

# We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index  
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?  
Contact [book.department@intechopen.com](mailto:book.department@intechopen.com)

Numbers displayed above are based on latest data collected.  
For more information visit [www.intechopen.com](http://www.intechopen.com)



# Psychosomatic Approach to Fibromyalgia Syndrome: Medical, Psychological, and Social Aspects

José Vicente Martínez-Quñones, Mar Martínez Gamarra  
and Ignacio Jáuregui-Lobera

## Abstract

Management of patients who describe chronic pain all over the body, associated with a range of symptoms as sleep disturbance, overwhelming fatigue, alteration in mood, or psychological distress that worsens the quality of life, is often complex and challenging. This syndrome has been named by terms such as “neurasthenia,” “fibrositis,” and “fibromyalgia”. At the present time, fibromyalgia is considered the most common central sensitivity syndrome, affecting over 5% of the population, being often observed in people with rheumatic conditions. While typically presenting in middle-aged women, fibromyalgia can affect both sexes at any age. The causes of fibromyalgia remain unknown. Significant research findings have focused on dysfunction of central pain processing, with defects in the ascending and descending pain pathways leading to increased pain perception. There are two methods used in the diagnosis of fibromyalgia: *criteria-based diagnosis* and *clinical diagnosis*. Although fibromyalgia defies definitively efficacious management, much evidence underlies the importance of treating the psychological factors that affect pain management process. The primary purpose of this paper is to provide a psychosomatic approach to fibromyalgia from three points of view of processing: the viewpoint of the medical profession, the position of the psychologist, and finally the way of thinking of people.

**Keywords:** fibromyalgia, psychosomatic, chronic pain, central sensitivity syndrome

## 1. Introduction

Under conditions of psychological dysregulation or disease, pain can lose its physiological role and take on an aberrant course, resulting in chronic pain syndromes [1].

As doctors, we often take care of patients who describe chronic pain all over the body, which is associated with a range of other symptoms including poor sleep, fatigue, and depression. This complex of symptoms is sometimes referred to as *functional somatic syndrome*, part of a *somatization disorder*, *idiopathic pain disorder*, or *psychosomatic syndrome*, dismissing the true suffering of the patients [2]. By reason of that, it is not unusual for patients to see at least four physicians before the diagnosis is made.

At the present time, we know that fibromyalgia (FM) is a nonprogressive and nondegenerative syndrome with a spectrum of symptoms that most commonly include generalized chronic pain. It affects 0.4–8.8% of the general population worldwide, with a global mean prevalence of 2.7%, with women outnumbering men by an average of 3:1 [3].

FM is defined as a central sensitization syndrome characterized by chronic extensive “centralized pain.” Central sensitization, as well, is defined as the process of becoming susceptible to a given stimulus that previously had no effect or significance (i.e., pressure, light, medication, temperature) [4]. This increased central responsiveness causes hyperalgesia, allodynia, and pain across multiple spinal segments, leading to chronic widespread pain [2].

Although FM is commonly classified as “functional,” because its etiology, pathogenesis, and symptoms are not completely explained, rheumatologists, pain specialists, and increasingly primary care providers are gaining confidence in making this diagnosis and initiating treatment [5].

Historically, its definition and content have changed repeatedly in the more than 100 years of its existence. Different terms have been proposed by the medical science [6–14], which summarizes the lack of understanding of this argumentative condition, which has evolved from a regional pain disorder to a multiple symptoms disorder [15] (**Table 1**).

Nowadays the ICD-11 considers FM to be a form of chronic widespread pain (CWP) [16, 17], besides it considers CWP a form of chronic primary pain (MG30.0) and is present when:

- A. Chronic pain (persistent or recurrent pain for longer than 3 months) is present in at least three body quadrants plus the axial skeleton (4 of 5 regions).
- B. The pain is associated with at least one of the following:
  - 1. Emotional distress due to pain is present.
  - 2. The pain interferes with daily life activities and social participation.

| Disorders   | Features   |
|---|--|
| <i>Neurasthenia</i><br><i>Nervous exhaustion</i>                    | Pathological entity in which there is a functional nervous dysfunction manifested by marked fatigability and irritability affecting various organs and functions without any demonstrable pathological tissue changes [6]. This term was abandoned in the 1930s                              |
| <i>Fibrositis</i>   | Inflammation of white fibrous tissue wherever situated (panniculitis, interstitial neuritis, myositis, bursitis, capsulitis, etc.). In this sense these terms merely indicate the position of the fibrous tissue which is implicated. Tenders point needed. Widespread aching. Fatigue [7–9] |
| <i>Chronic fatigue syndrome</i><br><i>Myalgic encephalomyelitis</i> | Medical condition characterized by symptom clusters that include pathological fatigue and malaise that is worse after exertion, cognitive dysfunction, immune dysfunction, unrefreshing sleep, pain, autonomic dysfunction, neuroendocrine, and immune symptoms [10, 11]                     |
| <i>Burn out</i>   | Represents the total depletion of one’s physical and mental resources [12]   |
| <i>Chronic widespread pain (CWP)</i>                                | A pain variable that would identify potential FM patients. It represents a categorical designation of musculoskeletal body pain defined by the location, distribution, and number of painful musculoskeletal body locations or sites [13, 14]  |

**Table 1.**  
*Fibromyalgia-like conditions.*

C. The pain is not better accounted for by another chronic pain condition.

This definition seems to define a CWP as a disease or disorder. Neither FM nor CWP is obviously a distinct entity.

In addition to the direct physical suffering that patients experience, the biopsychosocial nature of chronic pain affects their social lives, ability to work, and psychological well-being. People with FM often reported dismissive attitudes from others, such as disbelief, stigmatization, lack of acceptance by their relatives, and friends, and doctors may consider them as *lazy* or *attention seeking* people, with their symptoms *all in their head* [2]. Such disdainfulness can have a substantial negative impact on patients, who are already distressed [18]. Furthermore, patients have an increased lifetime prevalence of many psychological disorders.

The primary purpose of this paper is to provide an approach to FM from three points of view of processing: the viewpoint of the medical profession, the position of the psychologist, and finally, social aspects.

1. The medical profession:

- a. Diagnostic criteria of FM
- b. Pathogenesis
- c. What causes FM? Predisposing factors
- d. Comorbidities:
  - i. Other central sensitivity syndromes
  - ii. Psychiatric
  - iii. Nonpsychiatric: rheumatology

2. The position of the psychologist:

- a. Psychosomatic disease?
- b. Emotional dysregulation
- c. Address the psychological in FM:
  - i. Our experience
  - ii. The main topics from a psychological point of view

3. Social aspects. Impact at three levels:

- a. Family
- b. Labor
- c. Health system

## 2. The medical profession

### 2.1 Diagnostic criteria of fibromyalgia

Diagnosing FM is quite challenging because there is an absence of a univocal identified biological cause [19].

Although two methods are used in the diagnosis, criteria-based and clinical one, FM remains a controversial interpretation, with some studies suggesting that FM is overdiagnosed and other reporting that community physicians have limited knowledge of FM diagnosis and criteria:

#### 2.1.1 Criteria-based diagnosis

FM became officially established by formal criteria in 1990 [20], after which a multiplicity of symptoms became a central component of the illness. Nowadays there is evidence in support of FM as a dimensional or continuum disorder [21, 22] which is included in the international list of diseases of the World Health Organization [17] (**Table 2**).

In 2016, the widespread pain criterion was reinstalled; thus FM diagnosis requires:

- Widespread pain index (WPI)  $\geq 7$  and symptom severity scale (SSS)  $\geq 5$  or a WPI of 4–6 and an SSS score  $\geq 9$
- Presence of widespread pain (pain in four or five body regions)
- Symptoms of at least 3 months of duration

Classification criteria may help guide a diagnosis but are primarily useful for research and epidemiological studies.

