



Epidemiological and Clinical Profile of Healthcare Providers Affected With Covid-19 at Civil Hospital, Medicity Campus, Ahmedabad, Gujarat

Kartikeya G Parmar¹, Dhaval V Parekh², Jinal Nogas³, Bhagyalaxmi Aroor⁴, Devang Raval⁵, Rajesh Solanki⁶

¹Associate professor, Dept. of Medicine, B.J. Medical College, Ahmedabad

²Senior resident, Dept. of Community Medicine, B.J. Medical College, Ahmedabad

³PGY-1 Resident, Dept. of Community Medicine, B.J. Medical College, Ahmedabad

⁴Professor, Dept. of Community Medicine, B. J. Medical College, Ahmedabad

⁵Professor & head, Dept. of Community Medicine, B.J. Medical College, Ahmedabad

⁶Professor & head, Dept. of Pulmonary medicine, B.J. Medical College, Ahmedabad

ABSTRACT

Background: SARS-CoV-2 has spread globally at a rapid pace, causing significant morbidity and mortality. Healthcare providers are especially vulnerable to infection with important implications. There might be adverse effects on their health, they could transmit the infection to vulnerable patients, family contacts and other staff if not quickly isolated and high rates of infection could cause problems due to health system manpower shortage.

Methodology: A cross-sectional study was conducted where a preformed semi-structured questionnaire was sent using Google forms. A total of 311 healthcare providers were sent the form out of which 161 responded. Analysis was done using Microsoft Excel 2019 and Google Forms.

Result: 75.16% healthcare providers always wore PPE, 11.18% wore it as per duty requirements and 13.66% used mask and sanitizer in non Covid duty areas. They were infected even with use of protective measures. 14.91% reported having co morbidities. Hypertension 8.7% followed by Diabetes 4.96% was the commonest. A significant association was present between sex and work profile of respondents with hospital admission.

Conclusion: Our study data can be used for making appropriate management strategies. Training should be provided in infection prevention control practices. Duty schedule should be designed so as to evenly distribute duties.

Key words: SARS-Co-V2, healthcare provider, decision-making

INTRODUCTION

An epidemic caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), a positive sense single stranded RNA virus of zoonotic origin, emerged in Wuhan, Hubei Province, China, in De-

cember 2019. This infection has since spread globally at a rapid pace, with COVID-19 cases having been identified in several other countries and territories, causing significant morbidity and mortality. The

How to cite this article: Parmar K G, Parekh D V, Nogas J, Aroor B, Raval D, Solanki R. Epidemiological and Clinical Profile of Healthcare Providers Affected With Covid-19 at Civil Hospital, Medicity Campus, Ahmedabad, Gujarat. Natl J Community Med 2021;12(2):24-27. DOI:10.5455/njcm.20210217071758

Financial Support: None declared **Conflict of Interest:** None declared

Copy Right: The Journal retains the copyrights of this article. However, reproduction is permissible with due acknowledgement of the source.

Date of Submission: 17-02-2021; **Date of Acceptance:** 26-02-2021; **Date of Publication:** 28-02-2021

Correspondence: Dr. Dhaval Parekh (E-mail: dhavalparekh32@gmail.com)

COVID-19 transmission is potent, and the secondary attack rate is high.¹ Over 97,00,000 cases have been detected in India as of 10th December 2020, leading it to become the primary cause of health related concern in the country.²

Healthcare workers (HCWs) are especially vulnerable to infection by SARS-CoV-2. In the first published series of 138 patients from Wuhan (China), 29% of the cases were HCWs. Very few studies have focused on SARS-CoV-2 infection among HCWs. Moreover, the data available so far have focused on the proportion of HCWs infected but have not sufficiently described epidemiological and clinical characteristics of the affected workers.^{3,4,5,6,7}

There are important implications of COVID-19 among HCWs. First, there might be adverse effects on their health: in the previously mentioned series from China, 14.8% of the cases among HCWs were classified as severe or critical and five of the patients died. Second, if they are infected they could also transmit the infection to vulnerable patients if they are not adequately and quickly isolated. Third, high rates of infection among them could cause problems due to shortage of staff in the health system. Fourth, they may transmit the infection to close family contacts, other HCWs, and the community.^{3,4,5,6,7}

Due to the importance of COVID-19 implications among HCWs, and the paucity of information published on this, it is important that we study its epidemiology and clinical characteristics better in order to make appropriate prevention and management strategies by decision-makers.

