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Prevalence and Characteristics of Fibromyalgia in Patients with Rheumatic Disease in Rheumatology Clinics in Kuwait

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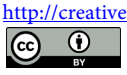


Abstract

Background: Fibromyalgia (FM) is a chronic pain syndrome characterized by widespread pain, fatigue, and associated symptoms that significantly impair quality of life. Its prevalence is higher among patients with rheumatic diseases compared to the general population, although regional data remain limited. This study aimed to determine the prevalence and clinical characteristics of FM in patients attending a rheumatology clinic in Kuwait. **Methods:** A cross-sectional study was conducted using consecutive sampling of adult patients attending rheumatology clinics at Farwaniya Hospital in Kuwait between May and July 2025. Patients completed a self-administered questionnaire based on the 2016 American College of Rheumatology (ACR) fibromyalgia criteria. Demographic and clinical data, including age, sex, BMI, diagnosis, disease duration, and comorbidities, were collected. Patients with a pre-existing diagnosis of FM were excluded. **Results:** A total of 208 patients were included, of whom 112 fulfilled FM criteria, corresponding to a prevalence of 53.9% (95% CI 46.8% - 60.8%). The FM group had a mean age of 45.1 ± 11.3 years, with a predominance of females (82.1%). Female sex was associated with FM in univariable analysis (OR 2.09, p = 0.037). Rheumatoid arthritis (RA) was less frequent in the FM group compared to the non-FM group (25.9% vs. 41.7%, OR 0.47, p = 0.022). The prevalence of FM was similar among patients with SLE, psoriatic arthritis, and axial spondyloarthritis. All patients with Sjögren's syndrome (n = 7) met FM criteria; however, the small sample size precludes firm conclusions. No significant associations were observed between FM and other comorbidities. **Conclusion:** FM was highly prevalent in this rheumatology cohort. Female sex was associated with fibromyalgia in univariable analysis. The high prevalence observed may reflect overlap between FM symptoms and rheumatic disease manifestations. Routine screening for FM in rheumatology

practice may improve clinical assessment and help distinguish inflammatory disease activity from non-inflammatory pain. Larger multicenter studies are needed to confirm these findings.

Keywords

Fibromyalgia, Inflammatory Rheumatic Diseases, Prevalence, Comorbidity, Disease Activity Assessment, Central Sensitization, Kuwait, Cross-Sectional Study

1. Introduction

Fibromyalgia (FM) is a chronic pain syndrome characterized by widespread musculoskeletal pain, fatigue, sleep disturbances, and cognitive dysfunction, leading to significant impairment in quality of life [1]. It is increasingly recognized as a common comorbidity among patients with rheumatic diseases, including rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), and spondyloarthritis (SpA) [2] [3].

The prevalence of FM in the general population is estimated at approximately 2% - 4%, whereas substantially higher rates have been reported in patients with inflammatory rheumatic diseases [3] [4]. The coexistence of FM in this population is clinically relevant, as it may lead to overestimation of disease activity, inappropriate escalation of immunosuppressive therapy, and poorer patient-reported outcomes [3] [5].

Several studies have demonstrated variability in the prevalence of FM across different rheumatic conditions, with reported associations influenced by demographic and clinical factors such as female sex, disease duration, and comorbidities [4] [6]. In the Middle East, reported prevalence estimates range from 1.6% to 26.5%, perhaps reflecting heterogeneity in study populations and methodologies; however, data from Kuwait remain scarce [7]-[10]. This represents an important regional evidence gap, particularly given potential differences in healthcare systems, disease characteristics, and sociocultural factors influencing symptom reporting. Understanding the burden and characteristics of FM in this setting is essential to improve diagnostic accuracy and optimize patient management.

Furthermore, the use of symptom-based classification criteria for FM in patients with inflammatory rheumatic diseases may lead to misclassification, particularly in the presence of active disease, thereby complicating clinical interpretation.

Therefore, this study aimed to determine the prevalence of FM among patients with rheumatic diseases attending a rheumatology clinic in Kuwait and to evaluate associated demographic and clinical factors.