#### 2.1.2 Clinical diagnosis

It is based on the physician/patient relationship. FM, because of symptoms' intensities (pervasive fatigue, abdominal cramps, headaches, disturbed sleep, muscle spasms, stiffness, tenderness, reduced physical, social and cognitive functioning, depressed mood, anxiety, and irritability), constitutes a heterogeneous disorder in which "chronic widespread pain" is dominant [23–28]. Moreover, FM differs from the "chronic widespread pain" by its inclusion of non-pain symptoms, including severity measures of fatigue, unrefreshed sleep, cognitive problems, and somatic symptoms [29].

Common manifestations in FM are *hyperalgesia* (excessive sensitivity to a normally painful stimulus, such as pressure), *allodynia* (painful sensation to a normally non-painful stimulus, e.g., touch and massage), expansion of the receptive field (pain beyond the area of peripheral nerve supply), prolonged electrophysiological discharge, an after-stimulus unpleasant quality of the pain (e.g., burning, throbbing, tingling, or numbness), and referred pain across multiple spinal segments, leading to chronic widespread pain [20]. The number of pain sites is strongly correlated with somatic and psychological symptom burden in the general population. An example of making a record of the pain sites is by the "Michigan body map" [30] (**Figure 1**).

| American College of Rheumatology (ACR) | Criteria established  | Clarification   |
|--|---|---|
| 1990<br>Wolfe et al. [20]              | Chronic widespread pain (CWP)<br>+<br>Pain in 11 of 18 <i>tender point</i> sites on “digital palpation”   | CWP: Simultaneous pain in the axial skeleton, in the left and the right side of the body, and above and below the waist, for at least 3 months<br>“Digital palpation” should be performed with an approximate force of 4 Kg<br>Tender point positive: the subject must state that the palpation was painful   |
| 2010<br>Wolfe et al. [21]              | Widespread pain index (WPI)<br>+<br>Symptom severity scale (SSS):<br><i>Fatigue</i><br><i>Waking unrefreshed</i><br><i>Cognitive symptom</i>  | WPI: areas with pain over the last week<br>SSS: the sum of the severity of the three symptoms plus the extent (severity) of somatic symptoms in general<br>“It does not require a tender point examination”   |
| 2011<br>Wolfe et al. [22]              | Widespread pain index (WPI):<br>Left <i>Shoulder</i> Right<br>Lt. <i>Upper Arm</i> Rt. <i>Lower</i><br>Lt. <i>Hip</i> Rt.<br>Lt. <i>Upper Leg</i> Rt. <i>Lower</i><br>Lt. <i>Jaw</i> Rt.<br><i>Chest</i><br><i>Abdomen</i><br><i>Upper Back</i> <i>Lower</i><br><i>Neck</i><br>+<br>Symptom severity (SS) score:<br><i>Fatigue</i><br><i>Waking unrefreshed</i><br><i>Cognitive symptom</i> | <ul style="list-style-type: none"><li>WPI <math>\geq 7/19</math> and SS score <math>\geq 5/12</math> <i>or</i> WPI between 3–6/19 and SS score <math>\geq 9/12</math>.</li><li>Symptoms have been present at a similar level for at least 3 months</li><li>The patient does not have a disorder that would otherwise sufficiently explain the pain</li></ul> WPI: In how many areas has the patient had pain?<br>Score will be between 0 and 19<br>SS score:<br>For the each of these three symptoms, indicate the level of severity over the past week using the following scale:<br>0 = no problem; 1 = slight or mild problems; generally mild or intermittent; 2 = moderate; considerable problems; often present and/or at a moderate level; 3 = severe: pervasive, continuous, life-disturbing problems<br>The SS score is the sum of the severity of the three symptoms plus the sum of the number of the following symptoms occurring during the previous 6 months: headaches, pain or cramps in lower abdomen, and depression (0–3). The final score is between 0 and 12 |

**Table 2.**  
*Fibromyalgia criteria according to the American College of Rheumatology.*

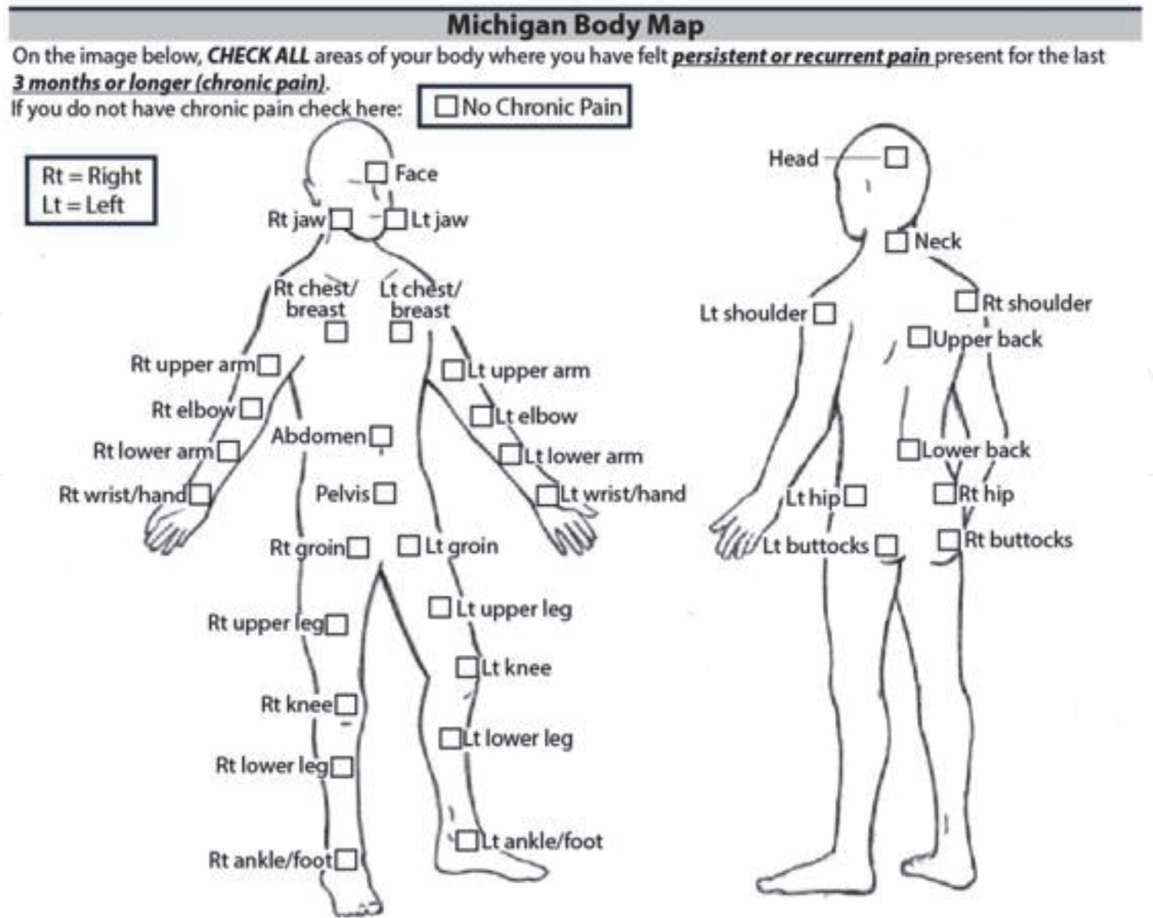
Quantitative sensory testing should be undertaken to determine if augmented response is present or absent, using pressure, pinprick, cold, heat, vibration, electricity, ischemia, and chemical (capsaicin, hypertonic saline) stimuli. Patients should be tested for allodynia (using cotton swab, brush, Von Frey filaments), temporal summation, conditioned pain modulation, and nociceptive flexion reflex.

All common conditions, like depression or FM, are caught in the dilemma of disease versus illness state (of health) versus trait (characteristic feature distinguishing a particular human being).

2.2 Pathogenesis

Given the high incidence of chronic pain, it is fundamental to understand basic processes underlying this kind of suffering: repeated stimulation of the centripetal





**Figure 1.**  
The Michigan Body Map. ©2015 Regents of the University of Michigan (<https://medicine.umich.edu/sites/default/files/content/downloads/MBM%202016.pdf>).