MATERIALS AND METHODS

A cross-sectional study was conducted where a preformed semi structured questionnaire was sent using google forms. A pretested questionnaire was used which was validated with the help of a pilot study. A pilot study was conducted among 20 persons taking 5 respondents each from doctors, nursing staff, paramedical staff and other allied departments. The questionnaire was prepared in English, Hindi and Gujarati and circulated amongst all cadres of Covid positive healthcare providers. Informed consent was taken from all respondents. The details for Covid positive healthcare providers was obtained from the Covid Control Room set up at Civil Hospital, Medicity Campus, Ahmedabad. The questionnaire was sent using whatsapp, sms and email to all concerned staff thus allowing data capture from various places. Ethical approval was approved for this study.

A total of 311 healthcare providers (total no. of healthcare providers positive as of 20th of November) were sent the form out of which 161 responded. Analysis was done using Microsoft Excel 2019 and Google Forms.

RESULTS

As of 20th of November 2020, 311 had tested positive out of a total of 2855 healthcare providers (10.9%). Of all the respondents, 12 (7.45%) were consultant doctors, 47 (29.19%) were resident doctors, 5 (3.11%) were intern doctors, 75 (46.58%) were nursing staff, 7 (4.35%) belonged to paramedic staff while 15 (9.31%) belonged to other allied departments.

Majority of healthcare providers 95 (59.01%) were working in the hospital IPD when infected while 11 (6.83%) were working in the hospital OPD. 55 (34.16%) were working in other related departments.

Study reported that there were more female respondents (63.35%) than male. Majority (45.96%) were in the 20-29 years age group followed by the 30-39 years age group. Mean age of the respondents was 34.5 years while the median age was 30 years. (Table 1)

Table 1: Distribution of respondents according to age, sex

Age Group	Male (%)	Female (%)	Total (n=161)
20-29	29(18.01)	45(27.95)	74(45.96)
30-39	21(13.04)	26(16.15)	47(29.19)
40-49	0(0.00)	13(8.07)	13(8.07)
50 & above	09(5.59)	18(11.18)	27(16.77)
Total	59(36.65)	102(63.35)	161(100.00)

Table 2: Protective measures against Covid

Protective measures	Respondents (%) (n=161)
Always wore PPE on duty	121 (75.16)
PPE as per duty requirement	18 (11.18)
Mask, sanitizer	22 (13.66)

Table 3: Symptoms and co morbidities amongst respondents

Variables	Respondents (%) (n=161)
Symptoms	
Asymptomatic	16(9.9)
Fever	86(53.4)
Dry cough	41(25.5)
Diarrhoea	21(13.0)
Headache	67(41.6)
General weakness	96(59.6)
Breathlessness	18(11.2)
Productive cough	03(1.9)
Any pain	25(15.5)
Loss of appetite	44(27.3)
Loss of taste/smell	42(26.1)
Sore throat	56(34.8)
Running nose	21(13.0)
Nausea/vomiting	18(11.2)
Altered sensorium	01(0.6)
Co-morbidities/ Associated Conditions	
Diabetes	08(4.9)
Hypertension	14(8.7)
Ischemic heart disease	01(0.6)
Asthma	04(2.5)
Others	0(0.00)

Table 4: Treatment details (n=161)

Details	Cases (%)
Place of isolation	
Home	85(52.80)
Covid Care Centre	42(26.09)
Hospital	34(21.12)
Duration of isolation (days)*	
Home	9.95 ±4.43
Covid Care Centre	10.28± 4.18
Hospital	10.07±4.29
Referral	
Yes	10(6.21)
No	151(93.79)
Supportive therapy	
Oxygen	8(4.97)
BiPAP	1(0.62)
Ventilator	0(0.00)
Injectables	5(3.10)
Plasma therapy	1(0.62)
Ayurvedic	68(42.24)

