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Original Article

Prevalence of Post Recovery Symptoms among Recovered Cases of COVID-19 in Pakistan

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ABSTRACT

COVID-19 has taken the world by surprise in terms of healthcare readiness and impact on daily life. Existing literature regarding the patient's health status following COVID-19 infection is scant. **Objective:** To analyze the current status of post-recovery symptoms among COVID-19 recovered patients in Pakistan. **Methods:** It is a descriptive web-based cross-sectional study. Data were gathered by using a Google form by sharing anonymous online questionnaire, comprised of both open and close ended questions. Then interpreted, and presented using tables and graphs using descriptive statistics through IBM SPSS 26. **Results:** Shortness of breath (27%) followed by fatigue (23.5%) seen to be more common symptoms still prevailing in the population. 69.2% of the population had no evidence of comorbidity but are still experiencing post COVID symptoms. Few cases reported experiencing insomnia and tooth sensitivity - 11% and 12% respectively. **Conclusions:** The results of this study showed that COVID-19 patients should be worried about their health even after they get better. A thorough analysis should be done to improve the health of people who have gotten better but are still dealing with long-term problems. Even though it's a new virus and research is still being done, it needs to be treated with care.

INTRODUCTION

COVID-19 changed how we learn, work, and live. Some changes are not lasted, but others are. The post-pandemic world is not the same as the pre-pandemic world. Many lives were lost as a result of the lack of a strong healthcare system during the time of COVID. As a result, all countries recognized the importance of a strong healthcare system and began to take steps to make it a reality [1]. Too many countries were affected by COVID-19's external shocks without universal social protection, strong public health systems, a plan to reach net-zero carbon emissions by 2050, or a real economy with good jobs that can last. We live in a world where there is more inequality between and within countries [2]. The COVID pandemic disproportionately affected the most vulnerable people. Some of the changes caused by the COVID pandemic can't be changed back. Along with these changes, we need to make more, like protecting the weak, to make society more open and fairer for everyone. Numerous ongoing health issues that can last for weeks, months, or years are considered as post-COVID conditions. Although those who experienced severe COVID-19 illness are more likely to develop post-COVID conditions, anyone who has been exposed to the virus that causes COVID-19 is susceptible. The world's economies, societies, and health systems changed in significant ways after the coronavirus pandemic. In addition to posing difficulties in disease control and crisis management, the COVID-19 pandemic had far-reaching and far-lasting effects on nations,

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communities, and international solidarity. In fact, everyone lost something during this crisis and now struggling with the after effects of the deadly virus [3]. According to Centers for Disease Control and Prevention (2021), when compared to those who have received the COVID-19 vaccination, those who are unvaccinated and contract the disease may be at a higher risk of developing post-COVID conditions [4]. The failure to recover to baseline health after an acute COVID-19 illness is one definition of post-COVID conditions. Conditions that occur after the acute COVID-19 illness have subsided may include the emergence of new symptoms, the return of old ones, or the exposure of a previously undiagnosed condition [5]. After COVID-19 infection, residual symptoms are referred to as "Long COVID," but this condition hasn't been adequately described. It is currently best described as a multi-organ illness with symptoms that present over a period of more than two months and are cyclical, progressive, and multiphasic [6]. Consequences and functional limitations following post- COVID can have far-reaching effects on a patient's health and well-being. People who have post-COVID conditions or long-term COVID may have a number of symptoms. Not everyone may have the same symptoms after COVID. People with post-COVID conditions may have health problems caused by different types and combinations of symptoms that happen at different times. Even though most patients' symptoms slowly get better over time. For some people, conditions that happen after COVID-19 illness can last for weeks, months, or even years and can sometimes make them unable to work [7]. If a person with long-term COVID is significantly limited in a major bodily function or other major life activity, this is determined without taking into account any medications, treatments, or other steps the person takes to lessen or deal with symptoms. Even if the impairment comes and goes, it is still a disability if it makes it hard to do something important in life when it is present. Long COVID can make it hard to do something important. There are many ways in which a person with long COVID could be severely limited in a major life activity [8]. Some people get new health problems after getting COVID-19. Some people, especially those who had a severe COVID-19 illness, have long-lasting effects on more than one organ or autoimmunity that can last for weeks, months, or even years. Effects that affect more than one organ can affect the heart, lungs, kidneys, skin, and brain. Because of these effects, people who have had COVID-19 may be more likely to get new health problems like diabetes, heart problems, blood clots, or neurological problems than people who have not had COVID-19 [9]. Long-term COVID patients may experience respiratory symptoms like wheezing, coughing, and shortness of breath. Patients have also reported other symptoms such as fatigue, dizziness, depression, anxiety, and problems remembering or concentrating. Our study aimed to describe the current situation of patients who have ever had COVID-19 infection and link this to long COVID symptoms.

