Original Research Article

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Assessment of clinical profile and factors affecting outcome of COVID-19 patient in Chhattisgarh state

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ABSTRACT

Background: India is in the grab of COVID pandemic, understanding the clinical profile, comorbid condition, vaccine status of COVID patient, will help in better prevention, treatment strategies, especially in local context, therefore present study is designed to describe, the clinical profile, comorbid conditions and factors determining the death and recovery of patient both in home and hospital setting.

Methods: It is a retrospective record based study of COVID-19 patient from September 2020 to May 2021 who underwent treatment either home or at hospital.

Results: Majority 90% patient were hospitalised, with male preponderance, 96.4% patient were non vaccinated at the time of data collection, risk of death about 83% were more >45 years age, with associated breathlessness and comorbidity.

Conclusions: Higher age, comorbidity, non -vaccinated status was associated with risk of death among COVID-19 patient.

Keywords: COVID pandemic, Vaccine status, Comorbidity

INTRODUCTION

The COVID-19 pandemic emerged as a major public health emergency nearly affecting the healthcare services all over the world. In December 2019, the capital of the Chinese province Hubei, Wuhan city, witnessed an outbreak of "pneumonia of unknown source" attributed to a newly identified culprit: a novel coronavirus. The clinical findings among most patients were dry cough, breathlessness, and fever. This led the centres for disease control and prevention (CDC) to designate the pathogen as "severe acute respiratory syndrome coronavirus 2" or SARS-CoV-2 before the World Health Organization termed the disease itself COVID-19 (coronavirus disease in 2019) in January 2020. This epidemic is the third coronavirus outbreak in the last 20 years after the SARS-CoV and the Middle East respiratory syndrome MERS-CoV. The first case of the COVID-19 pandemic in India was reported on 30 January 2020 in Kerala state.² In Chhattisgarh state first confirmed COVID-19 case was detected on 18 March 2020. Later on the COVID surge was seen from August 2020 and there is continuous surge in confirmed COVID cases in Chhattisgarh state and the death rate has also increased from mid-march 2021. Many factors affecting the outcome of the disease in which COVID-19 vaccine is one of them which need to be explored, so the present study is aimed to describe the clinical, demographic characteristics of COVID-19 patient in Chhattisgarh state and the factors affecting the outcome of disease.

Aims and objectives

Aim and objective od current study was to study the clinicodemographic characteristics, associated comorbid conditions, vaccine status and outcomes of COVID-19

patients underwent treatment at home and hospital settings.

METHODS

The present study was a retrospective descriptive record based study from September 2020 to May 2021 obtained from electronic database among the patients diagnosed with COVID-19 in Chhattisgarh. Patient information regarding demographic characteristics, clinical symptom, vaccine status, comorbidity, home, hospital treatment, oxygen support, drug treatment and outcome were gathered from website. A total of 1232 cases were entered, but due to incomplete data, an analysis has been done in 753 COVID patient.

Inclusion and exclusion criteria

Inclusion criterion for current study was all patient whose outcome of the disease was known (cured, death) and exclusion criterion was patients who were still on treatment.

Definition and ethical consideration

A confirmed case of COVID-19 was defined as a positive result by real-time reverse transcriptase-polymerase-chain reaction (RT-PCR) assay of nasal and pharyngeal swab specimens. Only laboratory-confirmed cases were included in the analysis. All the COVID related information about symptoms experienced, comorbidity, vaccine status, oxygen support, age, sex of patient, outcome of disease were provided by the patient or their relative voluntarily and were uploaded in the website by themselves, so no consent has been taken from the patient.

Statistical analysis

Data was summarised, compiled in MS Excel sheet obtained from electronic database and frequency and proportion were computed wherever applicable, as measures of central tendencies. The quantitative variables were defined with mean and standard deviation (SD), whereas qualitative measures were defined as proportions. Statistical significance was tested with the Chi-square test, Fischer exact test at 5% level of significance. All calculation were done using SPSS software IBM 23 version.

RESULTS

This is the analysis of 753 COVID-19 patient of Chhattisgarh who underwent treatment at home or hospital. The analysis has been done on those data whose outcome were mentioned either cured at home or hospital and Died. The median age of patient was 45 years, IQR 30. Majority patient were male 65.6% and 90% patient went treatment at hospital with only 9.8% were in home isolation treatment. 96.4% patients were non vaccinated

at the time of data collection. Out of total 753 patient, 505 (67%) were cured either at home or hospital settings and 248 (33%) died at hospital. No death occurred at home. Among vaccinated 24% patient undergone treatment at home against only 1.3% who were hospitalised. Among died 248 patient, majority 83% were of age above 45 years. Among home treatment fever were the chief complaints 62.2% followed by cough 40.5%. Among hospitalised patient who died majority were diabetic and hypertensive 10.75% and those who cured were 2.6% diabetic, 2.3% hypertensive and only 0.4% with heart disease.