*Values are indicated in mean±SD

Table 5: Association of age group, sex and work profile with hospital admission

Variables	Infected	Admissions	P value
Age group			
20-29	74	16	0.14095
30-39	47	7	
40-49	13	6	
50 and above	27	11	
Sex			
Male	59	8	0.045635*
Female	102	32	
Work profile			
Clinical	115	36	0.015027*
Other allied dept	46	4	

*Indicates significant association (p<0.05)

75.16% of the respondent healthcare providers always wore PPE while 11.18% wore it as per duty requirements and 13.66% used mask and sanitizer in non Covid duty areas. It is important to note that healthcare providers were infected even though use of protective measures. (Table 2)

53 (32.92%) had taken HCQ prophylaxis. It was observed that amongst those who had taken HCQ prophylaxis, 26.4% required hospital admission which was greater than amongst those who did not take HCQ prophylaxis where 18.5% required admission.

A total of 24 (14.91%) respondents reported having co morbidities. Generalized weakness (59.6%) followed by fever (53.4%) were the most commonly reported symptoms. Hypertension (8.7%) followed by Diabetes (4.96%) were the common co morbidities reported. (Table 3)

Majority (52.80%) were isolated at home followed by Covid care centre isolation (26.09 %). 21.12% required hospital admission. 6.21% required referral to a hospital for supportive care. Most common therapy required was oxygen support (4.97%). (Table 4)

17 (10.56%) of the respondents reported SpO2 levels of 95 and below at the time of testing/admission.

50 (31.05%) developed post Covid symptoms, majority reporting weakness (64%) as the most common symptom. 4 (2.48%) persons reported long Covid.

A significant association (p<0.05) was present between sex and work profile of respondents with hospital admission. (Table 5)

DISCUSSION

Covid has had manifold implications on physical, mental and social health of frontline workers. On an already overburdened healthcare system Covid has had catastrophic effects. Apart from being infected themselves, they also have the potential to infect the patients they take care of. Staying away from their family and the fear of infecting them has added to mental burden of the aforementioned workers.

In our study 10.9% of the total healthcare providers working were infected. Out of all respondents, it was observed that 17 (42.5%) persons required hospital admission were aged 40 and above while 17 (14.05%) were aged below 40 years. It shows that those in a higher age group required more hospital admissions as compared to lower age groups.

The mean age of our respondents was 34.5 years which was similar to the mean age of the respondents of the study conducted in Delhi. The median age of our study was 30 years which was lower than the study conducted in Spain which had a higher median age (42 years).^{1,3,8}The difference might be due to different age proportions between the country.

32.92% had taken hydroxychloroquine prophylaxis which was lower than the no. of healthcare workers who had taken HCQ prophylaxis in the study conducted in Delhi (57.5%). Despite taking HCQ, our study showed that more respondents required hospital admissions among those who had taken HCQ prophylaxis compared to those who had not. Despite using protective measures it was observed in our study that healthcare providers were at increased risk of infection than the general population.

The most common symptom reported in our study was weakness (59.6%) while fever was the most common symptom reported in the studies conducted in other studies. 14.91% respondents reported one or more comorbid conditions in our study which was lower than the study conducted in Canada (29.1%) but higher than the Delhi study (10.6%). Hypertension was the most common comorbidity reported which was similar to the

studies conducted in Canada and Delhi where Cardiovascular disease and Hypertension were the commonest comorbid conditions reported respectively.^{1,8}

In our study, 21.12 % respondents required hospital admission which was higher than the studies conducted in Canada (2.5%) and Spain (5.2%).^{3,8} This may be due the fact that initial hospital policy required all infected healthcare providers to get admitted. This policy was modified later. 2.48 % reported long Covidi i.e. symptoms and complications persisting for more than 3 weeks after the initial infection. Higher infection rate was seen among healthcare providers, especially among those coming directly in patient contact.

CONCLUSION AND RECOMMENDATIONS

59.01% healthcare providers were working in the hospital IPD when infected while 6.83% were in the hospital OPD and 34.16% in other related departments.

75.16% healthcare providers always wore PPE while 11.18% wore it as per duty requirements and 13.66% used mask and sanitizer in non Covid duty areas. It is important to note that healthcare providers were infected even with the use of protective measures.

14.91% reported having co morbidities. Hypertension 8.7% followed by Diabetes 4.96% were the common co morbidities reported.

A significant association was present between sex and work profile of respondents with hospital admission.