METHODS

It was a descriptive web-based cross-sectional study intended to assess "Prevalence of post recovery symptoms among recovered cases of COVID-19 in Pakistan". This study was carried out across big cities of Punjab including Multan, Khanewal, Islamabad, Rawalpindi, Sargodha, Sialkot, Okara, Hyderabad, Faisalabad and DG Khan, Pakistan. This study was conducted during a period of two months started from August 2022 to January 2023. The convenience sampling technique was used formally for data collection. Almost 37 email addresses have been taken from the database of EQUIP Research & Development Consultants of the known and recovered patients of COVID-19 across mentioned cities. Also, they were instructed to send the Google form so that more COVID 19 recovered patients might be included in the study. Furthermore, snowball sampling technique was also used to find participants, and advertising the invitation to take part in the study on social media was also part of the process. The Sample Size Calculator (Raosoft®), accessible at raosoft.com/samplesize.html, was used to determine the sample size for this investigation. The response distribution was assumed to be 50%, and the margin of error was set at 5% with a 90% confidence level. For this investigation, a minimum determined sample size was 267. In accordance with the inclusion and exclusion criteria of the study, 30 completely filled forms were required from the targeted areas. In this regard, special attention was paid so that the questionnaire would be equally shared among study participants from targeted areas of Pakistan. As, it is a web-based study so emails and reminders were sent to the participants over and over again to fill the questionnaire. It was hard to motivate the participants as people were reluctant to share their health issues. So, only fully completed 253 survey results were involved for analysis. Considering the study's inclusion and exclusion criteria, 5 of the 267 participants didn't fill out the entire form, and 9 of them were beyond the age of 70. Due to this, they were disqualified from the study by adhering to the exclusion criteria. Eventually, there were 253 persons in the total sample size, with ages ranging from 10 to 70 and confirmed COVID-19 status. Inclusion Criteria: Age range 10-70 years, Confirmed COVID-19 patients. Exclusion Criteria: Below 10 and above 70 years of age, Non-confirmed COVID-19 patients. Data were gathered by using

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a Google form, an anonymous online questionnaire was created in consultation with subject matter experts, and previously validated questionnaires on lingering symptoms following COVID-19 infection were modified, which is comprised of both closed-ended and open-ended, covering demographic information about respondents, items, and questions pertaining to the research topic were included in a self-structured questionnaire that was created and used to generate numerical data. A pilot test with 20 participants was conducted, and necessary changes were made to improve the clarity of the questions. The results of the pilot testing were not incorporated into the final analysis. To organize and give meaning to the data, data analysis was done. Data that were missing were examined before analysis. Data entry was completed using an excel spreadsheet by importing data from a Google form. IBM SPSS 26.0, which was downloaded from IBM Support, was then used for analysis. The collected data were organized, interpreted, and presented in the form of tables and graphs by using descriptive statistics.

RESULTS

The study included a total of 253 (Male: 56.5%, Females: 43.5%) with maximum age range (41.7%) between 21-30 years of post-recovered patients of COVID-19. Majority of the patients belonged to Multan (21.2%) and were married (51.7%). Major portion of the respondents were involved in private job (38.8%) while 37.5% responded that they lost 10-15 working days during COVID-19 infection (Table 1).

Table 1: Respondents Demographics (n=253)

Demographic Variables	Category	Frequency (%)
Age	10 - 20	21 (8.3%)
	21 - 30	106 (41.7%)
	31 - 40	51 (20.2%)
	41 - 50	54 (21.4%)
	51 - 60	18 (7.1%)
	61 - 70	3 (1.3%)
Gender	Male	143 (56.5%)
	Female	110 (43.5%)
City	Multan	54 (21.2%)
	Khanewal	35 (14%)
	Islamabad	23 (9.1%)
	Rawalpindi	16 (6.5%)
	Sargodha	14 (5.4%)
	Sialkot	13 (5.2%)
	Okara	11 (4.5%)
	Hyderabad	33 (13.1%)
	Faisalabad	36 (14.2%)
	DG Khan	18 (6.8%)
Marital Status	Married	131 (51.7%)
	Single	116 (45.9%)
	Divorce/Separation	0 (0.0%)
	Widow	6 (2.4%)
Current Employment Status	Business	24 (9.4%)
	Private Job	98 (38.8%)
	Daily Wager	15 (5.9%)
	Student	59 (23.5%)
	Government Job	30 (11.8%)
	Unemployed	18 (7.1%)
	Researcher	3 (1.2%)
	Retired	3 (1.1%)
	Housewife	3 (1.2%)
Effect of COVID 19 on Employment Status (No. of days loss)	1-5	16 (6.4%)
	5-10	56 (22.3%)
	10-15	95 (37.5%)
	15-20	44 (17.2%)
	20-25	30 (11.9%)
	>25 days	12 (4.7%)

43% of respondents said that 2021 was the year their first symptom manifested. And 60% of respondents reported that the symptoms were mild to moderate in severity, while 49.9% said that the symptoms lasted for 5 to 10 days (Figure 1).

