

## **FIBROMYALGIA FROM THE GENDER PERSPECTIVE: TRIGGERING, CLINICAL PRESENTATION AND COPING**

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### **ABSTRACT**

**Objective:** to identify the gender-based differences regarding triggering, clinical presentation and coping of fibromyalgia.

**Method:** an integrative literature review of the narrative type and conducted in five stages, about how research studies discuss the gender-based differences regarding fibromyalgia. It was carried out in November 2022 with the fibromyalgia/*fibromialgia* and gender/*género* descriptors in the LILACS, MEDLINE, BDNF and IBECS databases via BVS and PubMed. The studies included were those published in the last 10 years, available in full and of free access, in English, Portuguese and Spanish.

**Results:** a total of 16 research studies conducted in United States, Spain, Mexico, Portugal, Egypt, Israel, Italy and Colombia were analyzed. No studies were found in Brazil, an only one of them includes a nurse as author. There is a prevalence of fibromyalgia in females and it is agreed that belonging to this gender can be a risk factor for the disease, due to the lower pain threshold and greater sensitivity to pressure and temperature. Men and women have different pain perceptions and experiences, which can generate underdiagnosis among the former. There are few male participants in the research studies. Only one survey addressed the transgender population.

**Conclusion:** there are divergent conclusions, with controversial data and hypotheses to explain the diagnostic disparity between the genders, and the low number of diagnosed men impacts on research studies. There is a broad field to be explored in Brazil about this topic and there is an evident need for research studies with transgender people. Analyses that correlate all genders may help reorganize fibromyalgia management to promote the patients' well-being and quality of life.

**DESCRIPTORS:** Fibromyalgia. Chronic pain. Gender. Sex. Literature review.

**HOW CITED:** Costa LP, Ferreira MA. Fibromyalgia from the gender perspective: triggering, clinical presentation and coping. *Texto Contexto Enferm* [Internet]. 2023 [cited YEAR MONTH DAY]; 32:e20220299. Available from: <https://doi.org/10.1590/1980-265X-TCE-2022-0299en>

# A FIBROMIALGIA NA PERSPECTIVA DE GÊNERO: DESENCADEAMENTO, CLÍNICA E ENFRENTAMENTO

## RESUMO

**Objetivo:** identificar as diferenças de gênero com o desencadeamento, a apresentação clínica e o enfrentamento da fibromialgia.

**Método:** revisão integrativa da literatura, do tipo narrativa, realizada em cinco etapas sobre como as pesquisas discutem as diferenças de gênero na fibromialgia. Realizada em novembro de 2022 com os descritores *fibromialgia/fibromyalgia*, *gênero/gender*, nas bases LILACS, MEDLINE, BDNF e IBECs através da Biblioteca Virtual em Saúde e PubMed. Incluíram-se estudos publicados nos últimos 10 anos, disponíveis na íntegra e de acesso livre, nos idiomas português, inglês e espanhol.

**Resultados:** analisou-se 16 pesquisas realizadas nos Estados Unidos, Espanha, México, Portugal, Egito, Israel, Itália e Colômbia. Não se encontrou estudos do Brasil e apenas em um deles há enfermeiro na autoria. Há prevalência da fibromialgia no gênero feminino e concordância de que pertencer a este gênero pode ser um fator de risco para a doença, pelo menor limiar de dor e maior sensibilidade à pressão e temperatura. Homens e mulheres têm percepções e experiências diferentes da dor e isto pode gerar subdiagnóstico em homens. Há baixa amostragem masculina nas pesquisas. Somente uma pesquisa abordou a população transgênera.

**Conclusão:** há conclusões divergentes, com dados controversos e hipóteses para explicar a disparidade diagnóstica entre os gêneros e o baixo número de homens diagnosticados impacta nas pesquisas. Há um campo a ser explorado no Brasil sobre este tema e se evidencia necessidade de pesquisas com transgêneros. Análises que correlacionem os gêneros podem ajudar a reorganizar o manejo da fibromialgia para promover o bem-estar e qualidade de vida dos pacientes.

**DESCRITORES:** Fibromialgia. Dor crônica. Gênero. Sexo. Revisão de literatura.

# LA FIBROMIALGIA DESDE LA PERSPECTIVA DE GÉNERO: DESENCADENAMIENTO, PRESENTACIÓN CLÍNICA Y AFRONTAMIENTO

## RESUMEN

**Objetivo:** identificar las diferencias de género en relación con el desencadenamiento, la presentación clínica y el afrontamiento de la fibromialgia.

