Research article

Prevalence and impact of fibromyalgia in patients with systemic lupus erythematosus at the Kenyatta National Hospital, Nairobi, Kenya

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Abstract

Background: Fibromyalgia is an increasingly recognized medical disorder that presents with chronic widespread musculoskeletal pain, fatigue, and poor sleep. The aetiology remains unknown, but it has been described in association with other rheumatological diseases. The overlapping symptoms of lupus and fibromyalgia can lead to misinterpretation of lupus activity and risk of overtreatment. No studies of this association have been held in the black African population, bearing in mind the nature of the influence of chronic disorders on quality of life and disease activity. Understanding the nature of this association in our population may contribute to this discussion.

Objectives: To determine the prevalence and impact of fibromyalgia in patients with Systemic Lupus Erythematosus (SLE) attending the rheumatology clinic at the Kenyatta National Hospital (KNH).

Methodology: This was a cross-sectional descriptive study of SLE patients attending a rheumatology clinic at the KNH. All the SLE patients with chronic musculoskeletal pain were screened for fibromyalgia using the revised 2010 ACR criteria. The study tools included the study proforma, the FIQR, SF-36, and SLEDAI-2K; which were used to assess the severity and the impact of fibromyalgia on the quality of life, and disease activity of lupus respectively.

Results: Sixty patients with SLE were recruited into the study, all female with a mean age of 34 years. The prevalence of fibromyalgia among SLE patients was 39 (65%). All domains of HRQoL were impaired. The mean score of the 8 domains were; Physical function 30.6±19.2, physical health 3.2±8.5, emotional problems 15.4±36.6, fatigue 32.1±12.5, social function 39.5±16.3, emotional well-being 39.4±18.0, pain 39.7±12.7 and general health 30.6±19.2. The median SLEDAI score was 7.0 (IQR 4.0-10.0), with half of the patients having moderate–severe disease activity (51.3%). Patients with fibromyalgia were more likely to be on steroids than non-fibromyalgia (p-value < 0.05). Other factors like marital status, nature of employment, and age were not found to be statistically significant.

Conclusion: Fibromyalgia is prevalent in SLE patients presenting with chronic musculoskeletal pain, in their middle age. The majority of the patients have moderate disease activity. The presence of fibromyalgia adversely impairs the quality of life of patients with lupus.

Key words: Fibromyalgia, SLE, Chronic pain, Quality of life, SLEDAI-2K

Introduction

Fibromyalgia is a complex condition characterized by chronic widespread pain, fatigue, sleep, and cognitive disturbances[1]. It's frequently accompanied by other unexplained somatic symptoms and disability in Activities of Daily Living (ADLs)[2,3]. The prevalence of fibromyalgia is estimated to be between 2 - 4% in the general population and more predominant in women and advances in age[4]. The cause of fibromyalgia remains unknown, some factors like genetic and environmental are postulated to predispose individuals to fibromyalgia. The most well-supported hypothesis in its aetiopathophysiology is the alteration in the CNS function resulting in augmented nociceptive processing and the development of CNS-mediated symptoms of fatigue, sleep, and cognitive disturbances[5]. Functional neuroimaging studies and imbalance in the levels of excitatory and inhibitory neurotransmitters corroborates this phenomenon[6]. Fibromyalgia can occur as either a primary disorder or

concurrently with other rheumatologic diseases like rheumatoid arthritis, osteoarthritis, and SLE. Other non-rheumatologic diseases have also been associated with fibromyalgia including hypothyroidism, and Human Immunodeficiency (HIV) infection[7,8].

The burden of SLE has been on the rise over the recent years in our set-up, with 90% of patients presenting with musculoskeletal pain[9]. This can be debilitating to patients who are already suffering from lupus, hence it requires adequate assessment and management of the pain if successful therapy is to be achieved. The association between fibromyalgia and SLE has been studied widely by various investigators with little clarity on their relationship, the aetiology of both diseases is unknown, but it's conceivable that they may impact each other. The neuroendocrine regulation in fibromyalgia can affect the expression of lupus activity via the interactions of hormones with the immune system[10]. Furthermore, both disorders present with similar dominant symptoms of arthralgia and fatigue which can result in misinterpretation of lupus activity in an individual with both disorders.

