



Original Research Article

Clinical - Demographic Profile and Trends of COVID-19 Patients at Rural Tertiary Care Hospital in North India

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Abstract

Context: India with 1.38 billion people become second most populous country that represent almost 17.85% of world's population is trying best to mitigate Corona Virus Disease -19 (COVID-19) transmission like other country.

Aim: Our aim was to find out critical care requirement including ICU, ventilator etc. as well as major comorbidities and other complications in patients with COVID-19 at rural tertiary care hospital in India.

Settings and Design: Present study is a retrospective observational study for clinical manifestation of patients with COVID-19 at Uttar Pradesh University of Medical Sciences, Saifai, Etawah.

Material and Methods: Total 415 patients were admitted till 31 July 2020, while 125 during 15-31 July 2020. Criteria for inclusion were -

1. Only positive cases with COVID-19 were included.
2. Closed cases with known outcome.
3. Age > 18 years.

Result: Out of 415 patients, 257 were discharged alive while 58 were deceased and 100 patients were remain admitted in the hospital till 31st July 2020, males and female admitted were 67.07% and 32.92% respectively. During 15-31 July 2020 total 125 patients with covid-19 were admitted, out of them 111 were discharged after treatment while 14 were deceased. The mortality rate 11.2% was observed at our facility during this period. Nearly 41% of the diseased were of age group 60 years or more against 9% population of this age group in India. Overall, 14.19% was admitted to ICU and 6.02% was having ventilator requirement. Major comorbidities observed were hypertension (30.76%), diabetes (26.92%), kidney disease (23.07%) while (19.25%) include others.

Conclusion: Comorbidities and upper age were associated with greater ICU admissions and ventilator requirement more over leading to higher mortality. Septic shock was measure complication (50.00%); ARDS (38.46%) followed by pneumonia (34.61%) remaining belongs to other complications. Average stay in the hospital was found 11.4 days, while it was variable in different age groups.

Keywords: SARS-CoV-2, Trends of COVID-19, Comorbidities, Demographic profile

1. Introduction

Worldwide pandemic due to severe acute respiratory syndrome corona virus (SARS-CoV-2) that caused corona virus disease-19 (COVID-19) have its origin from China [1].

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Up to July 31, 2020 around 171,782,908 COVID-19 positive cases and 3,698,62 deaths have been reported. A total of 1,638,006,899 vaccine doses have been administered worldwide. In India only total 16,97,054 cases, 5,64,637 active cases and 36,770 deaths were observed. During last two- decade three corona virus pandemics occurred in human population [2]. In the early phase of this pandemic patients with COVID-19 hospitalized in India, were having symptoms that included mild upper respiratory tract infection mainly affected the young male population. Out of 21 patients

20 recovered without oxygen supplementation and only one required oxygen for recovery [3]. The duration of hospital stay of patients with COVID-19 was about 11.54 in a study carried out at Safdarjung Hospital Delhi while symptom observation time was about 2 days. About 52.4% patients were having history of contact with COVID-19 confirmed patients while 61.9% were having travel history outside India [3].

Grasselli et al. in 2020 observed 5-20% ICU requirement in COVID-19 patients while mortality was reported 26% to 61.5% [4]. Invasive mechanical ventilation was required to nearly all patients admitted in ICU and 88% were managed [5,6]. There is limited information about patho-physiological state of patients with COVID-19 [7,8]. Intrapulmonary ventilation-perfusion mismatch resulted from hypoxemic respiratory failure in ARDS patients, who were having mechanical ventilation requirement [9]. Emergency medical services were immediately required to respond to patients with COVID-19 as well as a coordination with the COVID-19 hospital in charge for quick response [10]. Fever, cough and dyspnoea like features were observed in patients with COVID-19 representing 80-90%, 60-80% and 18-46% respectively [2]. Case fatality rate was observed 0.9% among patients without co-morbid condition [11].

