

## Original Research Article

# Characteristics of patients infected with SARS COVID-19 admitted at COVID health facilities in one of the aspirational district of India: a retrospective study

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## ABSTRACT

**Background:** COVID-19 is the third corona virus that has emerged among the human population in the last two decades. The main aim of this study was to describe the epidemiologic features, clinical presentation of first 52 patients diagnosed with polymerase chain reaction (PCR)-confirmed SARS-CoV-2 infection admitted at COVID health facilities.

**Methods:** A retrospective descriptive study was conducted over a period of three months from 1st April 2020 to 30th June 2020. We obtained demographic, epidemiological, clinical, laboratory data from the medical records of patients infected with SARS-Cov-2. The categorical variables were expressed in terms of frequency and percentages and the continuous variables were expressed as mean and standard deviation. In addition to descriptive analysis, Pearson's chi-square test was applied to ascertain the associations between certain variables.

**Results:** The mean age of participants was  $29 \pm 11.67$  years with a male preponderance. Forty three (83%) patients had travel history within India in the previous 30 days i.e. from Delhi (35%), Haryana (15%), Tamilnadu (11%), Himachal Pradesh (8%), Maharashtra (1.9%), Punjab (8%), and Uttar Pradesh (4%). Majority of the patients (90%) were asymptomatic. The age group of 21-30 years was the most affected group (44%) as comparison to the other age groups. No mortality was reported and 100% recovery rate was found.

**Conclusions:** In conclusion, COVID-19 affects a wide-range of patients, from youth to the elderly. In this study, all the COVID-19 infected patients were classified as mild as most were asymptomatic. Close monitoring and large-scale control strategies will be needed to prevent widespread transmission within the community.

**Keywords:** COVID-19, SARS-Cov-2, Epidemiology, Aspirational, Dedicated COVID care centre, Dedicated COVID health center

## INTRODUCTION

In December 2019, a cluster of pneumonia with unknown etiology appeared in Wuhan City, Hubei Province of China. On subsequent virus isolation from human patients and molecular analysis it was found that the pathogen was a new corona virus (CoV), first named as 2019-nCoV and subsequently World Health Organization (WHO)

renamed this as COVID-19.<sup>1</sup> On January 30, 2020 WHO declared this outbreak as a public health emergency of international concern (PHEIC) due to an explosive increase in number of confirmed cases. On the basis of "alarming levels of spread and severity, and by the alarming levels of inaction", on March 11, 2020, the Director-General of WHO characterized the COVID-19 situation as a pandemic.<sup>2</sup>

COVID-19 is the third corona virus that has emerged among the human population in the last two decades. The other two were the severe acute respiratory syndrome corona virus (SARS-CoV) outbreak in 2002 and the Middle East respiratory syndrome corona virus (MERS-CoV) outbreak in 2012. It is an infectious disease caused by a recently emerged novel corona virus (severe acute respiratory syndrome corona virus 2 (SARS-CoV-2)) and is different from the corona viruses causing severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS).<sup>3</sup> Human to human transmission of COVID-19 has been confirmed in some of the case reports similar to other corona virus.<sup>4</sup> The rapid transmission of this outbreak and the increased pressure across healthcare systems have led to emergency measures resulting in substantial social and economic disruption.<sup>5</sup> No vaccine or specific antiviral treatment for covid-19 has yet been shown to be effective, hence supportive therapy that eases the symptoms and protects multi-organ function may be beneficial.<sup>6</sup> The COVID-19 outbreak is still a major challenge for clinicians. Up to 30th June 2020, around 10,185,374 confirmed cases of COVID-19 and 5,03,862 confirmed deaths have been reported globally. India has reported 5,66,840 cases and 16,893 deaths by 30th June 2020.<sup>7</sup>

The Chamba district of Himachal Pradesh was identified as one of the aspirational district under Aspirational District Programme by Government of India. The present study was conducted with the aim to describe the epidemiologic features, clinical presentation of first 52 patients diagnosed with polymerase chain reaction (PCR)-confirmed SARS-CoV-2 infection admitted at Dedicated COVID Care Center (DCCC) and Dedicated COVID Health Center (DCHC) of Chamba district of Himachal Pradesh.

## METHODS

A retrospective observational study was conducted on first 52 patients over a period of three months from 1st April 2020 to 30th June 2020 in one of the aspirational district of India i.e. District Chamba of State Himachal Pradesh, a state in trans Himalayan region of India. Only those individuals who were confirmed to have COVID-19 by SARS-CoV-2 real-time reverse transcriptase-polymerase chain reaction (RT-PCR) were eligible for inclusion in this study. We obtained demographic, epidemiological, clinical, laboratory data including age, sex, nationality, travel history, symptoms, duration of stay, and co-morbidities from the medical records of patients infected with SARS-Cov-2

### Statistical analysis

No statistical sample size calculation was performed, and sample size was equal to the number of patients treated during the study period. Data was entered into MS-Excel and analysis was done using Epi info 7, SPSS 20 software. The categorical variables were expressed in

terms of frequency and percentages and the continuous variables were expressed as mean and standard deviation. In addition to descriptive analysis, Pearson's chi-square test was applied to ascertain the associations between certain variables. Level of significance was set at  $\alpha \leq 0.05$ .

