

# Fibromyalgia Syndrome and its Allied Clinical Features are Associated with Low Socioeconomic Status

**Background:** Fibromyalgia (FMS) syndrome may be linked to low living standards. This study aimed to estimate the prevalence of widespread pain, FMS, and its associated clinical features in low socioeconomic class populations.

**Methods:** Four hundred (114 male and 286 female) individuals with musculoskeletal pain were divided into two groups: group A consisted of 226 (50 male and 176 female) individuals with low socioeconomic status, and group B consisted of 174 (64 male and 110 female) individuals with high socioeconomic status. A diagnosis of FMS was confirmed according to the two-stage classification process proposed by the 1990 ACR classification criteria for FMS. Stage 1 was composed of the participants answering the diffuse widespread pain questionnaire. Stage 2 evaluated all participants complaining of diffuse pain for assessing the 18 tender points compared to the four control non-tender points through digital palpation. All participants were also asked about FMS-associated clinical features.

**Results:** There were 100(44.24%) individuals with widespread pain and 12(5.3%) individuals who fulfilled the 1990 ACR classification criteria of FMS in group A, and there were 32 (18.4 %) individuals with widespread pain and 3(1.72%) individuals fulfilled the 1990 ACR classification criteria of FMS in group B. Women outnumbered men in a ratio of 3:1 and 2:1 in group A and group B, respectively. All FMS-associated clinical features were more prevalent in group A than in group B.

**Conclusion:** Fibromyalgia and its associated clinical features are prevalent in the low socioeconomic status population.

**Keywords:** Prevalence • Fibromyalgia • Widespread pain • Socioeconomic

## Introduction

Fibromyalgia syndrome (FMS) is a frequent and worldwide rheumatologic disorder [1-5]. It is a chronic, generalized pain condition associated with characteristic tender points on physical examination, often accompanied by a number of frequent somatic, psychological, and emotional symptoms that include fatigue, sleep disturbances, morning stiffness, headache, irritable bowel, cognitive difficulties, anxiety, and depressive disorders [6-7]. According to general population studies, the prevalence of FMS was between 0.5% and 5% [8-9]. Being a syndrome mainly affecting middle-aged populations, it is a fundamental cause of workplace disability and limitations in activities of daily living [10]. The exact etiology of FMS is still obscure. Age is a factor that is consistently associated with FMS, which is most common among the 20–50

years age group, with an increase in the risk of FMS through middle age, which declines after that [11]. Another well-defined risk factor is gender, with a female-to-male ratio of 7:1 [12]. FMS has also been linked to occupation, such as manual labor [13] and stress imposed by the occupational environment [14]. The low-income level has also been associated with FMS [15-16]. Literature also reported familial aggregation [17]. Other possible risk factors of FMS include obesity associated with lower pain thresholds [18], and low physical activity [19], partially explained by poor psychological status and functional abilities. The prevalence of depressive disorders among FMS patients was found to vary between 20–80% [20]. FMS is linked to a considerable disability; about one-third of persons with FMS receive a pension for disability [21]. Lower socioeconomic status persons have less favorable health

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outcomes for many health problems than those with high socioeconomic status. The difficulty in medical and health-related care access, low adherence to management recommendations, and financial constraints could explain this difference [22]. Most studies, especially those addressing the association between FMS and socioeconomic status, were carried out in developed and western countries, while studies in developing countries, particularly our locality, are few. Numerous variables are utilized to measure socioeconomic status. The highest education level is considered an accurate, valid, and reliable variable [23-24]. Occupation and income are also important variables for measuring socioeconomic status. There is a direct correlation between a higher level of education and socioeconomic status with a low possibility of FMS development. Our aim in this study was to evaluate the association between socioeconomic status and the presence of FMS and its associated clinical features.

