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Original Article

Prevalence of Chronic Fatigue in Post COVID-19 Patients in Twin Cities

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ABSTRACT

COVID-19 is linked to clinically severe symptoms despite the initial infection has subsided. The acute symptoms and recovery from coronavirus disease 2019 (COVID-19) are mainly in the headlines. However, many people who have recovered deal with ongoing physical, mental, and psychological issues long beyond the acute stage. The most persistent and debilitating of these symptoms is fatigue. **Objective:** To determine the prevalence of chronic fatigue in post COVID-19 patients living in Twin cities (Rawalpindi and Islamabad). **Methods:** A descriptive cross-sectional survey was conducted and the data were collected from the population living in Islamabad and Rawalpindi using a non-probability convenient sampling technique. The study was completed within 6 months after the approval from the ethical committee. Data were collected through a self-structured questionnaire containing demographics and a fatigue severity scale was used to assess chronic fatigue. **Results:** There were 382 participants enrolled in total. Out of which 54.2% were females and 45.8% were males. According to the results of the fatigue severity scale 65.4% participants reported chronic fatigue. Out of the 207 female participants, 148 (71.5%) reported chronic Fatigue while 159 (28.5%) were non-fatigued. The results also showed that out of 175 males, 102 (58.3%) reported chronic fatigue and 59 (41.7%) were non-fatigued. **Conclusions:** The current study concluded that most of the population in the Twin cities (Rawalpindi and Islamabad) had a prevalence of chronic fatigue in post COVID-19 patients.

INTRODUCTION

The seventh human coronavirus, known as the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), was identified in Wuhan, Hubei Province, China, in December 2019. The virus has spread throughout the entire world, infecting 4,806,299 people and killing 318,599 as of May 20, 2020. Middle East respiratory syndrome coronavirus (MERS-CoV), SARS-CoV, and SARS-CoV-2 all cause severe pneumonia with casualty rates of 2.9%, 9.6%, and 36%, respectively [1]. In Pakistan, the first case of coronavirus is reported in Karachi on 26th February 2020 with an estimated population as 204.65 million [2]. The COVID-19 epidemic has sparked widespread anxiety among everyone, including healthy and affluent people as well as the most vulnerable members of society, such as adults over 60, those with pre-existing conditions, and those from the lower socioeconomic classes [3]. This virus has badly impacted health, lifestyle and economy all around the world and also left symptoms till now [2]. One of the most commonly mentioned symptoms before and after a COVID-19 infection is fatigue. Fatigue is a feeling of constant tiredness or weakness that can be physical or mental or a combination of both [4]. Mainly fatigue is divided into acute and chronic fatigue. Acute fatigue is lasts less than 2-4 weeks. If the fatigue persists more than 4 months it is considered as chronic fatigue [5]. The criteria for chronic fatigue are that it lasts up to 6 months or more and affects physical and social activities [6]. The cause of fatigue is still unknown. However, it is mentioned in studies on the coronavirus and the influenza virus epidemics that these viruses can alter the immune response Furthermore,

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interferon-gamma and interleukins are released following the viral infection, passing through the blood-brain barrier and affecting the central nervous system organs such as the hypothalamus [7]. The autonomic alteration resulting from hypothalamus involvement may cause cognitive abnormality, imperfectly regulated sleep/wake cycle, and serious fatigue [8]. Many people survived but many lost their lives during this pandemic. Those who survived had acute and chronic effects on their health and chronic fatigue is one of them. It also referred as common complain seen in primary health cases [5]. Majority of individuals that have recovered present with the complain of weariness and exhaustion [9]. Due to this reason, it was necessary to estimate the generality of fatigue in post COVID-19 patients. Worldwide some researchers have been done on the prevalence of chronic fatigue but there was less literature available on this topic in Pakistan so there was a need to find out the prevalence and effects of chronic fatigue. The current study makes an attempt to assess the prevalence of chronic fatigue in post COVID-19 patients in twin cities.