The burden of fibromyalgia in SLE patients in the Kenyan population is unknown, despite studies showing that more than 90% of patients with lupus present with musculoskeletal pain[9], without such information, the burden of fibromyalgia in SLE patients with chronic musculoskeletal pain will never be understood. Fibromyalgia has remarkably adverse effects on both the physical and psychosocial health of affected individuals, which can be incapacitating for many sufferers, thus negatively impacting the quality of life of these patients who are already suffering from lupus. Fibromyalgia symptoms can also lead to misinterpretation of the lupus activity resulting in overtreatment in patients with both conditions. It is therefore, significant to identify fibromyalgia with the sight to offer an appropriate mode of therapy to offer symptomatic relief.

Materials and methods

After obtaining ethical approval from the University of Nairobi and Kenyatta National Hospital Ethics and Research Council, we enrolled all SLE patients with chronic musculoskeletal pain attending the Rheumatology Outpatient Clinic (ROPC) at the KNH. The study site is situated in Nairobi, Kenya and serves as the biggest teaching and referral hospital in Eastern and Central Africa, with a bed capacity of more than 2000. The rheumatology clinic is one of the busiest and largest outpatient clinic in the country, it runs every Tuesday and Thursday from 2 to 5 pm seeing almost 60 patients per day. The clinic is attended by consultant rheumatologists and residents from the Department of Internal Medicine and Paediatrics. All the patients with a file diagnosis of SLE with chronic musculoskeletal pain for more than 3 months were recruited into the study. Relevant information on the clinical history and demographic data were retrieved from the patient's file. The 2010 ACR diagnostic criteria for fibromyalgia was used to establish cases of CWP and fibromyalgia. Widespread Pain Index (WPI) was obtained by modest palpation of multiple soft tissue sites and asking the patients if they had experience pain/tenderness in the preceding 7 days. The severity of the three main symptoms of fibromyalgia and other somatic symptoms were evaluated using the Symptom Severity Score (SSS). Those who fulfilled the 2010 ACR criteria were diagnosed to have fibromyalgia and subsequently given the FIQR questionnaire to assess the severity and impact of fibromyalgia. Patients were then given a self-administered SF-36 questionnaire to assess their quality of life and the SLEDAI- 2k was used to assess their disease activity.

Statistical methods: Categorical data of the study population were summarized into proportions and continuous variables were summarized into means, medians, and SD. The prevalence of fibromyalgia was presented as a percentage. The severity of fibromyalgia was presented as a proportion in each class (mild, moderate, and severe). The QoL score was calculated and presented as proportions for good and poor. Disease activity was scored and categorized into mild, moderate, and severe diseases, and then presented in percentages.

Results

Ninety two patients with SLE attending the rheumatology clinic were assessed for chronic musculoskeletal pain between July and October 2022. Of these, 27 patients did not qualify for the inclusion criteria and 5 patients declined to consent. A total of 60 patients were enrolled in the study.

Socio-demographic characteristics: The mean age of the patients was 33.6 years (SD 7.61) with a range of 16-52 years (Table 1). All the 60 respondents in the study were female. Thirty four patients (56.7%) were married, 1 (1.7%) was separated from the spouse and 25 (41.7%) were single at the time of recruitment. About 47 (78.3%) patients reported that they were involved in activities that did not require any manual form of labour, while 13 (21.7%) reported engaging in manual activities during their daily activities. Thirty four patients (56.7%) were unemployed at the time of study and 26 (43.3%) were employed. A total of 54 (90%) study participants had post-primary education.

Table 1: Socio-demographic characteristic

	Frequency, *n=60*	(%)
Age (years)		
< 20	2	3.3
20 – 29	15	25.0
30 – 39	33	55.0
40 – 49	7	11.7
>50	3	5.0
Marital status		
Married	34	56.7
Single	25	41.7
Divorced	1	1.7
Educational level		
Primary	6	10.0
Secondary	29	48.3
University	25	41.7
Daily activities		
Manual	13	21.7
Non-manual	47	78.3
Occupation		
Employed	26	43.3
Unemployed	34	56.7

