

Clinical profile and outcomes of COVID-19 positive patients -A cross sectional study

Christina Karthaka, Sulakshana S. Baliga, Padmaja R. Walvekar

Department of Community Medicine, J.N. Medical College, KLE Academy of Higher Education and Research, Belagavi, Karnataka, India

ABSTRACT

Background: Globally 220 countries and territories are affected and cases of COVID-19 have increased by 8% resulting in 3.6 million new cases. The most common symptoms include fever, cough, loss of taste or smell, headache and mortality rate was uncertain. The objective of this study is to know the clinical profile and outcomes of COVID-19 positive patients. **Methodology:** A Cross-Sectional Study was conducted for 2 months (October–December 2020) among 727 COVID 19 positive patients residing in the field practice area of 4 health centers. Details regarding medical history, exposure history, underlying co-morbidities, symptoms, signs clinical features and outcomes (i.e. cured, mortality, and length of stay) were obtained. **Results:** The mean age of participants was 41 ± 17 years, 59.28% were males, 40.71% were females. A significant association was found between age, family history of disease, co-morbid disease, medication history, smoking habit, alcohol consumption, type of symptoms, isolation type, treatment given with outcomes ($P < 0.05$). Subjects with previous history of medication (HR, 2.749; 95% CI 1.0774–7.015), and those who had symptoms (HR, 3.6446; 95% CI 1.0280–12.921) were associated with increased risk of death as compared to others. **Conclusion:** COVID-19 positive was found in 56% of patients, they were less severe and improved with medication and deaths were found in 3.85% of patients. Fever was noted in only 15.72% of patients, gastrointestinal symptoms in 1.22% and respiratory symptoms in 14.74% of patients. Participants with older age were significantly associated with complications and those with co-morbidities were significantly associated with death on multinomial logistic analysis.

Keywords: Clinical profile, COVID-19, outcomes

Introduction

COVID-19 was first reported on 31 December 2019, following a report of a cluster of cases of ‘viral pneumonia’ in Wuhan, China. In India the total number of cases till date are 8,814,549 and 129,635 deaths respectively.^[1,2] Globally cases of COVID-19 have increased by 8%, resulting in 3.6 million new cases.^[1] Case fatality rate was reported lowest in Germany and highest in Italy.

Overall it was 3.4% and nearly 20% among patients more than 80 years of age.^[3,4]

The most common symptoms include fever, cough, and mortality rate was uncertain.^[1,2,5] The severity of the disease was higher among elderly population and patients with co-morbidities.^[6] Approximately 80% of patients are either asymptomatic or have mild disease.^[1] Elderly patients with diabetes, hypertension had increased chances of mortality and morbidity and ICU admission.^[3,7]

There has been drastic change in the health care delivery system especially at primary care level due to COVID-19. Therefore it is important to identify the clinical profile and outcomes of COVID-19 patients considering the novelty and substantial

Address for correspondence: Dr. Sulakshana S. Baliga, Department of Community Medicine, J.N. Medical College, KLE Academy of Higher Education and Research, Belagavi 590 010, Karnataka, India.
E-mail: baliga1983@rediffmail.com

Received: 11-02-2021

Revised: 03-07-2021

Accepted: 04-07-2021

Published: 29-11-2021

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_301_21

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Karthaka C, Baliga SS, Walvekar PR. Clinical profile and outcomes of COVID-19 positive patients -A cross sectional study. J Family Med Prim Care 2021;10:4036-40.

heterogeneity of illness across the world especially India. This article information gives the baseline statistics at the community level to devise plans in order to contain COVID-19 in the present pandemic. Hence, this study was planned to know the clinical profile and outcomes of COVID-19 positive patients.

Methodology

COVID 19 positive patients residing in the field practice area for more than 1 year who tested positive on by real-time reverse transcriptase polymerase chain reaction (RAT/RT-PCR) either by throat or nasopharyngeal swab were included. Participants who do not belong to field practice area such as migrant workers, travelers, and relatives who visited the houses in the field practice area and became positive were excluded.

All the COVID positive patients in the field practice area were line-listed as per the Belagavi District COVID positive patients list from the four field practice areas under the department of Community Medicine, JNMC, KAHER Belagavi.

A total of 727 COVID-positive patients were included. Data were collected after obtaining written informed consent from the study participants. While a telephonic consent was obtained from the quarantined family members if the patient was unable to give consent himself/herself Participants were interviewed using a pre-designed, pretested questionnaire which included details such as socio-demography, medical history, exposure history, underlying co-morbidities, symptoms, signs clinical features, and outcomes.