## RESULTS

From 1st April 2020 to 30th June 2020, a total of 52 COVID-19 confirmed patients were admitted at DCCC of District Chamba. Thus, data from 52 patients with laboratory-confirmed COVID-19 were included in this study.

**Table 1: Socio-demographic and epidemiological characteristics.**

Variables	N (%)
Total patients	52 (100%)
Age in years (Mean±SD), 95% CI	29±11.67, 25.75 to 32.25
<b>Age groups</b>	
<10	1 (1.9)
11-20	9 (17)
21-30	23 (44)
31-40	9 (17)
41-50	8 (15)
51-60	1 (1.9)
61-70	1 (1.9)
71 and above	0
<b>Gender</b>	
Male	42 (81)
Female	10 (19)
History of travel outside India in last 30 days	0
History of travel within India in last 30 days	43 (83)
HQ	13 (26)
IQ	29 (58)
Total no of primary contacts	400
Total no of contacts turned positive	9 (17)
<b>Samples taken from</b>	
Alive persons	51 (98)
After death	1 (1.9)

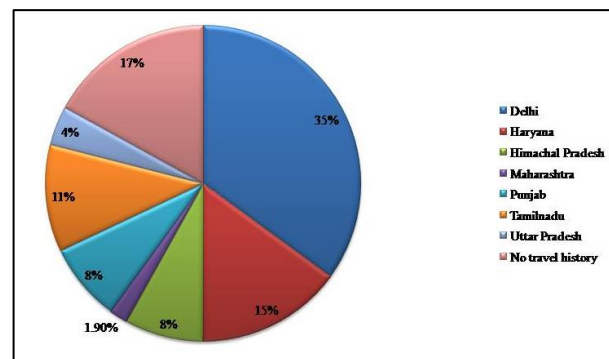
Table 1 summarizes the demographic and epidemiological characteristics of the participants. As shown in table below, majority of the patients were of 21-30 years age group. Mean age of the participants was 29±11.67 years and there was male preponderance (81%). It was found that after the lockdown was implemented countrywide, the majority of the confirmed cases (83%) had a travel history from states where a high incidence of the cases were already being reported, as maximum travel history was from the capital of the nation i.e. Delhi (35%), and no international travel history was found (Figure 1). Figure 1 illustrates the travel history of patients. As shown in figure maximum travel history was

from Delhi, followed by Haryana, Tamilnadu, Himachal Pradesh, Punjab and Uttar Pradesh respectively. No international travel history was found.

**Table 2: Clinical characteristics.**

Variables	N (%)
Symptomatic	5 (10)
<b>Asymptomatic</b>	47 (90)
<b>Treatment at</b>	
Dedicated COVID Care Center (DCCC)	50 (96)
Dedicated COVID Health Center (DCHC)	1 (1.9)
<b>Comorbidity</b>	
Yes (congenital heart disease (CHD))	1 (1.9)
No	50 (96)
<b>No. of samples taken</b>	
1	1 (1.9)
2	30 (58)
3	14 (27)
4	5 (10)
5	1 (1.9)
6	1 (1.9)
<b>Temperature °C</b>	
<b>Day</b>	
<37	33(65)
37	18 (35)
<b>Night</b>	
<37	37(73)
37	14 (27)
<b>Spo2, %</b>	
<b>Day</b>	
<97	15 (30)
97-98	18 (35)
>98	18 (35)
<b>Night</b>	
<97	13 (26)
97-98	18 (35)
>98	20 (39)
Days to recover (mean ±SD), 95% CI	13.37 ± 4.5, CI 12.10 to 14.64
<b>Days to recover</b>	
10	19 (37.3)
11-15	21 (41.2)
16-20	6 (11.8)
>20	5 (9.8)
Recovery on first follow up	35 (67.3)
Recovery on second follow up	9 (17.3)
Recovery on third follow up	4 (8)
Recovery on fourth follow up	2 (4)
Recovery on fifth follow up	1 (1.9)
<b>Outcomes</b>	
Cured	51 (100)
Death	0

Majority of the cases (58%) that were diagnosed positive were already quarantined in various institutions across the district as per administration guidelines. All the patients were treated at dedicated COVID health facility as per the treatment guidelines recommended by Government of India.



