Research Article

Clinico-epidemiological Profile and Social Stigma in Hospitalised RT-PCR Confirmed COVID-19 Cases with and without Comorbidity

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A B S T R A C T

Introduction: The unprecedented COVID-19 outbreak has now spread to every nook of the world. It has contributed to an enormous adverse impact globally. Persons of every age group are likely to get infected but elderly people or those with comorbidities could develop a more serious illness.

Objectives: To describe the clinico-demographic characteristics, various risk factors, and COVID-19 related social stigma among 135 hospitalised patients in north India and to find an association by comparing it with comorbidity.

Methods: The present study is an observational analytical study carried out on 135 patients with RT-PCR confirmed cases admitted in a tertiary care hospital India aged between 15-79 years. Data were collected in a validated questionnaire specially designed for COVID-19 by National Centre for Disease Control (NCDC).

Result: A total of 135 patients were included (median age, 40 years [interquartile range {IQR}, 54-29; range, 15-79 years]; 62.9% Male). The presenting symptoms at the time of admission were fever (57.0%), cough (43.0%), fatigue (42.2%), and breathlessness (28.1%). The most prevalent comorbidities were hypertension (20%), diabetes (14.1%), thyroid disorder (6.7%), cardiovascular diseases (3.7%), and chronic obstructive pulmonary disease (4.4%) and 23.7% patients reported having at least one comorbidity. Patients without pre-existing diseases have more social stigma as compared to patients with comorbidities. Twenty eight percent reported use of AYUSH therapies as prophylactic measures.

Conclusion: This study describes the clinico-demographic profile, baseline comorbidities, and social stigma associated with COVID-19 patients. Patients having comorbidity have less stigma, however, the family of both the groups were worried and supportive.

Keywords: COVID-19, RT-PCR, Comorbidity, Social Stigma, Coronavirus, AYUSH, Sars-CoV-2

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Introduction

Coronavirus Disease 2019 (COVID-19) is a new viral respiratory disease caused by the novel coronavirus (2019-nCoV), which has spread to almost every corner of the world. As of now, a total of 102,942,987 confirmed cases of COVID-19 infection have been identified in the world (updated on 30 April '21). In India, the prevalence of COVID-19 patients has increased significantly over the last few months and has now exceeded 18,762,976, making India the country with the second-highest number of COVID-19 cases.[1]

People of any age with any underlying medical condition are at an increased risk for developing severe illness from COVID-19 such as malignancy, chronic kidney disease, serious heart conditions, COPD (chronic obstructive pulmonary disease), immunocompromised state (weakened immune system) from a solid organ transplant, obesity, hypertension, diabetes mellitus, and sickle cell disease. Previous studies show that COVID-19 patients with comorbidities may lead to a poor prognosis and may also be associated with a significantly increased risk of mortality.[2,3]

Patients' clinical manifestations included fever, non-productive cough, fatigue, dyspnea, and myalgia. However, the difference in clinical characteristics between cases with and without comorbidity was not reported. Many study findings reported that the 2019-nCoV infection was more likely to affect older people with comorbidities, and could result in organ dysfunction (e.g., shock, Acute Respiratory Distress Syndrome [ARDS], acute cardiac injury, and acute kidney injury) and death. At present, there are no effective medicines or proven vaccine and treatment is just symptomatic. The objective of this study was to describe the clinical characteristics, identify various risk factors and the emotional response of 135 hospitalised patients with laboratory-confirmed RT-PCR positive reports, and to find their association with the patients having comorbidity and with those who did not have any pre-existing disease.

Methods

Design and Setting

This was an observational analytical hospital-based study carried out by the Department of Community Medicine on a sample of 135 patients with COVID-19 diagnosis confirmed with Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) admitted in the Safdarjung Hospital, a dedicated tertiary care hospital for COVID-19 isolation and management in New Delhi, North India. The study is prepared according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. Prior to data collection, the necessary approval was obtained from the Institutional Ethics Committee.

Data were collected from all the patients above 18 years who underwent testing for COVID-19 by RT-PCR from July to August 2020 to assess the association of comorbidity with an incidence of clinical manifestation, risk factors, and stigma in these confirmed COVID-19 patients. All the individuals who tested negative of COVID-19 in RT-PCR testing and suspected cases were excluded from the study.

Study Participants

Altogether 365 patients were screened and 145 patients, who tested positive for COVID-19 by RT-PCR were found eligible to take part in the study, of which 10 patients refused to participate in the trial, leaving a total of 135 patients. Informed consent from each participant was obtained and they were interviewed. The data was analysed by a research team initially from the medical record of patients, and detailed information was collected through phone calls. Each patient was explained the purpose of the study, and privacy and confidentiality were ensured, following which patient's queries regarding symptoms, treatment, and other doubts were taken before data collection.

