patients with fibromyalgia who only improve in the assessment of pain and the level of resilience, and with a small to moderate effect size.

The limitation of a cognitive behavioral treatment for fibromyalgia has been underlined in previous studies (Hauser et al., 2009). Similarly, in a mindfulness-based stress reduction study of patients with various types of chronic pain (back pain, arthritis, migraine, fibromyalgia), fibromyalgia patients had the least improvement in psychopathological distress, with an effect size of .39, versus .86 for patients with arthritis or .75 for patients with back pain (Rosenzweig et al., 2010). In addition, in the review by Lakhan and Schofield (2013), fibromyalgia patients improved only in severity of symptoms, with a small effect size, but not in quality of life nor in anxious-depressive symptoms.

Limited therapeutic results in fibromyalgia have suggested the need to outline differentiated treatments based on whether chronic pain is or is not associated with fibromyalgia, as well as the necessity to include other types of therapeutic strategies or take other variables beyond pain into consideration, such as the level of psychopathology, individual versus group-treatment formats, and so on (Martínez et al., 2021).

Results of fibromyalgia patients have suggested that it might be necessary to carry out more intensive work on cognitive variables, especially in somatosensory amplification, rumination, and the magnification of symptoms. This cognitive style seems to require more intense and longer lasting work (Glombiowski et al., 2010), which would be more approachable in individual sessions rather than in a group format.

TABLE 3 Cognitive-behavioral therapy outcomes in chronic pain patients ($n = 24$)

Variables	Pretreatment		Posttreatment		Student's t	p	Cohen's d repeated measures
	M	SD	M	SD			
Pain (MPQ)							
--Sensorial	12.96	3.41	13.76	6.51	-0.64	.52	0.19
--Affective	5.03	3.19	5.30	3.78	-0.36	.71	0.08
--Evaluative	3.61	1.57	2.50	1.44	3.43	.00	-0.64
--Miscellanea	4.57	1.47	3.65	1.16	3.63	.00	-0.65
--Total	26.11	5.81	24.34	9.60	1.00	.32	-0.27
--No. of words	11.38	2.91	11.46	4.16	-0.09	.92	0.02
--Pain intensity	2.65	1.09	2.23	0.65	2.28	.03	-0.39
Psychopathology (LSB-50)							
--Minimization	2.28	0.86	1.69	0.77	4.50	.00	-0.87
--Magnification	0.78	0.67	0.66	0.51	1.53	.13	-0.29
--Psychoreactivity	1.43	0.72	1.15	0.55	3.11	.00	-0.61
--Hypersensitivity	1.10	0.80	0.88	0.61	2.27	.03	-0.46
--Obsession-compulsion	1.63	0.76	1.46	0.68	1.54	.13	-0.29
--Anxiety	0.84	0.60	0.68	0.53	1.96	.06	-0.40
--Hostility	0.82	0.77	0.74	0.68	0.56	.58	-0.11
--Somatization	1.72	0.88	1.45	0.81	2.21	.03	-0.44
--Depression	1.67	1.01	1.26	0.80	3.69	.00	-0.72
--Sleep disturbance	2.58	1.11	2.20	1.42	1.75	.09	-0.43
--Expanded sleep disturbance	1.90	0.77	1.51	0.81	3.03	.00	-0.63
--Psychopathological risk index	0.90	0.65	0.75	0.54	1.43	.16	-0.26
--Global impact	1.42	0.66	1.16	0.55	3.92	.00	-0.77
--Intensity of symptoms	2.68	0.59	2.14	0.49	5.43	.00	-1.62
--Frequency of symptoms	26.66	11.04	26.16	9.08	0.41	.68	-0.05
Chronic pain coping (CAD)							
--Religion (0-20)	7.65	8.29	7.56	7.93	0.10	.92	-0.02
--Catharsis (0-20)	6.78	5.55	7.30	5.43	-0.43	.66	0.09
--Distraction (0-24)	11.21	6.09	12.60	5.82	-1.20	.24	0.24
--Mental self-control (0-20)	5.78	6.07	5.17	5.74	0.69	.49	-0.14
--Self-affirmation (0-20)	14.30	4.88	16.56	3.82	-2.53	.01	0.48
--Information-seeking (0-20)	13.13	7.51	13.71	6.31	-0.46	.64	0.08
Resilience	60.54	21.30	66.53	16.48	-1.49	.16	0.38
Quality of life (SF-36)							
--Physical	35.54	21.13	43.79	18.02	-2.08	.04	0.39
--Mental	46.39	23.20	58.24	20.81	-3.84	.00	0.75