**Método:** revisión integradora de la literatura de tipo narrativa, realizada en cinco etapas sobre la forma en la que los trabajos de investigación debaten las diferencias de género en la fibromialgia. La revisión se condujo en noviembre de 2022 con los descriptores *fibromialgia/fibromyalgia* y *género/gender*, en las bases de datos LILACS, MEDLINE, BDNF e IBECs a través de la BVS y PubMed. Se incluyeron estudios publicados en los últimos 10 años, disponibles en su texto completo, de acceso gratuito y en portugués, inglés y español.

**Resultados:** se analizaron 16 trabajos de investigación realizados en Estados Unidos, España, México, Portugal, Egipto, Israel, Italia y Colombia. No se encontraron estudios provenientes de Brasil y solamente uno de ellos incluía a un enfermero entre sus autores. Se registra prevalencia de fibromialgia en el sexo femenino y se concuerda que pertenecer a este género puede ser un factor de riesgo para padecer la enfermedad, debido al umbral de dolor más bajo y a la mayor sensibilidad a la presión y a la temperatura. Los hombres y las mujeres tienen distintas percepciones y experiencias en relación con el dolor y eso puede generar subdiagnóstico en los hombres. Se detecta un bajo muestreo masculino en los trabajos de investigación. Solamente uno analizó a la población transgénero.

**Conclusión:** se registran conclusiones divergentes, con datos controversiales e hipótesis para explicar la disparidad diagnóstica entre los géneros; además, la escasa cantidad de hombres diagnosticados ejerce un efecto en los trabajos de investigación. Existe un campo a ser explorado en Brasil sobre este tema y se hace evidente la necesidad de realizar trabajos de investigación con personas transgénero. Análisis que correlacionen los géneros podrán ayudar a reorganizar el manejo de la fibromialgia para promover el bienestar y la calidad de vida de los pacientes.

**DESCRIPTORES:** Fibromialgia. Dolor crónico. Género. Sexo. Revisión de la literatura.

## INTRODUCTION

Fibromyalgia (FM) is a chronic rheumatic disease lasting more than three months, multifactorial, with complex etiopathogenesis and still not fully understood, characterized by diffuse musculoskeletal pain, mental fatigue, changes in behavior, concentration and memory, usually associated with signs and symptoms such as anxiety, depression, and sleep, mood and gastrointestinal disorders, triggering countless limitations and disabilities in the patients<sup>1-3</sup>.

Therefore, in addition to all its biological variables, FM also involves psychological and social variables that permeate the entire health/disease process. Given the broad range of symptoms, it can be asserted that fibromyalgia exerts negative effects on the physical, cognitive, social, family and professional aspects of the people affected<sup>4</sup>.

There is still much difficulty in relation to its diagnosis. This difficulty is closely related to subjectivity and to the non-specific symptoms of the disease. Predominantly, the diagnosis is made based on assessing the presence of pain and sensitivity in at least 11 points, called “tender points”, associated with the clinical judgment of the signs and symptoms mentioned by the individuals. Therefore, its diagnosis becomes difficult, oftentimes late, and even undergoing many variations according to the physician’s experience<sup>5-6</sup>.

From the epidemiological point of view, what draws the attention in the FM scenario is its high prevalence among women<sup>5</sup>. It is a frequent disease in the population aged between 35 and 44 years old, in a proportion of up to nine women for every man affected. In Brazil, it is found in up to 2.5% of the general population and it is estimated that it affects from 2% to 4% of the world population. A number of studies also show an increase to 5% among women living in United States, and to 4.7% of the population in some European countries<sup>7</sup>.

A Spanish study indicates that FM affects 4-2% of the women aged between 40 and 50 years old and with low schooling levels, when compared to 0.2% of the men. In addition to that, women aged less than 60.6 years old tend to present more acute symptoms of the disease<sup>4</sup>. Women are 1.5 times more likely to experience generalized chronic pain than men and are 10 times more likely to have 11 or more “tender points” in their clinical examination, a fact that can explain the higher prevalence of FM in women<sup>6</sup>.

Furthermore, in addition to the higher prevalence of fibromyalgia among women, some significant clinical differences in the presentation of fibromyalgia symptoms between men and women have already been pointed out. Therefore, properly identifying such differences in the clinical aspects between the genders can favor a better understanding of the pathophysiology of the disease, as well as assist in the implementation of the most appropriate therapeutic approach<sup>8</sup>.

In view of the higher prevalence of FM in females, this research aims at identifying gender differences in terms of triggering, clinical presentation and coping with fibromyalgia.

## METHOD

This is an Integrative Literature Review (ILR) of the narrative type, whose method aims at generating new knowledge on a given topic by means of a review, criticism and synthesis of the literature in an integrated manner, from new frameworks and perspectives on the researched topic<sup>9</sup>.

The following stages were applied to develop this ILR: elaboration of the research question; preparation of the search with the inclusion and exclusion criteria; critical assessment of the sample with identification of pre-selected and selected studies; data extraction with synthesis and critical analysis of the studies selected; presentation of the discussion and conclusion of the knowledge review<sup>9-10</sup>.

