

PREVALENCE OF FIBROMYALGIA IN POST COVID-19 PATIENTS

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Abstract

Keywords

Fibromyalgia, Post Covid-19 patients, Prevalence, Widespread pain index and Symptom severity scale

Article History

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Copyright @Author Corresponding Author: * Hafsah Arshad *Objective:* To find the prevalence of fibromyalgia in patients who recovered from Covid-19.

Methods: This descriptive cross- sectional study was conducted from February 2022 to July 2022 at different hospitals of Rawalpindi and Islamabad. Nonprobability sampling technique was used for collection of sample. Data was collected from 398 post Covid -19 patients. Covid patients with a recovery span of after 3 to 6 months, aged 18 to 65 years and both male and female were included; patients with hypertension, diabetes, pain due to fatigue and muscular pain were excluded from study. The data was collected using semi-structured questionnaire, which included questions related to demographics, duration of Covid-19 with other attributes such as weight, height, widespread pain index (WPI) and symptom severity scale (SSS) to assess the symptoms of fibromyalgia. Data was analyzed by SPSS version 26.

Result: The mean age was 31.4 ± 11.15 years. Among 398 participants, 212 (55.8%) were females and 168 (44.2%) were males. The overall prevalence of fibromyalgia was found to be 31.2%. The mean of Widespread Pain Index across gender was 6.40 ± 3.433 in males and 6.79 ± 2.75 in females. The mean of Symptom Severity Scale across gender was 4.38 ± 0.86 in males and 4.41 ± 0.79 in females.

Conclusion: Fibromyalgia was prevalent among post covid-19 patients.

INTRODUCTION

The global COVID-19 pandemic has shown significant impact, leading to high rates of morbidity and mortality worldwide. Fortunately, the development of vaccines has contributed to a reduction in infection and mortality rates, allowing for better control of the disease. While patients with COVID-19 typically experience acute symptoms during the initial phase of illness, with acute respiratory distress being the most severe (1). However, even after recovering from Covid-19 the patients may persists with neurological, musculoskeletal and psychological problems. Fatigue



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and dyspnea in particular were found in Covid-19 survivors (2). It is found that regardless of comorbidities, 10% to 35% of patients who do not need hospitalization are thought to experience post-COVID symptoms (3).

Fibromyalgia (FM) is marked by persistent musculoskeletal pain. Common symptoms of Fibromyalgia include muscle and joint stiffness, sleep disruption, fatigue, mood disturbances, cognitive impairments, anxiety, depression, increased sensitivity, and difficulty in performing routine activities. Additionally, FM may be linked with certain conditions, including infections, diabetes, syndromes, various psychiatric or rheumatic neurological problems (4). The American College of Rheumatology (ACR) established diagnostic criteria in 1990 for Fibromyalgia, which was revised in recent years. According to this, FM is based on two primary criteria: (1) pain on both sides above and below the waist, having centralized pain, and (2) chronic widespread pain lasting for at least three months, accompanied by tenderness at a minimum of 11 out of 18 predefined anatomical sites (5). Fibromyalgia is one the most common of musculoskeletal system, it affects women more frequently than men. In general population the estimated prevalence of fibromyalgia is to be 2-4 % (6). The exact mechanism behind pathophysiology of fibromyalgia is yet unknown, however it is likely a complex, multifactorial condition that involves altered cortical processing, impaired pain inhibitory mechanisms, and molecular changes within pathways of pain. However, it is well established that individuals with fibromyalgia has high sensitivity to various stimulus, such as pressure stimulus of mechanical and ischemic types, hot and cold stimulus (7). Additional secondary factors that may contribute to symptoms of fibromyalgia include reduced neurotransmitter, changes in hormone level, heredity, and environmental causes. Serotonin plays a key role in mood regulation, depression and anxiety. It is found that serotonin levels are reduced in people with fibromyalgia as compared to healthy people. The decreases in blood serum serotonin levels may be explained by changes in the pain modulation pathway, which lessen GABA actions at the periaqueductal gray (8). The three main clinical symptoms that affect the quality of life among people

with fibromyalgia are fatigue, pain and sleep problems. In western countries, the prevalence of fibromyalgia ranges from 2% to 7% (9). Since fibromyalgia and long-term covid patients have similar symptoms, it is possible that COVID-19 infection may cause or worsen fibromyalgia in certain people. The current study was planned to find prevalence of fibromyalgia in post covid-19 patients.