Note: Cohen's d repeated measures (Morris & De Shon, 2002).

Abbreviations: CAD, Chronic Pain Coping Questionnaire; LSB-50, Brief Symptom Check List; MPQ, McGill Pain Questionnaire; SF-36, Medical Outcomes Survey 36-item Short-Form Survey.

From the somatization viewpoint, the difficulties in identifying, recognizing, and verbalizing emotions and alexithymia more specifically become particularly relevant for people with fibromyalgia (Di Tella & Castelli, 2013). It seems necessary, therefore, to include work on emotional variables in therapy. In this regard, Linton (2013) pointed to the need to work specifically on anger, sadness, fear, anxiety, and worry, given that the co-occurrence of significant emotional distress is a predictor of therapeutic failure, as seen in this study (Lumley, 2010).

Therefore, it seems essential to address the relationship between emotions and pain (Linton, 2013), especially for patients with fibromyalgia. Thus, transdiagnostic treatments focusing on emotion have begun to be applied with patients with comorbidity between chronic pain and anxious-depressive symptomatology (Boersma et al., 2019; Lumley et al., 2017), with promising results.

Consequently, patients seeking treatment for chronic pain may require different management plans depending on their diagnosis. The outcomes of this study conclude the need to

TABLE 4 Cognitive-behavioral therapy outcomes in fibromyalgia patients ($n = 38$)

Variables	Pretreatment		Posttreatment		Student's t	p	Cohen's d repeated measures
	M	SD	M	SD			
Pain (Lattinen)							
--Intensity	2.48	0.59	2.39	0.69	0.78	.44	-0.12
--Frequency	3.59	0.73	3.39	0.78	1.59	.12	-0.24
--Use of painkillers	2.52	1.06	2.72	1.02	-1.35	.18	0.19
--Incapacity	2.45	0.93	2.31	0.80	1.09	.28	-0.16
--Sleep	2.23	1.05	1.75	1.33	2.70	.01	-0.47
--Total	13.66	2.75	12.77	2.81	2.69	.01	-0.41
Psychopathology (LSB-50)							
--Minimization	2.42	0.76	2.28	0.76	1.41	.17	-0.21
--Magnification	1.18	0.83	1.21	0.86	-0.57	.57	0.03
--Psychoreactivity	1.62	0.87	1.76	0.81	-1.05	.30	0.19
--Hypersensitivity	1.26	0.99	1.40	0.93	-1.09	.28	0.16
--Obsession-compulsion	1.99	0.89	2.13	0.86	-0.79	.43	0.19
--Anxiety	1.15	0.87	1.31	0.93	-1.81	.07	0.24
--Hostility	1.08	0.96	1.25	0.96	-1.14	.26	0.18
--Somatization	2.40	0.74	2.35	0.80	-1.06	.29	-0.08
--Depression	1.86	1.03	1.80	0.90	0.49	.62	-0.07
--Sleep disturbance	2.82	1.07	2.71	1.27	0.94	.35	-0.11
--Expanded sleep disturbance	2.15	0.83	2.09	0.88	0.68	.50	-0.08
--Psychopathological risk index	1.12	0.75	1.29	0.86	-1.69	.09	0.27
--Global impact	1.70	0.75	1.77	0.76	-1.73	.47	0.11
--Intensity of symptoms	2.57	0.62	2.37	0.61	1.32	.19	-0.27
--Frequency of symptoms	32.25	9.39	36.11	8.89	-2.86	.00	0.42
Chronic pain coping (CAD)							
--Religion (0-20)	5.22	6.29	5.56	5.63	-0.22	.83	0.05
--Catharsis (0-20)	10.00	5.70	9.57	6.16	0.25	.80	-0.06
--Distraction (0-24)	9.67	7.87	13.39	6.62	-2.24	.04	0.49
--Mental self-control (0-20)	3.89	5.72	5.72	5.00	-1.11	.28	0.24
--Self-affirmation (0-20)	17.11	2.61	15.56	4.05	1.65	.12	-0.51
--Information-seeking (0-20)	13.78	4.23	15.50	3.35	-2.81	.01	0.38
Resilience	55.30	14.89	64.36	13.90	-3.71	.00	0.54
Quality of life (SF-12)							
--Physical	29.10	9.14	29.25	7.45	-0.12	.90	0.01
--Mental	38.24	11.40	39.33	9.81	-0.73	.47	0.10