In order to conduct this study, the following research question was first formulated: How has the literature been discussing the gender-based differences regarding triggering, clinical presentation

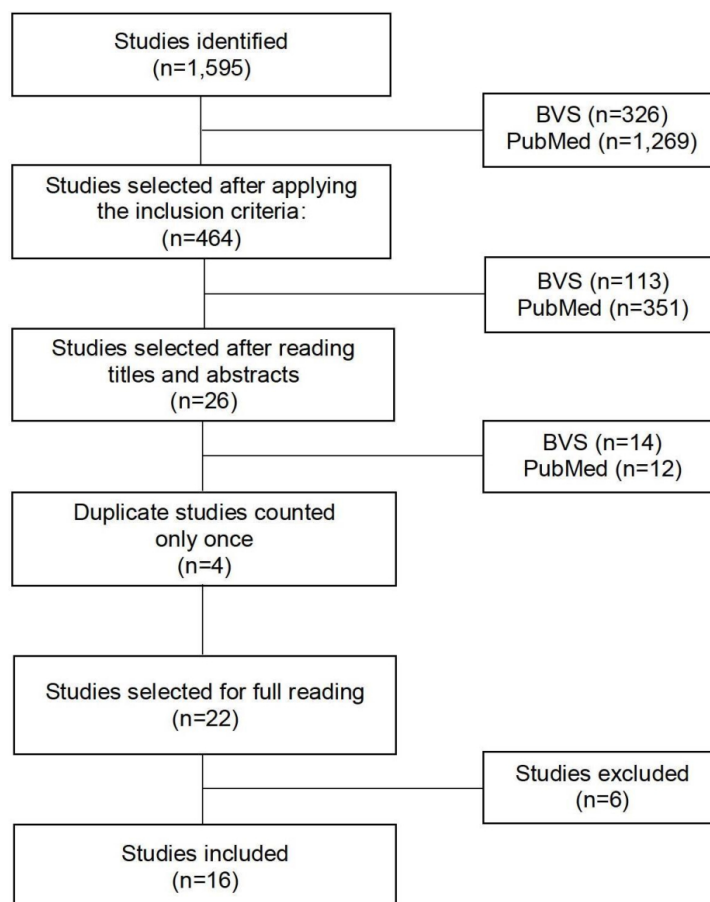
and coping of fibromyalgia? From elaboration of the question, a survey of the universal descriptors was carried out through the Descriptors in Health Sciences (*Descritores em Ciências da Saúde*, DeCS) from *Biblioteca Virtual em Saúde* (BVS) and the Medical Subject Headings (MeSH) from the National Library. The following descriptors were selected in English and Portuguese, respectively: “Fibromyalgia/fibromialgia” and “gender/gênero.”

Subsequently, the following inclusion criteria were applied: studies from the last 10 years, published in full, available free of charge in Portuguese, English and Spanish and that present discussions about gender-based differences in terms of triggering, clinical presentation and coping with fibromyalgia. Thesis and dissertations were excluded, as well as editorials and letters to the editor.

The search was carried out in November 2022, in the following databases: *Literatura Latino-Americana em Ciências de Saúde* (LILACS), Medical Literature Analysis and Retrieval System Online (MEDLINE), *Base de Dados de Enfermagem* (BDENF) and Índice Bibliográfico Español en Ciencias de la Salud (IBECs) via *Biblioteca Virtual de Saúde* (BVS), as well as in the National Library of Medicine National Institutes of Health (PubMed).

When performing the searches based on the descriptors chosen, a total of 326 and 1,269 studies were found in BVS and in PubMed, respectively, totaling 1,595. After applying the inclusion criteria, 113 studies from BVS and 351 from PubMed were selected to proceed to reading their titles and abstracts.

After reading the titles and abstracts, with the objective of selecting the studies that were closest to the guiding question of this review, 14 publications in BVS and 12 in PubMed were selected, four of which were duplicates and, thus, counted only once, totaling 22 publications. A total of 16 studies were selected after full-reading (Figure 1).



**Figure 1** - Flow corresponding to the search and selection of studies in the databases, based on the research criteria. Rio de Janeiro, RJ, Brazil, 2022.

The data extracted from the articles selected in the review were organized into spreadsheets with the following variables: study title, authors, year of publication, language, journal, objective, method, main results and level of evidence.

In order to determine the level of evidence, the rigor and characteristics of each study were considered, based on the methodological approach employed in them. The research studies were hierarchically classified into levels of evidence according to their designs, namely: Level 1 - Meta-analysis results of multiple randomized controlled clinical studies; Level 2 - Results of individual experimental studies; Level 3 - Results of quasi-experimental studies; Level 4 - Results of descriptive studies (non-experimental) or with a qualitative approach; Level 5 - Results of case or experience reports; and Level 6 - Experts' opinions<sup>11</sup>.