Clinical outcomes were studied by reviewing discharge summary records of the participants. Two health care workers in each centre were trained to collect the reports of COVID-positive patients and retrieve the information. Data were cross-checked to avoid errors and clinical outcomes were analyzed. In case of death of the patient their household members were interviewed. If none are available the information was collected from the ANM/ASHA workers.

Ethical clearance

Ethical clearance permission was obtained from Institutional Ethics Committee wide number (MDC/DOME/447) on 10/12/2020.

Statistical analysis

Data is analyzed using statistical software R version 4.0.2 and Microsoft Excel. Continuous variables were represented by mean \pm SD and categorical variables represented by frequency. To check the association between categorical variables *Monte-Carlo's simulation* is used. To compare mean/distributions over groups ANOVA test is used. To check the variable effecting the outcomes multinomial logistic regression is used. Cox proportional hazard model is used to find the variables affecting mortality. A value of $P \leq 0.05$ indicates statistical significance.

Results

Table 1 shows that maximum participants were between 21 and 40 years of age with mean age of study participants was 41.12 ± 17.2 years. There were 431 males and 296 females with male predominance (1:1.46). Approximately 37 (5.09%) subjects were health workers, 26.27% had completed secondary schooling. Only 6.46% of participants had health insurance.

Among 727, 104 subject's family suffered with COVID-19. Approximately 44.02% subjects were asymptomatic. Fever was reported in only 15.72% patients, respiratory symptoms in 14.74%, and gastrointestinal symptoms in 1.22% patients. Mean duration of fever observed was 6.18 ± 4.15 days. We observed 3.85% of the subjects died due to COVID-19. Nearly 38 participants had ICU admissions and required ventilator support among which few had developed pneumonia. Among 28 deaths recorded one of them died of liver failure and one more due to sepsis. A significant association was found between age, family history of disease, co-morbid disease, medication history, smoking habit, alcohol consumption, type of symptoms, isolation type, treatment given with outcomes ($P < 0.05$).

Table 2 shows that by ANOVA, there was a significant difference in the age over outcomes. Tukey's test was used for *post hoc* analysis. From Tukey's test, there was a significant difference in the age between cured complications ($P = 0.00060$), cured-death ($P = 0.0065$).

Table 3 shows that for unit increase in age there was an increase in log odds of outcome as complications compared to cured by

Table 1: Sociodemographic details of study participants (n=727)

	Variables	Number of subjects (%)
Age	≤ 20	80 (11%)
	21-40	310 (42.64%)
	41-60	220 (30.26%)
	61-80	111 (15.27%)
	≥ 80	6 (0.83%)
Gender	Male	431 (59.28%)
	Female	296 (40.72%)
Education	Illiterate	111 (15.27%)
	Primary School	165 (22.7%)
	secondary schooling	191 (26.27%)
	PUC	128 (17.61%)
	Graduate	120 (16.51%)
	Postgraduate	8 (1.1%)
Profession	NA	4 (0.55%)
	Others	690 (94.91%)
	Healthcare workers	37 (5.09%)
SES	I	184 (25.31%)
	II	64 (8.8%)
	III	38 (5.23%)
	IV	433 (59.56%)
	V	8 (1.1%)

