

Short Communication

The long-term adverse events and persisting clinical symptomatology post COVID-19 infection among the healthcare workers of a tertiary care hospital in West Bengal

Poonam Joshi^{1*}, Zichen Sherpa², Farhad Ahmed³, Smita Das⁴, Mugunthan M.⁵

¹College of Nursing, ²Department of Nursing Services, ³Department of Community Medicine and Family Medicine (CMFM), ⁵Department of Microbiology, AIIMS Kalyani, West Bengal, India

⁴College of Nursing AIIMS New Delhi, India

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*Correspondence:

Dr. Poonam Joshi,

E-mail: Poonam.nursing@aiimskalyani.edu.in

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ABSTRACT

COVID-19, a global pandemic, has dominated every person's life worldwide. The clinical presentation of COVID-19 ranges from asymptomatic, mild symptomatic to fulminant and fatal cases, having consequences for many organ systems. In a cross-sectional study, 128 healthcare workers of a tertiary care medical college hospital, 4 weeks following the COVID infection agreed to participate in the study. Self-developed subject data sheet and the self-reporting symptoms tool based on the WHO case report form were used for data collection. A significant number of health care workers (HCWs) had long COVID symptomatology in terms of constitutional, muscular-skeletal, respiratory, otolaryngology, and CNS symptoms. The commonly experienced symptoms were myalgia (45.3%), malaise (39%), fatigue and tiredness (69.5%), loss of taste (21.1%), loss of smell (20.3%) and night sweats (11.7%), lack of sleep (20.3%), and anxiety (12.5%). The cardiovascular and integumentary were the less affected organ systems. About one-third of the HCWs reported that symptoms like myalgia, malaise and tiredness got worse after physical activity (29.7%). Aggravation of symptoms with any form of mental activity was reported in 11.7% of the study participants. One in every ten HCWs (12.5%) had reported not being able to perform daily activities that they were doing before getting COVID-19 infection. However, all resumed their job after the recovery. Long COVID symptoms were reported by a significant number of HCWs, necessitating the need for the establishment of follow-up clinics for the care of healthcare workers.

Keywords: Post-COVID-19 infection, Long-term adverse events, Persisting clinical symptomatology, Healthcare workers

INTRODUCTION

COVID-19, a global pandemic, has dominated every person's life worldwide. The pandemic had affected more than 210 countries; India has been one of the worst affected countries with it. The clinical presentation of COVID-19 ranges from asymptomatic, mild symptomatic to fulminant and fatal cases, having consequences for many organ systems.¹ A study done in China reported

that 81% of people with COVID-19 presented with mild symptoms, 14% presented with severe respiratory dysfunction and 5% developed a critical illness with respiratory failure, shock and multiple organ dysfunction or failure.² The COVID-19 symptoms last for an average of 11.5±5.7 days.³ A significant proportion of patients have been found to remain unwell at post-discharge follow-ups. The long COVID is defined as a group of new, returning or ongoing symptoms that an individual

experiences more than 4 weeks after COVID-19 infection.⁴ The long-term symptoms experienced by survivors of COVID-19 after recovery are still unknown, but there is some emerging evidence suggesting that the individuals affected with COVID experienced symptoms long after recovery from the acute phase of COVID-19 infection.^{5,6} A smartphone application-based study revealed the persistence of COVID-19 symptoms in approximately 10% of patients after 3 weeks of disease onset and in some patients, the symptoms persisted for months.⁷ Some follow-up studies have reported fatigue (40-53%), breathlessness (36-43%), sleep disorders (29%), joint pain (27%) and inability to concentrate (25%) as symptoms which persisted for months.^{7,8}

The long-term health impact of this pandemic is yet to be assessed. Most studies of COVID-19 risks have focused on mortality and have omitted or minimized the disease burden associated with persistent or long-term morbidity among individuals of all ages. In India, there are few studies, which have reported persistent symptoms after recovery from COVID-19.⁹ Identification of such symptoms post-COVID-19 would help in the reliable estimate of such morbidity which is important for individual care and prognosis. Therefore, the study was undertaken to investigate the long-term adverse events and persistent clinical symptomatology post-COVID -19 infection among the HCWs in a tertiary care facility.

METHODS

This was a cross-sectional study conducted among healthcare workers of a tertiary care medical college hospital. All doctors, nursing officers, hospital support staff and medical students involved in patients' care were defined as HCWs for this study. All the HCWs who had a history of RT-PCR and/or RAT positivity in the last six months (COVID-19 survivors) were approached to participate in the study. The data collection was conducted for four months, from April 2022 to July 2022. The HCWs were contacted for data collection 4 weeks after the COVID infection. All HCWs with COVID-19 infection, not willing to participate in the study were excluded.

