Original Article

Self-Perceived Fibromyalgia Among Female Students and Academicians; A Single City Study

Bisma Ishtiaq, Roha Asif, Misbah Amanat Ali, Wajida Perveen, Ijaz Amin, Laiba Naeem

ABSTRACT

Objective: The study aims to analyze the prevalence of self-reported fibromyalgia syndrome among female students and teachers, and its association with demographic factors.

Methodology: This descriptive cross-sectional study was conducted over six months from 6th April to 25th September 2020 after ethical approval, targeting females in the education sector across various educational institutes in Sialkot city using convenient sampling technique. Based on predefined eligibility criteria, a total of 161 females aged 18-35 were included in the study by utilizing a fibromyalgia survey questionnaire. The correlation between different age groups and symptom severity was investigated ($P \leq 0.05$ was considered significant).

Results: Out of 161 participants, 43 (26.70%) reported symptoms of fibromyalgia, having a mean age of 24.46±4.305 years. Prevalence of fibromyalgia reported was 22.7% in 18–23 years, 25.4% in 24–29 years and 43.5% in 30–35 years of age respectively. The symptom severity levels were mild (34.8%), moderate (41.3%), and severe (43.5%). The most affected body area was the shoulder (79.06%), followed by the neck (72.09%) and the lower back (69.77%). The prevalence in minor and major body areas was recorded as 37.39% and 34.51%, respectively.

Conclusion: The prevalence of self-reported fibromyalgia in females increases with advancing age, most evident in the thirties and onwards. The risk of fibromyalgia is directly related to the body mass index. Symptom distribution analysis supported the tender point theory of fibromyalgia assessment.

KEYWORDS: Chronic Fatigue Disorder; Fibromyalgia Syndrome; Muscle Tenderness; Musculoskeletal pain.

INTRODUCTION

Numerous musculoskeletal problems are very common nowadays due to lifestyle disturbances and environmental insults and among these, fibromyalgia syndrome (FMS) is the most tiring problem, especially in the women population. It is a health condition that is non-degenerative, chronic, and characterized by widespread pain covering half of the body horizontally or vertically because of the tender points. If not treated well on time, it can last for more than three months or even longer, varying from case to case. A bunch of symptoms that characterize fibromyalgia include lower pain threshold to allodynia, stiffness, hyperalgesia, fatigue, cognitive impairment, psychological distress, short-term memory, weakened rapidity of information processing, reduced attention span, and limited multitasking abilities. Additional symptoms include 11 to 18 tender points throughout the body, with women having the more tender points.[1]

Bisma Ishtiaq[1], *DPT*
Clinical Physiotherapist
Roha Asif[2], *M. Phil, PhD.*
Assistant Professor
Misbah Amanat Ali[3], *MS-NMPT*
Assistant Professor
Wajida Perveen[4], *MS-OMPT*
Associate Professor Department of Physical Therapy
Ijaz Amin[5], *MS(Ortho)*
Professor
Laiba Naeem[6], *DPT*
Demonstrator
[1]Axon Medica Dubai, Al Rashidiya Dubai, UAE
[2,5,6]Sialkot College of Physical therapy Amin Welfare & Teaching Hospital, SKT, PAK.
[3]Avicenna medical College, LHR, PAK.
[4]CMH Lahore Medical College & Institute of Dentistry LHR, PAK.

Correspondence:
Dr. Wajida Perveen
wajopri@gmail.com

Symptoms for fibromyalgia can be seen in a cyclic pattern. Most of the patients with fibromyalgia have one or more pain co-morbidities. Diseases like arthritis, physical abuse/trauma, or any other infection raise the risk of fibromyalgia. Individuals suffering from post-traumatic stress disorder (PTSD) may eventually develop this condition. Depending upon the different causes, research stated that the chance of getting fibromyalgia in women is higher than in men due to hormonal parameters.[2] The symptoms of fibromyalgia tend to worsen during premenstrual periods, pregnancy, postpartum, or menopause, all of which are events primarily influenced by sex hormones.[3]

Characteristic changes in the sleep patterns along with altered levels of serotonin, growth hormone, cortisol, and substance P, contribute to the etiology of this syndrome, suggesting that dysregulation of the neuroendocrine and autonomic systems may be its underlying cause.[4] Rahman A et al, in a genome-wide linkage study found that a specific chromosomal region was significantly associated with fibromyalgia. It has been examined and revealed that the faulty inhibition is caused by the disturbance in the neurotransmitters with higher quantities of substance P but lower levels of dopamine metabolites, noradrenaline and serotonin.[5] Fibromyalgia usually occurs during early to middle adulthood. It has been established that housewives have a higher tendency to suffer from fibromyalgia.[6] According to Kaleem S et al (2021), out of 100 confirmed fibromyalgia cases, 86% were women. Their mean age was 49.2 years, and the prevalence of fibromyalgia in the age group 18-30 was less than 1%, while it was 8% for the age group 55-64.[7] Moshrif A (2022), in an epidemiological survey of females conducted in Norway reported that 34 women consulted a physician for either pain or stiffness or both. Of these 34 women, 14 were diagnosed with fibromyalgia.[8]