*NA - Not applicable to children below 5 years

Table 2: Relationship between outcomes and other variables

Variables		Outcomes			P
		Complications	Cured	Death	
Age	≤20	1 (1.25%)	77 (96.25%)	2 (2.5%)	0.00299*MC
	21-40	16 (5.16%)	286 (92.26%)	8 (2.58%)	
	41-60 TM	10 (4.55%)	202 (91.82%)	8 (3.64%)	
	61-80	18 (16.22%)	83 (74.77%)	10 (9.01%)	
	≥80	1 (16.67%)	5 (83.33%)	0 (0%)	
Age (in years)		49.78±18.21	40.12±16.89	50.14±16.93	<0.00001*A
Family History Of co-morbidities	No	30 (4.81%)	581 (93.11%)	13 (2.08%)	<0.00001*
	Yes	16 (15.53%)	72 (69.9%)	15 (14.56%)	
History of Co- morbidities	No	34 (5.27%)	598 (92.71%)	13 (2.02%)	0.0005*MC
	Yes	12 (14.63%)	55 (67.07%)	15 (18.29%)	
Medication	No	39 (6.19%)	571 (90.63%)	20 (3.17%)	0.0004998*MC
	Yes	7 (7.22%)	82 (84.54%)	8 (8.25%)	
Smoking habit	No	39 (6.19%)	571 (90.63%)	20 (3.17%)	0.04498*MC
	Yes	7 (7.22%)	82 (84.54%)	8 (8.25%)	
Alcohol consumption	No	43 (6.54%)	594 (90.41%)	20 (3.04%)	0.002999*MC
	yes	3 (4.29%)	59 (84.29%)	8 (11.43%)	
Symptoms	Asymptomatic	17 (5.31%)	299 (93.44%)	4 (1.25%)	0.002731*
	Symptomatic	29 (7.13%)	354 (86.98%)	24 (5.9%)	
Type of isolation	Home	2 (0.44%)	446 (98.45%)	5 (1.1%)	0.0004998*MC
	Hospital	44 (16.06%)	207 (75.55%)	23 (8.39%)	
Treatment given	Antibiotics, Antivirals and steroids	6 (8.96%)	55 (82.09%)	6 (8.96%)	0.01549*MC
	Antibiotics	2 (2.06%)	95 (97.94%)	0 (0%)	
	Antivirals	32 (6.49%)	444 (90.06%)	17 (3.45%)	

*Signification 0.05, MC: Monte-Carlo's simulation, A: ANOVA

Table 3: Multinomial logistic regression

	Cured Vs	
	Complications	Death
Intercept	-8.255971	-7.9744
P	<0.0001*	<0.0001*
Age	0.02943	0.0182
P	0.0053*	0.1915
Co-morbid disease (Reference No)		
Yes	0.0577	1.4023
P	0.1758	0.0086*
Type of Symptom (Reference Asymptomatic)		
Symptomatic	0.8376	1.9335
P	0.03418*	0.0014*
Isolation type (Reference Home)		
Hospital	4.1174	2.1782
P	<0.0001*	<0.0001*
Treatment given (Reference: Anti-biotic, Anti-viral therapy and Steroids)		
Antibiotics	-0.6857	-10.4583
P	0.4381	<0.0001*
Anti-Viral therapy	1.1839	1.3528
P	0.0324*	0.0335*

*Signification 0.05

0.02943. The log odds of death Vs cured increased by 1.4023 among the participants with the co-morbid disease.

The log odds of complications Vs cured increased by 0.8376 among the participants with symptoms of COVID-19. The log odds of death Vs cured increased by 1.9335 among those with symptoms

of COVID-19. The log odds of complication Vs cured increased by 4.1174 among study subjects in hospital isolation compared to home isolation. The log odds of death Vs cured increased by 2.1782 among study subjects who were in hospital isolation compared to home isolation. The log odds of death Vs cured decreased by 10.4583 in the participants on Antibiotic treatment compared to participants on all three, that is, anti-biotic, anti-viral therapy, and steroids. The log odds of complications Vs cured increased by 1.1839 in participants who were on those who were on all three i.e Anti-viral therapy treatment compared to anti-biotic, anti-viral therapy, and steroids. The log odds of death Vs cured increased by 1.3528 among the participants who were only on anti-viral therapy.

Table 4 shows that among the study subjects with previous medication history hazard ratio was 2.7491 times more compared to the subjects without previous medication history. Among the participants with symptoms of COVID-19 hazard ratio was 3.6446 times more when compared to the subjects without any symptoms.

Figure 1a shows that participants who were already on some medications due to chronic illness (diabetes, hypertension) had 2.75 times risk of death when compared to those participants who were on no medication. Symptomatic patients had 3.64 times risk of death when compared to asymptomatic.

Discussion

COVID-19 had a major impact on human population. It has caused disruption of normal life. The centre and state