Sample Size and Sampling

On the basis of a previous study, the prevalence of diabetes in COVID-19 patients was found to be 8.2%.[3] Taking this value as reference, the minimum required sample size with a 5% margin of error and 5% level of significance is 116 patients.

Study Tool

Data was collected in a pre-tested validated questionnaire specially designed for screening of COVID-19 cases provided by the National Centre for Disease Control (NCDC) of the Ministry of Health & Family Welfare, Government of India. The questionnaire captured information which included demographic data, signs, symptoms at the time of admission, comorbidities, travel history, exposure history, mechanism of contact, laboratory findings, treatment or prophylactic measures, and social stigma related questions. It took around 8-12 minutes to fill the questionnaire.[4]

Statistical Analysis

The data were entered in Microsoft Excel and were analysed using SPPS version 21.0. Descriptive statistics were used to characterise the study population. Association between categorical variables was assessed using Chi-Square test (or Fischer exact test). P-value < 0.05 was considered significant.

Result

We reported the clinical characteristics of RT-PCR confirmed patients admitted to a COVID-19-dedicated hospital from north India. A total of 135 patients were included over a period between July to August 2020, with male preponderance (n=85; 62.9%), mean age being 41.80±14.99

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years, and the median age being 40 years (IQR, 54-29; range, 15-79 years). Forty Two (31.1%) respondents were aged between 16 and 30 years of which majority were not having any pre-existing disease (n = 38/42; 90.5) in contrast to patients aged between 46 and 60 years where majority of the cases (n = 23/35; 65.7%) had known comorbidity (Table 1).

Table 1.Demographic and Clinical Profile of Patients

Variables	Comorbidity n (%)		Chi-Square	p-value
	Present (n = 50)	Absent (n = 85)		
Age (in years)				
15-30 (n = 43)	5 (11.6)	38 (88.4)	17.469	0.001
31-45 (n = 41)	12 (29.3)	29 (70.7)	1.524	0.217
46-60 (n = 35)	23 (65.7)	12 (34.3)	16.663	0.001
> 60 (n = 16)	10 (62.5)	6 (37.5)	5.047	0.025
Sex				
Female (n = 50)	25 (50.0)	25 (50.0)	5.722	0.017
Male (n = 85)	25 (29.41)	60 (70.59)		
Symptoms and signs at admission				
Asymptomatic (n = 29)	5 (17.2)	24 (82.8)	6.206	0.013
Fever (n = 77)	31 (40.3)	46 (59.7)	0.798	0.372
Fatigue (n = 57)	30 (52.6)	27 (47.4)	10.288	0.001
Cough (n = 58)	25 (43.1)	33 (56.9)	1.605	0.205
Runny Nose (n = 14)	4 (28.6)	10 (71.4)	0.480	0.488
Sore throat (n = 33)	10 (30.3)	23 (69.7)	0.849	0.357
Breathlessness (n = 38)	18 (47.4)	20 (52.6)	2.421	0.120
Diarrhoea (n = 6)	2 (33.3)	4 (66.7)	0.037	0.848
Pain (muscular, chest, abdomen, joint) (n = 21)	10 (47.6)	11 (52.4)	1.194	0.274
Nausea/ vomiting (n = 24)	14 (58.3)	10 (41.7)	5.677	0.017
Headache (n = 36)	19 (52.8)	17 (47.2)	5.216	0.022
Irritability/ confusion (n = 7)	4 (57.1)	3 (42.9)	1.280	0.258
Redness of eyes (n = 6)	4 (66.7)	2 (33.3)	2.364	0.124
Other symptoms (n = 10)	7 (70.0)	3 (30.0)	5.032	0.025
Tachypnoea (n = 12)	6 (50.0)	6 (50.0)	0.949	0.330
Abnormal lung auscultation (n = 12)	7 (58.3)	5 (41.7)	2.562	0.109
Abnormal chest X- Ray findings (n = 16)	10 (62.5)	6 (37.5)	5.047	0.025
Travel history in past one month				
Yes (n = 5)	1 (20.0)	4 (80.0)		0.421
No (n = 130)	49 (37.7)	81 (62.3)		
Contact history (n = 56)	15 (26.8)	41 (73.2)	4.313	0.038
Prophylactic medication history (n = 85)	33 (38.8)	52 (61.2)	1.232	1.232
Allopathic medicines				
Multivitamins (n = 24)	6 (25.0)	18 (75.0)	2.691	0.101
Vitamin C (n = 34)	11 (32.4)	23 (67.6)	0.999	0.318
Hydroxychloroquine (n = 14)	4 (28.6)	10 (71.4)	0.742	0.389
AYUSH medicines (n = 38)	18 (47.4)	20 (52.6)	2.113	0.146