Therefore, such information was grouped and generated a data synthesis, allowing for the presentation of the results and their discussion, as well as the indication of gender-based differences in terms of triggering, clinical presentation and coping with fibromyalgia.

## RESULTS

After the analytical reading of all 16 selected articles, a chart was prepared to present the main characteristics of these studies, such as identification, year of publication, journal, language, type of study, objectives and level of evidence (Chart 1).

**Chart 1** - Distribution of the studies included in the integrative review, according to the BVS and PubMed databases and in order as per year of publication. Rio de Janeiro, RJ, Brazil, 2022.

Identification Year	Journal/ Language	Type of study	Objective	LE*
1 <sup>12</sup> 2022	Open Access Rheumatol English	Cross-sectional and prospective study	To assess gender-based differences in terms of characteristics of the symptoms, cognitive dysfunction and disease severity in Egyptian patients with FM, considering the ACR 1990, 2011, and the latest ACR 2016 diagnostic criteria.	3
2 <sup>13</sup> 2022	Clin Rheumatol English	Cross-sectional study	To assess the influence of gender on the clinical manifestations and to investigate the BDNF serum levels as a potential biomarker for fibromyalgia.	3
3 <sup>14</sup> 2022	Am J Mens Health English	Cross-sectional study	To explore the association of sociodemographic and clinical factors in fibromyalgia patients with depression and/or anxiety.	3
4 <sup>15</sup> 2021	Clin Rheumatol English	Systematic Review	To systematically review the available findings on men affected by fibromyalgia, to highlight their psychological and clinical characteristics, and to highlight the therapeutic options available for this population group.	1
5 <sup>16</sup> 2021	Clin Rheumatol English	Cross-sectional and retrospective cohort study	To assess the prevalence of fibromyalgia among transsexual individuals.	3
6 <sup>17</sup> 2020	Front Neurosci English	Hypothesis	To present the biological data of the autoimmune hypothesis that can explain the female prevalence of fibromyalgia, followed by how it can explain the central sensitization and sleep disturbance that characterize the syndrome.	4

Chart 1 - Cont.

Identification Year	Journal/ Language	Type of study	Objective	LE*
7 <sup>18</sup> 2020	Mayo Clin Proc Innov Qual Outcomes English	Prospective study	To investigate gender-related differences in patients with fibromyalgia in terms of demographic and clinical characteristics, including number of pain points, mood disorders, sleep problems, severity of the FM symptoms, fatigue, cognitive dysfunction and quality of life.	3
8 <sup>19</sup> 2018	PLOS One English	Analysis of databases from longitudinal research studies	To define the role of environment, severity, prevalence of symptoms and gender in the diagnosis of fibromyalgia and, when possible, to measure the extent and mechanisms of biased diagnostic.	3
9 <sup>20</sup> 2018	J Womens Health (Larchmt) English	Quantitative research study	To compare sociodemographic characteristics, medical and psychiatric comorbidities, and use of services among veterans diagnosed with fibromyalgia when compared to veterans with other pain diagnoses; to examine differences between men and women diagnosed with fibromyalgia in sociodemographic characteristics, concurrent diagnoses and use of services, including psychotropic and opiate prescription fillings; to replicate previous findings on gender-based differences in prevalence and to extend them with an examination of gender-based differences in multimorbidity and use of services.	3
10 <sup>21</sup> 2018	Am J Mens Health English	Qualitative research study with interviews and thematic analysis	To understand the phenomenon of fibromyalgia, examining its multiple impacts on men in terms of the interactions in society and the USA health system.	4
11 <sup>22</sup> 2016	Aquichan Spanish	Quantitative and quasi-experimental study with pre- and post-test	To assess, from a gender perspective, the training strategy for fibromyalgia patients of the Patients' School, based on training "among peers".	3
12 <sup>23</sup> 2016	Pain Res Manag English	Cross-sectional study	To test gender-based differences in sensitivity, impact of fibromyalgia, health-related quality of life, fatigue, sleep quality, mental health, cognitive performance, pain-cognition and positive health in Spanish patients with fibromyalgia and in age-matched individuals without fibromyalgia from the same region; to test the optimal cutoff score of the different "tender points" for women and men.	3

Chart 1 - Cont.