Note: Cohen's d repeated measures (Morris & De Shon, 2002).

Abbreviations: CAD, Chronic Pain Coping Questionnaire; LSB-50, Brief Symptom Check List; SF-12.

subdivide patients with chronic pain to be able to adjust treatments to the specific needs of each patient.

Limitations

This study also has some limitations such as not having used cognition assessment tools to evaluate brain fog in fibromyalgia, a limited sample size, the use of different measures of pain intensity, and the lack of follow-ups after the end of the treatment, which prevents us from knowing if the results can

be maintained over time. However, despite requiring more research, differential profiles provide relevant information that can be taken into account to improve therapies applied with fibromyalgia and nonfibromyalgia chronic pain patients in routine care.

AUTHOR CONTRIBUTIONS

Conceptualization: Karme Salaberria and José I. Pérez-Fernández. *Formal analysis:* Karme Salaberria. *Investigation:* María Ruiz-Iriondo. *Methodology:* Karme Salaberria and María Ruiz-Iriondo. *Project administration:* Alvaro Iruin and Aitziber

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

DATA AVAILABILITY STATEMENT

Authors have access to the original data on which the article reports.

ETHICAL STATEMENT

All procedures performed in this study were in accordance with the ethical standards of the Research Committee of Euskadi (CEIm-E#PI201862) and with the 1964 Helsinki Declaration and its later amendments.

INFORMED CONSENT

Informed consent was obtained from all participants included in the study.

