Research Square

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Prevalence and Associated Factors of Post-Traumatic Stress Disorder in People with Fibromyalgia in Primary Care

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Abstract

Background:

Central sensitization syndromes (CSS), including fibromyalgia (FM), are characterized by altered pain processing and heightened sensitivity, often accompanied by fatigue, cognitive issues, and mood disturbances. Psychiatric comorbidities, particularly post-traumatic stress disorder (PTSD), are common among these patients and may exacerbate symptoms. This study explores the prevalence of post-traumatic stress disorder (PTSD) in people with fibromyalgia and other central sensitization syndromes (CSS) in primary care in order to provide evidence that facilitates comprehensive clinical management.

Method:

Three semi-rural primary health care areas. 254 individuals over

18 years old diagnosed with CSS who gave their written informed consent to participate. An ad hoc questionnaire was applied, including sociodemographic and clinical variables, and the EGEP-5 instrument for PTSD detection. Prevalence of symptoms compatible with PTSD and their relationship with variables such as sex, gender, educational level, employment status, and participation in psychoeducational groups.

Results:

The sample was mainly composed of women (96.5%) with a mean age of 57.4 years. Fibromyalgia was diagnosed in 68.5% of participants, and 23.6% had both fibromyalgia and chronic fatigue syndrome. PTSD-compatible symptoms were present in 32.7% of participants. The highest rates were observed among those with higher education (48.7%) and women in unpaid work (42.6%) ($p < 0.05$). The most frequent traumatic events were the violent death of a loved one (54.4%) and psychological harassment (49.4%). Participation in psychoeducational groups was also associated with a higher prevalence of PTSD (40.9%).

Conclusions:

A high percentage of people with fibromyalgia present PTSD symptoms, associated with psychosocial and gender factors. Exposure to traumatic events is high. Systematic PTSD screening in primary care is recommended to improve the comprehensive management of people with CSS.

Trail registration: not applicable

Introduction

Central sensitization syndromes (CSS) encompass a group of disorders characterized by an alteration in pain processing at the level of the central nervous system, which leads to an amplification of nociceptive stimuli and, consequently, a hypersensitivity to pain that exceeds levels considered normal (Borst et al.,

2024; Min et al., 2024). Within this group, fibromyalgia (FM) is recognized as a chronic, complex, and multifactorial disease, whose aetiology has not yet been fully clarified. It is characterized by widespread musculoskeletal pain, often with an unclear onset and localization, and lasting for more than three months(Benachi Sandoval et al., 2023; Bhargava & Goldin, 2025; Wolfe et al., 2019). Individuals living with FM experience persistent and increased pain sensitivity, particularly in muscular structures. In addition, associated symptoms and clinical manifestations, such as fatigue, cognitive dysfunction, sleep disturbances, memory problems, and mood disorders, significantly affect their overall functioning (Berwick et al., 2022; Pereira et al., 2017; Rodríguez-Almagro et al., 2023). Compared with the general population, patients with FM tend to experience a poorer quality of life, which negatively impacts their social, occupational, and daily spheres (Borst et al., 2024; Gammoh et al., 2024; Mas et al., 2008; Rodríguez-Almagro et al., 2023). The global prevalence of FM is estimated to be around 5%, although significant variations exist between countries, ranging from 0.4% to 9.3% (Rodríguez-Almagro et al., 2023; Segura- Jiménez et al., 2019; Siracusa et al., 2021; Winslow et al., 2023). In Spain, the prevalence reaches 2.4% in the population over 20 years old, and 4.9% in the 40–49 age group (Benachi Sandoval et al., 2023; Kocyigit & Akyol, 2022; Seoane-Mato et al., 2019).

Psychiatric comorbidities such as psychological stress, dysthymia, depression, and anxiety are common among individuals with CSS (Gammoh et al., 2024; Revuelta Evrard et al., 2010; Siracusa et al., 2021). Moreover, previous studies indicate that between 26% and 45% of patients with fibromyalgia also present post-traumatic stress disorder (PTSD) (Borst et al., 2024; Gammoh et al., 2024). PTSD is a psychological response to severe traumatic events, manifested through flashbacks, avoidance, anxiety, and hypervigilance. When trauma is intense and sustained, it can alter the nervous system, increase pain sensitivity, and contribute to its chronicity (National Institute of Mental Health, 2024).