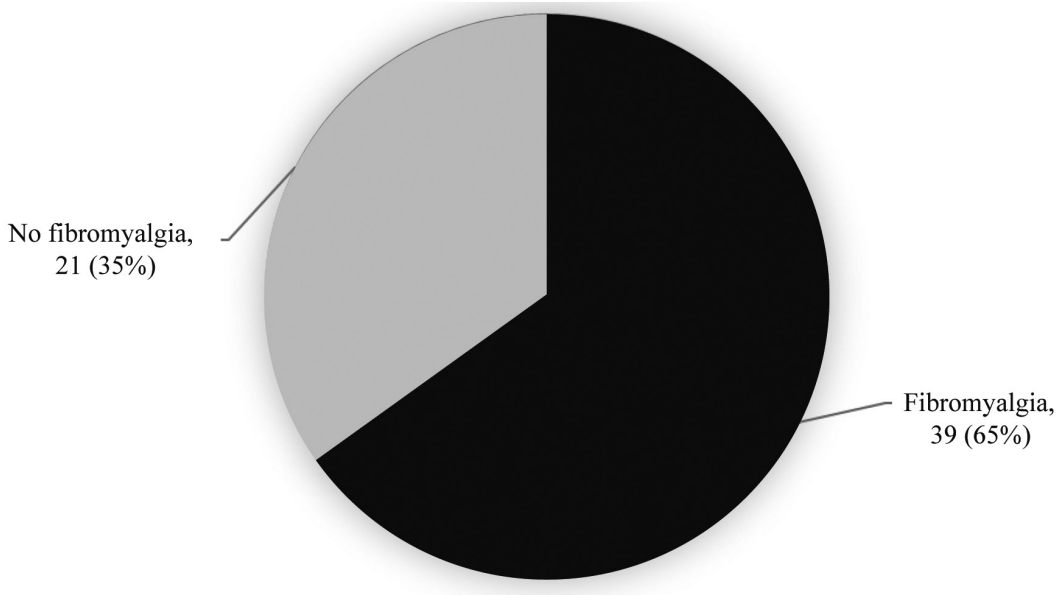
Table 2: Clinical characteristics

Variable	Frequency, *n=60*	(%)
Duration of illness (years)		
<1	10	16.7
1-5	41	68.3
>5	9	15.0
Medication taken		
NSAIDS	52	86.7
Steroids	47	78.3
HCQ's	56	93.3
Methotrexate	3	5.0
Mycophenolate	8	13.3
Azathioprine	20	33.3
Cyclosporine	1	1.7
Hematinic	13	21.7

Clinical characteristics: As demonstrated in Table 2, the mean disease duration of the patients was 42 (SD 4.2) months, with the shortest follow-up being 1 month and the longest 20 years. The median duration of the disease duration was 2.0 (IQR 1.1 – 4.0) years. The most frequently prescribed drugs were hydroxychloroquine 56 (93.3%), NSAIDs for symptomatic pain relief (86.7%), and steroids (78.3%). There was low usage of immunosuppressant drugs. There was no patient on biologic disease-modifying anti-rheumatic drugs (DMARDs).

Prevalence of fibromyalgia in SLE: Figure 1 demonstrates the prevalence of fibromyalgia in SLE patients with chronic MSC pain. Out of the 60 studied patients, 39 patients satisfied the 2010 ACR criteria for fibromyalgia, thus we found a prevalence of 65% (95% CI 52.4% - 75.8%).

Figure 1: Prevalence of fibromyalgia in SLE patients



Severity of fibromyalgia syndrome: The mean FIQR score for the 39 patients with fibromyalgia was 56.3 (SD 20.4), this denotes them as having a moderate disease (Table 3). Among the 39 study subjects with fibromyalgia, 12 (30.8%) patients had mild symptoms, 5 (12.8%) had moderate symptoms, 16 (41.0%) had severe symptoms, and 6 (15.4%) had very severe symptoms.

Table 3: Severity of fibromyalgia syndrome

Severity	Frequency, n=39
Mild (0-42)	12 (30.8%)
Moderate (43-59)	5 (12.8%)
Severe (60-74)	16 (41.0%)
Very severe (75-100)	6 (15.4%)

Frequency of fibromyalgia symptoms: As outlined in Table 4, pain, fatigue, and unrefreshed sleep were the most frequent symptoms as assessed by the fibromyalgia impact questionnaire, while the least reported symptoms were a balanced problem, memory problem, and increased sensitivity to environmental stimuli (loud noises, bright light, odors or cold).