Methodology:

This descriptive cross- sectional study was conducted from September 2021 to February 2022 at different hospitals of Rawalpindi and Islamabad. The ethical approval was taken from university IRB/DPT/1020-1302. The study duration was six months after the approval. The sample size was calculated by using Solvin's formula; $n = N / (1 + N e^2)$ taking confidence interval 95% and margin error (e) 5% or 0.05. The actual population was taken N= 106319, so the sample turned out to be 398. Data was collected from post Covid -19 patients from different hospitals of Rawalpindi and Islamabad. Covid patients with a recovery span of after 3 to 6 months, aged 18 to 65 years and both male and female were included; patients with hypertension, diabetes, pain due to fatigue and muscular pain were excluded from study. Nonprobability sampling technique was used for collection of data. The data was collected using a semi-structured questionnaire. The questionnaire had 21 questions. The first part includes Second part demographic information. was Widespread Pain Index (WPI), and third part was Symptom Severity (SS) scales. These are self-reporting scales to assess the distribution of pain and severity of symptoms. WPI score ranges from 0 to 19. The SS scale score ranges from 0 to 12. The diagnostic criteria for fibromyalgia is that if a participant has WPI \geq 7 and SS score \geq 5, complain of pain more than 3 months. A Fibromyalgianess Scale or Fibromyalgia Symptom Scale (FS) was obtained by adding up the modified WPI and SS scores. An FS score of ≥ 13 has been largely adopted as the best cutoff for FM classification.(10) Written informed consent was taken from each participant. Data was analyzed using IBM SPSS Statistics version 26. Descriptive statistics were applied. For categorical

variables, frequency and percentage and for numerical variables mean and SD were calculated.

Results:

Among the total participants of 380, 168 (44.2%) were males and 212 (55.8%) were females. The mean age was 31.4 ±11.15. Regarding age groups, 213 (56.1%) were 18-25 years, 90 (23.7%) were 26-33 years, 34 (8.9%) were 34-41 years, 42 (11.1%) 42-49 years and 1 (3%) were 50-57 years (Figure 1). 162 (42.6 %) were married and 218 (57.4%) were unmarried. Most of participants, 292 (76.8%) were graduates, 73 (19.2%) secondary level 292 (76.8%) and 15 (3.9%) had primary level education. 16 (4.2%) were unemployed, 155(40.8%) were students and 20 (55.0%) were employed. Overall mean BMI was 20.63± 5.95. Considering BMI categories; 107 (28.2%) were underweight, 203 (53.4%) had normal BMI, 43 (11.3%) were overweight and 27 (7.1%) were obese. 264 (69.5%) participants reported covide-19 duration 10 days and 116 (30.5%) reported more than 10 days. Majority participants 127 (33.4%) were in 6 months' time span since Covid-19. Regarding participants affected by Covid-19; 166 (43.7%) were in the 2nd wave, 99 (26.1%) in 1st wave, 77 (20.3%) in 3rd wave, 38 (10.0%) in 4th wave.

The mean value for widespread pain index was 6.62 ± 3.07 . The total score was ≥ 7 in 178 (46.7%) participants and <7 in 202 participants.

Table 1:	Widespread	l pain	index response	across gender.
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Participants showed positive responses for Right Jaw 60(15.8%), Left Jaw 18(4.7%), Right shoulder 143(37.6%), left shoulder 85(22.4), Right upper arm 48(12.6%), Right lower arm 146(38.4%), Left upper arm 40 (10.5%), Left lower arm 70(18.4%), Neck 56(14.7%), Abdomen 56(0.7%), Right Hip 82 (21.6%), Left Hip 59(15.5%), Right upper leg 35(9.2%), Right lower leg 79(20.8%), Left upper leg 91(23.9%), Left lower leg 107(28.2%), Upper back 40(10.5%) and Lower back 18(4.7%). The detail of widespread pain index scale response among participants is given in table 1.