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Table 2.Response of Participants, Their Families, and Neighbours to COVID-19 Positive Status

Response of participants about their COVID-19 positive status	Comorbidity n (%)		Chi-Square	p-value
	Present (n = 50)	Absent (n = 85)		
Sad (n = 18)	3 (16.7)	15 (83.3)	3.696	0.055*
Anxious (n = 36)	15 (41.7)	21 (58.3)	0.451	0.502
Worried (n = 56)	24 (42.9)	32 (57.1)	1.390	0.238
Denial (n = 10)	4 (40.0)	6 (60.0)	0.041	0.840
Normal (n = 16)	4 (25.0)	12 (75.0)	1.128	0.288
Strong (n = 1)	0 (0.0)	1 (100.0)	0.593	0.441
Response of family members to the COVID-19 positive status of the patients				
Supportive (n = 65)	26 (40.0)	39 (60.0)	0.472	0.492
Sad (n = 8)	3 (37.5)	5 (62.5)	0.001	0.978
Worried (n = 45)	16 (35.6)	29 (64.4)	0.064	0.801
Not informed (n = 7)	1 (14.3)	6 (85.7)	1.639	0.200
Patients experience any discrimination or changed attitude of family members				
Yes (n = 29)	16 (55.2)	13 (44.8)	5.209	0.022*
No (n = 106)	34 (32.1)	72 (67.9)		
Patients experience any discrimination or changed attitude of their neighbours				
Yes (n = 71)	31 (43.7)	40 (56.3)	2.819	0.093
No (n = 64)	19 (29.7)	45 (70.3)		

Table 3.Contact History of RT-PCR Positive COVID-19 Patients

	Comorbidity n (%)		Chi-Square	p-value
	Present (n = 50)	Absent (n = 85)		
H/ O contact with 2019-nCOV case (n = 56)	15 (26.8)	41 (73.2)	4.313	0.038
If yes				
Laboratory confirmed case of 2019-n-COV (n = 47)	13 (27.7)	34 (72.3)	0.114	0.736
Person who is under investigation for 2019-nCOV while that person was ill (n = 9)	2 (22.2)	7 (77.8)		
If yes, in which setting				
While taking samples/ other investigations (n = 1)	0 (0.0)	1 (100.0)	-	1.000
Clinical care of case (among HCW) (n = 14)	3 (21.4)	11 (78.6)	-	0.736
Housekeeping (Hospital) (n = 2)	0 (0.0)	2 (100.0)	-	1.000
Caregiver of the case (Specify details of case) (n = 15)	4 (26.7)	11 (73.3)	-	1.000
Visit to a place where 2019-n-COV cases are treated or sampled (specify details) (n = 9)	5 (55.6)	4 (44.4)	-	0.048
Others, specify (n = 13)	3 (23.1)	10 (76.9)	-	1.000
Not known (n = 7)	0 (0.0)	7 (100.0)	-	0.171

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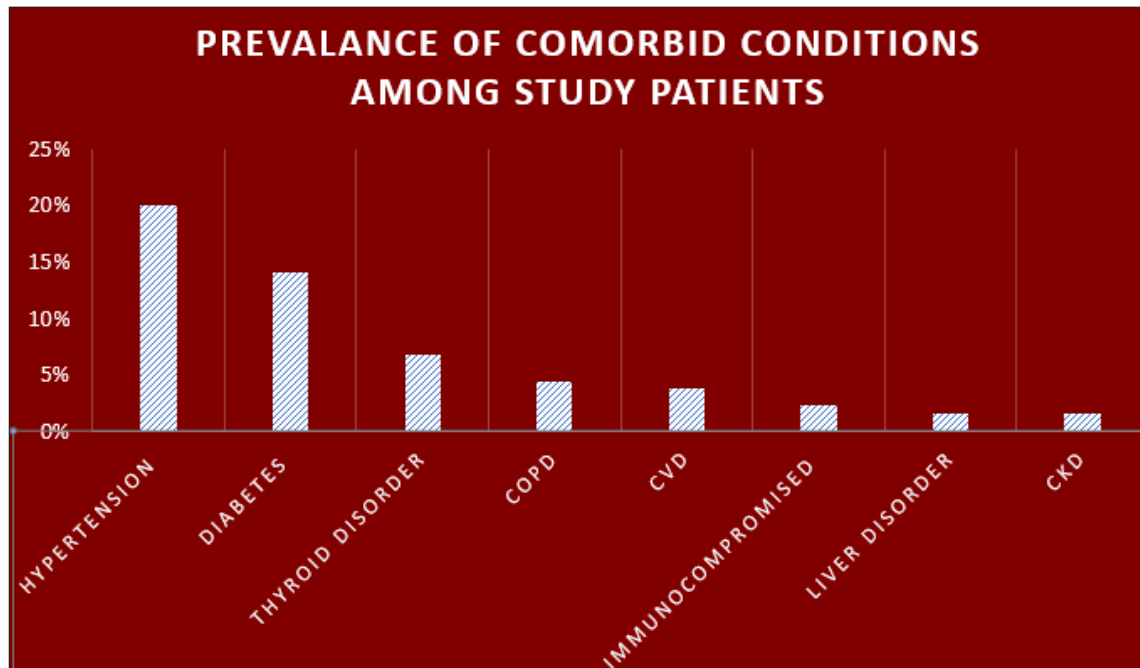
Figure 1.Prevalence of comorbid conditions among 135 study RT-PCR confirmed study patients
*COPD= Chronic Obstructive Pulmonary Disease, CKD=Chronic Kidney Disease, CVD=Cardiovascular disease