Table 4: Frequency of fibromyalgia symptoms assessed by the FIQR

Symptom category	Patients (%)
Pain	100.0
Fatigue	100.0
Stiffness	87.2
Unrefreshing sleep	100.0
Depression	89.7
Memory	71.8
Anxiety	97.4
Tenderness to touch	92.3
Balance problems	76.9
Increased sensitivity to environment stimuli	79.5

Frequency of fibromyalgia based on severity: All the patients with fibromyalgia reported having pain in the previous 7 days (Table 5). Sixty two percent of the patients had pain score of above 7 on the pain scale, 67% of the patients scored more than 7 on the fatigue score and 62% reported a high unrefreshing sleep score of more than 7. There was an equally high depression score in fibromyalgia patients.

Table 5: Frequency of fibromyalgia symptoms

Symptom category	None n (%)	1 – 3 n (%)	4 - 6 n (%)	7-10 n (%)
Pain	0 (0.0)	5 (12.8)	10 (25.6)	24 (61.5)
Fatigue	0 (0.0)	2 (5.1)	11 (28.2)	26 (66.7)
Stiffness	5 (12.8)	7 (17.9)	14 (35.9)	13 (33.3)
Unrefreshing sleep	0 (0.0)	1 (2.6)	14 (35.9)	24 (61.5)
Depression	4 (10.3)	9 (23.1)	11 (28.2)	15 (38.5)
Memory	11 (28.2)	7 (17.9)	15 (38.5)	6 (15.4)
Anxiety	1 (2.6)	11 (28.2)	20 (51.3)	7 (17.9)
Tenderness to touch	3 (7.7)	7 (17.9)	17 (43.6)	12 (30.8)
Balance problems	9 (23.1)	6 (15.4)	17 (43.6)	7 (17.9)
Increased sensitivity	8 (20.5)	5 (12.8)	4 (10.3)	22 (56.4)

Quality of life in patients with fibromyalgia: Among the 39 study subjects with fibromyalgia, 38 patients had poor quality of life, with all the aspects of QoL being impaired (Table 6). The most affected domains by fibromyalgia were emotional well-being and physical health, where there was a significant limitation to work roles and performing daily activities (Table 7).

Table 6: Quality of life in patients with fibromyalgia

Score	Frequency, n=39	(%)
Poor	38	97.4
Good	1	2.6

Table 7: Average quality of life

Domains	Mean ± SD
Physical function	30.6 ±19.2
Physical health	3.2 ±8.5
Emotional problems	15.4 ±36.6
Energy / Fatigue	32.1 ±12.5
General mental health	39.4 ±18.0
Social functioning	37.7 ±16.2
Pain	39.7 ±12.7
General health	30.6 ±19.2

Disease activity in SLE patients with fibromyalgia: As illustrated in Table 8, the median disease activity score was 7.0 (IQR 4.0-10.0), with half of the patients in the study having moderate-severe disease activity.

Table 8: Disease activity in patients with fibromyalgia

Disease activity score	Frequency, *n=39*	(%)
Mild (0-5)	19	48.7
Moderate (6-12)	12	30.8
Severe (>13)	8	20.5

Sociodemographic and clinical characteristics of SLE patients with and without fibromyalgia: There was no statistical significance between the sociodemographic and clinical characteristics of the study subjects with and without fibromyalgia except for the medical therapy (Table 9). Those with fibromyalgia are more likely to be on steroids compared to those without fibromyalgia with a P-value of 0.023.