The mean value for Symptom severity scale was 4.40±0.82. The total score was ≥5 in 206 (54.1%) participants. Most of the participants 190(50.0%) reported moderate fatigue, sleep disturbance as slight problem 174 (45.8%) and cognitive symptoms with moderate problem 202 (53.2%) (Table 2). Most of the participants 284(74.4%) complained of muscle pain, 129(76.8%) male and 155(26.9%) females. Fever was in 187(49.2%) participants, 85 (50.6%) male and 102 (48.1%) females. Headache was found in 163(43.9%), depression 150(39.5%), male 60 (35.7%) and females were 90(42.5%). Nausea was reported by 98(25.85), diarrhea 111(29.2%), loss of taste 107(28.2%), shortness of breath 128(33.7%) and Insomnia 130(34.2%). The detail of somatic symptoms in participants is given in table 3. Fibromyalgia prevalence in post covid 19 participants was shown in figure 1.

Variables	All participants n (%)	Male n (%)	Female n (%)
Right shoulder girdle			
Yes	143 (37.6%)	78(46.4%)	127(59.9%)
No	237 (62.4%)	90(53.6%)	85(40.1%)
Left shoulder girdle			
Yes	85 (22.4%)	117(69.6%)	131(61.8%)
No	295(77.6%)	51(30.4%)	81(38.2%)
Right upper arm			
Yes	48(12.6%)	90(53.6%)	129(60.8%)
No	332(87.4%)	78(46.4%)	83(39.2%)
Left upper arm			
Yes	40(10.5%)	87(51.8%)	126(59.4%)
No	340(89.5%)	81(48.2%)	86(40.6%)
Right lower arm			
Yes	146(38.4%)	51(30.4%)	104(49.1%)

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No	234(61.6%)	117(69.6%)	108(50.9%)
Left lower arm			
Yes	70(18.4%)	36(21.4%)	51(24.1%)
No	310(81.6%)	132(78.6%)	161(75.9%)
Neck			
Yes	56(14.7%)	106(63.1%)	122(57.5%)
No	324(85.3%)	62(36.9%)	90(42.5%)
Right hip (buttock)			
Yes	82(21.6%)	79(47.0%)	126(59.4%)
No	298(78.4%)	89(53.0%)	86(40,6%)
Left hip (buttock)			
Yes	59(15.5%)	54(32.1%)	56(26.4%)
No	321(84.5%)	114(67.9%)	156(73.6%)
Right upper leg			
Yes	35(9.2%)	34(20.2%)	54(25.5%)
No	345(90.8%)	134(79.8%)	158(74.5%)
Left upper leg			
Yes	91(23.9%)	32(19.0%)	60(28.3%)
No	389(76.1%)	136(81%)	152(71.7%)
Right lower leg			
Yes	79(20.8%)	84(50.0%)	118(55.7%)
No	301(79.2%)	84(50.0%)	94(44.3%)
Left lower leg			
Yes	107(28.2%)	44(26.2%)	63(29.7%)
No	273(71.8%)	124(73.8%)	149(70.3%)
Upper back			
Yes	40(10.5%)	27(16.1%)	16(7.5%)
No	340(89.5%)	141(83.9%)	196(92.5%)
Lower back			
Yes	18(4.7%)	16(9.5%)	5(2.4%)
No	362(89.5%)	152(90.5%)	207(97.6%)
Right jaw			
Yes	60(15.8%)	40(23.8%)	27(12.7%)
No	320(84.2%)	128(76.2%)	185(87.3%)
Left jaw			
Yes	18(4.7%)	5(3.6%)	15(7.1%)
No	362(95.3%)	162(95.4%)	197(92.9%)
Abdomen			
Yes	56(14.7%)	95(56.5%)	112(52.8%)
No	324(85.3%)	73(43.5%)	100(47.2%)

Table2: The Symptoms Severity scale across gender.

Variables	All participants n (%)	Male n (%)	Female n (%)
Fatigue			
Slight problem	114(30.0%)	46(27.4%)	68(32.1%)
Moderate problem	190(50.0%)	74(44.0%)	117(55.2%)
Severe problem	76(20.0%)	48(28.6%)	27(12.7%)
Severe problem	(0(20.0%)	40(20.0%)	2 ((12. (70)



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Sleep distributions				
Slight problem	174(45.8%)	56(33.3%)	118(55.7%)	
Moderate problem	146(38.4%)	70(41.7%)	76(35.8%)	
Severe problem	60(15.8)	42(25.0%)	18(8.5%)	
Cognitive symptoms				
Slight problem	11(2.9%)	80(47.6%)	122(57.5%)	
Moderate problem	202(53.2%)	60(35.7%)	67(31.6%)	
Severe problem	127(33.4%)	23(13.7%)	17(8.0%)	