Table 1: Gender wise distribution of COVID patients.

Gender	N	%	
Male	494	65.6	
Female	259	34.4	
Total	753	100	

Table 2: Vaccination status of COVID patient.

Vaccine *	N	%
Received	27	3.6
Not Received	726	96.4
Total	753	100
Vaccine	Home isolation	Hospitalised
Vaccine Received	Home isolation 18 (24.3)	Hospitalised 9 (1.3)
,		

^{*}vaccine status at the time of data collection.

Above (Table 2) shows that; out of 753 patient only 3.6% were vaccinated either one dose or two dose and rest 96.4% were not vaccinated at the time of data collection. Among vaccinated 24, 3% patients were on home treatment and only 1.3% were hospitalised against non vaccinated in which 98.7% required hospital treatment. This shows vaccinated people were having mild form of disease than non-vaccinated.

Table 3: Age wise distribution of died COVID patients (n=248).

Age group (years)	N	%
5-15	2	0.8
16-30	6	2.4
31-45	34	13.7
46-60	104	41.9
61-75	79	31.8
76-95	23	9.3
Total	248	100

Above (Table 3) shows majority patient 42% who died were of age group 46-60 years followed by 31.8% of 61-75 years age group. About 83% died patient were of age above 45 years, and 0.8% were below 15 years.

Table 4: Clinical manifestations of COVID patients.

Manifestations	Home (N=74)	Hospital (N=679)
Fever	46 (62.2)	418 (61.6)
Cough	30 (40.5)	435 (64)
Weakness	20 (27)	119 (17.5)
Breathlessness	5 (6.7)	199 (29.3)
Running Nose	12 (16.2)	128 (18.8)
Headache	13 (17.6)	74 (10.9)
Body ache	15 (20.3)	56 (8.2)
Loss of taste	13 (17.6)	29 (4.3)
Loss of smell	11 (14.9)	30 (4.4)
Loss of appetite	4 (5.4)	16 (2.3)
Diarrhoea	8 (10.8)	11 (1.6)

Above (Table 4) shows that among home isolation patient 62.2% suffered from fever as their primary symptom, followed by cough 40.5%, weakness 27%. Majority hospitalised patient presented with cough 64%, fever 61.6% as their chief complaints.

DISCUSSION

This study was a retrospective study among Covid patients. In the present study patient were younger (median age 45.5±18.8 SD) years compared to those in China (median age 56 years), New York (median age 63 years) or Italy (median age 63 years).³⁻⁵ Although finding (mean age of 40.3 years) was observed in a study done by Gupta et al at another tertiary care hospital from northern India.⁶

Table 5: Association of status of vaccination, comorbidities and oxygen support administered with death and recovery of study subjects.

	Death	Cured (home+hospitalized)	Total	Chi-square and P value
COVID vaccine received				
Received	0 (0)	27 (100)	27 (100.0)	Eighan Engat aut
Not- Received	248 (34.2)	478 (65.8)	726 (100.0)	Fisher Exact est, p≤0.00001
Total	248 (32.9)	505 (67.1)	753 (100.0)	p≤0.00001
Comorbidity present				
Yes	129 (72.1)	50 (27.9)	179 (100.0)	2 162 700
No	119 (20.7)	455 (79.3)	574 (100.0)	$\begin{array}{c} x^2 = 162.798, \\ p \le 0.00001 \end{array}$
Total	248 (32.9)	505 (67.1)	753 (100.0)	p≤0.00001
Oxygen support				
Yes	209 (90.1)	23 (9.9)	232 (100.0)	2 405 842
No	39 (7.5)	482 (92.5)	521 (100.0)	$\begin{array}{c} x^2 = 495.843, \\ p \le 0.00001 \end{array}$
Total	248 (32.9)	505 (67.1)	753 (100.0)	p≤0.00001
COVID vaccine	Home	Hospitalized	Total	Chi Square and P value
Received	18 (66.7)	9 (33.3)	27 (100.0)	2 102 006
Not received	56 (7.7)	670 (92.3)	726 (100.0)	$x^2 = 102.096,$ $p \le 0.00001$
Total	74 (9.8)	679 (90.2)	753 (100.0)	p≥0.00001

Above (Table 5) shows that no death of COVID positive cases occurred among who were vaccinated, (72.1%) death occur among comorbid COVID patient compared to (20.7%) deaths among without comorbidities, (90.1%) died in whom oxygen support were required, as compared to only (7.5%) deaths, where oxygen support not required.