The data provided by our study can be used for making appropriate prevention and management strategies. All health care personnel should be provided with appropriate training in infection prevention control practices. The duty schedule should be so designed so as to evenly distribute duties among various healthcare providers. A pre placement examination of all workers should be carried out to segregate those having comorbid conditions and associated high risk conditions and preventing severity of outcome. Incentives and use of innovative technologies such as video calls with loved ones would help in reducing stress among them. Adequate care should be taken of infected healthcare providers.

REFERENCES

1. Khurana A, Kaushal GP, Verma V, Sharma K, Kohli M. Prevalence and clinical correlates of COVID-19 outbreak among healthcare workers in a tertiary level hospital. MedRxiv. 2020 Jan 1.
2. Covid data. Available at <https://www.Covid19india.org/>. Last accessed on 10-12-2020.
3. Suárez-García I, de Aramayona López MM, Vicente AS, Abascal PL. SARS-CoV-2 infection among healthcare workers in a hospital in Madrid, Spain. *Journal of Hospital Infection*. 2020 Oct 1;106(2):357-63.
4. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, Wang B, Xiang H, Cheng Z, Xiong Y, Zhao Y. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *Jama*. 2020 Mar 17;323(11):1061-9.
5. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *Jama*. 2020 Apr 7;323(13):1239-42.
6. Luo Y, Trevathan E, Qian Z, Li Y, Li J, Xiao W, Tu N, Zeng Z, Mo P, Xiong Y, Ye G. Asymptomatic SARS-CoV-2 infection in household contacts of a healthcare provider, Wuhan, China. *Emerging infectious diseases*. 2020 Aug;26(8):1930.
7. Wee LE, Sim XY, Conceicao EP, Aung MK, Goh JQ, Yeo DW, Gan WH, Chua YY, Wijaya L, Tan TT, Tan BH. Containment of COVID-19 cases among healthcare workers: The role of surveillance, early detection, and outbreak management. *Infection Control & Hospital Epidemiology*. 2020 May 11:1-7.
8. Schwartz KL, Achonu C, Buchan SA, Brown KA, Lee B, Whelan M, Wu JH, Garber G. Epidemiology, clinical characteristics, household transmission, and lethality of severe acute respiratory syndrome coronavirus-2 infection among healthcare workers in Ontario, Canada. *PloS one*. 2020 Dec 28;15(12):e0244477.
9. Google forms. Available at <https://www.google.com/forms/about/>. Last accessed on 5-1-2021
10. Ong SW, Tan YK, Chia PY, Lee TH, Ng OT, Wong MS, Marimuthu K. Air, surface environmental, and personal protective equipment contamination by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from a symptomatic patient. *Jama*. 2020 Apr 28;323(16):1610-2.
11. Liu Y, Yan LM, Wan L, Xiang TX, Le A, Liu JM, Peiris M, Poon LL, Zhang W. Viral dynamics in mild and severe cases of COVID-19. *The Lancet Infectious Diseases*. 2020 Jun 1;20(6):656-7.
12. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, Liu L, Shan H, Lei CL, Hui DS, Du B. Clinical characteristics of coronavirus disease 2019 in China. *New England journal of medicine*. 2020 Apr 30;382(18):1708-20.
13. ICMR. National Taskforce for COVID-19. Advisory on the use of hydroxy-chloroquine as prophylaxis for SARS-CoV-2 infection. 2020. [Internet]. Available from: <https://www.mohfw.gov.in/pdf/AdvisoryontheuseofHydroxychloroquinasprouphylaxisforSARSCoV2infection.pdf> Last accessed on 5-1-2021
14. Lancet T. COVID-19: protecting health-care workers. *Lancet* (London, England). 2020 Mar 21;395(10228):922.
15. Ran L, Chen X, Wang Y, Wu W, Zhang L, Tan X. Risk factors of healthcare workers with coronavirus disease 2019: a retrospective cohort study in a designated hospital of Wuhan in China. *Clinical Infectious Diseases*. 2020 Oct 15;71(16):2218-21.
16. Ehrlich H, McKenney M, Elkbuli A. Protecting our healthcare workers during the COVID-19 pandemic. *The American journal of emergency medicine*. 2020 Jul 1;38(7):1527-8.