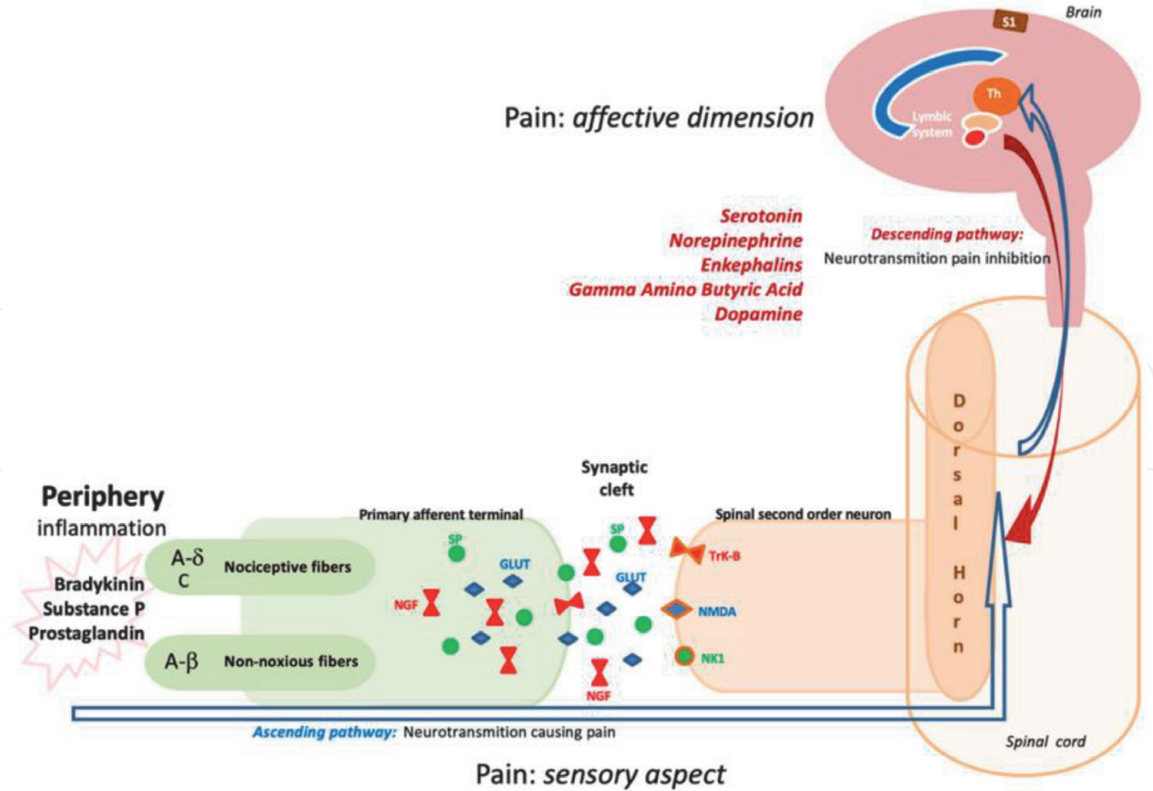
nerves overtime causes changes to the way the pain signals are processed, leading to a pathophysiological state where the nervous system is sensitized and the perception of pain becomes heighten.

Both the peripheral and the central nervous system can become sensitize to pain signals in response to injury or inflammation nociceptors. The periphery can become more sensitive to painful stimuli, a process called “peripheral sensitization.” These sensitize nociceptors and then send additional pain signals to the CNS which can lead to the overstimulation of the CNS.

“Central sensitization” is a proposed physiological phenomenon in which dysregulation in the central nervous system (imbalance between pain transmission and pain inhibition) causes neuronal dysregulation and hyperexcitability, resulting in hypersensitivity to both noxious and non-noxious stimuli and the perpetuation of pain [31] (Figure 2).

Central sensitization has been proposed as the root etiology for “central sensitivity syndromes” (CSS), which refer to a group of medically indistinct disorders for which no organic cause can be found. A number of authors state that the CSS symptoms are not medically explicable and are psychiatric, psychological, or psychosocial in nature [32–34]. Therefore, people with FM suffer from abnormalities in the central pain processing, what implies a lower threshold for interpreting sensory information as noxious, in addition to an increased excitation’s mechanism or reduced inhibition’s ones. This plays an important role in the development and maintenance of chronic pain.

On the other hand, some aberrations of the peripheral nervous system, as an antidromal axonal reflex of C fibers in response to a stimulus, may initialize



**Figure 2.**  
*Physiological pathways of pain. The activated C fibers express, at their nerve terminals, several neurotransmitters: Substance P (SP), nerve growth factor (NGF), calcitonin gene-related peptide, vasoactive intestinal peptide, glutamate (GLUT), aspartate, and brain-derived neurotrophic factor. These chemicals cause a barrage of impulses at the synapse that now hyperexcite the postsynaptic receptors: neurokinin1 (NK1), N-methyl-D-aspartate (NMDA), metabotropic glutamate, tyrosine kinase B (TrK-B), and protein kinase gamma. Activation of these receptors results in a remarkable physiologic change in the postsynaptic nerve cells, including membrane changes, intracellular influx of calcium, protein kinase activation, and expression of protein c-fos (marker for neuronal activity following peripheral stimulation). These changes cause an intensification of hyperexcitability of the second-order neurons, giving rise to hypersensitivity to various peripheral stimuli. “Central sensitivity”: perturbation in the central processing of sensory information that amplifies the response of the central nervous system to a peripheral input.*

neuroendocrine processes and vascular permeability. These processes encompass the phenomenon of neuro-inflammation, in which stress and other psychological factors induce these neural responses to amplify the pain perception.

Abnormal sensory and pain processing is the key factor in the pathophysiology of FM [35], and in addition, sensitization heightens the perception of pain.

### 2.3 What causes fibromyalgia? Predisposing factors

There is evidence for excessive pain-related neuronal activity at multiple levels of the central nervous system, structural and functional changes in the brain by imaging studies, and impaired function of normal descending inhibitory mechanisms [29].

Several factors, such as genetic predisposition or alteration in the expression of several genes (epigenetic mechanisms), deficiencies in neurotransmitter levels, biochemical changes in the body, endocrine dysfunction, certain types of infections (e.g., Epstein-Barr virus, Lyme disease, Q fever, viral hepatitis), mood states, sociocultural environment (early-life stress or adversity), psychological trauma, and past experiences in general (e.g., childhood or sexual abuse), have been proposed as explanatory mechanisms of patients’ subjective experience of central sensitivity and subcortical nociceptive transmission [28, 36–43].



Genes associated with increased or decreased frequency of chronic pain states or pain sensitivity regulate the breakdown or binding of pain sensitivity-modulating neurotransmitters and other inflammatory pathways. Candidate genes implicated in FM include those controlling serotonin mechanisms, dopamine receptors, as well as metabolism of catecholamines [44, 45].

A recent review confirmed the key role of neurobiological substrates, including the hypothalamic-pituitary-adrenal (HPA) axis, monoaminergic, opioidergic, endocannabinoid, and immune systems, as well as some epigenetic mechanisms, in the association of early-life psychological stress and the risk of chronic pain in later life [40]. Early psychological trauma can alter the HPA axis response, which may result in the dysfunction of peripheral and spinal dorsal horn neurons, excitatory amino acids, and central neuropeptides that can lead to abnormal nociceptive input to the brain when there is no actual painful stimulus, resulting in a central sensitization syndrome [46, 47]. Similarly, many people with FM exposed to early abuse have anxiety, depression, and post-traumatic stress disorder [2].

Patients with FM appear to have specific gut microbiome alterations that differ from their healthy peers. Recently Clos-García et al. have found an alteration in glutamate metabolism (possible molecular biomarker) connecting the gut microbiome with the brain through the enteric nervous system. This alteration has been associated with psychiatric and gastrointestinal disorders [48].

Finally, there is no scientific support for the idea that physical trauma (e.g., motor vehicle accidents) causes FM [49].