METHODS

The current study was a cross-sectional survey. The data were collected from population living in Islamabad and Rawalpindi. After approval from the ethical committee, the study was completed within 6 months. The sample size calculated from Epitool was 382. A non-probability convenient sampling technique was used in this study. Patients with age 18 years or above, Post COVID-19 patients of 4 or more than 4 months, Patients infected with any COVID-19 variant (Delta, omicron etc.), Patients with at least one positive PCR were included. Patients with any Neuromuscular, Systemic and Musculoskeletal disorders, Patients with any Psychological or mental illness, and those who had any Disease associated with fatigue were excluded from the study. Demographic data were collected on a self-administered questionnaire that consists of (name, age, gender, marital status, height, weight, education and occupation). Data on COVID-19 related symptoms were collected on a self-structured questionnaire. It includes the onset of symptoms, the kind of symptoms experienced by the patient during COVID-19 and post-COVID-19 and their current health status. The information regarding PCR and quarantine period was also collected. Fatigue was assessed using the Fatigue Severity Scale is a 9-item scale where responses were collected on a 7-point Likert scale where 1 represents "strongly disagree" and 7 represents "strongly agree". Its contents included nine statements for responding to fatigue e.g., how fatigue affects motivation, exercise, physical functioning, carrying out duties, interfering with work, family or social life. Score ranges 1-7. A higher score indicates more severe fatigue. According to the interpretation of fatigue severity scale, two categories were made based on the responses of Fatigue Severity Scale, non-fatigued category which scored less than 36 and fatigued category which scored 36 or greater than 36. SPSS version 21.0 (Statistical Procedure of Social Sciences) software was used to analyse the data. The data were analysed using descriptive statistical methods (mean, frequency, and percentage).

RESULTS

We approached 420 individuals for the current study. The study disqualified 38 participants who failed to meet the inclusion criteria for participation. Out of 38 participants, 20 participants were those whose PCRs were negative, 10 were under the age of 18, and 8 had neuromuscular and other illnesses so 382 participants who met our inclusion criteria were included. Participants demographics and characteristics have been shown in Table 1.

Table 1: Participants demographics and characteristics

Variables	Mean ± SD/ f (%)
Age (years)	30.43±0.65
Gender	
Male	207(54.2)
Female	175(45.8)
BMI	23.52±0.22
BMI Interpretations	
Class 2 obese	4(1)
Class 1 obese	31(8)
Over weight	53(14)
Normal	195(51)
Under weight	99(26)

Following their initial recovery, participants reported experiencing the following sign and symptoms as shown in the Table 2. Participants experienced fatigue 68.8%, muscle pain and headache 36.5%, cough 28.6% joint pain 26.2% etc. The results showed that out of the 382 participants, 116 participants identified the first item of the scale which represents "My motivation is lowered when I am fatigued" as "agree," 41 marked it as "strongly disagree", 35 were "disagree", 30 were "slightly disagree" while 29 marked it as "neutral" on the FSS. 64 participants were" slightly agree" and 67 were "strongly agree". To the second question, which represents "Exercise brings on my fatigue" 35 participants chose "strongly disagree", 57 were "disagree", 34 were "slightly disagree",73 was "neutral", 63 were "slightly agree", 78 were "agree" and 42 marked "strongly agree". To the third question, which represents "I am easily fatigued" 38 participants chose "strongly disagree", 62 were "disagree", 51 were "slightly disagree",43 was "neutral", 68 were "slightly agree", 74 were "agree" and

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48 marked "strongly agree". To the fourth question, which represents "Fatigue interferes with my physical functioning" 30 participants chose "strongly disagree", 37 were "disagree", 36 were "slightly disagree",48 was "neutral", 86 were "slightly agree", 89 were "agree" and 56 marked "strongly agree". To the fifth question, which represents "Fatigue causes frequent problems for me" 35 participants chose "strongly disagree", 57 were "disagree", 39 were "slightly disagree",55 was "neutral", 81 were "slightly agree", 81 were "agree" and 34 marked "strongly agree". To the sixth question, which represents "My Fatigue prevents sustained physical functioning" 35 participants chose "strongly disagree", 57 were "disagree", 39 were "slightly disagree",55 was "neutral", 81 were "slightly agree", 81 were "agree" and 34 marked "strongly agree". To the seventh question, which represents "Fatigue interferes with carrying out certain duties and responsibilities" 35 participants chose "strongly disagree", 39 were "disagree", 47 were "slightly disagree",56 was "neutral", 85 were "slightly agree", 75 were "agree" and 45 marked "strongly agree". To the eighth question, which represents "Fatigue is among my most disabling symptoms" 48 participants chose "strongly disagree", 59 were "disagree", 49 were "slightly disagree",60 was "neutral", 87 were "slightly agree", 52 were "agree" and 27 marked "strongly agree". To the ninth question, which represents "Fatigue interferes with my work, family or social life" 50 participants chose "strongly disagree", 51 were "disagree", 40 were "slightly disagree",46 was "neutral", 77 were "slightly agree", 58 were "agree" and 60 marked "strongly agree" (Table 2).

