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# FIBROMYALGIA IN EARLY KNEE OSTEOARTHRITIS; A TERTIARY CARE HOSPITAL EXPERIENCE

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## ABSTRACT

**Objectives:** To find the prevalence of fibromyalgia in patients with early knee osteoarthritis.

**Methodology:** In this observational cross-sectional study 115 patients (age 18-49) in which 65 females and 50 males were selected from the Department of Rheumatology, Lady Reading Hospital Peshawar from August 2020 and February 2021. The American College of Rheumatology 1990 criteria and American Classification Criteria 1986 were used for the diagnosis of fibromyalgia in early knee osteoarthritis.

**Results:** Mean age of the patients was  $37.38 \pm 9.14$  years. There were 50 patients (females= 38, males = 12) who reported fibromyalgia. Moreover, there were 41 patients with hypertension, 3 with diabetes, and 1 with ischemic heart disease. Similarly, 3 patients reported hypothyroidism while 1 patient-reported chronic kidney disease. As regards fibromyalgia, 50 patients with early OA were found to have fibromyalgia comprising 43.5% of the total patients.

**Conclusion:** It is concluded that fibromyalgia is a commonly occurring disease among patients with early knee osteoarthritis. This condition affects both sexes, although females are far more likely to develop fibromyalgia as compared to males. The results of this study further highlighted the need for awareness, early diagnosis, and timely management of Fibromyalgia preventing patients from being over-treated for early knee OA.

**Keywords:** Early Knee Osteoarthritis; Fibromyalgia; Hypertension; Ischemic Heart Disease.

## INTRODUCTION

Fibromyalgia (FM) is a disorder characterized by constant pain, fatigue, muscle stiffness, and abnormal sleep patterns in addition to cognitive symptoms it is followed by a series of other symptoms including depression, anxiety, and functional damage to activities of the day-to-day lives.<sup>1,2</sup> The frequency is higher in young women but patients of either gender are susceptible at any stage of life. Chronic pain and fatigue are the most common cause of fibromyalgia in the United States<sup>3-5</sup>, particularly the women and men of low socioeconomic status. The occurrence and progression of fibromyalgia in females is 3-5% in females and in males, it is 0.5-1.6%.<sup>6</sup> According to Branco et al, fibromyalgia affects 4.7% of people in Europe, and 5.8% of women and 3.5% of the male population were predicted to experience it globally.<sup>7</sup>

Another study reported that the prevalence of fibromyalgia in Tunisia is 8.3%.<sup>8</sup> There has been outstanding development made in the understanding of this kind of disorder. However, the underlying symptoms of fibromyalgia have not been fully studied. For instance,

patients with fibromyalgia pain were diagnosed with central sensitization and impaired central nociceptive processing. Fibromyalgia pain is increasingly recognised as a neurosensory condition.<sup>9</sup> Fibromyalgia progresses with high frequency with some sort of disorders classified as systemic inflammation, like rheumatoid arthritis (RA)<sup>10</sup> Systemic lupus erythematosus (SLE),<sup>11</sup> and Hepatitis C infection.<sup>12</sup> However, there is a lack of evidence regarding the existence of Fibromyalgia with early Osteoarthritis.

Osteoarthritis (OA) is characterized by cartilage loss, subchondral bone changes, synovial inflammation, and meniscus degeneration.<sup>13</sup> There is little evidence regarding the presence of fibromyalgia in patients suffering from osteoarthritis.<sup>14</sup>

The current study was conducted due to the lack of data. Moreover, the presence of fibromyalgia in patients with knee osteoarthritis will affect the overall management plan. Therefore, the current study is an attempt to find out the frequency of fibromyalgia in patients with early osteoarthritis.

## METHODOLOGY

This observational cross-sectional study was conducted at the Department of Rheumatology, Lady Reading Hospital Peshawar from August 2020 to February 2021. A total of 115 patients enrolled whose ages were between 18 and 49 both male and females. The Ethical approval was obtained from the Hospital Research and Ethical Board of Lady Reading Hospital. Written informed consent was taken from all the patients. Patients were subjected to complete history taking and detailed physical examination. Fibromyalgia scoring was done in all patients with early osteoarthritis.

The sample size was calculated using the WHO software with the following assumptions: Confidence level = 95%, the Anticipated proportion of accuracy=35.5%<sup>14</sup>, and Absolute Precision= 8%. The sampling technique used was non-probability consecutive sampling. Similarly, patients with inflammatory arthritis, vitamin D deficiency, any history of recent trauma or injury to the knee, and chronic kidney disease patients were excluded from the current study. If the requirements of the American College of Rheumatology 1990 criteria are fulfilled then patients were considered to be diagnosed with fibromyalgia.<sup>6</sup> According to which tenderness on 11 out of 18 tender points was defined as having fibromyalgia. Similarly,

early knee osteoarthritis was defined as the presence of knee pain and joint stiffness of less than 10mins and Kellgren–Lawrence grade  $\geq 1$ .<sup>16</sup>

SPSS version 22 was used for the analysis of the data. The Mean and standard deviation were calculated for numerical (quantitative) variables like age. Frequencies and percentages were calculated for qualitative variables such as gender in addition to fibromyalgia and were stratified among age. The significance was set at a 5% level.