**Patients and Methods**

This was a cross-sectional study carried out in the outpatient department of Rheumatology at Basrah Teaching Hospital from January 2021 to August 2022. A sample of 400 (114 male and 286 female) individuals with musculoskeletal pain was divided into two groups: group A consisted of 226 (50 male and 176 female) individuals with low socioeconomic status (unemployed, worker, low educated, individuals not completed the primary education) and group B consisted of 174 (64 male and 110 female) individuals with high socioeconomic status (teachers, officers, doctors, lawyers, individuals completed secondary and higher education). Information about age, sex, history of widespread pain (pain in the left side of the body, pain in the right side of the body, pain above the waist, and pain below the waist, axial skeletal pain, cervical spine or anterior chest or thoracic spine or low back). Medication history was recorded for all participants. The exclusion criteria were autoimmune rheumatic diseases, any chronic diseases such as uncontrolled diabetes mellitus and heart or renal failure, thyroid disorders, psychiatric disorders, and a history of cancer. A diagnosis of FMS was confirmed according to the two-stage classification process that was proposed by the 1990 ACR classification criteria for FMS [25]. Stage 1 was composed of the participants answering the diffuse widespread pain questionnaire. Stage 2 evaluations of all participants complaining of diffuse pain by another physician for assessing the 18 tender points compared to the four control non-tender points through digital palpation with an approximate force of 4 kg (the amount of pressure required to blanch a

nail). The four control non-tender points are; the middle of the forehead, the volar aspect of the mid-forearm, the thumbnail, and the anterior thigh muscles. To diagnose FMS, the widespread pain had to have been present for at least three months, and pain must have been present in 11 or more out of 18 specific tender points on digital palpation. All participants were also asked about the following FMS-associated clinical features: morning stiffness, sleep disturbance, fatigue, headache, anxiety, depression, and irritable bowel. Depression and anxiety were assessed by the Hospital Anxiety and Depression Scale (HADS) [26], which consists of 14 items divided into two subscales of seven items each. The subscale value ranges from 0-21 for either anxiety or depression. Pain intensity was measured by a visual analog scale (VAS).

**Ethical considerations:** The study was conducted in accordance with the principles of the Declaration of Helsinki, and verbal consent was obtained from all participants prior to their involvement.

**Statistical analysis:** SPSS Software version 25.0 was used for data analysis. Percentages and mean were used to present the data in tables. Comparison of study groups was carried out using chi-square and Fisher's exact test for categorical data; and Student's t-test for continuous data. A P-value of < 0.05 was considered statistically significant.

**Results**

The demographic characteristics of both groups are shown in Table 1. There were 100(44.24%) individuals with widespread pain and 12(5.3%) individuals who fulfilled the 1990 ACR classification criteria of FMS in group A, and there were 32 (18.4 %) individuals with widespread pain and 3(1.72%) individuals fulfilled the 1990 ACR classification criteria of FMS in group B, the difference was statistically significant (p= 0.002). Women outnumber men in a ratio of 3:1 and 2:1 in both group A and group B, respectively, as shown in Table 2. All FMS-associated clinical features were more prevalent in group A than in group B (p<0.05 for all), tender point count (TPC) and pain intensity measured by visual analog scale (VAS) were slightly higher in group A compared to group B, but the difference was statistically not significant as shown in Table 3. TPC:

**Table 1. Demographic characteristics of low compared to a high socioeconomic group.**

Characteristic	Group A	Group B	P value
Total No. 400 (100%)	226	174	>0.05
Male 114	50	64	>0.05
Female 286	176	110	>0.05
Age (mean±SD)	50±1.4	49±3.6	>0.05

**Table 2. Frequency of widespread pain and FMS in low compared to a high socioeconomic group.**

Total No. %	Group A 226(100)%	Group B 174(100%)	P value
Widespread pain	100(44.24%)	32 (18.4%)	0.012
Male	28 (12.38%)	8 (4.6%)	
Female	72 (31.86%)	24 (13.8%)	
FMS	12 (5.3%)	3 (1.72%)	0.011
Male	3 (1.32%)	1 (0.57%)	
Female	9 (3.98%)	2 (1.15%)	

**Table 3. Frequency of FMS-associated clinical features, tender point count, and pain intensity in low compared to a high socioeconomic group.**