FMS still lacks a viable cure. Although fibromyalgia is a non-inflammatory, non-progressive condition, a variety of circumstances might influence the severity of its symptoms, including environmental pressures, weather changes, bodily stresses, and emotional stresses. Serotonin (5-hydroxytryptamine, 5-HT) is the common component underlying all symptoms.[4] Pharmacological and non-pharmacological approaches to manage symptoms have limited efficacy.[9] Management of fibromyalgia includes being active and doing regular exercises to reduce the associated symptoms. This study is rationalized around the prevalence of this condition among females from different backgrounds, focusing on a specific body area by observing the symptoms and lifestyles.

METHODOLOGY

The descriptive cross-sectional study was started after ethical consideration and approval from SCPT IRB letter no. IRB-SCPT-DPT-116-2020 dated 20-03-2020. The sample size was calculated using Raosoft and was found to be 161 subjects.[6] Data for this study was collected after obtaining informed consent from participants at four different institutes (medical colleges and universities) of Sialkot city, which ensured suitable diversity of data collection using a convenient sampling technique. Adult females either students or teaching faculty members from different disciplines were included in the study. Females with any congenital spinal deformity, history of recent trauma or surgery, diagnosed with rheumatoid or any other inflammatory arthritis were excluded. The data collection was completed within two months (April - May 2020). The study was conducted over a six-month period, from 6th April to 25th September 2020. A fibromyalgia survey questionnaire (FSQ) was utilized to collect data.[10] The possible score ranges from points 0 to 31. FSQ has two domains: (i) widespread pain index (WPI) and (ii) symptom severity score (SSS). Symptom severity score ranges from 0-12. WPI is reflected by pointing out the painful or tender sites of the body on a given body chart in the last seven days. There are seven points on the right and seven on the left body side,

while five points lie in axial body regions, including the neck, chest, abdomen, and upper and lower back. Score points range from 0-19; the greater the score, the more severe the condition, and vice versa. A total score of 13 or more is the cutoff for the diagnosis of fibromyalgia. Moreover, the addition to a 13-point cut-off in the 2011 American College of Rheumatology (ACR) preliminary diagnostic criteria was modified for FMS, mentioning the occurrence of these three circumstances:

WPI ≥7 and SSS ≥5, or WPI 3–6 and SSS ≥9.

Symptoms persist on a consistent level for three months minimum. There is no alternative explanation for the patient's suffering.[11,12]

This research targeted adult females ranging from 18 to 35 years of age and willing to participate without any history of trauma or injury. The collected data was then analyzed using the SPSS 23.0 statistical software. Frequency and percentages were calculated for symptom distribution and mean ± SD for age; Chi-square was applied to find the relation between the severity of symptoms in different age groups and between scores of FSQ in different body mass index (BMI) categories. A p-value of ≤0.05 is considered significant.

RESULTS

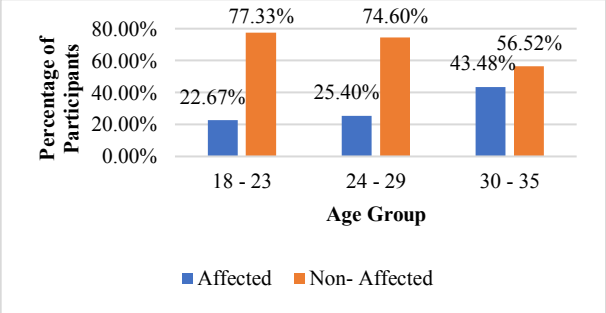
Forty-three out of the 161 participants reported symptoms of fibromyalgia with a prevalence of BMI: 26.7%, having a mean age and standard deviation (M±SD) of 24.46±4.305 years. The total population was further categorized into three age categories: (i) 18–23, (ii) 24–29, and (iii) 30–35 (years) (Table 1). The number of affected participants in the 18-23 years age category were 22.67%, in 24-29 years 25.40% and in, 30-35 years 43.48%.