## RESULTS

The total number of patients presented to the Department of Rheumatology, Lady Reading Hospital was 115. There were 65 female patients (56.5%) and 50 male patients (43.5%). The mean age of the study cohort was  $37.38 \pm 9.14$  years. A total of 50 (43.5%) patients with early knee OA were found to have fibromyalgia. There were 41 patients with hypertension, while diabetes and ischemic heart disease was found in 3 and 1 patients respectively.

When gender was cross-tabulated against fibromyalgia, our results were found to be statistically significant. Fibromyalgia was found in 50 patients with 76% of female patients and 24% of male patients with a p-value of 0.004 as shown in Table 1.

The details of co-morbidities with fibromyalgia is given in table 2.

## DISCUSSION

The study examined 115 patients with early osteoarthritis for the presence of fibromyalgia and observed that fibromyalgia is found in 43.5% of the patient. It is also observed that as compared to males, fibromyalgia is more common in females with early osteoarthritis. Early osteoarthritis is the development of clinical and/or radiographic features suggesting OA before the age of 50 years. In our study majority of patients were aged in the late 30s and 40s with a mean  $\pm$  standard deviation of  $37.38 \pm 9.14$  years respectively. There are relatively limited studies on the prevalence of fibromyalgia in early knee OA, however, one of the studies showed established disease, the mean age + SD of the study population was  $53.4 \pm 7.2$ , with  $37.5 \pm 6.9$  being the age + SD of patients with concomitant OA and fibromyalgia.<sup>14</sup>

The current study observed more female patients compared to male patients, with a ratio of 1.3:1. Indeed knee osteoarthritis is considered to be more common in females as compared to males.<sup>17–21</sup> There can be many reasons, which include but are not limited to knee anatomy, mechanics, gait disturbances, more pain sensitivity, and disability.<sup>22–25</sup>

Table 1: Gender vs Fibromyalgia cross-tabulation in patients with early Osteoarthritis (n=115)

Gender	Fibromyalgia		Total	P-value*
	Present	Absent		
Female	38 (58.4%)	27 (41.5%)	65	0.004
Male	12 (24.0%)	38 (76.0%)	50	

\*P-value of 0.05 is considered a statistically significant

Table 2: Cross-tabulation of Fibromyalgia vs different variables in patients with Early Osteoarthritis

Variables	Fibromyalgia		Total	P-value*
	Yes	No		
Diabetics	3 (100%)	0	3	0.18
Hypertensive	21 (51.2%)	20 (48.7%)	41	0.08
Ischemic Heart Disease	1 (100%)	0	1	0.107

It was observed that fibromyalgia was found in 43.5% of patients with early osteoarthritis. In comparison to this, studies have demonstrated a relatively lower frequency of 6%<sup>26</sup>, 10%,<sup>27</sup> and 22.83%<sup>28</sup> of FM among their OA patients. However, by considering such studies, the cohort was based on established OA while the current study considered the early knee OA patients only. Likewise, this difference can be due to different sample sizes and different socioeconomic statuses including the educational level of the patients.

It was observed that fibromyalgia was more common in females than males which was statistically significant (76% of females vs. 24% of males,  $p = 0.004$ ). After extensive review, we could not find data regarding the gender distribution of fibromyalgia in patients with early osteoarthritis. Marwa et al<sup>14</sup> suggested that all of the females in their study cohort had fibromyalgia which is in line with the current study. However, similar results have been shown in the established osteoarthritis patients as compared to early OA patients included as compared to the current study. Bergman et al<sup>27</sup> reported a 56% prevalence of Fibromyalgia in female patients of OA. They too did not segregate the early OA from established OA. The current study was limited in the sample size, and therefore, recommends further studies with a large sample and extended duration of time to confirm or refute the association of early knee OA with FM. Secondly, the study does not take into consideration the association of FM with the grade of knee OA.

## CONCLUSION

In this study, it was concluded that fibromyalgia is a commonly occurring disease in patients with early knee osteoarthritis. We also conclude that in contrast to established OA, females with early osteoarthritis are more likely to develop fibromyalgia compare to the opposite gender. We, therefore,

recommend that all patients with early knee osteoarthritis should be screened for concomitant fibromyalgia.

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### Author's Contribution

IH contributed in the collection of data and performed the statistical analysis. SA conceived the idea and wrote the manuscript. SHM, SK, NU and WH helped in data collection and write up of the manuscript. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

### Conflict of Interest

Authors declared no conflict of interest

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None

### Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.