Table 2: Signs and symptoms experienced by participants

Signs and symptoms experienced	
Variables	**F (%)**
No symptoms	14(3.6)
Continuous headache	10(2.6)
Extreme body pain or weakness	15(4)
Worsened symptoms after physical or mental activity	33(8.7)
Dizziness	61(16)
Depression	58(15.1)
Loss of smell or taste	60(15.9)
Fast or pounding heartbeat	36(9.5)
Muscle pain and headache	139(36.5)
Memory or sleep problems	64(16.7)
Chest pain	45(11.9)
Cough	109(28.6)
Joint pain	100(26.2)
Fatigue	262(68.8)
Shortness of breath	94(24.6)

Participants in the current study were split into two groups. "Non-fatigued" was defined as having a fatigue severity scale score of less than 36, and severe "Fatigued" was defined as having a score higher than 36 as shown in Table 3. On the basis of these categories fatigue was prevalent in 65.4% of the participants.

Table 3: Frequency of Chronic Fatigue on Fatigue Severity Scale

Variables	F (%)
Non-fatigued	132(34.6)
Fatigued	250(65.4)

According to the Fatigue Severity Scale findings, out of 207 female participants 148(71.5%) female participants reported fatigued while 59(28.5%) were non-fatigued. Fatigue Severity Scale also finds out that out of 175 male participants 102(58.3%) male participants reported fatigued while 59(41.7%) were non-fatigued as shown in Figure 1.

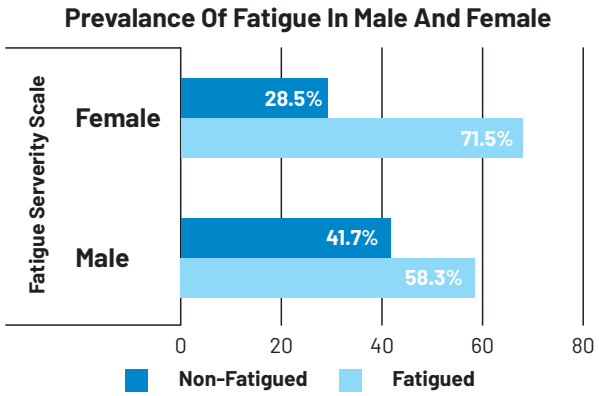

Figure 1: Frequency of Fatigue in Male and Female participants on Fatigue Severity Scale

DISCUSSION

The acute COVID-19 disease and the post-COVID condition have both been linked to post-COVID fatigue, which has been reported to be one of the main complaints. The current research confirms that post-COVID-19 patients had a significant rate of chronic fatigue [10]. The mean age of the participants in the current study was 30.4 ± 0.65. In the study conducted by Grover *et al.*, the mean age of the participants was 36.08 ± 13.12 [11]. According to González-Hermosillo *et al.*, the mean BMI was 26.6 ± 3.0, and in another study, it was 27.8 ± 4.2, however, the mean BMI of participants in the current study was 23.5 ± 4.3 [12, 13]. According to the findings of the current study, 65.4% of the participants were fatigued after 4 months. According to Huang *et al.*, 63% of people reported having persistent fatigue after six months. These findings are consistent with our research [14]. Using the Chalder fatigue scale, Townsend *et al.*, conducted a study and found that (severe fatigue) 52.3% was consistent following COVID-19. Because hospitalised individuals who were taking drugs were included, the results are different from those of the current study, and this may be why there was less fatigue [15]. Another study found that patients' self-reported levels of fatigue using the FSS at one, three, six, and twelve