Table 1: Demographic Data of Participants

N=161	Range	Number of participants (%)
Age (years) Mean ± std. dev 24.46 ± 4.305	18–23	75(46.58%)
	24–29	63(39.13%)
	30–35	23(14.29%)
BMI (kg/m^2) of participants	<18.5	25(15.52%)
	18.5-24.9	92(57.14%)
	>25	44(27.34%)
Marital Status	Single	73 (45.35%)
	Married	86 (53.41%)
	Divorced	2 (1.24%)
Academic Status	Teacher	76 (47.20%)
	Student	85 (52.80%)

BMI: body mass index

Figure 1: Percentage of Age-Wise Affected and Non-Affected Participants with Fibromyalgia



Based on FSQ scores, three categories were made for severity checks, i.e., mild (FSQ score ≤6), moderate (FSQ score 7-12), and severe (FSQ score ≥13) problems. There were 75 participants (46.58%) aged 18–23 years, among whom 28 (50%) had mild, 30 (48.38%) moderate and 17(39.5%) had severe symptoms. In 24-29 years', age category there were 63 (39.13%) participants, out of whom 21 (37.5%) had mild, 26 (41.93%) moderate and 16 (37.2%) had severe symptoms. While, 23 (14.28%) participants were 30-35 years old, out of whom 7 (12.5%) had mild, 6 (9.67%) moderate and 10 (23.25%) had severe symptoms. The chi-square value was 4.314, with a p value of 0.3652, indicating no significant association between age and fibromyalgia severity (Table 2).

Table 2: Severity of Symptoms in Different Age Groups.

Symptom Severity on the basis of FSQ	Age in years			Total (n=161)	P value	Chi-square
	18-23 (75)	24-29 (63)	30-35 (23)			
Mild problem (<6 score)	28 (50%)	21 (37.5%)	7 (12.5%)	56 (34.78%)	0.3652	4.314
Moderate problem (7-12 score)	30 (48.38%)	26 (41.93%)	6 (9.67%)	62 (38.5%)		
Severe Problem (13+ score)	17 (39.5%)	16 (37.2%)	10 (23.25)	43 (26.70%)		

P value ≤ 0.05 taking as significant
FSQ: fibromyalgia survey questionnaire

Furthermore, the study was expanded to determine which regions of the body were most sensitive to pain for fibromyalgia patients. The body was divided into 12 sections, and subjects responded on a scale of 0 to 19. Fibromyalgia discomfort was recorded for these 12 sections (Table 3).

Table 3: Body Parts Most Affected by Fibromyalgia

Body Part	Status	No. of affected participants N=43	% age of affected participants with respect to the total of that region
Jaw	Affected	2	4.65%
	Normal	41	
Neck	Affected	31	72.09%
	Normal	12	
Shoulder	Affected	34	79.06%
	Normal	9	
Upper Arm	Affected	6	13.95%
	Normal	37	
Lower Arm	Affected	11	25.58%
	Normal	32	
Chest	Affected	4	9.30%
	Normal	39	
Abdomen	Affected	12	27.91%
	Normal	31	
Upper Back	Affected	19	44.19%
	Normal	24	
Lower Back	Affected	30	69.77%
	Normal	13	
Hips	Affected	3	6.98%
	Normal	40	
Upper Leg	Affected	11	25.58%
	Normal	32	
Lower Leg	Affected	25	58.14%
	Normal	18	

BMI: body mass index

According to BMI, the participants were divided into three categories, i.e., underweight, normal and overweight, with fibromyalgia prevalence of 28%, 23.9% and 31.8%, respectively. Chi-square value was 0.5557, degree of freedom of 2 with a p value of 0.7574, supporting no association between BMI and fibromyalgia (Table 4).

The most critical body area suffering from fibromyalgia was the shoulder, with 79.06% affected, closely followed by the neck, with 72.1% and the lower back, with 69.8% affected.

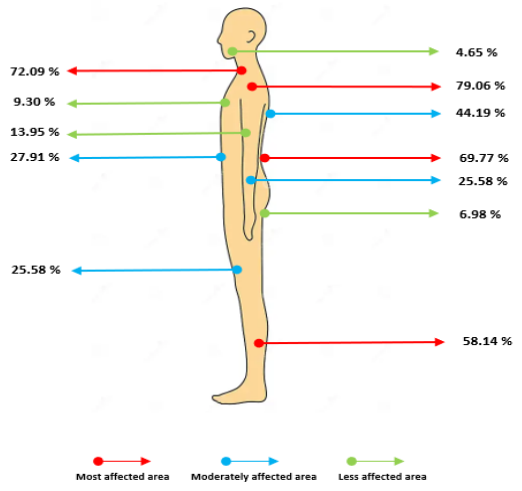
Table 4: Prevalence of Fibromyalgia in Different BMI Categories

Weight Category	Females with Fibromyalgia	Participants	P value	Chi-square
Underweight (BMI<18.5)	7/25 (28%)	25(15.5%)	0.7574	0.5557
Normal weight (BMI 18.5-24.9)	22/92 (23.91%)	92(57.14%)		
Overweight (BMI>25)	14/44 (31.81%)	44(27.32%)		
Total	43/161 (26.70%)	161(100%)		

P value ≤ 0.05 taking as significant

The number of participants who reported pain in multiple areas was recorded by dividing it into two categories. The first category was “minor body areas,” i.e., the upper extremities, having 115 participants, among which 43 were diagnosed with fibromyalgia and the prevalence recorded was 37.4%. The second category was “major body areas,” i.e., back, hips and legs, having 113 participants, among which 39 were diagnosed with fibromyalgia and the prevalence recorded was 34.5%.