## **2.4 Comorbidities**

### *2.4.1 Other central sensitivity syndromes*

Pain, fatigue and other distressing sensations, occurring in the absence of clinically obvious pathology are common health problems in medical practice. Such experiences are never uniform, yet symptoms often present together in stereotypically recognizable ways. Several criteria were suggested for classification of a disease as a member of the CSS group: (a) the presence of CS; (b) the absence of an underlying disease (primary conditions), and (c) mutual associations between the disorders.

Recently, Yunus proposed a number of ailments included in the list of CSS family: irritable bowel syndrome, primary (dysfunctional) dyspepsia, tension-type headache, migraine, myofascial pain syndrome, myofascial temporomandibular disorder, primary chronic neck pain, primary low back pain, restless legs syndrome, periodic limb movement disorder, and endometriosis, among others [42].

Because of the mutual associations between the disorders, the differential diagnosis of FM is difficult.

### *2.4.2 Psychiatric*

Patients relate too many symptoms, and the symptoms appear too severe and too unusual, and the patients too healthy compared with patients with other pain disorders [15].

A recent clinical review summarized that 62% of FM patients showed major depressive disorder, 11% bipolar disorder, 29% panic disorder, and 29% social phobia [50].

Mental disorders, especially mood disorders, have been associated with a negative impact on pain, fatigue, sleep, physical functioning, and quality of life in FM [51].

### 2.4.3 Nonpsychiatric: rheumatology

It is said that non-arthritis rheumatism frequently covers anxiety states. The musculoskeletal pain or fatigue associated with other disorders may mimic those of FM and vice versa. Additionally, there are many similar disorders, which are not exclusive of FM, and will overlap concomitantly. The broad categories are the following [52]:

- Inflammatory and autoimmune disorders, including rheumatoid arthritis, systemic lupus erythematosus, Sjögren's syndrome, polymyalgia rheumatica, and spondyloarthritis
- Muscle disorders and myalgias
- Myofascial pain syndrome, temporomandibular joint dysfunction, lower back pain

## 3. The position of the psychologist

### 3.1 Psychosomatic disease

FM, as a paradigm of psychosomatic disorders, would have different repercussions:

- a. Physical (inactivity, disability) that leads the person to a sick and invalid role
- b. Psychological, resulting in emotional disturbances, vulnerability to substance abuse, etc.
- c. Social, such as tendencies towards isolation, interpersonal conflicts, etc.

Sometimes pain becomes the center of life for the patients, leading to a successive demand for assistance, conflicts with professionals, etc.

Regarding the psychological point of view, pain has been approached from the theories of traits, psychodynamic thesis, behaviorism, neuropsychology, etc., since the cognitive perspective is one of the most relevant today, specifically the study of beliefs and internal language of the patients. Along with this, the study of the different styles in the locus of control is relevant and, from the constructivist perspective, the study of the meanings and the analysis of the narrations of pain by the patients. The study of personality traits and their link with pain would be the most basic psychological approach. The study of coping styles would be in an intermediate place. Finally, the most elaborate approach would be the study of meanings.

It is interesting to make it clear that among the very different styles of coping with pain (avoidance, ignoring, reinterpreting, giving self-instructions, etc.), the most negative, the one that makes the pain worse, is the catastrophic style.

In the well-known constructivist perspective, authors such as Walker, Holloway, and Sofaer [53] studied five sequential themes in the experience of pain:

- *The pain takes hold of me*
- *I lost something*

- *I feel lost in the system*
- *They do not understand me*
- *My situation is unacceptable, inexplicable, speechless*

### 3.2 Emotional dysregulation

In the psychosomatic field, stress has been a very studied element with respect to FM. When scales or questionnaires are applied, the stress scores in FM patients are higher than in the control groups. In addition, patients who score higher also show several psychological disorders. It has been postulated that chronic stress (but not acute stress) would contribute to the FM symptoms. It has also been noticed that specific situations of intense stress correlate with post-traumatic stress disorder and FM. Finally, among the patients with FM, a higher prevalence of experiences of victimization (abuse and sexual abuse), throughout the life, is detected. The intensity of the traumatic event correlates, in these cases, with pain and sleep disturbances.

Linked to this, it is worth noting the issue of social support, which is an issue usually over-mentioned by FM patients. Social support has three main functions:

- a. Affective-emotional: intimacy, attachment, care, concern for the other, etc.
- b. Material: provision of material assistance, assistance, etc., is an instrumental function.
- c. Informative: advice, guide, education, etc.

The tendency to consider the first function as the most important is not correct. The key would be to give support based on the type of need that arises. Giving emotional support when the problem is strictly material, for example, may be tender, but it will not be effective. It must be noted that social support would lead to stress. Social relations imply obligations, and in turn, tensions can be derived from them. In short, stress can emerge. In fact, Helgeson [54], among others, points out that negative social interactions predict health- and well-being-related problems more than the positive ones do.

The differences between men and women in social support have not been studied much, although it is a simple fact that men and women differ in the way they participate in social relations. In this regard, it is necessary to mention something about gender roles. The traditional masculine role is associated with activity, the search for independence, competitiveness, objectives, assertiveness, self-confidence, etc., and within this role, it may be more difficult to seek and achieve social support. The role of women has been associated with expressiveness, emotions, intimacy, more ability to recognize difficulties (and with it to ask for help), cooperation, empathy, etc., thus giving and receiving social support seem to be easier tasks.

The association between social support, stress, and health has been studied without conclusive results due to serious methodological errors. Perhaps it would point out that the negative part of the social relations that we have already indicated is more relevant in the case of women. Why is it? Women tend to be a source of support more frequently and are more involved in socio-family networks. Belle already pointed out how support networks can create psychological distress: (a) for a lack of respect or disapproval of others; (b) for revealing confidences or not

meeting the expectations of others; (c) when the support person is too demanding; and (d) when there is a sort of contagion of the stress from some members to others [55].

### **3.3 Address the psychological factors in fibromyalgia**

Beyond works with quantitative methodology, we will focus this section on qualitative research. This way of approaching knowledge is interpretive. It would be the interpretative study of a particular problem in which the researcher is responsible for the production of meaning. Many times, we reach statistically significant results that are absolutely useless, that do not discover anything, and that do not tell us anything that we did not know from our conversations with patients, and that, simply, we did not care to measure in order to know. In a different way, qualitative methods study intersubjective meanings located and constructed rather than supposed objective facts. Observation and interview would be prioritized over the experiment and the standardized questionnaires. In the understanding of the meanings, one works with the narrative, being storytelling a good tool for it. The laws of physical objects imply that there is no history, which is something impossible for the person. Faced with paradigmatic, objectivist thinking, without a position on itself, narrative thinking poses positions depending on the context. The data is not the central element, but where the data comes from, the person is the starting point, the private representation of the person about the world or its disorder, the way the person lives reality. The subject is therefore interesting: how the person builds the own context and makes history. The narrative is the element to reach that meaning sought. It is a story, a story ordered in some way. The narratives are unique, individual, unrepeatable, and have an author. They provide, finally, a meaning.

### **3.4 Our experience**

In order to research the experience of pain and its different repercussions in women diagnosed with FM, we performed individual in-depth interviews in a total of 15 patients. It is a semi-structured interview with some guide points but giving the patients the opportunity of a broad expression of their experiences. This way we tried to know the ideas that patients had about the disease but, above all, their experiences. The interviews lasted 50–60 min, were recorded in audio, and subsequently, transcribed with the collaboration of two psychologists. After the transcription, an analysis of the interviews was developed. For this purpose, in the clinical field, the methodology proposed by Weber for the analysis of content has been used [56]. It involves the following stages: (a) identifying common themes in the responses of patients and classifying them semantically, by their meaning; (b) grouping the themes of common meaning into categories; and (c) analyzing the frequency of each of the topics by watching its presence depending on the number of patients.