A significant difference was found in more than half of the patients with and without comorbid conditions who visited a place where 2019-nCOV cases were being treated or sampled (p = 0.048). Close contact with a known COVID-19 patient in 47 (34.8%) subjects was the most common exposure characteristic, nine (6.7%) patients were in contact with an ill patient undergoing investigation for COVID-19, 15 (11.1%) were caregivers of the case and 14 (10.3%) were among Health Care Workers (HCW). There were a few (5 (3.7%) patients who gave a history of travel outside India in the past one month (Table 3).

Among the symptomatic, the presenting symptoms at the time of admission were fever (n = 77; 57%) in majority of patients, cough (n = 58; 42.9%), fatigue (n = 57; 42.2%) breathlessness (n = 38; 28.1%), headache (n = 36; 26.7%) and sore throat (n = 33; 24.4%). These and all the rest of the symptoms of these patients are given in Table 1. On comparing patients with and without comorbidity, it was found that fatigue, headache, nausea, or vomiting were significantly associated with patients having comorbidity, having p-value < 0.05. Abnormal chest auscultation (n = 12) and abnormal chest X-ray findings (n = 16) were seen more in patients with comorbidity as compared to others. An important finding in the study is that majority of the asymptomatic patients (n = 29; 21.5%) were those who have no comorbidity (n = 24; 82.8%) with p-value of 0.013 (Table 1).

Various comorbidities were present among 135 cases on admission, as revealed by the patient's self-report. Thirty Two (23.7%) patients reported having at least one comorbidity and 14 (10.4%) patients had more than one comorbidity. The prevalence of specific comorbidities was as follows: hypertension (27; 20%), diabetes (19; 14.1%), chronic obstructive pulmonary disease (6; 4.4%), cardiovascular diseases (5; 3.7%), liver disorder (2; 1.5%), chronic kidney diseases (2; 1.5%), immunodeficiency (3; 2.2%), and thyroid disorder (9; 6.7%). None of the cases had malignancy (Figure 1).

When the patients were enquired about the feeling when they got to know about the COVID-19 positive status, most of them felt worried (n = 56; 41.5%) and anxious (n = 36; 26.7%). Patients without comorbidity were more likely to have a bad emotional status (83.3%) compared to those who reported a pre-existing disease (16.7%) and this difference was statistically significant (p = 0.055); also their family's response was supportive (60%) as compared to those with comorbid conditions (40%), however, p-value was insignificant. Some participants reported having faced discrimination or changed attitude of their family members after revealing their COVID-19 positive status (n = 29; 21.5%), and this difference was statistically significant (p = 0.022). More than half of the patients (52.6%) faced discrimination or found a change in the attitude of their neighbours however, the difference was not statistically significant (p = 0.093) (Table 2).

More than half of the patients (n = 85; 62.9%) reported use of medicines such as AYUSH medicines (28.1%), vitamin-C medicines (25.2%), multivitamins (17.8%), HCQ (10.4%) etc. to protect themselves from contracting coronavirus infection (Table 1).

