Review article

Fibromyalgia: Reviewing the epidemiology and gender-based differences in Africa

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Abstract

Objectives: Fibromyalgia is a complex disorder which presents with chronic widespread musculoskeletal pain, together with other symptoms like fatigue, sleep disturbances and cognitive disturbance. The cause remains unclear but it is postulated that there are abnormalities in neurohormonal profile and central sensitization to pain as the main mechanism. It is known to occur more commonly in females than males. This study set out to look at these differences in terms of epidemiology and gender differences.

Data source: We conducted online and public library searches using the English language.

Data extraction: We reviewed several papers and research work focusing on epidemiology and differences in gender presentation. The period of the search was between the years 1990 up to 2020.

Conclusion: Fibromyalgia is a commonly occurring rheumatologic condition. Gender differences exist with regard to epidemiology, clinical presentation and health seeking behaviors. Population based studies would be of use to establish the prevalence in Africa. More studies would be necessary to explain the gender differences noted in the many aspects of the disease including response to treatment.

Key words: Fibromyalgia, Fibromyalgia in women, Gender differences and impact of fibromyalgia

Introduction

Fibromyalgia is a condition characterized by chronic widespread musculoskeletal pain together with tenderness in areas known as pressure points. The condition has other symptoms apart from musculoskeletal ones. These include a disturbance in sleep patterns whereby patients present with poor unrefreshing sleep. Other associated symptoms include fatigue, irritable bowel syndrome and cognitive symptoms[1]. With regard to the widespread pain, inflammation is not a feature of fibromyalgia and therefore the patients do not suffer consequences of joint damage or deformities as is seen with other painful inflammatory conditions[2].

The cause of this condition is unknown. Several studies have been done to link it with certain causative factors and so far, it has been linked with Parvovirus B, Human Immunodeficiency Virus (HIV) and Hepatitis C virus infections. It is thought that these infections may act as a trigger to fibromyalgia[3]. There is a high prevalence of sleep disturbances in patients with fibromyalgia. These may include difficulty in falling asleep and poor unrefreshing sleep. There are notable abnormalities in sleep studies of patients with this condition. These may play a role in worsening symptoms of fibromyalgia[4]. The main focus of recent studies has been on the alterations in the neuroendocrine system of patients suffering from fibromyalgia. It has been noted that they tend to have abnormalities in hormonal profile alterations like serotonin[5] and substance P[6]. This has led to suggestions that it is a neurohormonal condition with central sensitization as the main mechanism in fibromyalgia[7]. This would then explain why the medications used to treat it are those whose main mechanism of action is in the central nervous system[8]. The hypothalamus-pituitary-adrenal axis has also been thought to play a role in the pathogenesis of this condition. A study done in women suffering from both fibromyalgia and chronic fatigue syndrome found that they tend to have low cortisol levels compared to healthy controls[9].

Fibromyalgia can occur on its own or in association with other rheumatologic conditions. It has been found to be prevalent in patients with rheumatoid arthritis, systemic lupus erythematosus, Sjogrens syndrome, osteoarthritis and also chronic fatigue syndrome[10]. Other non-rheumatological diseases have also been associated with fibromyalgia and these include diabetes mellitus[11].

Population based studies have put the disease at a prevalence of 2% in the

general population. In terms of gender, fibromyalgia is commonly seen in females compared to males. The reason for this is unclear. When it comes to age, it is mainly seen in middle aged women but the prevalence rises as they advance in age. The prevalence thus rises from 18-30 years and peaks at 55-64 years. Women also present with longer disease duration and have more tender points compared to men[12].

There is no specific laboratory or imaging modalities that can be used to diagnose fibromyalgia. The American College of Rheumatology has over the years developed sets of criteria that can be used for diagnostic purposes. This entails the presence of widespread pain present for at least three months. Widespread pain is defined as pain in all the four quadrants of the body together with presence on both right and left side of the body. Physical extermination is then carried out to assess for tenderness in 18 established areas on the body[13]. Previously, assessment of tender points was required but this has since been removed from the latest criteria. This entails calculation of widespread pain index on 19 sites together with assessment of 41 defined somatic symptoms[14].