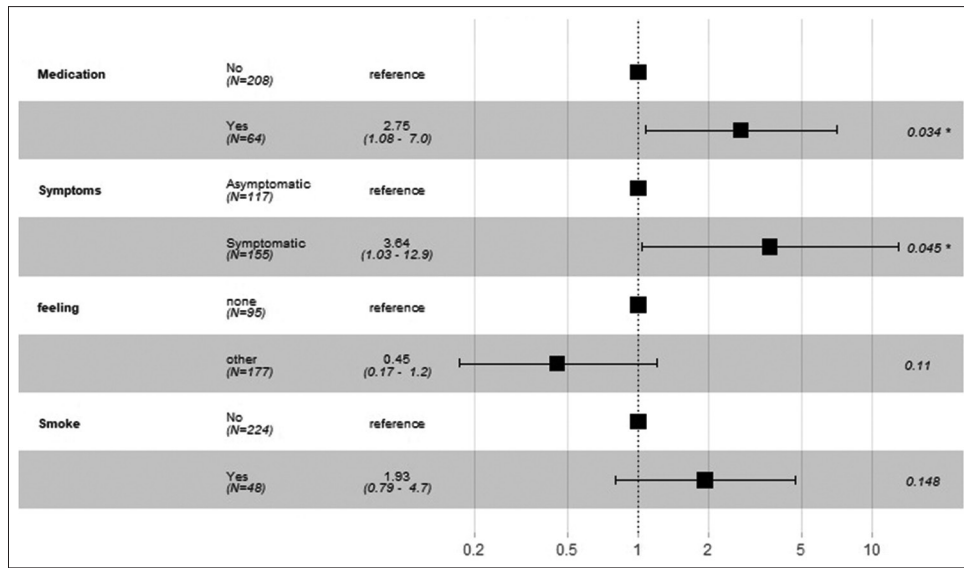


Figure 1: (a) Forest plot of Hazard ratio

Variable	Co-efficient	Hazard ratio (CI)	P
Medication	Reference No		
	Yes	1.0113 2.7491 (1.0774-7.015)	0.0343*
Type of Symptoms	Reference Asymptomatic		
	Symptomatic	1.2932 3.6446 (1.0280-12.921)	0.0452*

*Signification 0.05

governments have imposed several regulations to contain its spread. Despite the efforts it has led to 143355 deaths in India and 1605091 worldwide.^[1,8] Thus the current study explores the profile of covid positive patients, their clinical presentation, and outcomes to look for novelty and substantial heterogenicity of illness across the world especially India.

Our study showed that mean age of participants was 41.12 ± 17.2 years similar to studies^[2,5] done in India but differed from those done in China and Europe.^[9,10] This shows that epidemiological presentation of infection varies between geographical location. Majority of them were between 21-40 years age group among which 60% were males and rest were females. These results were similar to study done in tertiary care centre in India.^[2,11] The mean duration of hospital stay was 10.63 ± 4.26 days and the risk of complications and death ($P < 0.0004998^{*MC}$) significantly increased among hospitalized patients.

In all the studies^[2,4,5,12,9,11] found till date fever is the most common symptom, the mean duration of fever in our study was 6.18 ± 4.15 days and other symptoms include sore throat, cough, myalgia. About 6 participants reported loss of smell/taste. It was found that The log odds of complications Vs cured increased by 0.8376 for the person with symptoms of COVID-19. The log odds of death Vs cured also increased by 1.9335 for the person with symptoms of COVID-19.

In our study factors such as increase in age ($P < 0.00001^{*A}$), positive family history of NCD's ($P < 0.00001^{*}$), co-morbidities ($P < 0.0005^{*MC}$) and those on medication ($P < 0.0004998^{*MC}$) have shown increased risk of complications among the participants. The most common co-morbidity reported was hypertension in 5% and diabetes in 3.4% and others had combination of hypertension, diabetes and asthma which were in par with other studies.^[2,5,6,11,13]

Nearly 68% have received antiviral therapy and were cured ($P < 0.01549^{*MC}$). Rest of them have received a combination of antibiotics, antivirals, steroids, vitamin C, and zinc. We have also found that The log odds of death Vs cured decreased by 10.4583 for the participants on Antibiotic treatment compared to anti-biotic, anti-viral therapy, and steroids which was similar to other study in Jakarta.^[13]

With regard to our study subjects with previous history of medication (HR, 2.749; 95% CI 1.0774–7.015), and those who had symptoms (HR, 3.6446; 95% CI 1.0280–12.921) were associated with increased risk of death as compared to others. Nearly 38 participants had ICU admissions and required ventilator support among which few had developed pneumonia. Among 28 deaths recorded one of them died of liver failure and one more due to sepsis. These results were similar to other studies.^[5,10,14]

Conclusion

To conclude though symptomatic COVID-19 positive was found in 56% of patients, they were less severe and improved with medication and deaths were found in 3.85% of patients. Fever was noted in only 15.72% of patients, gastrointestinal symptoms in 1.22% and respiratory symptoms in 14.74% of patients. Participants with older age were significantly associated with complications and those with co-morbidities

were significantly associated with death on multinomial logistic analysis. A significant association was found between age, family history of non-communicable diseases, medication history habit of smoking, alcohol consumption, type of symptoms, and treatment without outcomes. Controlling the spread of COVID-19 and reducing death as soon as possible requires contained control efforts especially at the grass-root level.