As, we did not have much data on long COVID-19 in India, assuming a prevalence of 50%, alpha value of 0.05 and 80% power, we calculated a sample size of 100. Considering 20% non-response, the final calculated sample size was 120. Using a purposive sampling technique, we contacted all the COVID-19 survivor HCWs working in our hospital. The tools used for data collection were the self-developed subject data sheet and the self-reporting symptoms tool based on the WHO case report form. The reliability of the self-reporting tool was established by the test and retest method (Cronbach $\alpha=0.89$). The tool was given to 5 experts for content validity, who had experience in treating and following up with COVID patients.

Data analysis

The data was coded and entered into an excel sheet. SPSS 26.0 was used to analyse the data. Descriptive statistics were used. The data was presented in frequency, percentage, mean, SD, median and IQR.

Ethical permission was obtained from the Institute's Ethics Committee (IEC-2022/44). Written informed consent was obtained after explaining the purpose of the study. The confidentiality and anonymity of the participants were ensured.

RESULTS

A total of 135 HCWs were reported to be COVID-19 positive between January to April 2022, out of them 128 HCWs agreed for participating in the study. The rest of them (n=7) declined to participate in the study citing various reasons including professional engagements.

The mean age of the HCWs was 27.89 ± 5.21 years and the majority of them were female (71.1%). The majority of the participants were nurses (67.2%). A total of 33 (26.19%) HCWs had been detected to be COVID-19 positive on more than one occasion. Other demographic details have been given in Table 1.

A total of 23 (17.9%) HCWs had at least one chronic illness (hypertension, diabetes mellitus, coronary artery disease, chronic lung disease, asthma, and hypothyroidism). Out of them, 82.6% were on treatment at the time of the interview. Very few HCWs gave a past medical history of anxiety disorder (1.2%) and smoking (4.7%). The majority of healthcare workers (HCWs) were vaccinated at the time of infection (98.4%). However, we could not retrieve the information on whether they were vaccinated within seven days of infection or not. More than half of the HCWs had received all three doses including the precautionary dose (54.7%) at the time of the survey. The majority of the HCWs were tested RT PCR assay positive (66.4%) and the remaining were RAT positive. The median duration (IQR) of testing for COVID-19 after the onset of symptoms was 2 (2-3) days. The median duration (IQR) of the symptoms during the illness was 7 (4-9) days. The majority of HCWs had mild to moderate illness (91.4%) and a few had severe (3.9%) and no symptoms (4.7%). One-sixth of the HCWs (15.6%) sought medical help in form of hospitalization/emergency care or outdoor/tele-consultation (Table 1). The commonly experienced symptoms during the illness in the order of occurrence were mainly fever (88.3%), sore throat (73.4%), cough/fatigue (65.6%), headache (60.2%), muscles pain (53.9%), running nose (50.8%), loss of taste (35.9%), loss of smell (29.7%), diarrhoea (21.1%), nausea and vomiting (19.5%) and abdominal pain (10.2%). The less frequently experienced symptom was chest pain (5.5%). Half of the HCWs' family members were affected with COVID (50%), of which 5 (3.9%) required hospitalization and 7

(5.5%) lost a family member. A significant number of HCWs had long COVID symptomatology in terms of constitutional, muscular-skeletal, respiratory, otolaryngology, and CNS symptoms. The commonly experienced symptoms were myalgia (45.3%), malaise (39%), fatigue and tiredness (69.5%), loss of taste (21.1%), loss of smell (20.3%) and night sweats (11.7%), lack of sleep (20.3%), and anxiety (12.5%). The cardiovascular and integumentary were the less affected

organ systems. About one-third of the HCWs reported that symptoms like myalgia, malaise and tiredness got worse after physical activity (29.7%). Aggravation of symptoms with any form of mental activity was reported in 11.7% of the study participants. One in every ten HCWs (12.5%) had reported not being able to perform daily activities that they were doing before getting COVID-19 infection. However, all resumed their job after the recovery (Table 2).

Table 1: Sociodemographic and clinical characteristics of healthcare workers (n=128).