The impact of this condition can be felt both at the individual and society level. At the individual level, fibromyalgia as much as it does not cause joint deformities, the disease can be debilitating in several aspects. The impact of symptoms like sleep disturbance, fatigue and depression can be assessed using the revised Fibromyalgia Impact Questionnaire (FIQR) tool. Additionally, pain, tenderness and their severity can also be assessed by the FIQR. The total score can be used to assess disease activity and also help with guiding management of the patient[15].

Other tools that help to assess the quality of life in fibromyalgia include EuroQol, the Medical Outcome Study (MOS) Sleep Scale, the Brief Pain Inventory- Short Form (BPI- sf) and the Hospital Anxiety and Depression Scale (HADS). Using these tools, it has been noted that the quality of life of patients with fibromyalgia is adversely affected by their pain, poor sleep patterns and chronic fatigue[16]. Assessment of the quality of life has been done in other studies with similar findings. The findings from one such study which looked at the focus groups in 48 women revealed that fibromyalgia has a substantial negative impact on patients' lives[17].

This can be seen well in advance of the diagnosis being made. A study in the United Kingdom revealed that fibromyalgia patients have a higher rate of clinic visits, prescriptions and diagnostic procedures up to 10 years before the diagnosis is made[18]. At the society level, fibromyalgia is associated with higher utilization of healthcare facilities. This could be in a bid to establish a diagnosis thus many hospital visits and unnecessary tests are done before a diagnosis is reached. In addition, many treatment modalities may be sought. This is as a result of the complex nature and myriad symptoms that the patient may present with[19].

Comparing the epidemiology in Western and African populations

Population based studies done in Western populations have estimated the prevalence to be between 2-4%[20]. In the United States, the prevalence was estimated to be 2.0% from a population of 3004 patients in a study done in Wichita[21]. In Europe, a study done in 5 countries estimated the prevalence in the general population at 4.7 % and it was found to be associated with both age and gender[22].

In Africa, there is paucity of data regarding the prevalence of fibromyalgia. Several countries have however sought to do prevalence studies in their own populations, some at community level and others at facility level. One such study was done in West Africa (Nigeria) where they studied 114 patients diagnosed by a rheumatologist. It was however noted that the ACR criteria may not be a sensitive tool to use in sub-Saharan Africa[23]. In Kenya, several studies have been done with regard to fibromyalgia. The first one was done by Dokwe *et al*[24] where they sought to establish prevalence of the disease in patients attending the medical outpatient clinics. They found a prevalence rate of 13% with middle-aged women contributing to 97.7% of the cases[24]. With regard to the associated conditions linked to fibromyalgia, Malombe *et al*[25] studied the disease in HIV positive patients who had musculoskeletal symptoms. They found a prevalence of 17.9% with a notable higher disease activity using the FIQR tool in comparison to the SIQR in those without fibromyalgia[25]. Umar *et al*[26] studied the presence of fibromyalgia in diabetic patients and they found that 27.9% of these patients had the condition. A majority of the patients were females (88.2%) and poor control of their underlying diabetes (using HBA1C measurements) was an associated finding[26].

Fibromyalgia in women

Differences exist between both genders when it comes to many things like biology and behavior. Consequently, the two genders may differ when it comes to disease manifestations, epidemiology and also pathophysiology of some conditions. In general, there is a female preponderance when it comes to most of the rheumatologic conditions. Certainly, common conditions like rheumatoid arthritis[27], systemic lupus erythematosus[28], systemic sclerosis[29] and even osteoarthritis[30] are seen more in women compared to men. The explanation towards this has remained elusive. It has been thought that these difference in occurrences could be due to the hormonal profile in both genders. Hormones like estrogen have been seen to play a role in auto reactivity of the immune cells (in mice studies) which then could explain some of the gender differences[31].

Fibromyalgia is no exception when it comes to these findings. In the USA, it has been found to be seven times more common in women. This was done via a population survey which interviewed about 3000 patients and further evaluated 391 who had symptoms of chronic

pain[12]. Another population based study revealed that those with fibromyalgia were more likely to be female and of a younger age group. The study population was however a predominantly male population[32].

In Africa, there is paucity of data with regard to fibromyalgia in women. What the previously mentioned studies found was that there is indeed an increased female to male ratio. In the Nigerian study, this was found to be at 1.5;1[23]. Dokwe *et al*[24] found a female preponderance of 97.7% in patients attending the medical out-patient clinics. The overall duration of symptoms was 5.8 years pointing towards the chronicity of symptoms before diagnosis was made. They also assessed the frequency of symptoms where they found that pain, fatigue and stiffness were the most common presentations in these patients[24].