The comorbidity between CSS and PTSD, and particularly fibromyalgia and PTSD, represents a relevant clinical challenge, especially in primary care, where their detection

and management usually begin (Bäärnhielm et al., 2024; Benachi Sandoval et al., 2023). The absence of early diagnosis, the complexity of combined treatment, the limited effectiveness of pharmacological interventions, and gender stereotypes further aggravate the vulnerability of individuals with fibromyalgia (Bäärnhielm et al., 2024; Carta et al., 2018; Coppens et al., 2017). Although progress has been made in understanding these conditions, important gaps remain regarding their relationship. Therefore, the main objective of this study was to explore the prevalence of PTSD in individuals with fibromyalgia and other CSS in the primary care setting in order to provide evidence that facilitates their comprehensive clinical management (Bäärnhielm et al., 2024; Coppens et al., 2017; Palop Larrea et al., 2022; D. Patricia Roth et al., comunicación personal, 2021).

The main objective of this study was to explore the prevalence of PTSD in individuals with fibromyalgia and other CSS in the primary care setting in order to provide evidence that facilitates their comprehensive clinical management.

Methods

Design

A cross-sectional study was conducted in three semi-rural primary healthcare which serve a total population of 55,674 individuals.

Sample

The study population consisted of individuals diagnosed with CSS who were assigned to a primary care team in the participating centres. Inclusion criteria were individuals aged 18 years or older, with a diagnosis of any of the CSS, who agreed to participate in the study and gave their written informed consent. Exclusion criteria were language barriers, cognitive impairment (MMSE between 18 and 24 points), and patients with advanced chronic illness. A sample size calculation was performed, and 254 participants were included. With this sample, the prevalence of PTSD can be estimated with a 5% precision, assuming the principle of maximum indeterminacy (P = q=50).

Instruments

An ad hoc questionnaire was developed consisting of four sections that included validated scales. The first section collected sociodemographic data, including: sex (male, female), gender (male, female, non-binary), age (in years), current employment status (employed, unemployed, retired, other), and educational level (illiterate, no formal education but literate, primary, secondary, higher education). The second section gathered information on clinical diagnoses, including the presence of fibromyalgia, chronic fatigue syndrome, and multiple chemical sensitivity, as well as the number of months since diagnosis.

The third section assessed PTSD using the EGEP-5 questionnaire, a validated self-report tool translated into Spanish by Crespo M. et al. (Crespo López, 2017). The EGEP-5 consists of 58 items divided into three parts that evaluate exposure to traumatic events, symptomatology, and individual functioning. The assessed domains align with the DSM- 5 diagnostic criteria, providing information both on the presence of PTSD and on the severity of different symptom clusters (intrusive symptoms, avoidance, cognitive and mood alterations, and hyperarousal). The EGEP-5 is recognized for its ease of administration, scoring accuracy, and strong psychometric properties, making it a valuable tool for diagnosing PTSD and analysing its impact on daily functioning.

Data Collection

Following ethical approval and authorization from the participating centres, recruitment was initiated. Clinical coordinators at each centre identified eligible individuals and provided their contact information.

Subsequently, primary care nurses contacted these patients to inform them and record their interest. Those who expressed willingness were then contacted by a researcher, who explained the study in detail and sent them the information sheet. After 15 days, a follow-up call was made to confirm participation. Finally, an in-person visit at the health centre was scheduled to verify inclusion criteria, address any questions, obtain informed consent, and administer a 30-minute questionnaire.

Data Analysis

Quantitative data were analysed using the statistical software SPSS (version 27 for Windows). Quantitative variables were described using mean and standard deviation or median, depending on their distribution; categorical variables were presented as absolute frequencies and percentages. For comparisons, the chi-square or Fisher's exact tests were applied, as well as Student's t-test or the Mann–Whitney test. Statistical significance was set at $p < 0.05$ with a 95% confidence interval. Prior to the study, the validity and reliability of the questionnaire were assessed through a pilot test with 12 eligible patients, which did not lead to any modifications being required.

Ethical Considerations

The study was approved by the Ethics Committee of the Primary Care Research Institute (CEIM code: 24/085P), and the principles established in the Declaration of Helsinki were observed. The platform used for data collection complied with the security and data protection requirements set out by current regulations, including the European Union General Data Protection Regulation (GDPR) and applicable national legislation. All responses were anonymized and accessible only to authorized researchers, thereby ensuring the confidentiality and privacy of participants.

Results

The final sample consisted of 254 individuals, of whom 96.5% (n = 245) were women. The mean age of participants was 57.44 years (SD = 10.92), and the mean time since diagnosis was 159.34 months (SD = 111.75), corresponding to a median of approximately 13 years.