Table 9: Association between demographic characteristics and FMS

	FMS (n=39)	No FMS (n=21)	OR (95% CI)	P-value
Age, Mean (SD)	34.4 (8.2)	32.1 (6.4)		0.232
Age (years), n (%)				
< 20	1 (2.6)	1 (4.8)	Reference	
20 – 29	10 (25.6)	5 (23.8)	2.0 (0.1 – 39.1)	0.648
30 – 39	21 (53.8)	12 (57.1)	1.8 (0.1 – 30.6)	0.701
40 – 49	4 (10.3)	3 (14.3)	1.3 (0.1 – 31.1)	0.858
>50	3 (7.7)	0 (0)	-	
Marital status, n (%)				
Married	21 (53.8)	13 (61.9)	0.6 (0.2 – 1.9)	0.413
Single	18 (46.2)	7 (33.3)	Reference	
Divorced	0 (0)	1 (4.8)	-	
Educational level, n (%)				
Primary	5 (12.8)	1 (4.8)	Reference	
Secondary	14 (35.9)	15 (71.4)	0.2 (0.02 – 1.8)	0.147
University	20 (51.3)	5 (23.8)	0.8 (0.1 – 8.5)	0.853
Daily activities, n (%)				
Manual	10 (25.6)	3 (14.3)	Reference	
Non-manual	29 (74.4)	18 (85.7)	0.5 (0.1 – 2.0)	0.315
Occupation, n (%)				
Employed	20 (51.3)	6 (28.6)	Reference	
Unemployed	19 (48.7)	15 (71.4)	0.4 (0.1 – 1.2)	0.095
Duration of illness, n (%)				
<1	7 (17.9)	3 (14.3)	Reference	
1-5	24 (61.5)	17 (81)	0.6 (0.1 – 2.7)	0.508
>5	8 (20.5)	1 (4.8)	3.4 (0.3 – 40.9)	0.330
Drugs:				
NSAIDS				
Yes	33 (84.6)	19 (90.5)	0.6 (0.1 – 3.2)	0.524
No	6 (15.4)	2 (9.5)		
Steroids				
Yes	34 (87.2)	13 (61.9)	4.2 (1.2 – 15.2)	0.023
No	5 (12.8)	8 (38.1)		
HCQs				
Yes	36 (92.3)	20 (95.2)	0.6 (0.1 – 6.2)	0.664
No	3 (7.7)	1 (4.8)		
Methotrexate				
Yes	2 (5.1)	1 (4.8)	1.1 (0.1 – 12.7)	0.950
No	37 (94.9)	20 (95.2)		
Mycophenolate				
Yes	6 (15.4)	2 (9.5)	1.7 (0.3 – 9.4)	0.524
No	33 (84.6)	19 (90.5)		
Azathioprine				
Yes	16 (41.0)	4 (19.0)	3.0 (0.8 – 10.4)	0.085
No	23 (59.0)	17 (81.0)		
Hematinic				
Yes	8 (20.5)	5 (23.8)	0.8 (0.2 – 2.9)	0.767
No	31 (79.5)	16 (76.2)		

Discussion

This study was aimed at finding out the prevalence and impact of fibromyalgia in SLE patients with chronic musculoskeletal pain. In the study, all the respondents were female with a median age of 34.0 years (IQR 29.0-38.0), in concordance with most literature that reported lupus to be a disease of female preponderance and affecting young adults[11-13]. However, several comparative studies have shown that the peak age of onset is usually lower in black women[14].

In the study, a higher proportion of patients in the fibromyalgia group were noted to be on steroids. This can be explained by the fact that the overlapping symptoms of lupus and fibromyalgia can lead to misinterpretation of lupus activity, resulting in higher prescriptions of steroids. Fibromyalgia tends to increase the risk of overtreatment and misinterpretation of symptoms of lupus[15]. The question that might be raised by this is whether the muscle and soft tissue pain were attributed to steroid myopathy? In the study, all lupus patients classified as fibromyalgia-positive reported generalized pain of muscle and soft tissue, but none showed muscle weakness during an examination or reported an event. This observation argues against steroid myopathy as a cause of pain in fibromyalgia. Other factors like marital status, nature of the occupation, and age were not statistically significant (P >0.05). In other studies, SLE patients with fibromyalgia were less likely to be employed and more likely to be divorced/separated, an observation that was not elucidated by our study[16].

In our study, the prevalence of fibromyalgia in SLE patients was 65%, higher than in previous studies which ranged between 22-61%. This confirms with great certainty that fibromyalgia is common in this group of patients. In a cross-sectional study of 102 patients with SLE in the USA, the 1990 ACR criteria were used to diagnose fibromyalgia and a prevalence of 22% was reported[16]. In another descriptive study in Brazil, Luiza *et al*[17] reported a 12% prevalence of fibromyalgia among 60 patients with lupus, they used similar tools as in our study; the 2010 ACR criteria to diagnose fibromyalgia, and FIQR to evaluate the functional capacity and health status of their patients. Disease activity and quality of life were assessed using SLEDAI and SF-36 respectively[17].