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months were 22%, 27%, 30%, and 34%, respectively, with worsening fatigue from one to twelve months after COVID-19 [10]. Arnold and colleagues conducted a prospective cohort research with a 163-person sample size. Patients were monitored for 8–12 weeks following COVID-19, and 39% of them reported fatigue. It meets the definition of acute fatigue. These results conflict with those of our study, in which we evaluated persistent fatigue four months after contracting the COVID-19 infection [16]. 68% of patients reported having chronic fatigue at 4-6 weeks after leaving the hospital, according to research by D' Cruz *et al.*, They had individuals with various comorbidities, severe pneumonia, and disrupted vital signs, which made a difference. And people with other comorbidities were not included in the current study [17-20]. A previous study evaluated 201 patients six months after hospitalisation who had Wuhan, Alpha and Delta variant infections. Similar post-COVID-19 fatigue was observed in all three SARS-CoV-2 genotypes (70%). The inclusion of elderly and middle-aged persons in the study, whose mean age was 60.510.5, may be the cause of the disparity in the results [9]. Those subjects who had at least one positive PCR result were included in this study. While a prior study included people with 2 consecutive negative PCR results, other studies also included positive PCR verified post-COVID-19 individuals [21].

CONCLUSIONS

The current study concluded that the most of the population in Twin cities (Rawalpindi and Islamabad) had a prevalence of chronic fatigue in post COVID-19 patients.

Authors Contribution

Conceptualization: KS
Methodology: HS, MM
Formal analysis: MT
Writing-review and editing: HRK, PN

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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REFERENCES

[1] Ciotti M, Ciccozzi M, Terrinoni A, Jiang WC, Wang CB, Bernardini S. The COVID-19 pandemic. Critical Reviews in Clinical Laboratory Sciences. 2020 Aug; 57(6): 365-88. doi: 10.1080/10408363. 2020.1783198.

[2] Pokhrel S and Chhetri R. A literature review on impact of COVID-19 pandemic on teaching and learning. Higher Education for The Future. 2021 Jan; 8(1): 133-41. doi: 10.1177/2347631120983481.

[3] Forni G and Mantovani A. COVID-19 vaccines: where we stand and challenges ahead. Cell Death & Differentiation. 2021 Feb;2 8(2): 626-39. doi: 10.1038/s41418-020-00720-9.

[4] Islam MF, Cotler J, Jason LA. Post-viral fatigue and COVID-19: lessons from past epidemics. Fatigue: Biomedicine, Health & Behavior. 2020 Apr; 8(2): 61-9. doi: 10.1080/21641846.2020.1778227.

[5] Zwarts MJ, Bleijenberg G, Van Engelen BG. Clinical neurophysiology of fatigue. Clinical Neurophysiology. 2008 Jan; 119(1): 2-10. doi: 10.1016/j.clinph. 2007.09.126

[6] Herlofson K and Larsen JP. Measuring fatigue in patients with Parkinson's disease–the fatigue severity scale. European Journal of Neurology. 2002 Nov; 9(6): 595-600. doi: 10.1046/j.1468-1331.2002. 00444.x.

[7] Hives L, Bradley A, Richards J, Sutton C, Selfe J, Basu B, *et al*. Can physical assessment techniques aid diagnosis in people with chronic fatigue syndrome/myalgic encephalomyelitis? A diagnostic accuracy study. BMJ Open. 2017 Nov; 7(11): e017521. doi: 10.1136/bmjopen-2017-017521.

[8] Simani L, Ramezani M, Darazam IA, Sagharichi M, Aalipour MA, Ghorbani F, *et al*. Prevalence and correlates of chronic fatigue syndrome and post-traumatic stress disorder after the outbreak of the COVID-19. Journal of Neurovirology. 2021 Feb; 27: 154-9. doi: 10.1007/s13365-021-00949-1.

[9] Fernández-de-Las-Peñas C, Cancela-Cilleruelo I, Rodríguez-Jiménez J, Gómez-Mayordomo V, Pellicer-Valero OJ, Martín-Guerrero JD, *et al*. Associated-onset symptoms and post-COVID-19 symptoms in hospitalized COVID-19 survivors infected with Wuhan, Alpha or Delta SARS-CoV-2 variant. Pathogens. 2022 Jun; 11(7): 725. doi: 10.3390/pathogens11070725.