### **3.5 Our sample**

Our patients had a mean age of 45 years (ranged 36–59), all of them were women and married. Regarding their training level, 46.46% had primary studies (7 out of 15), and the rest were divided between degree or diploma (26.66%) and professional training or baccalaureate (26.66%). Besides, 40% were housewives (6 out of 15), and the rest worked in extra domestic tasks (26.66% as administrative assistants, 13.33% as operators, one of them as a secondary school teacher, another



as clerk, and one as head of section in the regional administration). Those who had extra domestic works said that they had in charge the housework with some help from their couples. Eight of the patients had two sons and daughters and seven of them only one son or daughter. In three cases (20%), in addition to the couple and the children, other family members lived at home and they needed care.

### 3.6 The main topics from a psychological point of view

As main concerns, patients referred the following:

- a. The personal history of pain: time elapsed since the pain started, professionals consulted, treatments performed, time elapsed since the diagnosis of FM, biographical aspects at the onset of pain
- b. The pain today: description (intensity, frequency, and duration) and treatment; what precipitates, worsens, or relieves
- c. Thoughts regarding pain: what is attributed to, how to control it, what is thought when the pain appears
- d. Feelings regarding pain: emotions that arise when facing pain
- e. Behaviors as responses to pain: how the pain is faced
- f. Repercussions of pain in daily life: functional impact on the patient (how pain limits life), impact on the family, social impact
- g. Support against pain: what help do you have to deal with pain.

At this point, our focus was the personal history of pain. In this regard, it is worth noting some narratives of our patients:

**Patient A:** *I was attended by several orthopedists and some of them gave me medication to the pain ... the problem is that when one has ... does not reach 30 years old and begins with continuous muscle contractures and without having a logical cause, well ... even while playing sports in those moments, well, you get annoyed, don't you? And then you go to one and the other, you even go to the neurosurgeon that the only thing he found was a minimal dehydration in ... a ... dorsal intervertebral disk ... and ... I think then it was progressively studied in case they found neck calcifications, they corrected them, they sent me to the rehabilitators ...*

**Patient B:** *... It was mostly because of the birth of my daughter, well with ... my daughter is already 10 years old, perhaps was the upbringing of the girl and also my father was diagnosed with a retinal detachment from the second eye because I had already had one and had lost the other eye ... this brought me a lot of tension buildup ...*

**Patient C:** *... When I was diagnosed with fibromyalgia I was suffering from pain for months, the pain started in the feet and hands, I had no strength in the hands, they became inflamed but I thought the housewives ... I thought it was from the mop, scrub ... always a blame for cleaning ... I said to me "today I'm more tired of cleaning," "today for ..." ... always blame until my husband told me to go to the*



*doctor ... he has the consultation in ... and he made several medical checks, he gave me medications ... until I went to another doctor who finally diagnosed fibromyalgia ...*

**Patient D:** *...The first symptoms were that I complained about my legs and I was said I had a column deviation; when I was 25 it hurts me a lot ... well with 25 ... no, with 23, my neck started to hurt me a lot and doctors told me that it was a cervical problem and they gave me laser ... well, I felt better, but pain remains, I always had pain and I continued with my medications ... I was bearing pain, it was easy when I was 23, but now ...*

From a psychological point of view, topics such as “personality and fibromyalgia,” “emotional dysregulation,” and “fibromyalgia as a psychosomatic disease (labeled as negative connotations)” would be the most relevant aspects to deep into the patients’ thoughts, feelings, and behaviors.

FM is a disease with clear female predominance. Stress seems to be a highlighted element in its origin, especially chronic stress. Regarding social support, it is essential to mention that, in order to make it appropriate, the type of support (material, emotional, informative) must be in accordance with the needs that arise. Giving material support, when emotional support is necessary, is simply inefficient. We also said that social support can usually involve stress. Social relationships entail, for example, obligations from which tensions and stress may arise. It is also necessary to remember here that the traditional feminine role is associated with the expression of emotions and empathy.

In our patients we observe how they work mostly away from home, they bear the burden of homework, and in addition, one out of five not only takes care of their husbands and children but is in charge of some other relatives. And it is striking that 40% of these patients do not perceive any help to face their pain. *They work inside, they work outside, they take care of everyone, they have pain, and they have no help.* This is the reality of some women we interviewed. Chronic stress and FM? It does not seem to fit any doubt. And regarding the health of women, there is a chilling fact: patients usually take several drugs for more than 5 years, continuously, without a diagnosis of certainty. Some patients interviewed told us that the feeling that was seizing them on their pilgrimage from doctor to doctor was that they were labeled as hysterical or a merely storyteller and that they just told them to take a pain reliever when they had pain.

Some husbands, ratifying such clinical impressions, exclaim on more than one occasion: “Again, with your pain!” And since the traditional female role is designed to take care and not so much to receive care from others, to understand and not so much to be understood, in many cases it is hardly expected that, when a woman feels pain, the husband will give an adequate care. The trigger elements of pain are usually psychic tensions. There is nothing to add to it, chronic stress seems evident. Along with it there are thoughts of resignation not exempt of accompanying feelings of guilt. The random attribution of pain seems to be part of that female role of taking on loads (“this pain has also touched me!”). The feeling of guiltiness is strange. Facing pain limits the woman life, which prevents her to have a satisfying sex life, which keeps her at home, and which prevents her from performing her tasks. She feels guilty: guilty for not attending to her relatives and spoiling their vacations and guilty because she does not have sexual relations as often as she would wish and for not being able to enjoy them, for not having a clean house, etc. What makes her feel so guilty if it’s not the assumption of a traditional role? We leave the answer for your own reflection [57].

## 4. Social aspects

By the time patients get to the FM treatment program at different health institutions, they typically have tried all the approved drugs for the disorder and are tired of the pain, the fatigue, the depression, and the skepticism. Many patients have been told for years (by friends, by family, by clinicians) that their symptoms are imaginary or that they are lazy or drug-seeking.

Above and beyond the specific impact on health, from a social perspective, FM contemplates an impact at three levels: (a) family, (b) labor, and (c) about the health system.

In the **family environment**, patients point to the existence of family imbalances, putting at risk the maintenance and quality of their relationships in that context. It seems that there are at least four aspects to highlight:

- a. A certain family disruption from the psycho-affective point of view (before or after the onset of the disease)
- b. Family loads secondary to fibromyalgia (change of roles in family components, redistribution of tasks, loss of role, etc.)
- c. Family economic losses
- d. Patterns of family behavior directly related to fibromyalgia and its repercussions

In the **work context**, fibromyalgia is an important cause of work hour lost. In Spain, for example, people with fibromyalgia have an annual average of 21 days of work lost, and approximately one third of patients (depending on their jobs) already have a disability pension before they reach the retirement age (in other diseases this figure is around 9–10%). And, in summary, the percentage of temporary leave and the number of sick leave days is 3–4 times higher than in the case of other workers. In addition, it is known that the occupational impact of fibromyalgia seems to be strongly influenced by psychopathological comorbidity (especially anxiety and depression).

The **impact on the health system** refers to the amount of resources that these patients use, with the consequent economic cost. The positive part is arriving at a diagnosis as soon as possible, these costs decrease as it stops the pilgrimage of patients in search of evidence that clarifies their health problem. Patients with fibromyalgia visit the primary care physician at an average of 8–13 times a year, with almost €1,000 annual cost for such visits, about €500 for testing, and another €1,500 for “nonmedical” therapies (e.g., physiotherapy or massages). We must add about €500 per year for the use of different medications.

Storytelling, as an instrument of communication in health context, can be used to create a story as a way to share or receive information as well as a way for us to understand our own lives and those of others around us [58]. In this case, one of the signatories (MG) has composed a narrative to make fibromyalgia visible. **Mya**, the chief character of the play, wishes us to transmit the emotions and feelings of the people who bear patiently the illness. Sometimes, the lack of understanding or the disregard of those around them for the different aspect of their lives doesn't help them to make progress. Various conditions affecting fibromyalgia patients have been depicted in this story. A great help for patients would be an overall consideration of clinicians, relatives, friends, and coworkers. Let us go to the story: and who is **Mya** (see Appendix 1)?