Limitations

1. We could include only laboratory confirmed cases but suspected and undiagnosed cases were not included in our study
2. There are chances of recall bias

Key messages and recommendation

This cross-sectional study revealed that more than half of the participants were symptomatic. Among those who had proven risk factors such as increase in age with associated co-morbidities had increased risk of hospital isolation which in turn led to increased risk of complications and death as compared to home isolates. Hence early detection and treatment of the patients is required to prevent complications and deaths.

In any community as front line workers from primary health care setting are the first to come into contact with a positive case and are involved in isolation and management of mild and moderate cases it is important to know the clinical profile and associated co-morbidities in a case so that along with hand hygiene, wearing of masks and social distancing those with co-morbidities and elderly can be advised for reverse isolation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Acknowledgments

Authors are thankful to study participants, medical officers and the college authorities for their cooperation.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. WHO official updates-Coronavirus. [Last accessed on 2020 Nov 15]. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.
2. Gupta N, Agrawal S, Ish P, Mishra S, Gaiind R, Usha G, *et al.* Clinical and epidemiologic profile of the initial COVID-19 patients at a tertiary care centre in India. *Monaldi Arch Chest Dis* 2020;90:1294-6.
3. Cheng P, Zhu H, Witteles RM, Wu JC, Quertermous T, Wu SM, *et al.* Cardiovascular risks in patients with COVID-19: Potential mechanisms and areas of uncertainty. *Curr Cardiol Rep* 2020;22:34.
4. Dosi R, Jain G, Mehta A. Clinical characteristics, comorbidities, and outcome among 365 patients of Coronavirus disease 2019 at a Tertiary care centre in Central India. *J Assoc Physicians India* 2020;68:20-3.
5. Mohan A, Tiwari P, Bhatnagar S, Patel A, Maurya A, Dar L, *et al.* Clinico-demographic profile and hospital outcomes of COVID-19 patients admitted at a Tertiary care centre in North India. *Indian J Med Res* 2020;152:61-9.
6. Sanyaolu A, Okorie C, Marinkovic A, Patidar R, Younis K, Desai P, *et al.* Comorbidity and its impact on patients with COVID-19. *SN Compr Clin Med* 2020;25:1-8.
7. Sabatino J, De Rosa S, Di Salvo G, Indolfi C. Impact of cardiovascular risk profile on COVID-19 outcome. A meta-analysis. *PLoS One* 2020;15:e0237131.
8. Ministry of Health and Family Welfare. Government of India. [Last accessed on 2020 Dec 10]. Available from: <https://www.mohfw.gov.in/>.
9. Borobia A, Carcas A, Arnalich F, Álvarez-Sala R, Monserrat-Villatoro J, Quintana M, *et al.* A cohort of patients with COVID-19 in a major teaching hospital in Europe. *J Clin Med* 2020;9:1733.
10. Feng X, Li P, Ma L, Liang H, Lei J, Li W, *et al.* Clinical characteristics and short-term outcomes of severe patients with COVID-19 in Wuhan, China. *Front Med (Lausanne)* 2020;7:491.
11. Soni SL, Kajal K, Yaddanapudi LN, Malhotra P, Puri GD, Bhalla A, *et al.* Demographic and clinical profile with COVID-19 at a Tertiary care hospital in North India. *Indian J Med Res* 2021;153:115-25.
12. Bhandari S, Bhargava A, Sharma S, Keshwani P, Sharma R, Banerjee S. Clinical profile of Covid-19 infected patients admitted in a Tertiary care hospital in North India. *J Assoc Physicians India* 2020;68:13-7.
13. Ramatillah DL, Isnaini S. Treatment profiles and clinical outcomes of COVID-19 patients at private hospital in Jakarta. *PLoS One* 2021;16:e0250147.
14. Liu J, Zhang S, Wu Z, Shang Y, Dong X, Li G, *et al.* Clinical outcomes of COVID-19 in Wuhan, China: A large cohort study. *Ann Intensive Care* 2020;10:99.