Table 3: Other Somatic Systems

Variables	All participants n (%)	Male n (%)	Female n (%)
Muscle pain			
Yes	284(74.4%)	129(76.8%)	155(73.1%)
No	96(25.3%)	39(23.2%)	57(26.9%)
Irritable bowel syndrome			
Yes	100(26.3%)	36(21.4%)	64(30.2%)
No	270(71.1%)	127(75.6%)	143(67.5%)
Fatigue/tiredness			
Yes	165(43.5%)	74(44.0%)	91(42.9%)
No	215(56.6%)	94(56.0%)	121(57.1%)
Thinking or memory problem			
Yes	70(18.4%)	26(15.5%)	44(20.8%)
No	310(81.6%)	142(82.5%)	168(79.2%)
Headache			
Yes	163(42.9%)	88(52.4%)	75(35.4%)
No	217(57.1%)	80(47.6%)	137(64.6%)
Pain/cramps in abdomen			
Yes	83(21.8%)	30(17.9)	53(25.0%)
No	297(78.2%)	138(82.1)	159(75.0%)
Numbness/tingling	w .		
Yes	71(18.7%)	36(21.4%)	35(16.5%)
No	309(81.3%)	132(78.6%)	177(83.5%)
Dizziness			
Yes	63(16.6%)	41(24.4%)	22(10.4%)
No	317(83.4)	127(75.6%)	190(89.6%)
Vomiting/heartburn			
Yes	116(30.5%)	52(31.0%)	64(30.2%)
No	264(69.5%)	116(69.0%)	148(69.8%)
Depression			
Yes	150(39.5%)	60(35.7%)	90(42.5%)
No	230(60.5%)	108(64.3%)	122(57.5%)
Constipation			
Yes	65(17.1%)	14(8.3%)	51(24.1%)
No	315(82.9%)	154(91.7%)	161(75.9)
Pain in upper abdomen			
Yes	45(11.8%)	21(12.5%)	24(11.3%)
No	335(88.2%)	147(87.5%)	188(88.7%)



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Nausea			
Yes	98(25.8%)	37(22.0%)	61(28.8%)
No	282(74.2%)	131(78.0%)	151(71.2%)
Fever			
Yes	187(49.2%)	85(50.6%)	102(48.1%)
No	193(50.8%)	83(49.4%)	110(51.9%)
Diarrhea			
Yes	111(29.2%)	46(27.4%)	55(30.7%)
No	269(70.8%)	122(72.6%)	147(69.3%)
Dry mouth			
Yes	74(19.5%)	33(19.6%)	41(19.3%)
No	306(80.5%)	135(80.4%)	177(80.7%)
Itching			
Yes	39(10.3%)	4(2.4%)	35(16.5%)
No	341(89.7%)	164(97.6%)	177(83.5%)
Wheezing (breathing sound)			
Yes	59(15.5%)	16(9.5%)	43(20.3%)
No	321(84.5)	152(90.5%)	169(79.7%)
Raynaud's (cyanosis)			
Yes	12(3.2%)	0(0.0%)	12(5.7%)
No	368(96.8)	168(100.0%)	200(94.3%)
Hives/welts			
Yes	12(3.2%)	0(0.0%)	12(5.7%)
No	368(96.8%)	168(100.0%)	200(94.3%)
Oral ulcers			
Yes	32(8.4%)	26(15.5%)	6(2.8%)
No	348(91.6%)	142(84.5%)	206(97.2%)
Loss/change in taste	0		
Yes	107(28.2%)	38(22.6%)	69(32.5%)
No	273(71.8%)	130(77.4%)	143(67.5%)
Seizures			
Yes	46(12.1%)	18(10.7%)	28(13.2%)
No	334(87.9%)	150(89.3%)	184(86.8%)
Dry eyes			
Yes	17(4.5%)	0(0.0%)	17(8.0%)
No	363(95.5%)	168(100.0%)	195(92.0%)
Shortness of breath			
Yes	128(33.7%)	64(38.1%)	64(30.2%)
No	252(66.3%)	104(61.9%)	148(69.8)
Loss of appetite			
Yes	80(21.1%)	11(6.5%)	69(32.5%)
No	300(78.9%)	157(93.5%)	143(67.5%)
Rash (allergy)			
Yes	80(21.1%)	11(6.5%)	69(32.5%)
No	300(78.9%)	157(93.5%)	143(67.5%)
Sun sensitivity			
Yes	64(16.8%)	28(16.7%)	36(17.0%)