Regarding employment status, 38.2% of participants were employed, while 24% were engaged in unpaid work. With respect to educational level, a considerable proportion of the sample had primary (43.7%) or secondary (40.6%) education.

Concerning clinical diagnosis, 68.5% were diagnosed with fibromyalgia (FM), and 23.6% presented a combination of FM and chronic fatigue syndrome (CFS). In addition, 45.5% of the sample participated in a psychological support group (Table 1).

Table 1
Sociodemographic and Clinical Characteristics of the Sample. (n = 254)

	n (%) / Mean ± SD
Age	57.44 ± 10.92
Gender	
Female	245 (96.5%)
Male	9 (3.5%)
Employment Status	
Unemployed	37 (14.6)
Employed	97 (38.2)
Retired	59 (23.2)
Unpaid work	61 (24)
Educational Level	
Illiterate	0 (0)
No formal education, but literate	1 (0.4)
Primary education	111 (43.7)
Secondary education	103 (40.6)
Higher education	39 (15.4)
Clinical Diagnosis	
Fibromyalgia	174 (68.5)
Chronic fatigue syndrome	15 (5.9)
Multiple chemical sensitivity	1 (0.4)
Fibromyalgia + chronic fatigue syndrome	60 (23.6)
Fibromyalgia + chronic fatigue syndrome + Multiple chemical sensitivity	4 (1.6)
Months since diagnosis	159.34 ± 111.75
Participation in psychoeducational support group	
Yes	115 (45.5)
No	138 (54.5)

Regarding PTSD, the mean score on the EGEP-5 scale was 17.52 (SD = 14.43), while the mean score for the functioning dimension was 2.78 (SD = 1.71). A total of 83 participants (32.7%) exhibited symptoms

consistent with a diagnosis of post-traumatic stress disorder (see Table 2).

Table 2. Characteristics of Post-Traumatic Stress Disorder. (n=254)

	n (%) / Mean ±SD
EGEP-5	17.52±14.43
EGEP-5 Dimension 3: Functioning	2.78±1.71
PTSD Diagnosis	
Yes	83 (32.7)
No	171 (67.3)

Regarding gender, most individuals presenting with PTSD were women, with a rate of 33.1%, although this difference was not statistically significant ($p > 0.05$). Participants with FM and CFS showed higher rates of PTSD compared to the rest (35% vs. 31.6%, 33.3%, 25%; $p > 0.05$).

Concerning employment status, women engaged in unpaid work exhibited significantly higher levels of PTSD compared to other employment conditions (42.6% vs. 38.1%, 32.4%, 13.6%; $p < 0.05$).

Regarding educational level, individuals with higher education showed the highest rates of PTSD (48.7% vs. 27%, 32%; $p < 0.05$).

Finally, 40.9% of participants who attended group sessions had a positive result in PTSD screening ($p < 0.05$) (Table 3).

Concerning diagnostic criteria and the experience of a traumatic event, the criterion with the highest score was symptom duration, while the criterion with the lowest score corresponded to changes in cognitive and mood state. Table 4 presents the compliance percentages for each of the seven diagnostic criteria for post-traumatic stress disorder.
Regarding the traumatic events experienced by participants, the most frequent was having witnessed the accidental or violent death of a close person (54.4%), followed by having experienced psychological harassment or abuse (49.4%) and having been involved in a traffic accident (37.2%). The least reported event was exposure to a war zone (0.4%). Concerning events witnessed but not directly experienced, traffic accidents were the most common (2.9%). Finally, the most frequent traumatic event occurring to a close relative was also traffic accidents (17.2%). Table 5 presents the percentages corresponding to these traumatic events reported by the majority of participants (n = 239).

Participants identified the most significant traumatic event as death (20.9%), harassment (17.6%), and "other" (38.1%), which refers to situations such as parental divorce, not feeling valued by one's family, high levels of work-related stress, or being a caregiver for a dependent person (Fig. 1).

Discussion

The results of this study provide a clear view of the sociodemographic and clinical profile of individuals with diagnoses related to central sensitization syndromes, particularly fibromyalgia, as well as their

relationship with post-traumatic stress disorder. The sample was predominantly female (96.5%), a finding consistent with the literature reporting a significantly higher prevalence of FM and related disorders in this population (Wolfe et al., 2011). The mean age and the prolonged duration since diagnosis, approaching 13 years, reflect the chronic nature of these conditions, characterized by persistent pain, fatigue, and complex symptomatology that affects the quality of life of those affected (Benachi Sandoval et al., 2023; Bhargava & Goldin, 2025).