It shows that among those patient who are vaccinated 66.7% undergone for home treatment against 33.2% non-vaccinated hospitalized patient. And those who were not vaccinated at the time of data collection 92.3% went for hospital treatment and the difference is statistically significant. This depicts that vaccine might hampers the progress of the disease and the disease is presented in milder form against non-vaccinated with moderate to severe disease form.

The present study had more male preponderance which is similar to study in north India by Mohan et al this may be related to the fact that the majority of the male patients were more involved in outside home activity than female who were involved in domestic work and also were part of public gathering which later became COVID hotspot. In the present study fever and cough were the main complaints both in home and hospitalised patient respectively followed by dyspnoea and weakness, similar findings were observed in studies.⁷⁻¹¹

Diabetes and hypertensive were the most common comorbid condition both in home and hospital patient. But there were higher Odds of death with Heart disease (OR-10.8) and renal disease (OR-8.19). Those patient who died 72% were comorbid against 27.9% cured comorbid patient. Similar finding were found in studies. 12-14 Those who were vaccinated with COVID vaccine there were 100% recovery rate and zero mortality was found among them, this shows that vaccine is halting the progress of disease and the severity. 15 Majority 66% vaccinated patient develop mild disease and underwent home treatment.

Table 6: Multivariate regression analysis of clinical presentation of COVID-19 cases with recovery and death.

Clinical presentation		Cured	Cured Death Exp (B) N=984 N=248		95% CI		P value
		N=984			Lower	Upper	1 varue
Breathlessness	No	923 (93.8)	83 (33.5)	1			
breatmessness	Yes	61 (6.2)	165 (66.5)	23.8	15.6	36.1	0.000
Loss of taste	No	943 (95.8)	227 (91.5)	1			
Loss of taste	Yes	41 (4.2)	21 (8.5)	2.13	1.14	3.98	0.018
Loss of smell	No	944 (95.9)	226 (91.1)	1			
	Yes	40 (4.1)	22 (8.9)	2.49	1.32	4.69	0.005

Table 7: Multivariate regression analysis of comorbid conditions of Covid-19 cases with recovery and death.

Clinical presentation		Cured	Death	Exp (B)	95% CI	95% CI	
		N=505	N=248	LAP (D)	Lower	Upper	P value
TT 4 19	No	502 (99.4)	234 (94.4)	1			
Heart diseases	Yes	3 (0.6)	14 (5.6)	10.4	2.81	38.57	0.000
Respiratory	No	502 (99.4)	237 (95.6)	1			
diseases	Yes	3 (0.6)	11 (4.4)	7.31	1.85	28.88	0.005
TT	No	480 (95.0)	175 (70.6)	1			
Hypertension	Yes	25 (5.0)	73 (29.4)	4.65	2.73	7.93	0.000
D 1 42	No	504 (99.8)	240 (96.8)	1			
Renal diseases	Yes	1 (0.2)	8 (3.2)	8.19	0.88	76.45	0.065
Liver diseases	No	503 (99.6)	244 (98.4)	1			
	Yes	2 (0.4)	4 (1.6)	4.25	0.66	27.40	0.128

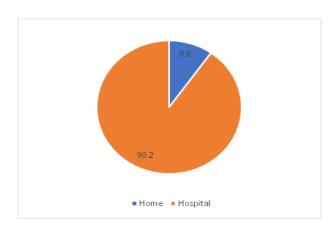


Figure 1: Proportion of COVID cases according to place of treatment.

Above (Table 6) is multivariate regression analysis of clinical manifestation of COVID-19 with death of patients, which shows that the risk of dying from COVID-19, in whom breathlessness was the complain is almost 23 times higher than reference population which is highly significant. Risk of dying in whom loss of taste, loss of smell was the manifestation is 2.1 times, 2.49 times significantly higher than reference population.

Above (Table 7) is multivariate regression analysis of comorbidities with death, which shows that the there is significant risk of dying from COVID 19, with Heart

disease, renal disease, respiratory disease, Hypertension as comorbidities present among study participants. The Odds of dying in greatest 10.4 for Heart disease patients followed by renal, respiratory diseases and so on.