## 5. About treatments

There is increasing recognition that multidisciplinary treatment models that address physical symptoms of the disease, as well as behavioral and psychological components, are effective, although total removal of symptoms is almost never achieved. The goal is improvement in health-related quality of life, function, and symptom burden. Patients should also know that symptoms will never kill them. The first step should be to address concerns, such as sleep or mood disorders. We are going to revise the different treatment options.

### 5.1 Psychoactive drugs

“Being on the hunt for the magic pill”: drugs don’t work very well with FM.

- **Antidepressants.** The three main antidepressants that have been studied through controlled clinical trials in FM are [59, 60]:
  - *Amitriptyline.* It reduces pain and fatigue, improves sleep, and produces a global feeling of improvement from the perspective of both the doctor and the patient. It is therefore highly recommended.
  - *Duloxetine.* It also reduces pain and improves sleep and mood and quality of life and functional capacity, so it is also equally recommended.
  - *Fluoxetine.* Its evidence on pain, sleep, and fatigue in FM patients is controversial, and it seems to be effective for depressive symptoms and functional limitation. I would not currently be at the forefront of the recommendations of psychoactive drugs.
- **Gamma-aminobutyric acid (GABA) analog**
  - *Pregabalin.* It was the first drug to be approved by the US FDA in 2007. Pregabalin reduces pain and improves sleep and quality of life, so it can be recommended for the treatment of these symptoms in patients with FM. It must be noted that a recent study comparing the efficacy of Duloxetine and Pregabalin concludes a higher efficacy of duloxetine for the treatment of pain in patients with FM [61].
- **Other pharmacotherapies,** like opioids (e.g., tramadol), dopamine agonist (e.g., ropinirole, pramipexole, or rotigotine), cannabinoids (e.g., Nabilone), or sodium oxybate, do not seem to support its use for treating FM [62–65].

### 5.2 Nonpharmacological options

- **Exercise.** Exercise is known to be beneficial for overall health. Incorporation of some physical exercise with strengthening and stretching program as a part of FM treatment shows significant effects in reducing pain and related FM symptoms. Recent evidence suggests that exercise may regulate the immune- and stress-related responses [66–68].
- **Transcranial stimulation.** Two types of noninvasive brain stimulation methods have been used to treat the cognitive and affective disorders [69]:

transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS). TMS sends a brief electrical current from an electromagnetic coil that is placed against the patient's scalp, creating a regional magnetic field that affects neural activity. tDCS sends a weak electrical current through a pair of electrodes placed on the scalp in the region of interest. The current is considered to help modulate the neural activity, possibly in a polarity specific way [70, 71]. It appears that both TMS and tDCS may modulate mood, but the effects on pain may be marginal.

- **Psychological and behavioral modalities**

- **Psychological treatment**

There is great evidence of the effectiveness of cognitive behavioral therapy on pain control, physical discomfort, and mood in patients with FM [72]. Similarly, behavioral therapy has shown efficacy in reducing the number of medical visits.

Other treatments, such as relaxation techniques, used in isolation for the sole purpose of controlling pain, have not proven effective. On the other hand, despite some positive results, there is no scientific evidence to recommend hypnosis and other forms of therapy.

In any case, it seems that the best option is the use of “multicomponent therapies,” specifically those based on the combination of physical exercise, cognitive behavioral intervention strategies, and drugs. They have proven effective in managing pain and improving the quality of life and physical capacity of patients.

- **Alternative therapies**

Today there is no scientific evidence on the effectiveness of certain treatments, at least for being recommended: acupuncture, homeopathy, ozone therapy, dietary supplements, Qi-Gong, Reiki, or Taichi [73].

Finally, the beneficial effect of chiropractic treatment and massage in the treatment of FM has not been sufficiently demonstrated, and therefore, its use is not recommended.

## Appendix 1

### And who is Mya?

“El entusiasta”

[www.elentusiasta.es](http://www.elentusiasta.es)

The H.G. Wells Museum

*Second day of the fatigue, Sunday. In the twenty-first century*

News: and where's Mya?

Yesterday, the *Sculpture of Pain* was stolen, a fifteenth-century masterpiece, highly valued by the *Experts of Life*. It belongs to the stage of the Spanish flamboyant gothic. It's an alabaster sculpture made by Sebastián de la Esperanza. It symbolizes medieval culture; the accompanying book personifies Wisdom.

It was transferred in March 1999, from the Cathedral of Sigüenza to the recently opened H.G. Wells Museum.

The *Commissioner of Righteousness* has asked to cooperate with the country's officials to investigate the clues in depth.

This morning, the main authorities of the emotions, have established the action plan and the resources they will provide to clarify the events that occurred.



At the moment, the museum officials have not made authorized statements. At 7:30 pm, the director called a press conference at the headquarters of the feelings (25 Transcendence St.), to make the first manifestations of what happened.

A reward is offered to all those who care about visibility.

### *Myalgia*

**Mya** reads the news and decides to go to the museum. She cannot accept another day of tiredness and fatigue.

The H.G. Wells Museum is a building without defined forms. A weird-speaking drone with fraudulent voice announces: “free admission.” There is a large uneven corridor where three rooms are placed on the right side and one more on the left.

What do they hide?

**Mya** enters into the first of the rooms in the right: “*The Room of the White Coats.*” Although *Painting One* greets her kindly, it can only spend 5 minutes because there are too many visitors. It examines her quickly and recommends talking to *Painting Two*. Then, the latter gives her some futuristic capsules and asks her to come back at another time. Finally, a whisper leads her to *Painting three*, which tells her that it has something for pain. It scares her because she hadn’t explained anything.

She comes out very confused, and stays absorbed in the middle of “*The Family Room,*” right next to the caution tape that the *Art Police* had put to cordon off the scene. She hears peaceful voices. Being suspended in the air, the *legless chairs* tell her that they are almost no longer visited or accompanied. At the beginning of the opening of the museum, it was the most frequented room, but now they are not important to them or simply do not know how to look at them. On the ceiling of this lugubrious room there is a *Deco Lamp* that looks at the walls with the complicity of the years. From a distance it seems to say: “I already knew that sooner or later it would happen.” The always silent *Deco Lamp* addresses the intrigued **Mya** sharing its thoughts: “They have never watched us, they don't care, people come and go, they look at us but they don't see us. They extract what we have inside but they give us nothing back. The one who hung us performed his function. The one who repairs us, from time to time, also believes that he has fulfilled his duty. But now, that doesn't care.” And the *Sculpture of Pain* was she left to her fate by a wrong way or did she abandon her privileged place in the museum because of misunderstanding and loneliness?

Curiosity leads her to the “*Just in Time Room,*” where the *Mosaics* are in continuous synchronized motion and almost silent. They ignore her. They prefer not to have eye contact with her. They have lost the habit. They do not recognize visitors because they are missing too much. Their complaints and regrets bore them. They don’t feel they are part of the team.

Once she visited the rooms on the right of the corridor, she went to the left side, to the “*Not Near Room.*” Those who were next to the stolen sculpture. And since their disappearance they have not even asked again. *Sculptures with no eyes* look her up and down, without any empathy. She prefers to think they have not seen her. She listens to a secure voice, which comes from the *Spokesman of the Council of Emotions*, who starts the meeting. It is necessary to face the fact of theft and start making decisions. Find out who has been the guilty before it is judged by the *Court of Righteousness*.

After 5 hours, the members of the council were still trying to assess what could have happened with the sculpture. The clues confused them. The *Query Painting* had not manifested yet. Its strokes made a slight movement. Everyone else looked paying more attention than on other occasions, but they didn’t understand why the picture wasn’t able to talk.

**Mya**, as she did not know anything about it, felt a greater curiosity for the painting. She waited just to see what it was doing. Its images were as clocks with



distorted shapes and its light was different from the rest. Would it know who was the guilty of the disappearance? What were the reasons of its differences? Would it be able to reach others with harmony? What a different museum! All its elements express those they feel and hear! She exclaimed.

Suddenly, several coordinated voices arise:

- *Painting Two*: “We were drawn to remember the decay of those who live depending on something or someone.”
- *Sculpture Eight*: “We were built to remember that principles exist.”
- *Mosaic Fifteen*: “We were just to remember that the senses exist.”
- *Frame Ten*: “We were to remember the transcendence.”