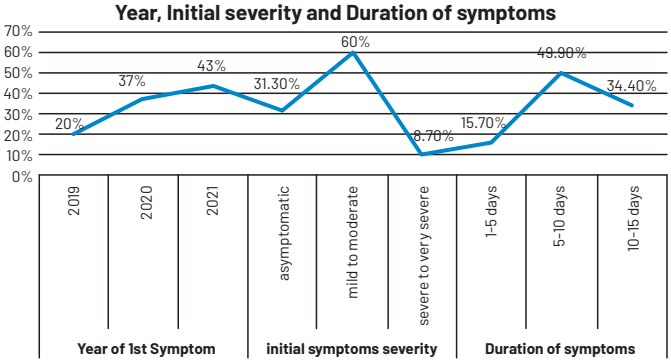

Figure 1: Initial Year, Severity and Duration of symptoms

Cough (25%) followed by fever (21%) were the major symptoms at first two weeks of infection (Figure 2).

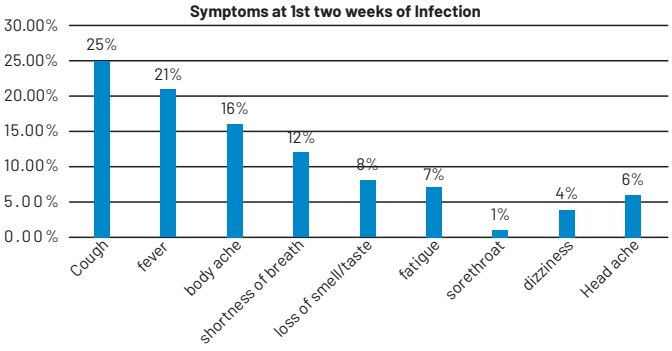

Figure 2: First two weeks symptoms

Figure 3 shows that the two main symptoms that individuals still suffer after recovering from COVID-19 are shortness of breath (27%) and fatigue (23.50%).

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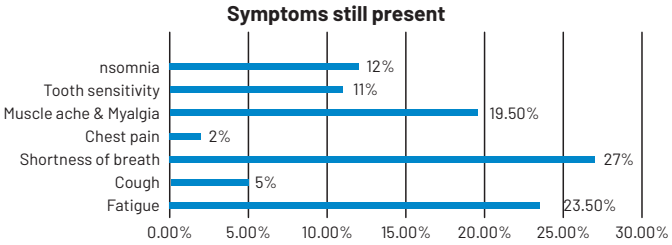

Figure 3: Symptoms still prevailing

Table 2 summarizes the overall health status of the respondents. Most of the affectees (56.6%) preferred to stay at home. The majority (69.2%) believed they had no comorbid conditions and did not get tested (61.5%) for COVID-19. High percentage of respondents reported visual disturbances followed by chest pain (20.3%).

Table 2: Respondents overall health status (n=253)

Demographic Variables	Category	Frequency (%)
Stayed at home, hospitalization or ICU	Stayed at home	143 (56.6%)
	Daily clinic visit	64 (25.3%)
	Hospitalization without ICU	34 (13.3%)
	Hospitalization with ICU	12 (4.8%)
Comorbidities (2/ more diseases)	No comorbidity	175 (69.2%)
	At least 1 comorbidity	78 (30.8%)
COVID Test	Antigen Test (Rapid Test)	66 (25.9%)
	PCR	32 (12.6%)
	No test	155 (61.5%)
Overall Health Impact	Chest pain (cardiac/angina)	51 (20.3%)
	Palpitation	34 (13.4%)
	Stroke (sudden numbness/ weakness)	49 (19.2%)
	Visual disturbances (blurred vision)	59 (23.3%)
	Cognition	35 (13.9%)
	Anxiety/ Depression	18 (7%)
	Weight loss	4 (1.5%)
	Weight gain	3 (1.4%)