Identification Year	Journal/ Language	Type of study	Objective	LE*
13 <sup>24</sup> 2015	Rheumatology English	Cohort study	To quantify the prevalence of fibromyalgia to describe its components - symptom severity score (SSS) and Widespread Pain Index (WPI) - and to identify biopsychosocial predictors of SSS severity as well as WPI using a population-based sample comprised by young adults.	3
14 <sup>25</sup> 2013	Univ Psychol Spanish	Qualitative research study	To describe and understand the phenomena of chronic pain without any organic cause (fibromyalgia) from a feminist and critical perspective through a tool to diagnose this pain with biopsychosocial dimensions: the psychosocial diagnosis of gender.	4
15 <sup>26</sup> 2012	Am J Mens Health English	Quantitative research study with application of a questionnaire	To examine the gender-based differences in terms of quality of life and symptoms among patients with fibromyalgia.	3
16 <sup>27</sup> 2012	Pain Med English	Cross-sectional study	To determine differences in pain, disability, depression and pressure sensitivity between men and women with fibromyalgia syndrome (FMS) and to analyze the relation between pain and pressure sensitivity in FMS.	3

\*LE= Level of Evidence

Chart 2 presents the main results of these studies.

Regarding the profile of the publications, of the 16 studies analyzed, 87.5% were published in English (n=14) and 12.5% in Spanish (n=2), all in foreign journals. No studies were found published in Portuguese and/or carried out in Brazil on this theme, which highlights the scarcity of Brazilian surveys addressing fibromyalgia and its gender-based particularities. The research studies were conducted in various countries, such as United States, Spain, Mexico, Portugal, Egypt, Israel, Italy and Colombia. In relation to the time frame, 62.5% were published in the last five years (n=10).

Regarding the methodological design employed, they were mostly quasi-experimental studies (n=12), followed by studies with a qualitative approach (n=3) and by systematic reviews (n=1).

These research studies were mainly developed by professional physicians, psychologists and physical educators. It is worth noting that only one of the studies included a professional nurse among its authors.

There is a prevalence of fibromyalgia in females and it is agreed that belonging to this gender can be a risk factor for the disease, due to the lower pain threshold and greater sensitivity to pressure and temperature. Men and women have different pain perceptions and experiences, which can generate underdiagnosis among the former. There are few male participants in the research studies. Only one survey addressed the transgender population.

**Chart 2** - Presentation of the main results found in the studies included in the integrative review, according to the BVS and PubMed databases and in order as per year of publication. Rio de Janeiro, RJ, Brazil, 2022.

Identification/ Year	Synthesis of the main results in relation to the gender of the people with fibromyalgia
1 <sup>12</sup> 2022	Higher proportion of women with fibromyalgia. Women present more symptoms, more pain points and greater severity of the disease. The disparities in prevalence are closely related to how the diagnosis is made. Applying diagnostic criteria enables a higher proportion of men diagnosed with fibromyalgia.
2 <sup>13</sup> 2022	The Brain-Derived Neurotrophic Factor levels are lower in people with fibromyalgia, which can be a possible biomarker for the relation between fibromyalgia and psychopathologies. Gender exerts an influence on the disease, as women present more varied symptomatology and men have more depressive symptoms.
3 <sup>14</sup> 2022	Of all 1,106 patients diagnosed with fibromyalgia, 1,052 were women and 54 were men. 318 were diagnosed with depression and/or anxiety and 42.6% of them were male, indicating an important relationship between fibromyalgia, depression and/or anxiety and gender.
4 <sup>15</sup> 2021	Men with fibromyalgia may present fewer pain points when compared to women. There may be certain variation in the symptoms and a catastrophic perception of the future, impacting on the male identity and social role. These affects and attitudes lead to silence, culminating in underdiagnosis, non-treatment and reduction in men's self-esteem. Therefore, they present worse coping with the disease, and are generally anxious and depressive when compared to women.
5 <sup>16</sup> 2021	Stress and trauma are important triggers for the onset of fibromyalgia and, due to psychological overload and gender dysphoria, fibromyalgia is highly prevalent among Israeli transgenders.
6 <sup>17</sup> 2020	Autoimmunity is a hypothesis for the high prevalence of fibromyalgia among women, as it is influenced by gender. Emotional and stressful factors are understood as triggers for onset of the disease, although not as causes. Confirmation of his hypothesis can generate advances in the diagnostic tests for fibromyalgia.
7 <sup>18</sup> 2020	Belonging to the female gender can be a risk factor for more pain points, lower pain threshold and greater sensitivity to pressure and temperature.
8 <sup>19</sup> 2018	There are many biases in the relation between fibromyalgia and gender, as many do not meet the American College of Rheumatology diagnostic criteria, generating biased evaluations about prevalence of the disease between the genders. The results indicate that, in the general population or in an unbiased sample of people with fibromyalgia, a mean of 60% will belong to the female gender.
9 <sup>20</sup> 2018	High prevalence of fibromyalgia was identified in young women when comparing American veterans who received this diagnosis to those who received other pain diagnoses. These women were younger than the men and more susceptible to associated psychopathologies and headache, whereas the men were more likely to present alcohol dependence, cardiovascular diagnoses, dementia, diabetes and paraplegia.
10 <sup>21</sup> 2018	High discrepancy between the prevalence and diagnosis of fibromyalgia in men. The main hypothesis is the influence of social stigma. For men, the impacts on affective and work relations are more significant than for women due to social demands, worsening the harms to men's mental health.
11 <sup>22</sup> 2016	Both men and women mention a negative perception about their health status and of the everyday limitations, although with differences in the experience between the genders. Men have a worse perception of their health, limitations and stress levels, in addition to greater difficulty managing and controlling the physical and emotional symptoms.