Everyone directed their forms to *Painting Seven*, which looked at the ground for a few seconds and shouted with no-voice: “Please, let’s change something about our past!”

From this moment on, they understood why the *Pain* with their *Sculpture* had decided to leave.

## Author details

José Vicente Martínez-Quiñones<sup>1\*</sup>, Mar Martínez Gamarra<sup>2</sup>  
and Ignacio Jáuregui-Lobera<sup>3</sup>


<sup>1</sup> Department of Neurosurgery, Mutua de Accidentes de Zaragoza, Zaragoza, Spain

<sup>2</sup> Storytelling Spanish Association (ASEST), Zaragoza, Spain

<sup>3</sup> Department of Molecular Biology and Biochemical Engineering, University of Pablo de Olavide of Seville, Seville, Spain

\*Address all correspondence to: jvmartinez@maz.es

## IntechOpen

© 2020 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

## References

- [1] Kuner R, Flor H. Neural circuits of chronic pain. *Neuroscience*. 2018;**387**:1-3
- [2] Sancassiani F, Machado S, Ruggiero V, Cacace E, Carmassi C, Gesi C, et al. The management of fibromyalgia from a psychosomatic perspective: An overview. *International Review of Psychiatry*. 2017;**29**(5):473-488
- [3] Branco JC, Bannwarth B, Failde I, Abello Carbonell J, Blotman F, Spaeth M, et al. Prevalence of fibromyalgia: A survey in five European countries. *Seminars in Arthritis and Rheumatism*. 2010;**39**(6):448-453
- [4] Sumpton J, Moulin D. Fibromyalgia. In: Biller J, Ferro JM, editors. *Handbook of Clinical Neurology*, Vol. 119 (3rd series). Neurologic Aspects of Systemic Disease; Part I. Elsevier BV; 2014. pp. 513-524
- [5] Bennett R, Friend R, Marcus D, Bernstein C, Han BK, Yachoui R, et al. Criteria for the diagnosis of fibromyalgia: validation of the modified 2010 preliminary ACR criteria and the development of alternative criteria. *Arthritis Care and Research*. 2014;**66**(9):1364-1373
- [6] Burton AR. Neurasthenia. *Journal of the National Medical Association*. 1925;**17**(1):16-18
- [7] Gowers WR. A lecture on lumbago: its lessons and analogues. *BMJ*. 1904;**1**:117-121
- [8] Fletcher E. Fibrositis. *Postgraduate Medical Journal*. 1937;**13**(143):324-329
- [9] Smythe HA, Moldofsky H. Two contributions to understanding of the fibrositis syndrome. *Bulletin on the Rheumatic Diseases*. 1977;**28**:928-931
- [10] Wolfe F, Cathey MA. The epidemiology of tenders points: A prospective study of 1520 patients. *The Journal of Rheumatology*. 1985;**12**:1164-1168
- [11] Basted AC, Marshall LM. Review of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: an evidence-based approach to diagnosis and management by clinicians. *Reviews on Environmental Health*. 2015;**30**(4):223-249
- [12] Kissling W, Mendel R, Förstl H. The burn-out syndrome: prevalence, symptoms, differential diagnosis and treatment. *Deutsche Medizinische Wochenschrift*. 2014;**139**(50):2587-2596
- [13] Benjamin S, Morris S, McBeth J, Macfarlane GJ, Silman AJ. The association between chronic widespread pain and mental disorder: A population-based study. *Arthritis and Rheumatism*. 2000;**43**:561-567
- [14] McBeth J, Macfarlane GJ, Hunt IM, Silman AJ. Risk factors for persistent chronic widespread pain: a community-based study. *Rheumatology (Oxford)*. 2001;**40**:95-101
- [15] Wolfe F, Walitt B. Culture, science and the changing nature of fibromyalgia. *Nature Reviews Rheumatology*. 2013;**9**(12):751-755
- [16] Nicholas M, Vlaeyen JW, Rief W, Barke A, Aziz Q, Benoliel R, et al. The IASP classification of chronic pain for ICD-11: Chronic primary pain. *Pain*. 2019;**160**:28-37
- [17] Treede R-D, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. Chronic pain as a symptom or a disease: The IASP Classification of Chronic Pain for the International Classification of Diseases (ICD-11). *Pain*. 2019;**160**:19-27
- [18] Kool MB, Geenen R. Loneliness in patients with rheumatic diseases: The significance of invalidation and lack of

social support. *The Journal of Psychology*. 2012;**146**:229-241

[19] Adams LM, Turk DC. Psychosocial factors and central sensitivity syndromes. *Current Rheumatology Reviews*. 2015;**11**:96-108

[20] Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL, et al. The American College of Rheumatology 1990 Criteria for the Classification of Fibromyalgia. Report of the Multicenter Criteria Committee. *Arthritis and Rheumatism*. 1990;**33**(2): 160-172

[21] Wolfe F, Clauw DJ, Fitzcharles MA, Goldenberg DL, Katz RS, Mease P, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. *Arthritis Care & Research (Hoboken)*. 2010;**62**(5): 600-610

[22] Wolfe F, Clauw DJ, Fitzcharles MA, Goldenberg DL, Häuser W, Katz RS, et al. Fibromyalgia criteria and severity scales for clinical and epidemiological studies: A modification of the ACR Preliminary Diagnostic Criteria for Fibromyalgia. *The Journal of Rheumatology*. 2011;**38**(6):1113-1122

[23] Crawford BK, Piau EC, Lai C, Bennett RM. Assessing fibromyalgia-related fatigue: content validity and psychometric performance of the Fatigue Visual Analog Scale in adult patients with fibromyalgia. *Clinical and Experimental Rheumatology*. 2011;**29**(6 Suppl 69):S34-S43

[24] Bennett RM. Clinical manifestations and diagnosis of fibromyalgia. *Rheumatic Diseases Clinics of North America*. 2009;**35**(2):215-232

[25] Bennett RM, Jones J, Turk DC, Russell IJ, Matallana L. An internet survey of 2,596 people with fibromyalgia. *BMC Musculoskeletal Disorders*. 2007;**8**:27

[26] Turk DC, Adams LM. Using a biopsychosocial perspective in the treatment of fibromyalgia patients. *Pain Management*. 2016;**6**(4):357-369

[27] Wilson HD, Robinson JP, Turk DC. Toward the identification of symptom patterns in people with fibromyalgia. *Arthritis and Rheumatism*. 2009;**61**(4): 527-534

[28] Wolfe F, Brähler E, Häuser W. Fibromyalgia prevalence, somatic symptom reporting, and the dimensionality of polysymptomatic distress: Results from a survey of the general population. *Arthritis Care and Research*. 2013;**65**(5):777-785

[29] Meeus M, Nijs J. Central sensitization: a biopsychosocial explanation for chronic widespread pain in patients with fibromyalgia and chronic fatigue syndrome. *Clinical Rheumatology*. 2007;**26**(4):465-473

[30] Brummett CM, Bakshi RR, Goesling J, Leung D, Moser SE, Zollars JW, et al. Preliminary validation of the Michigan Body Map. *Pain*. 2016;**157**(6):1205-1212

[31] Neblett R, Cohen H, Choi Y, Hartzell MM, Williams M, Mayer TG, et al. The Central Sensitization Inventory (CSI): establishing clinically significant values for identifying central sensitivity syndromes in an outpatient chronic pain sample. *The Journal of Pain*. 2013;**14**(5):438-445

[32] Kroenke K. Physical symptom disorder: a simpler diagnostic category for somatization-spectrum conditions. *Journal of Psychosomatic Research*. 2006;**60**:335-339

[33] Rubin JJ. Psychosomatic pain: new insights and management strategies. *Southern Medical Journal*. 2005;**98**: 1099-1110

[34] Ehrlich GE. Pain is real; fibromyalgia isn't. *The Journal of Rheumatology*. 2003;**30**:1666-1667