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REFERENCES

- Boersma, K., Södermark, M., Hesser, H., Flink, I. K., Gerdle, B., & Linton, S. J. (2019). Efficacy of a transdiagnostic emotion-focused exposure treatment for chronic pain patients with comorbid anxiety and depression: A randomized controlled trial. *Pain, 160*(8), 1708–1718. <https://doi.org/10.1097/j.pain.0000000000001575>
- Breivik, H., Collett, B., Ventafrida, V., Cohen, R., & Gallacher, D. (2006). Survey of chronic pain in Europe: Prevalence, impact on daily life, and treatment. *European Journal of Pain, 10*(4), 287–333. <https://doi.org/10.1016/j.ejpain.2005.06.009>
- Carmona, L., Curbelo, R. J., & González, C. (2016). PROMs for fibromyalgia. In Y. E. Miedany (Ed.), *Patient reported outcome measures in rheumatic diseases* (pp. 175–208). Springer. https://doi.org/10.1007/978-3-319-32851-5_7
- Crespo, M., Fernández-Lansac, V., & Soberón, C. (2014). Adaptación española de la escala de resiliencia de Connor-Davidson (CD-RIS) en situaciones de estrés crónico. *Behavioral Psychology/Psicología conductual, 22*(2), 219–238.
- De Rivera, L., & Abuín, M. R. (2012). *LSB-50. Listado de síntomas breve*. TEA ediciones.
- Di Tella, M., & Castelli, L. (2013). Alexithymia and fibromyalgia: Clinical evidence. *Frontiers of Psychology, 4*, 909. <https://doi.org/10.3389/fpsyg.2013.00909>
- Donoso, L., & Lorenzo, A. (2016). Factores psicológicos y su rol en el proceso salud-enfermedad de pacientes diagnosticados con fibromialgia. *Salud y Sociedad, 7*(1), 46–59. <https://doi.org/10.22199/S07187475.2016.0001.00003>
- Eccleston, C., & Crombez, G. (2017). Advancing psychological therapies for chronic pain. *F1000 Research, 6*, 461. <https://doi.org/10.12688/f1000research.10612.1>
- Ehde, D. M., Dillworth, T. M., & Turner, J. A. (2014). Cognitive-behavioral therapy for individuals with chronic pain: Efficacy, innovations and directions for research. *American Psychology, 69*(2), 153–166. <https://doi.org/10.1037/a0035747>
- Geloch, D., Garolera, M., Rosselló, L., & Pifarré, J. (2013). Disfunción cognitiva en la fibromialgia. *Revista de Neurología, 56*(11), 573–588. <https://doi.org/10.33588/rn.5611.2013016>
- Glombiowski, J. A., Sawyer, A. T., Gutermann, J., Koenig, K., Rief, W., & Hofmann, S. G. (2010). Psychological treatments for fibromyalgia: A meta-analysis. *Pain, 151*(2), 280–295. <https://doi.org/10.1016/j.pain.2010.06.011>
- González-Escalada, J. R., Camba, A., Muriel, C., Rodríguez, M., Contreras, D., & De Barutel, C. (2012). Validación del índice de Lattinen para la evaluación del paciente con dolor crónico. *Revista sociedad española del dolor, 19*(4), 181–188.
- Hauser, W., Bernardy, K., Arnold, B., Offenbacher, M., & Schiltenwolf, M. (2009). Efficacy of multicomponent treatment in fibromyalgia syndrome: A meta-analysis of randomized controlled clinical trials. *Arthritis Rheumatoid, 61*(2), 216–224. <https://doi.org/10.1002/art.24276>
- Hayes, C., Naylor, R., & Egger, G. (2012). Understanding chronic pain in a lifestyle context: The emergence of a whole-person approach. *American Journal of Lifestyle Medicine, 6*(5), 421–428. <https://doi.org/10.1177/1559827612439282>
- Khoo, E. L., Small, R., Cheng, W., Hatchard, T., Glynn, B., Rice, D. B., Skidmore, B., Kenny, S., Hutton, B., & Poulin, P. A. (2019). Comparative evaluation of group-based mindfulness-based stress reduction and cognitive behavioral therapy for the treatment and management of chronic pain: A systematic review and network meta-analysis. *Evidence Based Mental Health, 22*(1), 26–35. <https://doi.org/10.1136/ebmental-2018-300062>
- Lakhan, S. E., & Schofield, K. L. (2013). Mindfulness-based therapies in the treatment of somatization disorders: A systematic review and meta-analysis. *PLoS One, 8*(8), e71834. <https://doi.org/10.1371/journal.pone.0071834>
- Lazaro, C., Bosch, F., Torrubia, R., & Baños, J. E. (1994). The development of a Spanish questionnaire for assessing pain: Preliminary data concerning reliability and validity. *European Journal of Psychological Assessment, 10*(2), 145–151.
- Lledó, A., Pastor, M. A., & López-Roig, S. (2013). *Intervención psicológica en la fibromialgia*. FOCAD. Colegio Oficial de Psicólogos.
- Linton, S. J. (2013). A transdiagnostic approach to pain and emotion. *Journal of Applied Biobehavioral Research, 18*(2), 82–103. <https://doi.org/10.1111/jabr.12007>
- Lumley, M. A. (2010). The two views of emotion in psychosomatic research. *Journal of Psychosomatic Research, 68*(3), 219–221. <https://doi.org/10.1016/j.jpsychores.2010.01.017>
- Lumley, M. A., Schubiner, H., Lockhart, N. A., Kidwell, K. M., Harte, S. E., Clauw, D. J., & Williams, D. A. (2017). Emotional awareness and expression therapy, cognitive, behavioral therapy and education for fibromyalgia: A cluster-randomized controlled trial. *Pain, 158*(12), 2354–2363. <https://doi.org/10.1097/j.pain.0000000000001036>
- Martínez, M. P., Sánchez, A. I., Cáliz, R., & Miró, E. (2021). Psychopathology as a moderator of the relationship between physical symptoms and impairment in fibromyalgia patients. *Psicothema, 33*(2), 214–221. <https://doi.org/10.7334/psicothema2020.338>
- Moix, J., & Kovacs, F. M. (2009). *Manual del dolor. Tratamiento cognitivo-conductual del dolor crónico*. Paidós.
- Morris, S. B., & De Shon, R. P. (2002). Combining effect size estimates in meta-analysis with repeated measures and independent group designs. *Psychological Methods, 7*(1), 105–125. <https://doi.org/10.1037/1082-989x.7.1.105>
- Oliveira, M., Leme, P., Yuan, S. L. K., Oliveira, M., Ferreira de Menezes, S. R., & Marques, A. P. (2019). Pain and quality of life in knee osteoarthritis, chronic low back pain and fibromyalgia: A comparative cross-sectional study. *Reumatismo, 71*(2), 68–74. <https://doi.org/10.4081/reumatismo.2019.1104>