2. Methodology

2.1. Study Design and Setting

This cross-sectional study was conducted at the rheumatology outpatient clinics of Farwaniya Hospital, Kuwait, between May and July 2025.

2.2. Study Population

Adult patients aged ≥18 years with a confirmed diagnosis of a rheumatic disease attending the rheumatology clinic during the study period were eligible for inclusion. Patients were recruited using consecutive sampling. Patients with a pre-existing diagnosis of FM were excluded to avoid duplication of diagnosis and potential bias in prevalence estimation. No formal sample size calculation was performed, as the study was exploratory in nature.

During the study period, 217 patients were approached. Nine patients with a pre-existing diagnosis of FM were excluded. All included participants completed the required 2016 American College of Rheumatology (ACR) fibromyalgia criteria items, allowing FM classification. The number of patients who declined participation was not systematically recorded. A total of 208 patients were included in the final analysis.

2.3. Data Collection

Participants completed a self-administered questionnaire based on the 2016 ACR fibromyalgia diagnostic criteria [1]. Participants completed an Arabic translation of the 2016 ACR fibromyalgia questionnaire prepared by the investigators based on the original criteria. The wording was reviewed with two bilingual rheumatologists to ensure clarity and comprehensibility. The questionnaire was self-administered, and assistance was provided only when participants requested clarification.

FM was defined according to the 2016 ACR criteria as: 1) Widespread Pain Index (WPI) ≥7 and Symptom Severity Scale (SSS) ≥5, or WPI 4 - 6 and SSS ≥9; 2) generalized pain in at least 4 of 5 body regions; and 3) symptoms present at a similar level for at least 3 months. Demographic and clinical data were collected, including:

- Age;
- Sex;
- Nationality;
- Body weight and body mass index (BMI);
- Rheumatic disease diagnosis (e.g., RA, SLE, PsA, axial SpA, Sjögren's disease);
- Disease duration;
- Comorbidities (including hypertension, diabetes mellitus, dyslipidemia, asthma, hypothyroidism, and anemia).

Clinical and diagnostic data were obtained from a combination of patient self-report and the hospital electronic health records. No objective measures of inflammatory disease activity (e.g., Disease Activity Score in 28 joints (DAS28), Systemic Lupus Erythematosus Disease Activity Index (SLEDAI), or Bath Ankylosing Spondylitis Disease Activity Index (BASDAI)) were systematically collected.

2.4. Outcome Measures

The primary outcome was the prevalence of FM, defined as the proportion of patients meeting the 2016 ACR criteria.

Secondary outcomes included the identification of demographic and clinical

factors associated with FM.

2.5. Statistical Analysis

Descriptive statistics were used to summarize baseline characteristics. Continuous variables were presented as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages.

Comparisons between patients fulfilling FM criteria, referred to as the FM group, and those who did not, referred to as the non-FM group, were performed using:

- Independent t-test for continuous variables.
- Chi-square test or Fisher's exact test for categorical variables, as appropriate

Univariate analysis was conducted to evaluate associations between fibromyalgia and clinical variables. Results were reported as odds ratios (OR) with 95% confidence intervals (CI).

Multivariable logistic regression was explored; however, due to sparse data in several variables and model instability, adjusted analysis was not performed, and only univariable associations are presented. Given these limitations, findings were interpreted as exploratory.

Missing data were handled using available-case analysis, with denominators reported for each variable where applicable.

A p-value < 0.05 was considered statistically significant. Statistical analyses were performed using the (JAMOVI project 2025, Jamovi version 2.7).

3. Results

3.1. Baseline Characteristics

A total of 208 patients were included, of whom 112 fulfilled FM criteria, corresponding to a prevalence of 53.9% (95% CI 46.8% - 60.8%). The mean age of the cohort was 45.1 ± 11.3 years in the FM group and 44.4 ± 12.0 years in the non-FM group, with no significant difference between groups (p = 0.679). The majority of patients were female, with a significantly higher proportion observed in the FM group compared to the non-FM group (82.1% vs. 68.8%, OR 2.09, p = 0.037).