- [35] McCarberg BH. Clinical overview of fibromyalgia. *American Journal of Therapeutics*. 2012;**19**(5):357-368
- [36] Fitzcharles MA, Yunus MB. The clinical concept of fibromyalgia as a changing paradigm in the past 20 years. *Pain Research and Treatment*. 2012; **2012**:184835
- [37] Buskila D, Atzeni F, Sarzi-Puttini P. Etiology of fibromyalgia: the possible role of infection and vaccination. *Autoimmunity Reviews*. 2008;**8**(1):41-43
- [38] Arnold LM, Hudson JI, Hess EV, et al. Family study of fibromyalgia. *Arthritis and Rheumatism*. 2004;**50**(3): 944-952
- [39] Holliday KL, McBeth J. Recent advances in the understanding of genetic susceptibility to chronic pain and somatic symptoms. *Current Rheumatology Reports*. 2011;**13**(6):521-527
- [40] Burke NN, Finn DP, McGuire BE, Roche M. Psychological stress in early life as a predisposing factor for the development of chronic pain: Clinical and preclinical evidence and neurobiological mechanisms. *Journal of Neuroscience Research*. 2017;**95**(6): 1257-1270
- [41] Scarinci IC, McDonald-Haile J, Bradley LA, Richter JE. Altered pain perception and psychosocial features among women with gastrointestinal disorders and history of abuse: a preliminary model. *The American Journal of Medicine*. 1994 Aug;**97**(2): 108-118
- [42] Yunus MB. Editorial Review: An update on central sensitivity syndromes and the issues of nosology and psychobiology. *Current Rheumatology Reviews*. 2015;**11**:70-85
- [43] Murgatroyd C, Spengler D. Epigenetics of early child development. *Frontiers in Psychiatry*. 2011;**2**:16
- [44] Ablin J, Neumann L, Buskila D. Pathogenesis of fibromyalgia— a review. *Joint, Bone, Spine*. 2008;**75**(3): 273-279
- [45] Limer KL, Nicholl BI, Thomson W, Mcbeth J. Exploring the genetic susceptibility of chronic widespread pain: The tender points in genetic association studies. *Rheumatology*. 2008;**47**(5):572-577
- [46] Beggs S. Long-term consequences of neonatal injury. *Canadian Journal of Psychology*. 2015;**60**:176-180
- [47] Schwaller F, Fitzgerald M. The consequences of pain in early life: Injury-induced plasticity in developing pain pathways. *The European Journal of Neuroscience*. 2014;**39**:344-352
- [48] Clos-Garcia M, Andrés-Marin N, Fernández-Eulate G, Abecia L, Lavín JL, van Liempd S, et al. Gut microbiome and serum metabolome analyses identify molecular biomarkers and altered glutamate metabolism in fibromyalgia. *eBioMedicine*. 2019;**46**: 499-511
- [49] Wolfe F, Häuser W, Walitt BT, Katz RS, Rasker JJ, Russell AS. Fibromyalgia and physical trauma: The concepts we invent. *The Journal of Rheumatology*. 2014;**41**(9):1737-1745
- [50] Palagini L, Carmassi C, Conversano C, Gesi C, Bazzichi L, Giacomelli C, et al. Transdiagnostic factors across fibromyalgia and mental disorders: Sleep disturbances may play a key role. A clinical review. *Clinical and Experimental Rheumatology*. 2016;**34**: S140-S144
- [51] Plazier M, Ost J, Stassijns G, De RD, Vanneste S. Pain characteristics in fibromyalgia: Understanding the multiple dimensions of pain. *Clinical Rheumatology*. 2015;**34**:775-783
- [52] Chinn S, Cadwell W, Gritsenko K. Fibromyalgia pathogenesis and



treatment options update. *Current Pain and Headache Reports*. 2016;**20**:25-35

[53] Walker J, Holloway I, Sofaer B. In the system: Patients' experiences of chronic back pain. *Pain*. 1999;**80**: 621-628

[54] Helgeson VS. Two important distinctions in social support: Kind of support and perceived versus received. *Journal of Applied Social Psychology*. 1993;**23**:825-845

[55] Belle D. Gender differences in the social moderators of stress. In: Barnett RC, Biener L, Baruch GK, editors. *Gender and Stress*. Nueva York: Free Press; 1987. pp. 257-277

[56] Weber RP. *Basic Content Analysis*. Newbury Park, CA: Sage Publications; 1990

[57] Jáuregui-Lobera I. *Cuestiones de género*. Zaragoza: Libros Certeza; 2007

[58] Jáuregui-Lobera I, Martínez-Gamarrá M, Montes-Martínez M, Martínez-Quñones JV. Storytelling as instrument of communication in health contexts. *Journal of Negative and No Positive Results*. 2020;**5**

[59] Okifuji A, Gao J, Bokar C, Hare BD. Management of fibromyalgia syndrome in 2016. *Pain Management*. 2016;**6**(4): 383-400

[60] Government of Spain. *Fibromyalgia*. Madrid (Spain): Ministry of Health, Social Policy and Equality; 2011

[61] Bidari A, Moazen-Zadeh E, Ghavidel-Parsa B, Rahmani S, Hosseini S, Hassankhani A. Comparing duloxetine and pregabalin for treatment of pain and depression in women with fibromyalgia: an open-label randomized clinical trial. *DARU*. 2019;**27**:149-158

[62] Bennett RM, Kamin M, Karim R, Rosenthal N. Tramadol and acetaminophen combination tablets in the treatment of fibromyalgia pain: A double blind, randomized, placebo-controlled study. *The American Journal of Medicine*. 2003;**114**(7):537-545

[63] Holman AJ, Myers RR. A randomized, double-blind, placebo-controlled trial of pramipexole, a dopamine agonist, in patients with fibromyalgia receiving concomitant medications. *Arthritis and Rheumatism*. 2005;**52**(8):2495-2505

[64] Skrabek RQ, Galimova L, Ethans K, Perry D. Nabilone for the treatment of pain in fibromyalgia. *The Journal of Pain*. 2008;**9**(2):164-173

[65] Scharf MB, Baumann M, Berkowitz DV. The effects of sodium oxybate on clinical symptoms and sleep patterns in patients with fibromyalgia. *The Journal of Rheumatology*. 2003;**30**(5): 1070-1074

[66] Kelley GA, Kelley KS, Jones DL. Efficacy and effectiveness of exercise on tender points in adults with fibromyalgia: A meta-analysis of randomized controlled trials. *Art*. 2011; **2011**:125485

[67] Busch AJ, Webber SC, Brachaniec M, et al. Exercise therapy for fibromyalgia. *Current Pain and Headache Reports*. 2011;**15**(5):358-367

[68] Mist SD, Firestone KA, Jones KD. Complementary and alternative exercise for fibromyalgia: A meta-analysis. *Journal of Pain Research*. 2013;**6**: 247-260

[69] Jáuregui Lobera I, Martínez Quñones JV. Neuromodulation in eating disorders and obesity: A promising way of treatment? *Neuropsychiatric Disease and Treatment*. 2018;**14**:2817-2835



[70] Galhardoni R, Correia GS, Araujo H, et al. Repetitive transcranial magnetic stimulation in chronic pain: A review of the literature. *Archives of Physical Medicine and Rehabilitation*. 2015;**96**(4 suppl):S156-S172

[71] Boyer L, Dousset A, Roussel P, et al. rTMS in fibromyalgia: A randomized trial evaluating QoL and its brain metabolic substrate. *Neurology*. 2014;**82**(14):1231-1238

[72] Bernardy K, Klose P, Welsch P, Häuser W. Efficacy, acceptability and safety of Internet-delivered psychological therapies for fibromyalgia syndrome: A systematic review and meta-analysis of randomized controlled trials. *European Journal of Pain*. 2019;**23**(1):3-14

[73] Lauche R, Cramer H, Häuser W, Dobos G, Langhorst J. A Systematic overview of reviews for complementary and alternative therapies in the treatment of the fibromyalgia syndrome. *Evidence-based Complementary and Alternative Medicine*. 2015;**2015**:610615