A higher prevalence of fibromyalgia at 40% was reported in a comparative study in Israel among 75 patients with SLE[18]. In India, a low prevalence of fibromyalgia was reported at 8.2% among 158 patients with lupus. The authors hypothesized that a strong family support system, the virtual lack of disability benefits, and/or racial variations in pain threshold could be the likely factors responsible for the low prevalence of fibromyalgia observed in this population[19]. These differences could be a result of geographical influences, sociocultural differences, therapeutic factors, and racial variation in the threshold of pain. We acknowledge the large variation in the prevalence rates compared to other studies and we attributed this to an ethnic difference in this study population (largely black African), low socioeconomic status, and lack of medical disability benefits. These findings corroborate a study done by Edwards *et al*[20] in evaluating the ethnic differences in pain tolerance, they noted that African-American subjects reported higher levels of clinical pain as well as greater pain-related disability than whites. Moreover, racial difference was again reported by Gansky *et al*[21] in the US, where there was a higher prevalence of fibromyalgia syndrome in black Americans than the whites, and this was attributed to poor socioeconomic status. All the papers that studied the association of fibromyalgia with socioeconomic status reported in consensus that the lower the household income, the higher the prevalence rate of fibromyalgia.

In the study, most of the patients had severe diseases. Pain, lack of energy, and poor sleep were the most common symptoms of fibromyalgia. The high pain score in fibromyalgia is an expected finding because these patients have increased central pain processing and depressed endogenous pain inhibition. Lack of refreshing sleep is common in fibromyalgia and usually leads to increased daytime fatigue, as results. Patients with fibromyalgia have difficulty in performing Activities of Daily Living (ADL) and achieving their goals.

A high FIQR mean score of 56.3 was reported, reflecting that the majority of our patients had moderate disease, in comparison to the previous local studies on fibromyalgia in HIV and diabetics patients[22,23], the average mean scores of 56.3 is higher than in HIV (50.1) and diabetics (51.9). This might be explained by the fact that patients with fibromyalgia in diabetes and HIV undergo counseling sessions at each visit to their respective clinics. The counseling involves psychotherapy and CBT, which help them cope with pain.

More than half of the patients in the fibromyalgia group had active disease, with a median disease score was 7.0 (IQR 4.0-10.0). Contrary to what was seen in other studies where fibromyalgia causes little or no impact on the activity of SLE, the extensive disease activity seen in this population can be attributed to multiple factors including early onset of the disease and long disease duration of the study subjects (from 1 month to 20 years), as well as high cost of treatment (we are not optimizing the treatment of lupus, especially the use of biologics) and irregular follow-ups.

Regarding the quality of life measured by SF-36 in our study, it can be seen that fibromyalgia was associated with poor quality of life in patients with lupus. All 8

domains in assessing QoL were negatively impaired, with emotional well-being and physical health being the most affected aspect by fibromyalgia, limiting their daily activity and ability to work. These findings are in agreement with the literature that fibromyalgia has a significant negative impact on QoL, working ability, and efficacy in patients living with lupus[16,24]. A comparable study by Luiza *et al*[16] verifies these findings. They reported a strong impact of fibromyalgia on the QoL in patients with SLE, with great intensity of symptoms. The most affected domain by fibromyalgia in the Brazilian population were physical aspects, pain, and emotional problems resulting in an incapacity for daily activities[16]. Another study in Israel reported that fibromyalgia had adversely affected the QoL and ability of SLE patients to cope. In the study, the patients were dissatisfied with their QoL, especially the general health aspect[24]. In a Canadian study by Gladman *et al*[25], it was reported that the presence of fibromyalgia had a strong correlation with the 8 domains of SF-36 and is a major contributor to poor quality of life in patients with lupus.

Conclusions

Fibromyalgia is a major problem in SLE patients with chronic musculoskeletal pain with a prevalence rate of 65%. It is most predominant in females between 30-39 years of age, in subjects with higher education levels and high disease activity leading to high steroid usage. High-intensity of fibromyalgia symptoms was seen in patients with lupus. The presence of fibromyalgia adversely affects the QoL of patients with lupus, causing incapacity for daily living by significantly affecting emotional well-being and physical health functioning.

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