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Table 4.Comparison of Main Characteristics of Previous Studies with the Present Study

Study (Total Sample Size)	Mean Age (Years)	Symptoms (%)			Comorbidities (%)	
		Fever	Cough	Fatigue	Hypertension	Diabetes
Wang et al. (n = 138)[2]	56.0	98.6	59.4	69.6	31.2	10.1
Guan et al. (n = 1099)[5]	47.0	87.9	67.7	38.1	14.9	7.4
Richardson et al. (n = 5700)[6]	63.0	3.7	59.4	-	56.6	33.8
Huang et al. (n = 41)[8]	49.0	98.0	76.0	44.0	15.0	20.0
Yang et al. (n=1576)[9]		91.3	67.7	51.0	21.1	9.7
Chen et al. (n = 99)[10]	55.5	83	82	-	-	13
Zhang et al. (n = 147)[11]	57.0	91.7	75	75	30.0	12.1
Liu et al. (n = 137)[13]	57.0	81.8	48.2	32.1	9.5	10.2
Mohan et al. (n = 144)[14]	40.1	17.4	34.7	1.4	2.1	11.1
Kishore et al. (n = 206)[15]	41.94	72.6	76.8	72.2	83.3	84.2
Current study (n = 135)	41.8	57.0	42.2	42.9	20.0	14.1

Discussion

Many studies have shown that pre-existing comorbid conditions are linked with a higher risk of developing more severe COVID-19. In our study also we found that 37.03% of COVID-19 positive cases had comorbidities, mostly in the older age group of more than 46 years. The present study documents the presence of at least one comorbidity in 23.7% of the subjects, and the most prevalent comorbidity was hypertension (20%), followed by diabetes mellitus (14.1%) which is comparable to another study conducted nationwide by Guan et al. in which 25.1% people had at least one comorbidity.[5] Various studies showed that hypertension and diabetes were highly prevalent in COVID-19 positive cases and this pattern was similar to our data (Table 4).[5,6,8,9,11,15] In our study, when cases with and without comorbidity were compared according to age, the population with more than 46 years of age with comorbid conditions were more which was statistically significant, in contrast to the subjects in the age group between 31 and 45 years wherein majority of the positive cases were not having any pre-existing condition.

In the present study, a significantly less proportion of patients were asymptomatic (21.5%), however, two studies from north India reported having almost half of the patients who had no symptom.[12,13] We found that the most prevalent symptoms were fever (57.03%), fatigue (42.9%), and cough (42.2%). A similar picture has been seen in many other studies, compared to the previously published studies from other countries and India, wherein almost every study reported these three symptoms, fever, dry cough, and fatigue as the most commonly reported symptoms (Table 4).[2,4-13]

In the present study, around 41.5% of the participants reported having contact with a COVID-19 positive case which was much higher when compared to another study from North India carried out by Mohan et al. in the initial phase of lockdown.[14] They reported only 4.9% of the patients who had close contact with COVID-19 positive cases. Among HCW, 10.4% reported having contracted the infection while giving clinical care to COVID-19 positive cases while another Indian study reported a very low percentage of 1.4%.[14]

Since COVID-19 is a new disease, and people are often afraid of the unknown, a study from India reported fear related to the COVID-19 virus in 78.9% of the healthy population.[15] People hide the illness due to social stigma and to avoid discrimination which discourages them from seeking health care immediately.[15-18] COVID-19 patients were asked a few questions regarding the stigma. Many patients without comorbidity (83.3%) were sad after knowing their COVID-19 status in contrast to the patients with comorbidity (16.7%), and this difference was statistically significant (p = 0.05). When similar questions were asked about their family members, the response was mainly supportive (60%) and worried (60.4%) among patients without comorbid conditions in contrast to subjects with comorbidity, and this difference was not statistically significant.

Thirty eight (28.14%) patients reported use of AYUSH interventions as prophylactic medicines, 24 patients reported use of Ayurvedic medicines (*Ayush Kwath, Chyawanprash*), and 19 patients reported use of Unani medicines (*Khamira Marwareed, Tiryaq Arba, Unani Joshanda*) as prophylaxis. In addition to these medicines, 11 patients reported the use of some homemade preparation such as use of warm water, haldi milk, ginger juice with honey, Gilo (*Tinospora cordifolia*), Ashwagandha (*Withania somnifera*), Kalongi

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(*Nigella sativa*), and Senna makki (*Cassia angustifolia*). (Table 1) On the basis of this study, it can be concluded that there has been an increase in the use of AYUSH medicines when compared to a previous online survey during the early period of lockdown in India which reported the use of Unani prophylaxis and ayurvedic immune boosters by only 4.5% and 2.9% of the population respectively.[19]

Limitations of the Study

The study lacked a negative RT-PCR control group that could better interpret the association in terms of clinical findings, comorbidity, anxiety, and stigma between the COVID-19 positive and negative groups. This was a single-institution study with possible selection bias, and thus the findings may not be representative of the overall population of COVID-19 positive patients in India.

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Conflict of Interest: None

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