A total of 32.7% of participants exhibited symptoms consistent with PTSD, with high exposure to traumatic events (98.4%) and a notable prevalence of prolonged symptom duration (98.8%), far exceeding rates estimated in the general population, which range from 2% to 7% (Bäärnhielm et al., 2024; Florido López, 2020). This finding supports the hypothesis of an association between exposure to traumatic events and the development of CSS, a relationship mediated by psychological vulnerability factors that contribute to the comorbidity between PTSD and FM (Lopez et al., 2021; Vidal et al., 2025).

Among the most frequently reported traumatic events were the violent death of a loved one and psychological harassment. In addition, a considerable percentage of participants mentioned events related to chronic interpersonal stress or stress derived from caregiving roles. Although these experiences do not always meet the formal DSM-5 diagnostic criteria, they may exert a significant cumulative effect on mental health. Contemporary biopsychosocial models emphasize the complex interaction of biological, psychological, and social factors in the aetiology and persistence of central sensitization syndromes. These factors include trauma, mood disorders, maladaptive coping strategies, socioeconomic stressors, and gender roles, all of which contribute to symptom manifestation and chronicity (Antunes et al., 2021; Aznárez, 2017; Kaleycheva et al., 2021; Pujal i Llombart & Mora, 2017).

Regarding educational level, the statistically significant association between higher education and the presence of PTSD symptoms is noteworthy. This finding contrasts with previous research linking lower educational levels to a higher prevalence of central sensitization syndromes (Mur et al., 2017), suggesting that other factors may be involved, such as greater diagnostic awareness, higher personal demands, or differential exposure to occupational and social stressors among more highly educated groups.

Additionally, a significant association was identified between PTSD and employment status. Women engaged in unpaid work exhibited the highest rates of PTSD, possibly due to the high emotional burden combined with a lack of social recognition, a phenomenon reflecting structural gender inequalities and the invisibility of caregiving work (Aznárez, 2017; Pujal i Llombart & Mora, 2017). The emotional overload and limited external validation resulting from these conditions may contribute to the development of both PTSD and CSS, highlighting the need to integrate a gender perspective into clinical management.

In contrast, employed individuals with PTSD face adverse conditions, including lack of workplace accommodations and slow disability recognition processes, factors that exacerbate their symptomatology (Servicio Público de Empleo Estatal, 2022). On the other hand, retired individuals

showed a lower prevalence of PTSD, which may reflect reduced exposure to daily stressors or better adaptation to their life situations.

Participation in psychoeducational groups was associated with a higher prevalence of PTSD symptoms ($p < 0.05$). This finding could be interpreted in two ways: on the one hand, individuals with greater emotional impact may actively seek support; on the other hand, it suggests that, although these groups help alleviate emotional and clinical symptoms (Di-Bonaventura et al., 2024; Galvez-Sánchez & Montoro, 2023), they are insufficient to address severe post-traumatic symptoms, highlighting the need for specific interventions for individuals with CSS and PTSD.

This study presents limitations inherent to its cross-sectional design, which prevents establishing causality, and the use of self-administered questionnaires, which may introduce recall or social desirability biases. Nevertheless, the findings underscore the importance of systematically assessing PTSD in individuals with CSS in the primary care setting. Early detection and appropriate treatment of PTSD could significantly improve the prognosis and well-being of people with CSS, representing a necessary complementary approach in providing comprehensive clinical care.

Conclusions

A high percentage of individuals with fibromyalgia exhibit symptoms consistent with post-traumatic stress disorder. Statistically significant associations were identified between PTSD and higher educational level, as well as engagement in unpaid work, suggesting the influence of psychosocial and gender-related factors in the development of the disorder. Additionally, participation in psychoeducational groups was associated with a higher prevalence of symptoms, which may reflect both an increased seeking of support and the need for trauma-focused interventions.

Exposure to traumatic events was high, with experiences such as the violent death of a loved one and psychological harassment, as well as chronic interpersonal stress, being particularly prominent.

These findings support the need to incorporate systematic PTSD screening in the care of individuals with CSS in order to improve comprehensive therapeutic approaches and functional prognosis for this population in the primary care setting.