**Figure 1: Travel history of COVID-19 positive patients.**

Total 7466 samples were collected from different health blocks of District Chamba, out of which 52 turned positive. Out of 52 samples, 51 were collected from alive persons and 1 sample was taken after the death of person (death was due to non COVID reason). Majority of the patients were asymptomatic (90%) and mild symptoms i.e. mild sore throat, cough were present in remaining of the patients (10%). Average duration of recovery for all patients was  $13.06 \pm 3.9$  days in DCCC. None of the patient required oxygen support during hospitalization. Only 1 patient was found to be having co-morbidity i.e. Congenital Heart disease who took maximum days (27) among all the patients to get recovered. Person to person transmission was also found in this study as 17% of primary contacts turned COVID-19 positive in this study. Majority of the patients recovered (67%) on their first follow up i.e. after collecting their second sample. No mortality was reported and 100% recovery rate was recorded in this study (Table 2).

**Table 3: Relation between gender and recovery days.**

Gender	Recovery days				Mean±sd, 95% CI
	1-10 (n, %)	11-15 (n, %)	16-20 (n, %)	>20 (n, %)	
Male	13 (68)	20 (95)	5 (83)	3 (60)	13.22±4.1, 11.9 to 14.5
Female	6 (32)	1 (5)	1 (17)	2 (40)	14±6.1, 9.7 to 18.3

Pearson chi-square ( $\chi^2$ ) 58.13, df = 8, p value=0.001

#### **Relation between age and recovery days**

The age group of 21-30 years was the most affected group (44%) as comparison to other age groups.

Maximum of the younger age group recovered within 15 days, whereas majority of the middle age group (21-40 years) recovered within 20 days. Statistically significant association was found between age and recovery days among all patients ( $p < 0.05$ ) (Table 4).

**Table 4: Relation between age and recovery days.**

Age in years	Recovery days			
	1-10 (n)	11-15 (n)	16-20 (n)	>20 (n)
1-20	4	4	0	1
21-40	10	15	16	1
41-60 and above	5	2	0	3

Pearson chi-square ( $\chi^2$ ) 63.64, df = 2, p value=0.001

The selected case profile of two patients who were primary and secondary contacts of COVID confirmed patient are also discussed below:

**Case 1:** A 2 years old girl with clinical history of Congenital Heart Disease turned COVID- 19 positive due to coming in contact of his COVID- 19 positive father after 11 days. Total 4 samples were taken and it took 27 days to be get recovered by this patient which was maximum duration of recovery among all other patients. She was shifted to DCCC and treatment was initiated there as per protocol recommended by Government of India. Patient was asymptomatic, only mild sore throat was present. She became negative on 27th day of her hospitalization and was discharged accordingly. Out of total 20 primary contact of this patient, only 1 contact i.e. her mother turned COVID-19 positive on 11th day.

**Case 2:** A 30 years old female with clinical history of 3 months pregnancy turned COVID-19 positive on 11th day after coming in contact with her COVID-19 positive daughter. Mild symptoms i.e. common cold, sneezing was present. Patient was staying with her daughter at CCC. First test was negative and on 11th day patient turned COVID-19 positive. Total 5 samples were taken and it took 21 days to be get recovered by this patient. None of the contact turned positive.

## DISCUSSION

COVID-19 has now become a global issue and declared as pandemic by World Health Organization. This virus spread out from China to the entire world. In this study, we did descriptive analysis of data of COVID-19 patients from one of the aspirational district of India. Till now it can be stated from the study that age is not a significant factor that affect a person to be captured by this disease.

Mean age of patients in the current study was  $29 \pm 11.67$  years. Majority of patients in our study were males (81%) which is consistent to previous research studies that reported male predominance.<sup>3,8-12</sup>

This male predominance may have happened due to increased travel by males for occupational or educational purposes as comparison to females. Most of the patients who were COVID-19 infected had history of travel suggesting that these cases were not community acquired except for few who were primary contacts of infected persons. Previous research also suggests the same findings and found that most of the infected patients had travel history from infected cities.<sup>3,12</sup>

The clinical spectrum of COVID-19 varies widely, and from an asymptomatic infection to severe and critical pneumonia with high fatality rates. In our study, all of the COVID-19 infected patients were classified as mild as majority were asymptomatic and 100% recovery rate was found. This is inconsistent with previous studies which classified majority of COVID-19 confirmed cases as mild.<sup>3,6,13,14</sup> Our study revealed that majority of patients recovered on their second follow up. We also studied the characteristics of primary contacts of COVID infected person and found few of the primary contacts turning positive after some days of COVID infected person.

To the best of our knowledge this was the first kind of descriptive study in any of the aspirational district of India. We also tried to find out the association between certain variables. Despite the clarity of findings, this study has few limitations. The sample size in the current study is characterized by a small cohort. Therefore, these results may be difficult to generalize at national or international level.

## CONCLUSION

COVID-19 affects a wide-range of patients, from youth to the elderly. Asymptomatic patients during the course of disease despite being COVID-19 positive pose a great epidemiological risk to the society as they can spread the infection unrestrictedly and shall be strictly isolated. Close monitoring and large-scale control strategies will be needed to prevent widespread transmission within the community. As a future work, this analysis can be extended by adding more attributes in the dataset.

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