Chart 2 - Cont.

Identification/ Year	Synthesis of the main results in relation to the gender of the people with fibromyalgia
12 <sup>23</sup> 2016	There were no gender-based differences in relation to the fibromyalgia symptoms; however, it was identified that men are more affected than women in terms of sensitivity, sleep latency and mental health.
13 <sup>24</sup> 2015	It was identified that women are more susceptible to generalized pain. Considering severity of the symptoms, it is related to socioeconomic factors in men, such as schooling level, work situation and income. In turn, the psychological factors are more involved in deterioration among women. There are important gender-based differences in terms of fibromyalgia somatization.
14 <sup>25</sup> 2013	Men with fibromyalgia do not identify with the masculinity model proposed by the hegemonic ideas, thus generating negative behaviors and reduction in quality of life. Women with fibromyalgia also have a feeling of failure given when faced with their socially-imposed role, thus triggering physical and personal crises.
15 <sup>26</sup> 2012	Women with fibromyalgia present less vitality in the quality of life assessment than men. Physical impairment is more intense for men with fibromyalgia. Fatigue and tiredness in the morning are more intense for women. However, the female gender seems to employ better strategies to cope with the disease.
16 <sup>27</sup> 2012	When compared to women, men with fibromyalgia present greater reductions in their physical functions, inabilities and longer pain history. On the other hand, women present higher depression levels, pain intensity, number of pain points and hyperalgesia under pressure.

## DISCUSSION

Most of the publications on this theme reassert the high prevalence of fibromyalgia in the female gender, although they present hypotheses that may explain this discrepancy with males<sup>12-14,18,20,22-23,26-27</sup>.

A well-accepted hypothesis is that men and women have different pain perceptions and experiences and that these particularities can lead to misconceptions and underdiagnosis of fibromyalgia in men<sup>14,21,27</sup>. Women have a lower pain threshold than men and seek health services more frequently. In addition to that, when compared to women, men are less likely to identify symptoms and, therefore, to be properly diagnosed with fibromyalgia<sup>14</sup>.

The small number of men diagnosed with fibromyalgia exert a considerable impact on research studies in this area, given the higher concentration of studies on this topic in the female population<sup>23</sup>.

Another hypothesis is that such disparity in higher prevalence rates among women is associated with social stigma. For the male gender, the stigma of having a disease considered female can generate greater distress, with more significant impacts on affective, social and work relations than for women, given that men are culturally recognized as family providers, exacerbating the harms to men's mental health<sup>21</sup>.

Through a phenomenological approach, Spanish researchers presented the impacts of chronic pain from the perspective of the psychosocial diagnosis of gender. Data from this study show that men with fibromyalgia do not identify with the masculinity model proposed by the hegemonic ideas, feeling misunderstood and stigmatized by employers, co-workers, health professionals themselves and family members, generating negative behaviors such mood changes, isolation, conflicting attitudes or stances that considerably reduce these men's quality of life. In turn, women with fibromyalgia also show certain feeling of failure in their social roles as women, mothers, housewives and workers, which triggers physical and personal crises<sup>25</sup>.

Other factors, such as estrogen fluctuations, differences in brain functioning and interpretation of painful stimuli, genetic differences characteristic of the genders in sensitivity and the subjectivities of the painful experience accompanied by anxiety and a catastrophizing mentality are also resorted to as possible explanations for these differences in relation to the diagnosis and the gender category<sup>27</sup>.

According to a Mexican study, the influence of autoimmunity is another hypothesis raised to try to explain the prevalence of fibromyalgia in women. The researchers described aspects of fibromyalgia triggering that approximate it to an autoimmune disease related to the nervous system and, as autoimmunity is influenced by gender, this correlation may explain the prevalence of the disease in the female gender. In this research, emotional and stressful factors are understood as triggers for onset of the disease, but not as causes, as in autoimmune diseases. With this, from the survey of this hypothesis, the authors propose new investigative research studies, which may perhaps culminate in the identification of diagnostic tests for fibromyalgia, for example<sup>17</sup>.

Therefore, when it comes to the relation between fibromyalgia and gender, there are still many biases and controversies<sup>19,27</sup>. The diagnosis of fibromyalgia itself is a challenge, oftentimes difficult to be made, as it requires the examiner's knowledge and skills in the proper application of diagnostic criteria and in the clinical evaluation of the patient.