DISCUSSION

There is insufficient literature examining the long-term effects of COVID-19 patients who are either released from the hospital or recovered through self-medication and quarantine. This cross-sectional study investigates the prevalence of post-recovery symptoms among recovered cases of COVID-19 in Pakistan. Several studies reported that patients who had recovered from COVID-19 disease continued to experience symptoms in ranges from 13.3% to 96% [10-14]. Our study represents almost the entire COVID-19 illness spectrum because it depicts the current situation of recovered COVID-19 patients with varying degrees of infection severity, ranging from mild to severe. However, it is unclear why some COVID-19 survivors still experience long-term symptoms. It is believed that COVID-19's long-term effects are related to SARS-capacity CoV-2's to occasionally cause a significant provocative response [15-17]. In this study, it was not possible to figure out how different kinds of variants affect the post-COVID-19 syndrome. But getting vaccinated keeps you from having to go to the hospital, so even with concerns like the delta variant, the number of serious cases went down [18]. Therefore, additional research is required to clarify how the various variants contribute to post-COVID-19 syndrome and how vaccination affects it. Contrary to the previous studies [10-13], shortness of breath (27%) followed by fatigue (23.5%) as shown in (Figure 3) are the most prevalent symptoms which are still present in recovered patients. This study shows the existence of muscle ache & myalgia and insomnia 19.5% and 12% respectively (Figure 3) which is in accordance as well as contrary to the previous study in which depression, anxiety, and insomnia were found to be prevalent in 15.97%, 15.15%, and 23.87% of the population, respectively [19, 20]. Cardiac manifestations are another well-defined disorder that predicts patient mortality in COVID-19 [21]. When the pandemic is over, it is expected that a significant number of patients will have residual lung and cardiac disorders. Our study contradicted this finding, as Table 2 shows that 23.3% of participants reported experiencing visual disturbances followed by chest pain (20.3%) and stroke (19.2%). The cause of post-COVID illnesses is unknown, but it is thought to be due to virus-specific pathophysiologic changes, a long-term inflammatory response to severe infection, and possibly related to post-intensive care illness. [22, 23].

CONCLUSIONS

Following the completion of this study, it became clear that many patients were dealing with new health issues, and they are needed to be advised to continue regular check-ups in order to sustain their health. The study also revealed a high proportion of long-term symptoms among recovered cases of COVID-19. The results of this study raise alarming health concerns for COVID-19 patients even after recovery. For the purpose of improving the health of recovered patients, who are still coping with long-term problems, a thorough analysis should be conducted. Despite the fact that it is a new virus and research is still being done, it needs to be handled carefully.

Conflicts of Interest

The authors declare no conflict of interest.

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REFERENCES

[1] Group Discussion Ideas. Post-COVID World. 2021. [Last cited: 20th Mar 2023]. Available at:

DOI: https://doi.org/10.54393/pjhs.v4i03.593

https://www.groupdiscussionideas.com/post-covid-world/.

[1] Sharan Burrow. Life Post-COVID 19. 2020. [Last cited: 20th Mar 2023]. Available at: https://www.imf.org/Publications/fandd/issues/2020/06/how-will-the-world-be-different-after-covid-19.

[3] Centers for Disease Control and Prevention. Post-COVID Conditions: Information for Healthcare Providers. 2019. [Last cited: 20th Mar 2023]. Available at: https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-conditions.html#overview.

[4] Centers for Disease Control and Prevention. Post COVID Conditions. 2021. [Last cited: 20th Mar 2023]. Available at: https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects.html.

[5] Lopez-Leon S, Wegman-Ostrosky T, Perelman C, Sepulveda R, Rebolledo PA, Cuapio A, et al. More than 50 long-term effects of COVID-19: a systematic review and meta-analysis. Scientific Reports. 2021 Aug; 11(1): 16144. doi: 10.2139/ssrn.3769978.

[6] Yong SJ. Long COVID or post-COVID-19 syndrome: putative pathophysiology, risk factors, and treatments. Infectious Diseases. 2021 Oct; 53(10): 737-54. doi: 10.1080/23744235.2021.1924397.

[7] Centers for Disease Control and Prevention. Long COVID or Post-COVID Conditions. 2022. [Last cited: 20th Mar 2023]. Available at: https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects/ index.html#:~:text=These%20effects %20can% 20include%20muscle,experience%20of%20post%2DCOVID%20conditions.

[8] Healthcare and Human Services. Long COVID can substantially limit one or more major life activities. 2021. [Last cited: 20th Mar 2023]. Available at: https://www.hhs.gov/civil-rights/for-providers/civil-rights-covid19/guidance-long-covid-disability/index.html#footnote100ac8mdc

[9] Adly HM, AlJahdali IA, Garout MA, Khafagy AA, Saati AA, Saleh SA. Correlation of COVID-19 pandemic with healthcare system response and prevention measures in Saudi Arabia. International Journal of Environmental Research and Public Health. 2020 Sep; 17(18): 6666. doi: 10.3390/ijerph17186666.