Variables		N (%)
Age (years)*		27.89±5.21
BMI*		24.45±3.69
Gender	Male	37 (28.9)
	Female	91 (71.1)
Occupation	Nurse	86 (67.2)
	Doctor	22 (17.2)
	Technician	20 (15.6)
Marital status	Married	54 (42.2)
	Unmarried/divorced	74 (57.8)
Present residence	Rural	46 (35.9)
	Urban	82 (64.1)
Permanent residence	West Bengal	63 (49.2)
	Outside West Bengal	65 (50.8)
Qualification	Secondary	10 (7.8)
	Diploma	06 (4.7)
	Graduation	88 (68.8)
	Post-graduation and above	24
Type of family	Nuclear	105 (82.0)
	Joint	23 (18)
Diagnosed with COVID more than once		33 (26.19)
Chronic illness		23 (17.9)
Current smoker		6 (4.7)
Anxiety disorder		2 (1.2)
Test done for COVID	RT-PCR	85 (66.4)
	RAT	43 (33.6)
Duration of testing after the onset of symptoms (days)**		2 (2-3)
Duration of symptoms during illness (days)**		7 (4-9)
Severity of illness	No symptoms/mild	70 (54.7)
	Moderate/severe	58 (45.3)
Highest level of care received	Selfcare/outpatient/ teleconsultation/ emergency	117 (91.7)
	care/hospitalized	11 (8.6)
Required oxygen support during hospitalization (n=11)		2/11 (18.18)
Lost family member during COVID		7 (5.5)
COVID vaccination status	Two doses	56 (43.75)
	Two doses and a precautionary dose	70 (54.69)
	No	2 (1.60)

Table 2: Post-COVID symptomatology among healthcare workers (n= 128).

Symptoms		N (%)
Constitutional	Low-grade fever	39 (30.4)
	Fatigue/ tiredness	89 (69.5)
	Dizziness on long-standing	42 (32.8)

Continued.

Symptoms	N (%)
Loss of appetite	44 (34.3)
Malaise	50 (39.0)
Myalgia	58 (45.3)
Night sweats	15 (11.7)
Gastro-intestinal	Difficulty to swallow 14 (10.9)
	Diarrhoea 12 (9.3)
	Vomiting 05 (3.9)
Otolaryngology	Sore throat 55 (42.9)
	Loss of smell 26 (20.3)
	Loss of taste 27 (21.1)
Central nervous system	Sleeping difficulty 26 (20.3)
	Depression 09 (7.03)
Mental health	Anxiety 16 (12.5)
	Inability to concentrate 22 (17.1)
Musculoskeletal system	Joint pain 45 (35.1)
	Movement limitation 35 (27.3)
Cardiovascular system	Chest pain 06 (4.6)
	Palpitations 13 (10.1)
Respiratory system	Shortness of breath 16 (12.5)
	Cough 64 (50.0)
Symptoms worsening after physical activity	38 (29.7)
Symptoms worsening after mental activity	15 (11.7)
inability to perform daily activities as before COVID infection	16 (12.5)
Resumed job post-recovery	128 (100)

DISCUSSION

The current study found that a low number of the HCWs infected with COVID-19 had severe symptoms (3.9%) and there was no casualty. This was probably because most of the healthcare workers were vaccinated. A significant number of HCWs had long COVID symptomatology in terms of constitutional, muscular-skeletal symptoms, respiratory, otolaryngology, and CNS symptoms. The commonly experienced symptoms were myalgia, malaise, and fatigue/tiredness. Other experienced symptoms were loss of taste, loss of smell, lack of sleep, anxiety and night sweats.

The HCWs had reportedly informed about the symptoms getting worse after any physical activity (29.7%) than mental activity (11.7%). A significant number of HCWs had reported not being able to perform daily activities which they were doing before COVID-19 (12.5%); however, all have resumed their job after the recovery. Our findings were congruent with several systematic reviews done outside India, which reported that fatigue, muscle pain, joint pain, headache, cough, altered taste and smell are the most common post-COVID symptoms.¹⁰⁻¹²

In the present study, the data was collected by two HCWs using a questionnaire based on the WHO standard case reporting format. The findings of the present study add to the data pool of post-COVID syndrome which was largely not known. However, more studies on larger

samples were needed to be done to explore the exact status of HCWs with long COVID. It was recommended that follow-up clinics should be established to provide rehabilitation services for the COVID survivors.

Limitations

The present study had a few limitations in terms of cross-sectional study design, self-reporting of long COVID and lack of objective assessment of symptoms. We could not contact all the COVID survivors and the enrolled participants were mainly nurses. Other categories of HCWs were underrepresented in the study.

CONCLUSION

Long COVID symptoms were reported by a significant number of HCWs, necessitating the need for the establishment of follow-up clinics for the care of healthcare workers.

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