American authors point out that many people do not meet the criteria for fibromyalgia established by the American College of Rheumatology in 2010-2016, with a mean of 3/4 of these individuals belonging to the female gender, biasedly evaluated and without an impartial and criteria-based medical diagnosis. Consequently, through the analysis of longitudinal data, the study evidences that, in the general population or in an impartial sample of people diagnosed with fibromyalgia, approximately 60% will belong to the female gender<sup>19</sup>.

An Egyptian cross-sectional research study corroborates this hypothesis that disparities in prevalence are closely related to how the diagnosis is made. This study found a higher proportion of women with fibromyalgia when compared to men, with more symptoms, more pain points and greater disease severity; however, it is believed that this result may be due to the diagnostic challenges<sup>12</sup>. In other words, they encompass the variability in the prevalence of fibromyalgia according to the diagnostic criteria employed.

In 2016, the American College of Rheumatology updated the diagnostic criteria in order to improve the identification of fibromyalgia, easing its assessment by examiners. When these criteria are employed, a higher proportion of men are diagnosed with the disease. Thus, after these updates, it is speculated that the gender-based differences in the prevalence of fibromyalgia will be reduced<sup>12</sup>.

A research study developed in the United States found high prevalence of fibromyalgia in young women when comparing veterans who received this diagnosis to those who received other pain diagnoses. On average, these women were nine years old younger than the men and were more likely to have associated psychiatric diagnoses, particularly bipolar disorder and major depressive disorder, as well as a connective tissue disease and headache diagnoses. The men were more likely to have alcohol dependence, cardiovascular diseases, dementia, diabetic complications and paraplegia<sup>20</sup>.

In Portugal, a cross-sectional prospective cohort study carried out with young adults, with a very similar proportion of women and men with fibromyalgia (51.4% vs. 48.6%), also identified that women are more susceptible to generalized pain. In relation to severity of the symptoms, in men it is related to socioeconomic factors such as schooling, work and income. In turn, the psychological factors are more involved in deterioration among women. Therefore, important gender-based differences are found in the somatization of fibromyalgia, mainly related to the context of social disadvantage<sup>24</sup>.

Men with fibromyalgia have a greater reduction in physical function, disabilities and longer duration of pain history when compared to women. On the other hand, women present higher depression levels, pain intensity, more pain points and hyperalgesia under pressure<sup>27</sup>.

The results of a Spanish study are close to these data when asserting that physical impairment is more intense for men with fibromyalgia, worsening their perception of their own health and increasing the impact of the disease on mental health. Fatigue and tiredness in the morning are more intense for women. They also report psychological tensions, but seem to use coping strategies better. However, women with fibromyalgia have less vitality in the quality of life assessment than men<sup>26</sup>.

In this gender perspective, data from another Spanish study also found that male individuals have a worse perception of their own health, limitations and stress levels, in addition to greater difficulty managing and controlling physical and emotional symptoms<sup>22</sup>. This study was developed with 600 individuals with fibromyalgia, mostly women (n=589), and analyzed the effectiveness of a peer education program aimed at these people with pre- and post-test application. In general, it was observed that men and women suffer from the symptoms and limitations of the disease. However, after implementing the training strategy, improvements in life habits and psychosocial aspects were observed, with a reduction in stress and number of medical appointments, and better coping with the disease<sup>22</sup>.

There is a strong correlation between fibromyalgia and psychopathologies such as anxiety and depression, which raises doubts in how the diagnosis is made and stigmatized interpretations, in addition to further weakening strategies for coping with the disease.

A Colombian study carried out between 2010 and 2016 with 1,106 patients diagnosed with FM (1,052 women and 54 men) identified that 318 (28.75%) of these patients were diagnosed with depression and/or anxiety, a fact represented by approximately 28% of the women and 42.6% of the men. Therefore, there is a significant relation between fibromyalgia, depression and/or anxiety and male gender<sup>14</sup>.

Corroborating this fact and based on the assumption of the frequent association of fibromyalgia with neuropsychiatric symptoms, an Italian study analyzed the participation of the Brain-Derived Neurotrophic Factor (BDNF) as a possible biomarker for the relation between these diagnoses. The researchers identified that the BDNF levels are considerably lower in people with fibromyalgia, in addition to concluding that, although women present symptomatological variety when compared to men, these latter significantly stand out when presenting depressive symptoms associated with fibromyalgia. BDNF is related to the nerve growth factor, neuroplasticity, survival, differentiation and neuronal repair. In psychopathologies such as anxiety and depression, it is possible to identify reduced levels of this biomarker, as well as in conditions involving chronic pain, where the reduction in BDNF levels causes hyperalgesia<sup>13</sup>.