The mean BMI was 30.6 ± 7.6 in the FM group and 28.6 ± 6.8 in the non-FM group, with no statistically significant difference (p = 0.214). Similarly, disease duration did not differ significantly between groups (3.24 ± 3.72 vs. 3.67 ± 4.00 years, p = 0.51). The proportion of Kuwaiti nationals was comparable between groups (81.3% vs. 79.2%, p = 0.84).

Table 1. Baseline characteristics of the study population.

Variable	FM Group (n = 112)	Non-FM Group (n = 96)	p-value
Age, years mean (SD) (N = 208)	45.1 (11.3)	44.4 (12.0)	0.679
Female sex, n (%) (N = 208)	92 (82.1%)	66 (68.8%)	0.037

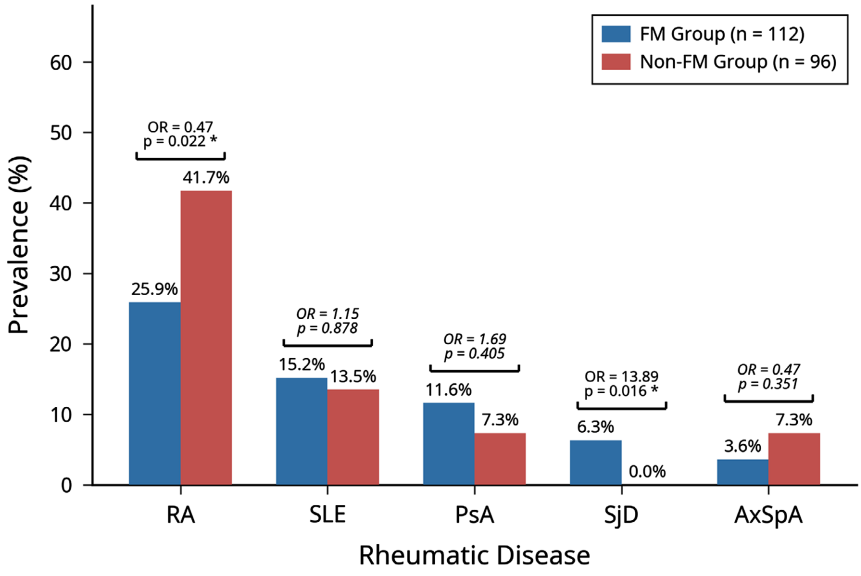
Continued

BMI, kg/m² mean (SD) (N = 58)	30.6 (7.6)	28.6 (6.8)	0.214
Weight, kg (SD) (N = 58)	81 (21.1)	76.5 (17.1)	0.252
Disease duration, years mean (SD) (N = 100)	3.24 (3.72)	3.67 (4.00)	0.51
Kuwaiti national, n (%) (N = 208)	91 (81.3%)	76 (79.2%)	0.84
WPI score mean (SD) (N = 208)	12.35 (4.09)	4.7 (4.82)	<0.001
SSS score mean (SD) (N = 208)	8.2 (1.90)	3.9 (2.85)	<0.001

Data are presented as mean ± standard deviation (SD) for continuous variables and number (percentage) for categorical variables. FM = fibromyalgia; BMI = body mass index; WPI = Widespread Pain Index; SSS = Symptom Severity Scale. Denominators vary due to missing data and are reported for each variable where applicable. P values correspond to comparisons between FM and non-FM groups; statistical significance was defined as $p < 0.05$.

3.2. Distribution of Rheumatic Diseases

RA was significantly less frequent among patients who fulfilled the FM criteria (25.9% vs. 41.7%; OR 0.47, p = 0.022). On the other hand, the proportions of SLE, psoriatic arthritis (PsA), and axial spondyloarthritis (axSpA) were similar between FM and non-FM groups, with no statistically significant differences observed (Figure 1).