Declarations

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Author Contribution

Conceptualization, G.R.-G., D.C.-L., E.C.-B and S.M.-J.; data curation, G.R.-G., D.C.-L.; formal analysis, G.R.-G., R.N.-B.; investigation: LL.L.-F., N.P.-V., M.S.-A., E.C.-B.; methodology, G.R.-G., D.C.-L., S..M-J., and R.N.-

B.; visualization, G.R.-G., D.C.-L., S.S.-F., S.M.-J.; writing—original draft, G.R.-G., D.C.-L. and R.N.-B.; writing—review and editing, G.R.-G., D.C.-L., S.M.-J., R.N.-B., E.C.-B., N.P.-V., M.S.-A., LL.L.-F and S.S.-F. All authors have read and agreed to the published version of the manuscript.

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Availability of data and materials

The datasets used or analyzed during the current study are available from the corresponding author upon reasonable request.

Consent for publications

Not applicable.

Competing interest

The authors declare no competing interests.

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Table 3 To 5

Table 3 To 5 are available in the Supplementary Files section.

Figures

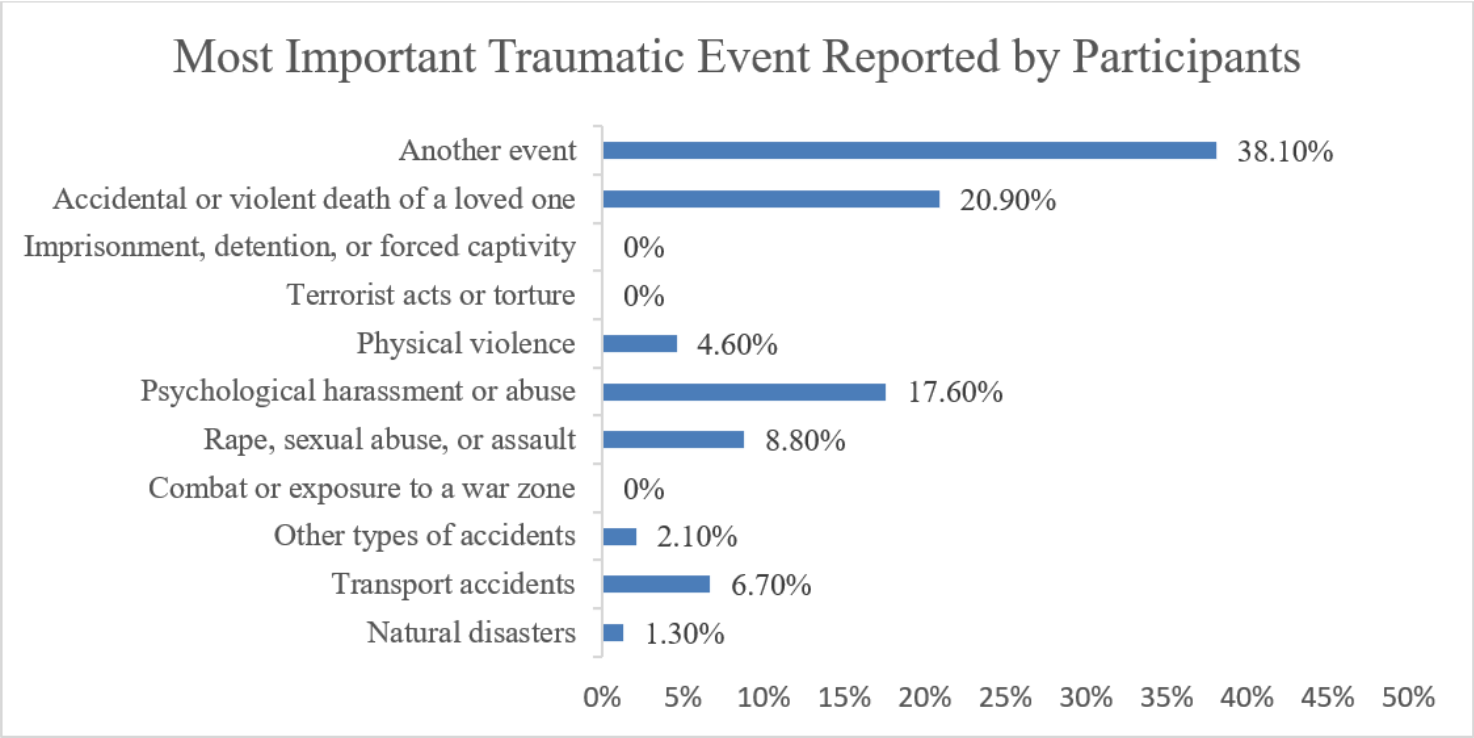


Figure 1

Most Important Traumatic Event Reported by Participants

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table3TO5.docx