Therefore, the clinical presentation of fibromyalgia is significantly influenced by gender, where women have higher prevalence of pain and other symptoms of the disease and men have higher prevalence of associated anxiety and/or depression<sup>13</sup>.

From this perspective, men with fibromyalgia may have fewer pain points when compared to women. In addition to that, the perception of the future in the face of illness is more catastrophic for men, generating a significant impact on male identity and social role. These affections and attitudes make these men decide to endure pain in silence, culminating in underdiagnosis and non-treatment and reducing their self-esteem. Therefore, men with fibromyalgia have worse coping with the disease and are generally anxious and depressed, which exerts negative impacts on their quality of life when compared to women suffering from the same disease<sup>15</sup>.

Only one study stated not evidencing gender-based differences in terms of fibromyalgia symptoms *per se*, but identified that men are more intensely affected in terms of sensitivity, sleep latency and mental health when compared to women. This is a Spanish research study that evaluated the symptomatological variety of fibromyalgia and the impacts of the disease on the other clinical aspects of 960 participants, including men and women with and without fibromyalgia. The sample

consisted of 388 people with fibromyalgia (367 women and 21 men) and 285 individuals without this diagnosis (232 women and 53 men) aged between 30 and 60 years old<sup>23</sup>.

In view of the above, in general, the results of research studies already carried out on the topic agree that belonging to the female gender can be a risk factor for more pain points, lower pain thresholds and greater sensitivity to pressure and temperature than the male gender<sup>18</sup>.

It is noted that only one study addressed the prevalence of fibromyalgia in the transgender population. Recently, in a publication from 2021, Israeli researchers pointed out that stressful situations and traumas are important triggers for the onset of fibromyalgia and that, due to psychological overload and gender dysphoria, the disease is highly prevalent among Israeli transgenders. Thus, it is necessary to consider the extreme urgency to expand research in order to improve health practices for the transgender population. Health professionals must be trained to identify, treat, refer and monitor such patients efficiently and effectively<sup>16</sup>.

As a limitation of this study, it is observed that there is significant discrepancy between men and women with fibromyalgia in the studies already carried out, which can lead to misunderstandings in the interpretation of the results. The diagnosis of fibromyalgia itself is still a challenge for the medical and health community, given that it is closely dependent on the professional who performs it, based on criteria and clinical presentations.

## CONCLUSION

There is high prevalence of fibromyalgia in the female gender as an important epidemiological data to guide diagnostic and therapeutic actions. However, there are still many divergent conclusions about this theme, with controversial data and possible hypotheses already raised in an attempt to explain this diagnostic disparity between the genders. More research studies need to be conducted to confirm or refute such hypotheses.

Expanding discussions about fibromyalgia, not only in the biomedical field but also in the psychosocial field of illness, and better understanding the real prevalence of the disease and gender-based differences associated with clinical presentations, allow promoting better adaptation of the treatment on an individual basis, as well as disease monitoring according to these particularities.

There is scarcity of studies that present a more robust sampling of the male population with fibromyalgia and there is still much discrepancy in the reduced numbers of men making up the research samples. This is in line with the diagnostic challenges and the urgent need to overcome them. The scarcity of studies in Brazil is also an important finding that announces the need for more investments by Brazilian researchers on this topic.

There is a need to invest in research studies with the transgender population, so that it is possible to know potential specificities and propose care measures directed to this population group.

The reorganization of fibromyalgia management, from its identification to its therapeutic monitoring, with the intention of mitigating the disparities that still affect the well-being and quality of life of these people, depends heavily on an analysis of the prevalence of the disease and other factors correlated to the genders.

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## NOTES

### ORIGIN OF THE ARTICLE

The article was extracted from the thesis - Social representations of people with fibromyalgia about the diseases and co-creation of care practices, presented at the Graduate Program in Nursing of *Universidade Federal do Rio de Janeiro*, with its defense scheduled for May 2023.

### CONTRIBUTION OF AUTHORITY

Study design: Costa LP, Ferreira MA.

Data collection: Costa LP.

Data analysis and interpretation: Costa LP, Ferreira MA.

Discussion of the results: Costa LP, Ferreira MA.

Writing and/or critical review of the content: Costa LP, Ferreira MA.

Review and final approval of the final version: Costa LP, Ferreira MA.

### FUNDING INFORMATION

Financial support from *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)*, through the Stuy Scholarship of the Academic Excellence Program (*Programa de Excelência Acadêmica, PROEX*). Process number: 88887.343172/2019-00.

### CONFLICT OF INTEREST

There is no conflict of interest.

### EDITORS

Associated Editors: Jaime Alonso Caravaca-Morera, Ana Izabel Jatobá de Souza.

Editor-in-chief: Elisiane Lorenzini.

### HISTORICAL

Received: November 27, 2022.

Approved: March 15, 2023.

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