Figure 2: Percentage of Body Areas Affected with Fibromyalgia



DISCUSSION

The present study was conducted to analyze the trends of fibromyalgia in female university students and academicians. The occurrence of fibromyalgia is related to the age of the patient, so a clear picture regarding the relation of maturing age with fibromyalgia could be established. However, irrespective of the age group, research has established that housewives and female medical students have the highest tendency to develop fibromyalgia and other related musculoskeletal disorders due to several contributing factors.[13,14] The females were divided into three age groups. However, at the same time, it reduced the chance of false alteration of results by a certain age group to the others. In this way, a much more authentic and to-the-point conclusion could be deduced compared to the outcomes of the Jordanian study, according to which fibromyalgia did not have any significant link with age, marital status, employment status, BMI, and comorbidities.[15]

A general increment in the prevalence rate was seen in females above thirty years of age. Similar results were found in a study conducted in five different European countries by Branco and Bannawarth.[16] Gammoh O et al (2024) concluded in their survey, that the prevalence of fibromyalgia was related to age and that younger individuals (<25 years) were at lower risk of developing fibromyalgia. The prevalence rate increased much steeper in the thirties and onwards. This might be related to genetic and socioeconomic factors, and, according to a study, due to the suboptimal fibromyalgia management through the use of over-the-counter analgesics, but the presence of other comorbidities might also be related to over-estimation of fibromyalgia in high age range individuals.[17] The most affected areas were the neck, shoulders, and lower back, supporting the tender point theory of fibromyalgia assessment.[18]

After establishing the age groups and symptom severity, decreased BMI imposed a risk of fibromyalgia and increased BMI further enhanced the probability as the prevalence rate was highest in the overweight category. The findings of current study are consistent with prior research by Aparicio and Ughreja in their publications on the relation between weight status and sleep with FMS. They hypothesized that female patient with obesity having FMS would have increased chances and levels of anxiety and despair, as well as inferior quality of life (QoL), dynamic balance and motor agility, cardiorespiratory fitness, and upper-body flexibility compared to their normal-weight peers. Jennifer and Shapiro proposed that reducing weight to a normal BMI can improve symptom severity, pain perception, and FMS. According to Neumann and Lerner, BMI was inversely related to the threshold of tenderness and QoL, but directly correlated with tender points count and physical malfunctionality.[19,20]

The result supported that the patients with this pain syndrome have the locality of tender points in accordance with one study showing that the tender points are in these regions, i.e., neck and shoulders. The participants' reporting of symptoms in these areas promotes the idea that FMS is related to pain complaints in the neck, shoulder and lower back areas.[21] According to a survey, the most prevalent areas for regional pain reported by the public are the lower back and shoulder. Although these areas have higher prevalence rates, they both share with widespread pain the characteristics of a female excess and the 'bell' form of the age distribution curve.[22]

This study showed a different perspective of research than one study supporting the opposite argument, i.e., lower back and neck pain had a direct variance with the prevalence of fibromyalgia.[22] However, this result explains another key point: localized pain leads to widespread chronic pain that is indicative of fibromyalgia. FMS patients demonstrated greater sensitivity to various pain modalities in all evaluated body regions, implying central disinhibition as a possible cause. The study is limited due to smaller sample size and confined to a single city.

CONCLUSION

Fibromyalgia severity rises with age and higher BMI in females. Older and overweight females reported more symptoms and reduced quality of life.

Recommendations: Weight loss and normalizing BMI may help manage fibromyalgia symptoms. The study challenges the tender point theory by showing more cases in minor body areas, suggesting localized pain may evolve into widespread pain. Future research with larger, balanced samples is needed to explore these findings and develop preventive strategies for at-risk females.

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Author Contributions:

Bisma Ishtiaq: conceived the study designed, carried out the data collection and statistical analysis and drafted the manuscripts.

Roha Asif: Participated in its design and coordination. drafted, read and approved the final manuscript.

Misbah Amanat Ali: Participated in its design and coordination. Statistical analysis, drafted, read and approved the final manuscript.

All authors are equally accountable for research work

Wajida Perveen: Participated in its design and coordination. Statistical analysis, drafted, read and approved the final manuscript.

Ijaz Amin: Participated in its design and coordination. Statistical analysis, drafted, read and approved the final manuscript.

Laiba Naeem: Participated in its design and coordination. Statistical analysis, drafted, read and approved the final manuscript.

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