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No	316(83.2%)	140(83.3%)	176(83.0%)
Hearing difficulties			
Yes	24(6.3%)	0(0.0%)	24(11.3%)
No	356(93.7%)	168(100.0%)	188(88.7%)
Easy bursing			
Yes	14(3.7%)	0(0.0%)	14(6.6%)
No	366(96.3%)	168(100.0%)	198(93.4%)
Hair loss			
Yes	80(21.1%)	21(12.5%)	59(27.8%)
No	300(78.9%)	147(87.5%)	153(72.2%)
Frequent urination			
Yes	90(23.7%)	39(23.2%)	51(24.1%)
No	290(76.3)	129(76.8%)	161(75.9%)
Bladder spasm			
Yes	7(1.8%)	3(1.8%)	4(1.9%)
No	373(98.2%)	165(98.2%)	208(98.1%)
Painful urination			
Yes	18(4.7%)	11(6.5%)	7(3.3%)
No	362(95.3%)	157(93.5%)	205(96.7%)
Insomnia (no sleep)			
Yes	130(34.2%)	79(47.0%)	51(24.1%)
No	250(65.8%)	89(53.0%)	161(75.9%)



Figure 1: Prevalence of fibromyalgia in participants.

Discussion:

The current study aimed to find out prevalence of fibromyalgia among post Covid-19 patients, a population that is particularly vulnerable to overwhelming affect FM results in a negative impact on their personal, professional, and daily lives, besides causing impairment in their physical, psychological, and social functioning (11). The results of this study revealed that 31.2% of post-COVID patients exhibited clinical features consistent with fibromyalgia (FM). This prevalence was notably higher compared to the general population, where FM typically affects 2-4% of individuals (12). Savin et al reported 15 % incidence

of fibromyalgia in post covid patients. They included

198 patients with 5 months follow up after covid.

They also reported that symptoms were more common in female patients (13). Senara et al

included 200 rheumatic disease patients who

recoverd from Covid-19. They study results showed



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common in post covid -19 patients. They also found that female gender and dyspnea were risk factors for developing FM after covid-19. Our study found similar results that fibromyalgia clinical features were more prevalent in females (20).

Limitation:

The study was based on self-reported information by Covid-19 survivors and there may be chances of reporting bias due to participant's perception of questions. Furthermore, it was cross sectional study design so it was not possible to evaluate the risk factors for the development of fibromyalgia among Covid-19 patients. The study could not be generalized due to small sample size.

Conclusion:

The study concluded that fibromyalgia was prevalent among post Covid-19 patients.

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that 35.9 ± 8.5 years was the mean age for participants. Fibromyalgia (p 0.002) and anxiety (p 0.03) was found to be higher in rheumatic disease patients in post sequel of covid-19. Severe covid infection, obesity and anxiety were reported risk factors for post covid fibromyalgia (14). Ursini and colleagues in their web based study on 616 patients who recovered from Covid-19 found that 30% survivors had fibromyalgia symptoms. Contrary to our study they found male gender and obesity were the risk factors for developing fibromyalgia in post covid patients (10). Wolfe et al in their study supported the fact that fibromyalgia was not as predominantly seen in females as often believed. The high female-to-male ratio was due to selection bias (15). Our findings suggested that fibromyalgia-like symptoms were more prevalent in individuals who had recovered from COVID-19, with a particular emphasis on those with a normal BMI. A study also found that pain threshold to mechanical and electrical stimulus was reduced in over weight persons (16). Kim et al. in their study to find out association between BMI and severity of symptoms among fibromyalgia patients concluded that BMI greater than 35kg/m had greater severity of fibromyalgia symptoms (P< 0.001). Obesity was also found associated with low level quality of life among such patients (17). Fatigue was present as severe problem and most common in female participants. In a prospective cohort study conducted by Logue et al on Covid-19 patients after 6 months of the infection and cohort of healthy adults. The mean age for 234 participants was found to be 48 years. They reported that 30% of participants experienced persistent symptoms. Fatigue was the most frequently reported symptom, affecting 14% of participants (18). Garrigues et al in their study found that fatigue was reported as most frequent symptom among 55% of participants. Following dyspnea (42%) and sleep disorder (31%) were also commonly reported (19). Akel et al conducted web based survey including 400 participants. They concluded that fibromyalgia was



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