FMS-associated clinical feature	Group A 226(100)%	Group B 174(100%)	P value
Morning stiffness	100 (44.24%)	14 (8.4%)	<0.05
Fatigue	98 (43.36%)	12 (6.9%)	
Sleep disturbance	98 (43.36%)	12 (6.9%)	
Headache	94 (41.6%)	13 (7.47%)	
Anxiety	91 (40.26%)	12 (6.9%)	
Depression	82 (36.28%)	10 (5.74%)	
Irritable bowel	80 (35.4%)	10 (5.74%)	
TPC (mean±SD)	14±3.3	13±4.2	>0.05
VAS (mean±SD)	7±2.8	6±4.5	>0.05

TPC: tender point count, VAS: visual analog scale

**Discussion**

Lower socioeconomic status, as measured by the unemployed, heavy worker, and low-educated persons, individuals who have not completed primary education, has been reported to be associated with an increased risk of developing a number of medical conditions, such as heart disease, hypertension, diabetes mellitus, and renal disease [27-31]. Lower socioeconomic status is also associated with numerous musculoskeletal problems. In a cohort study conducted in England, Macfarlane et al. reported a higher percentage of musculoskeletal pain in individuals with low social class [32]. Hagen K et al [33].reported a higher percentage of musculoskeletal pain in individuals with low social class in a cohort study conducted among 46,901 adults in Norway. Another study from Norway conducted by Ole Fredrik Andersen et al [34]. also reported a higher prevalence of musculoskeletal pain in those of lower social class and women. In this study, widespread pain was found to be more prevalent in individuals of a low socioeconomic class than those of a higher socioeconomic class in a percentage of 44.24%and 18.4%, respectively, results that agreed with the above findings. Agreed with our findings, Bergman and colleagues showed that widespread musculoskeletal pain was more prevalent in a Swedish population with a low socioeconomic status cohort, indicated by being a low-level employee or living in poor housing conditions [35]. We found

the prevalence of FMS among individuals of a low socioeconomic class was 5.3%, compared to 1.72% in the higher socioeconomic class. Our finding agrees with Ana Assumpção et al [36]. finding, who reported a prevalence rate of 4.4% of their study population. The prevalence rate in our stud was higher than what has been reported elsewhere. In most studies, the prevalence rate ranges from 2% to 4% [37-38], but some discrepancies can exist [39-41]. The mechanism in which low socioeconomic status may affect the expression of widespread pain and FMS could be explained by several factors. Poor access to optimal healthcare for those in the lower economic class, such as limited access to healthcare, difficulty to adherence to medical recommendations, indirect healthcare costs, transportation and child care costs, and limited financial resources for good health strategies that include good nutrition, participation in health-related physical activity, and access to nonphysician healthcare providers. Another explanation for the high prevalence of widespread pain and FMS in low socioeconomic classes is that; they are more likely to be involved in heavy manual work, which results in injuries and pain. Wijnhoven et al [42]. Declared that non-paid works, like household tasks, are a risk factor for widespread chronic pain. Still, an inverse correlation between the level of education and chronic pain was reported by other studies [43]. In our study, we reported a higher prevalence of widespread pain and FMS among women compared to men; this finding is comparable to other studies. FMS is much more common in women than

men in a proportion of 9:1. Gender differences have also been observed in other related syndromes, e.g., chronic fatigue syndrome, irritable bowel syndrome, and headaches. The mechanisms of gender differences in these illnesses are not fully understood but are likely to involve an interaction between biology, psychology, and sociocultural factors [44-46]. In this study, morning stiffness, sleep disturbance, fatigue, irritable bowel, headache, anxiety, and depression were the most common non-musculoskeletal manifestations recorded in our study population. These FMS-allied clinical features were more prevalent in low socioeconomic than high socioeconomic individuals. The emotional and physical effects of pain decrease the social activities in the low socioeconomic class, predisposing them to anxiety, depression, tiredness, and FMS [47]. In this study, the differences in TPC and pain intensity between both groups are negligible and insignificant.

### Conclusion

Widespread pain, fibromyalgia, and its associated

clinical features are prevalent in the low socioeconomic status population.

### Author contributions

AM conceived, designed, collected, analyzed, interpreted the patient data of the study and writing the manuscript. AA advised on the design of the study. Collected, analyzed, interpreted the patient data and writing the manuscript. Both authors read and approved the final manuscript.

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### Conflicts of interest

The authors declare no conflict of interest.

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