Bars represent the prevalence (%) of rheumatic diseases in patients with and without fibromyalgia (FM). Numerical values denote percentages. Odds ratios (ORs) with corresponding P values are displayed for between-group comparisons. FM = fibromyalgia; RA = rheumatoid arthritis; SLE = systemic lupus erythematosus; PsA = psoriatic arthritis; SjD = Sjögren's disease; axSpA = axial spondyloarthritis. Statistical significance was defined as $p < 0.05$. Estimates for categories with zero counts in one group should be interpreted cautiously.

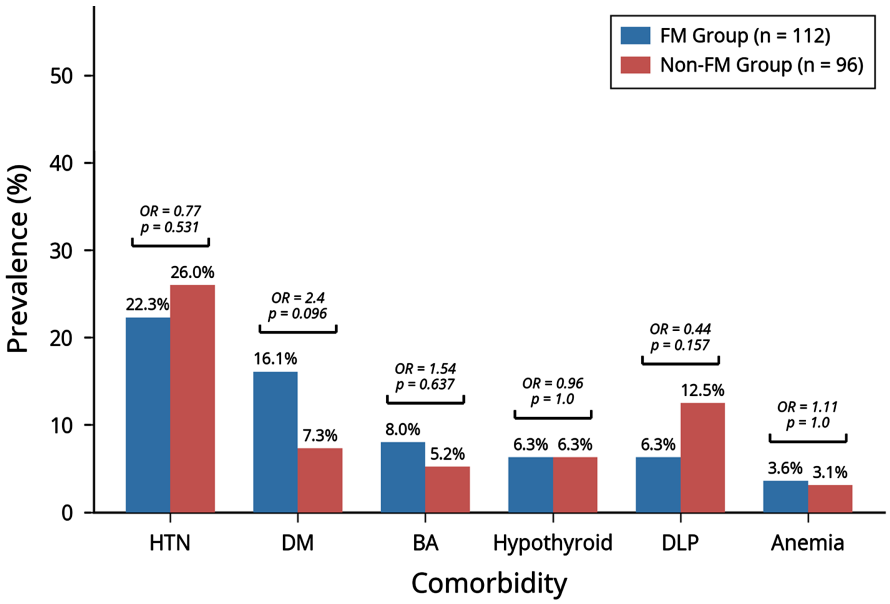
Figure 1. Prevalence of rheumatic diseases in patients with and without fibromyalgia.

All patients diagnosed with Sjögren's disease (n = 7) fulfilled the FM criteria; however, given the small sample size, this finding should be interpreted with caution.

3.3. Comorbidities

Dyslipidemia was less frequent in the FM group compared to the non-FM group (6.3% vs. 12.5%). Hypertension and diabetes mellitus (DM) were common in both groups, with prevalence ranging from 22.3% - 26% and 16% - 7.3%, respectively.

Although DM was more frequent among patients with FM, this difference did not reach statistical significance (OR 2.40, 95% CI 0.95 - 6.09, p = 0.096). No statistically significant differences were observed for the remaining comorbidities (Figure 2).



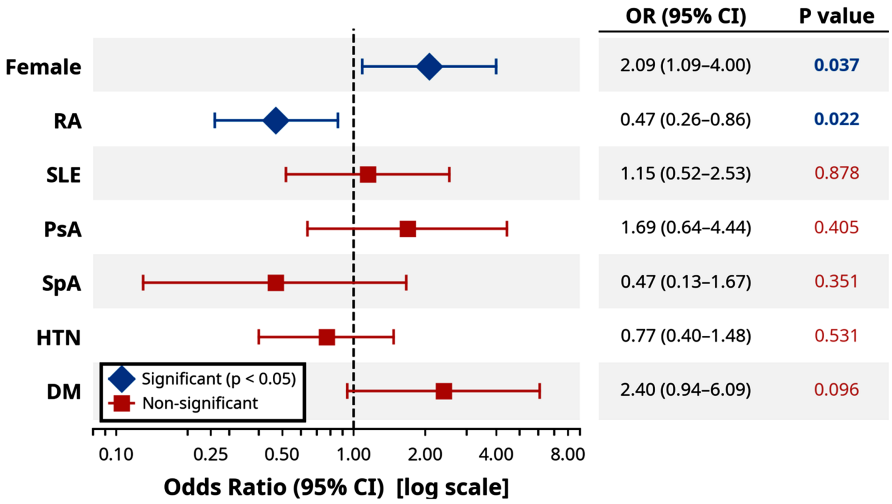
Bars represent the prevalence (%) of comorbidities in patients with and without fibromyalgia (FM). Numerical labels indicate percentages. Odds ratios (ORs) and corresponding P values are displayed for between-group comparisons. FM = fibromyalgia; HTN = hypertension; DM = diabetes mellitus; BA = bronchial asthma; DLP = dyslipidemia. Statistical significance was defined as $p < 0.05$.