[10] Davis HE, Assaf GS, McCorkell L, Wei H, Low RJ, Re'em Y, et al. Characterizing long COVID in an international cohort: 7 months of symptoms and their impact. EClinicalMedicine. 2021 Aug; 38: 101019. doi: 10.1016/j.eclinm.2021.101019.

[11] Sudre CH, Murray B, Varsavsky T, Graham MS, Penfold RS, Bowyer RC, et al. Attributes and predictors of long COVID. Nature Medicine. 2021 Apr; 27(4): 626-31. doi: 10.1038/S41591-021-01292-Y.

[12] Norton A, Olliaro P, Sigfrid L, Carson G, Paparella G, Hastie C, et al. Long COVID: tackling a multifaceted condition requires a multidisciplinary approach. The Lancet Infectious Diseases. 2021 May; 21(5): 601-2. doi: 10.1016/S1473-3099(21)00043-8.

[13] Chopra V, Flanders SA, O'Malley M, Malani AN, Prescott HC. Sixty-day outcomes among patients hospitalized with COVID-19. Annals of Internal Medicine. 2021 Apr; 174(4): 576-8. doi: 10.7326/M20-5661.

[14] Michielsen HJ, De Vries J, Van Heck GL. Psychometric qualities of a brief self-rated fatigue measure: The Fatigue Assessment Scale. Journal of Psychosomatic Research. 2003 Apr; 54(4): 345-52. doi: 10.1016/S0022-3999(02)00392-6.

[15] Buonsenso D, Munblit D, De Rose C, Sinatti D, Ricchiuto A, Carfi A, et al. Preliminary evidence on long COVID in children. Acta Paediatrica (Oslo, Norway: 1992). 2021 Jul; 110(7): 2208. doi: 10.1111/APA.15870.

[16] Kayaaslan B, Eser F, Kalem AK, Kaya G, Kaplan B, Kacar D, et al. Post-COVID syndrome: A single-center questionnaire study on 1007 participants recovered from COVID-19. Journal of Medical Virology. 2021 Dec; 93(12): 6566-74. doi: 10.1002/JMV.27198.

[17] Menges D, Ballouz T, Anagnostopoulos A, Aschmann HE, Domenghino A, Fehr JS, et al. Burden of post-COVID-19 syndrome and implications for healthcare service planning: A population-based cohort study. PloS One. 2021 Jul; 16(7): e0254523. doi: 10.1371/JOURNAL.PONE.0254523.

[18] Al-Tawfiq JA, Koritala T, Alhumaid S, Barry M, Alshukairi AN, Temsah MH, et al. Implication of the emergence of the delta (B. 1.617. 2) variants on vaccine effectiveness. Infection. 2022 Jun; 50(3): 583-96. doi: 10.1007/S15010-022-01759-1.

[19] Perrin R, Riste L, Hann M, Walther A, Mukherjee A, Heald A. Into the looking glass: Post-viral syndrome post COVID-19. Medical Hypotheses. 2020 Nov; 144: 110055. doi: 10.1016/j.mehy.2020.110055.

[20] Cénat JM, Blais-Rochette C, Kokou-Kpolou CK, Noorishad PG, Mukunzi JN, McIntee SE, et al. Prevalence of symptoms of depression, anxiety, insomnia, posttraumatic stress disorder, and psychological distress among populations affected by the COVID-19 pandemic: A systematic review and meta-analysis. Psychiatry Research. 2021 Jan; 295: 113599. doi: 10.1016/j.psychres.2020.113599.

[21] Xiong TY, Redwood S, Prendergast B, Chen M. Coronaviruses and the cardiovascular system: acute and long-term implications. European Heart Journal.

DOI: https://doi.org/10.54393/pjhs.v4i03.593

2020 Mar; 41: 1798-1800. doi: 10.1093/EURHEARTJ/EHAA231.

[22] Hosey MM and Needham DM. Survivorship after COVID-19 ICU stay. Nature Reviews Disease Primers. 2020 Jul; 6(1): 60. doi: 10.1038/S41572-020-0201-1.

[23] Inoue S, Hatakeyama J, Kondo Y, Hifumi T, Sakuramoto H, Kawasaki T, et al. Post-intensive care syndrome: its pathophysiology, prevention, and future directions. Acute Medicine & Surgery. 2019 Jul; 6(3): 233-46. doi: 10.1002/ams2.415.