Malombe *et al*[25] studied the HIV positive population and of the 68 patients out of 380, 88% were female. Fibromyalgia was found to be independently associated with the female gender with an odds ratio of 2.75. Other associations included unemployment and retired status. On the contrary, fibromyalgia was not associated with clinical stage of HIV, CD4 count or anti-retroviral regimen[25].

Basis of the gender differences

Female hormones are also believed to play a role in both the incidence and severity of fibromyalgia. This is evidenced by the fact that it tends to occur in women of child bearing age. In paediatric fibromyalgia, it has been shown that the prevalence between both genders remains similar until puberty whereby it tends to be higher in girls compared to boys[33]. Other findings have been that the level of progesterone and testosterone are inversely proportionate to the level of pain in fibromyalgia. This was a study done in women with fibromyalgia whereby hormone levels were assessed daily over a period of 25 days and compared against the symptom of pain. Additionally, fibromyalgia pain was highest during menstrual phase when hormone levels were low suggesting that sex hormones have a role to play in the symptomatology of fibromyalgia[34].

Racial differences have also been seen when it comes to the prevalence in females. For instance, a study done in USA comparing African-American women to Caucasian women found a prevalence of 3% and 2% respectively[35]. Other differences between the races have been seen whereby racial minorities were found to have greater levels of mood disturbance and depression than their Caucasian counterparts[36].

Notable differences in both genders exist when it came to disease presentation where it was seen that women with fibromyalgia were more likely to have connective tissue diseases. Men were found to have medical conditions linked to their diagnosis of fibromyalgia. In terms of clinical differences, women tend to have a higher tender point count compared to men when the ACR 1990 criteria was used[37]. They also tend to have more pain at these sites. Other differences in this study that compared 40 men and 40 women with fibromyalgia found that men had severe symptoms with decreased physical function together with lower quality of life[38].

It is a known finding that fibromyalgia is associated with cognitive symptoms like anxiety and depression. A study done to establish differences in the two genders with regard to this found that the odds of being female were 112% when anxiety was reported as a symptom. Curiously, in this study, depression was more associated with the male gender[39].

Effects of fibromyalgia from the women's perspective

The main symptom of pain is described as present throughout, unpredictable and fluctuating. Several patients were asked to describe their symptoms and below is an excerpt

''My body is stiff and then I get pain, like a hard pain in my back and then I'm tired, tired, tired all the time and it feels like I can't open my eyes properly for the whole day."

Other women felt as though their bodies were unfamiliar to them. Other symptoms described include sensitivity to cold, tender skin and swellings as well. The main finding from this study is that women felt that there's a double burden associated with fibromyalgia. This results from the symptomatology and also not being able to be understood/believed by those around them including healthcare workers[40].

The diagnosis of fibromyalgia has profound effects on patient's relationships with others. This includes family members, workmates and the community at large. At the family level, effects on the spouse can be varied from those who offer support during the illness while in others, fibromyalgia can lead to the end of a relationship[41]. Guilt is also one of the negative feelings that women living with fibromyalgia experience when it comes to feeling inadequate about not being able to take care of their children. Additionally, their spouses may have to take up more household roles in the family and this may further worsen the guilt feelings[42].

The physical and cognitive symptoms of fibromyalgia may affect the productivity of women living with fibromyalgia. It has been seen that this may lead to stigma and lack of social acceptance by the medical community and other people around them. In addition, those who are working may end up changing jobs frequently or take up lesser roles because of the difficulty in performing tasks brought about by their pain or cognitive symptoms like poor memory[42].

Conclusions

Fibromyalgia is a debilitating condition whose cause is unclear. The prevalence is noted to be higher in middle aged females with differences in disease presentation. The reason for the gender differences are unclear but there is evidence that sex hormones may have a role to play in this. More research is needed to explain these differences. The effects of the disease can be felt both at individual and

society level with increased utilization of resources both for diagnosis and treatment. There is paucity of data on fibromyalgia in Africa. We recommend that more studies be done to establish the prevalence and characteristics in the female gender.

Conflicts of interest: None to declare.

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