Figure 2. Prevalence of comorbidities in patients with and without fibromyalgia.

3.4. Univariable Analysis

Univariable analysis demonstrated that female sex was significantly associated with FM (OR 2.09, 95% CI 1.09 - 3.99, p = 0.037), while RA was inversely associated with FM (OR 0.47, 95% CI 0.26 - 0.87, p = 0.022).

Other variables, including age, BMI, disease duration, nationality, SLE, PsA, axial SpA, hypertension, and DM, were not significantly associated with FM (Figure 3).



Forest plot of odds ratios (ORs) with 95% confidence intervals (CIs) from univariable analysis evaluating factors associated with fibromyalgia (FM). The dashed vertical line denotes the null value (OR = 1). Point estimates are represented by squares and 95% CIs by horizontal bars. Statistically significant associations ($p < 0.05$) are highlighted in blue. ORs greater than 1 indicate increased odds of FM, whereas ORs less than 1 indicate reduced odds. RA = rheumatoid arthritis; SLE = systemic lupus erythematosus; PsA = psoriatic arthritis; SpA = spondyloarthritis; HTN = hypertension; DM = diabetes mellitus.

Figure 3. Univariable analysis of factors associated with fibromyalgia: forest plot of odds ratios.

4. Discussion

This study provides important insights into the prevalence and characteristics of FM among patients attending a rheumatology clinic in Kuwait. We observed a notably high prevalence of FM (53.9%), which exceeds most estimates reported in patients with inflammatory rheumatic diseases, where FM prevalence typically ranges between 10% and 30%, depending on disease type and diagnostic criteria [5] [8]. This difference suggests that the observed prevalence may, in part, reflect methodological and clinical factors rather than a true population-level estimate.

Several factors may explain this elevated prevalence. The study population was derived from a tertiary rheumatology clinic, likely comprising patients with persistent symptoms and greater disease burden, where symptom overlap between inflammatory and non-inflammatory pain syndromes is common. In addition, the use of the 2016 ACR criteria [1], which are entirely symptom-based, may increase sensitivity but reduce specificity in patients with established rheumatic diseases. In this setting, symptom-based criteria may contribute to misclassification, particularly in patients with active inflammatory disease, thereby leading to an overestimation of FM prevalence [1] [6] [7].

The overlap between FM symptoms and manifestations of rheumatic diseases, such as pain, fatigue, and stiffness, represents a well-recognized diagnostic challenge. Comorbid FM has been shown to increase patient-reported outcomes and disease activity indices in inflammatory arthritis, potentially confounding clinical assessment [6] [7]. Therefore, the high prevalence observed in this study should

be interpreted within the context of symptom overlap and limitations in distinguishing central sensitization from inflammatory disease activity.

The association between female sex and FM is consistent with established epidemiological patterns. FM disproportionately affects women, likely due to a combination of biological, hormonal, and psychosocial factors influencing pain perception and central sensitization [2] [3]. Regional observations similarly demonstrate higher prevalence among women, supporting the generalizability of this finding [9].