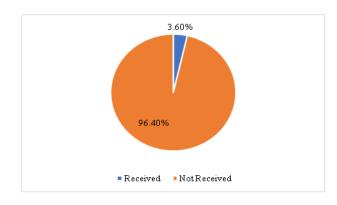


Figure 2: COVID patient vaccination status.

Limitations

Limitations of current study were the result in the study may not be the representative of other similar study or elsewhere in the country as the information provided by the patient was voluntarily. Therefore information of COVID patient who did not participate in the study remains unrepresented in this analysis. Additionally there were lack of information about patient hypoxic condition,

level of oxygen saturation in blood, CT chest finding at the time of admission, therefore could not able to interpretate the association of above parameter with the outcome of disease.

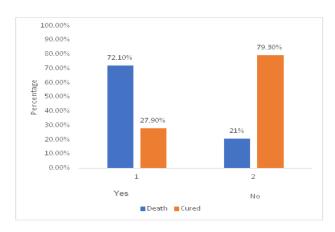


Figure 3: Proportion of COVID death and cured person on the basis of presence and absence of comorbidity.

CONCLUSION

Thus this retrospective study identified several risk factors for death in hospital among COVID-19 patients. Higher ages, presence of comorbid illness, breathlessness, non vaccinated status at the time of admission were associated with higher risk in hospital death.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- 1. Soni SL, Kajal K, Yaddanapudi LN. Demographic & clinical profile of patients with COVID-19 at a tertiary care hospital in north India. Indian J Med Res. 2020;54:52-9.
- Dosi R, Jain G, Mehta AClinical Characteristics, Comorbidities, and Outcome among 365 Patients of Coronavirus Disease 2019 at a Tertiary Care Centre in Central India. JAPI . 2020;68(9):20-3.
- Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: A retrospective cohort study. Lancet. 2020;395:1054-62.
- 4. Richardson S, Hirsch JS, Narasimhan M, Crawford JM, McGinn T, Davidson KW. Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York city area. JAMA. 2020;32:2052-9.

- Grasselli G, Zangrillo A, Zanella A, Antonelli M, Cabrini L, Castelli A, et al. Baseline characteristics and outcomes of 1591 patients infected with SARS-CoV-2 admitted to ICUs of the Lombardy Region, Italy. JAMA. 2020;323:1574-81.
- Gupta N, Agrawal S, Ish P, Mishra S, Gaind R, Usha G. Safdarjung hospital COVID 2019 working group. Clinical and epidemiologic profile of the initial COVID-19 patients at a tertiary care centre in India. Monaldi Arch Chest Dis. 2020;90(1):54-9.
- Mohan A, Tiwari P, Bhatnagar S. Clinicodemographic profile & hospital outcomes of COVID-19 patients admitted at a tertiary care centre in north India. Indian J Med Res. 2020;152(2):61-9.
- 8. Sherwal BL, Makkar N, Jain A. Trends and clinico-epidemiological profile of COVID-19 patients at a designated COVID-19 hospital in Delhi, North India. J Family Med Prim Care. 2020;9(12):6261-6.
- 9. Kumar S, Rathore P, Choudhary N, Singh N, Thankachan A, Kumar B, et al. Assessment of the prevalence of symptoms in patients under institutional isolation in COVID-19 pandemic in India. Indian J Palliat Care. 2020;26(1):S86-9.
- Bhandari S, Singh A, Sharma R, Rankawat G, Banerjee S, Gupta V, et al. Characteristics, treatment outcomes and role of hydroxychloroquine among 522 COVID-19 hospitalized patients in Jaipur city: An epidemio-clinical study. J Assoc Physicians India. 2020;68(6):13-9.
- 11. Hasan MJ, Chowdhury SM, Khan MA, Rahaman M, Fardous J, Adit T, et al. Clinico-epidemiological characteristics of asymptomatic and symptomatic COVID-19-positive patients in Bangladesh. medRxiv. 2020.
- 12. Paudel SS. A meta-analysis of 2019 novel coronavirus patient clinical characteristics and comorbidities. Res Square. 2020.
- 13. Kaur H, Singh M, Kaur K. Clinical profile and outcomes of patients admitted with COVID-19 Infection report from a tertiary hospital, JMSCR. 2021;9(1):189-90.
- 14. Guan W-jie, Liang W-hua, Zhao Y. Comorbidity and its impact on 1590 patients with Covid-19 in China: A Nationwide Analysis. Eur Respir J. 2020.
- Silver lining: Vaccinated patients respond better to Covid-19 treatment, claims. Available at: https://timesofindia.indiatimes.com. Accessed on 10 May 2021.

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