- Pérez-Pareja, J., Sesé, A., González-Ordi, H., & Palmer, A. (2010). Fibromyalgia and chronic pain: Are there discriminating patterns by using the Minnesota Multiphasic personality Inventory-2 (MMPI-2)? *International Journal of Clinical and Health Psychology, 10*(1), 41–56.
- Porter-Moffitt, S., Gatchel, R. J., Robinson, R. C., Deschner, M., Posamentier, M., Polatin, P., & Lou, L. (2006). Biopsychosocial profiles of different pain diagnostic groups. *The Journal of Pain, 7*(5), 308–318. <https://doi.org/10.1016/j.jpain.2005.12.003>
- Rodero, B., García-Campayo, J., Casanueva, B., Lopez, Y., Serrano-Blanco, A., & Luciano, J. V. (2010). Validation of the Spanish version of the Chronic Pain Acceptance Questionnaire (CPAQ) for the assessment of acceptance in fibromyalgia. *Health Quality of Life Outcomes, 8*, 37. <https://doi.org/10.1186/1477-7525-8-37>
- Rosenzweig, S., Greeson, J. M., Reibel, D. K., Green, J. S., Jasser, S. A., & Beasley, D. (2010). Mindfulness-based stress reduction for chronic pain conditions: Variation in treatment outcomes and role of home meditation practice. *Journal of Psychosomatic Research, 68*(1), 29–36. <https://doi.org/10.1016/j.jpsychores.2009.03.010>
- Soriano, J., & Monsalve, V. (2002). CAD: cuestionario de afrontamiento ante el dolor crónico. *Revista de la sociedad española del dolor, 9*, 13–22.
- Vilagut, G., Valderas, J. M., Ferrer, M., Garin, O., López-García, E., & Alonso, J. (2008). Interpretación de los cuestionarios de salud SF-36 y SF-12 en España: componentes físico y mental. *Medicina clínica Barcelona, 130*(19), 726–735. <https://doi.org/10.1157/13121076>
- Woo, A. (2010). Depression and anxiety in pain. *British Journal of Pain, 4*(1), 8–12. <https://doi.org/10.1177/204946371000400103>
- Yunus, M. B. (2007). Fibromyalgia and overlapping disorders: The unifying concept of central sensitivity syndromes. *Seminars in Arthritis and Rheumatology, 36*(6), 339–356. <https://doi.org/10.1016/j.semarthrit.2006.12.009>

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