In contrast, RA was less frequently observed among patients meeting FM criteria. This finding contrasts with existing literature, which consistently reports a substantial burden of FM among RA patients, with prevalence estimates typically ranging from approximately 15% to 30% [5] [8]. The apparent inverse association observed in this study is therefore unlikely to represent a true protective effect and is more plausibly explained by sampling variability, residual confounding, or differences in disease control and treatment exposure. It is also possible that effective suppression of inflammatory activity in RA patients may reduce symptom burden and decrease the likelihood of fulfilling FM criteria. However, the absence of objective measures of disease activity limits the ability to explore this hypothesis [6] [7].

No significant differences in the prevalence of FM were observed among patients with SLE, PsA, or axSpA. Although prior studies have reported variable prevalence across these conditions, the absence of association in this cohort should be interpreted cautiously [5] [8]. The study was not powered for disease-specific subgroup analyses, and the absence of multivariable adjustment further limits the ability to identify independent associations. These findings should therefore be considered exploratory.

All patients in this cohort with SjD fulfilled FM criteria; however, the small sample size precludes firm conclusions, and this observation should not be over-interpreted.

With respect to comorbidities, hypertension and DM were common in both groups, with no statistically significant associations observed. Although diabetes appeared more frequent among patients with FM, this did not reach statistical significance, and the wide confidence interval indicates limited precision, consistent with the exploratory nature of the analysis.

The clinical implications of these findings are important. The coexistence of FM in patients with rheumatic diseases may result in overestimation of disease activity, increased symptom burden, and potential misdirection of treatment strategies, including inappropriate escalation of immunosuppressive therapy. Accurate identification of FM is therefore essential to support appropriate clinical decision-making and to distinguish inflammatory from non-inflammatory sources of pain [6] [7].

5. Limitations

This study has several limitations. The cross-sectional design precludes causal in-

ference. The use of self-reported measures may introduce reporting bias. The single-center setting may limit generalizability, and because patients with a prior diagnosis of FM were excluded, the reported prevalence reflects newly identified cases meeting FM criteria and may underestimate the overall burden of FM among all rheumatology clinic attendees.

Importantly, the absence of multivariable analysis limits the ability to determine independent associations and increases susceptibility to confounding. In addition, the lack of objective disease activity measures restricts the ability to distinguish between active inflammatory disease and FM-related symptoms and may have contributed to the overestimation of FM prevalence. Small subgroup sizes, particularly for SjD, further limit interpretability.

Despite these limitations, this study provides insight into the burden of FM in a rheumatology clinic setting in Kuwait. The findings highlight the overlap between FM and rheumatic disease symptomatology and support the need for systematic approaches to FM identification in clinical practice. Furthermore, this study contributes to the limited body of literature from the Gulf region, where data remain limited [7] [8].

6. Conclusions

Fibromyalgia was highly prevalent in this rheumatology cohort, substantially exceeding estimates reported in most inflammatory rheumatic disease populations. This finding likely reflects, at least in part, the overlap between FM symptomatology and manifestations of active rheumatic disease, as well as the use of symptom-based classification criteria, which may overestimate true prevalence in this setting.

The coexistence of FM has important clinical implications, as it may inflate patient-reported outcomes and disease activity indices, potentially leading to misinterpretation of disease activity and inappropriate escalation of immunosuppressive therapy.

These findings underscore the importance of systematically evaluating FM in routine rheumatology practice and exercising caution when interpreting symptom-based measures of disease activity.

Future multicenter studies incorporating objective measures of inflammatory disease activity are needed to better delineate the true burden of FM and its impact on clinical decision-making in patients with rheumatic diseases.

Authorship Contributions

All authors contributed equally to formulating the survey questions, analyzing the survey results, conducting the literature review, and preparing this manuscript.

Agreement to Conditions

All authors have read and agreed to the manuscript's content and are accountable for its accuracy and integrity. The submitted article is an original work that has not been considered or reviewed by any other publication and has not been pub-

lished elsewhere in the same or similar form.

Ethical Approval

This study was conducted in accordance with the principles of the Declaration of Helsinki. The Ministry of Health in Kuwait's Ethical Approval Committee approved the study protocol (Approval Number: 2024/2753).

Conflicts of Interest

The authors declare no conflicts of interest.

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