[10] Mazza MG, Palladini M, Villa G, De Lorenzo R, Querini PR, Benedetti F. Prevalence, trajectory over time, and risk factor of post-COVID-19 fatigue. Journal of Psychiatric Research. 2022 Nov; 155: 112-9. doi: 10.1016/j.jpsychires.2022.08.008.

[11] Grover S, Sahoo S, Mishra E, Gill KS, Mehra A, Nehra R, *et al*. Fatigue, perceived stigma, self-reported cognitive deficits and psychological morbidity in patients recovered from COVID-19 infection. Asian Journal of Psychiatry. 2021 Oct; 64: 102815. doi: 10.1016/j.ajp.2021.102815.

[12] Montenegro P, Moral I, Puy A, Cordero E, Chantada N, Cuixart L, *et al*. Prevalence of post COVID-19

DOI: https://doi.org/10.54393/pjhs.v4i06.839

condition in primary care: a cross sectional study. International Journal of Environmental Research and Public Health. 2022 Feb; 19(3): 1836. doi: 10.3390/ijerph19031836.

[13] González-Hermosillo JA, Martínez-López JP, Carrillo-Lampón SA, Ruiz-Ojeda D, Herrera-Ramírez S, Amezcua-Guerra LM, *et al*. Post-acute COVID-19 symptoms, a potential link with myalgic encephalomyelitis/chronic fatigue syndrome: a 6-month survey in a Mexican cohort. Brain Sciences. 2021 Jun; 11(6): 760. doi: 10.3390/brainsci11060760.

[14] Huang C, Huang L, Wang Y, Li X, Ren L, Gu X, *et al*. 6-month consequences of COVID-19 in patients discharged from hospital: a cohort study. The Lancet. 2021 Jan; 397(10270): 220-32. doi: 10.1016/S0140-6736(20)32656-8.

[15] Townsend L, Dyer AH, Jones K, Dunne J, Mooney A, Gaffney F, *et al*. Persistent fatigue following SARS-CoV-2 infection is common and independent of severity of initial infection. PloS One. 2020 Nov; 15(11): e0240784. doi: 10.1371/journal.pone.0240784.

[16] Arnold DT, Hamilton FW, Milne A, Morley AJ, Viner J, Attwood M, *et al*. Patient outcomes after hospitalisation with COVID-19 and implications for follow-up: results from a prospective UK cohort. Thorax. 2021 Apr; 76(4): 399-401. doi: 10.1136/thoraxjnl-2020-216086.

[17] D'Cruz RF, Waller MD, Perrin F, Periselneris J, Norton S, Smith LJ, *et al*. Chest radiography is a poor predictor of respiratory symptoms and functional impairment in survivors of severe COVID-19 pneumonia. ERJ Open Research. 2021 Jan 1; 7(1): 1-13. doi: 10.1183/23120541.00655-2020.

[18] Alhazzani W, Evans L, Alshamsi F, Møller MH, Ostermann M, Prescott HC, *et al*. Surviving sepsis campaign guidelines on the management of adults with coronavirus disease 2019 (COVID-19) in the ICU: first update. Critical Care Medicine. 2021 Mar; 49(3): e219-34. doi: 10.1097/CCM.0000000000004899.

[19] Van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, *et al*. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. New England Journal of Medicine. 2020 Apr; 382(16): 1564-7. doi: 10.1056/NEJMc2004973.

[20] El Sayed S, Shokry D, Gomaa SM. Post-COVID-19 fatigue and anhedonia: A cross-sectional study and their correlation to post-recovery period. Neuropsychopharmacology Reports. 2021 Mar; 41(1): 50-5. doi: 10.1002/npr2.12154.

[21] Stavem K, Ghanima W, Olsen MK, Gilboe HM, Einvik G. Prevalence and determinants of fatigue after COVID-19 in non-hospitalized subjects: a population-based study. International Journal of Environmental Research and Public Health. 2021 Feb; 18(4): 2030. doi: 10.3390/ijerph18042030.