Patients were received in a screening area, evaluated on arrival and triaged for isolation facility, wards, critical care unit or intensive care units (ICU) as per clinical assessment immediately. Patients with higher age along with comorbidities were considered at high-risk that may lead to progression to severe disease. Disease was defined as severe if either of these i.e., RR >24/min, SpO₂ <94% on room air, drowsiness, confusion, hypotension, sepsis and septic shock on admission to ICUs [12,13]. Clinical outcomes of COVID-19 patients were found variable in different countries [14-18]. Therefore it is important to analyze the demographic profile of patients with COVID-19.

2. Methods

Present study was carried out by a team of critical care unit experts, microbiologist, physician, neurologists, and experts from other disciplines as required. COVID-19 Our aim was to find out critical care requirements including ICU, ventilator etc. as well as major comorbidities and other complications in patients with COVID-19 at Uttar Pradesh University of Medical Sciences Saifai Etawah. Firstly, during 15-31 July 2020 total 125 admitted patients with COVID-19 were assessed, secondly 82 deceased patients were observed for comorbidities and other complications between 09 June to 15 September 2020.

2.1 Study Design and Population

Current study was carried out with reverse transcriptase polymerase chain reaction (RT-PCR)

positive cases. Patients were received in a screening area, evaluated on arrival and triaged for isolation facility, wards, critical care unit or intensive care units (ICU) as per clinical assessment immediately. Health care workers involved in management for patients with COVID-19 were trained regarding infection control procedures. In presence of suspected case according to safety criteria, all doctors, nursing staff, paramedical staff and supporting staff take precautionary measures including medical PPE kits. A total 125 patients have been admitted to COVID-19 hospital during 15 July 2020 to 31 July 2020. We collected paper and electronic medical records of confirmed patients with COVID-19.

2.2 Criteria for inclusion and exclusion

Inclusion criteria

- 1) Only RT-PCR positive patients were included.
- 2) Closed cases with known outcome
- 3) Age > 18 years.

Exclusion criteria

- 1) Negative RT-PCR patients were excluded.

2.3 Data collection

Basic demographics data including age, gender, symptoms and co-morbidities, as well as requirement of oxygen therapy, ventilator, ICU, duration of hospitalization, and the outcome were collected. The collected data was checked by investigators independently. The signs and symptoms like influenza illness were included [19]. The outcome based on oxygen therapy and ventilator requirement were also analyzed.

2.4 Sample Collection and testing

The nasopharyngeal and oropharyngeal swabs were collected with precautions. All collected samples were received and tested for RT-PCR at VRDL Laboratory situated in Microbiology department of UPUMS. All confirmed laboratory cases were studied. Data were collected between 15 June 2020 to 31 July 2020. The clinical outcomes regarding patient condition including oxygen supply, patient admitted in ICU and patient on ventilator were recorded.

2.5 Statistical analysis of data

For statistical analysis of data Graph Pad Prism V 7.0 software tool was used. The results were reported in terms of medians and interquartile ranges. Categorical variables reported in terms of counts and percentages.

3. Results

Out of 415 patients during study, 257 were recovered and discharged alive while 58 were deceased till 31st July 2020 (figure-1), males admitted were twice the number of female (67.07% and 32.92% respectively). During 15 July 2020 to 31 July 2020 only 125 positive COVID-19 patients were admitted, out of them 111 was discharged after treatment while 14 were deceased. The mortality rate that was observed 11.2% at our facility (figure-2). Nearly 41% of the diseased were of age group 60 years or more against 9% population of this age group in India. This old age group patients with COVID-19 were admitted with higher percentage. Overall, 14.19% was admitted to ICU (figure-3) and 6.02% was having ventilator requirement (figure-4). While 15 July 2020 to 31 July 2020 out of 125 RT-PCR positive COVID-19 patients admitted, only 9.6% (12 out of 125) patients was having ICU requirement while only 3.2% (4 out of 125) patients were having ventilator requirement. All patients were Indians mostly from Uttar Pradesh.

3.1 Demographic outcome

Demographic outcome in terms of comorbidities and other complications in 82 patients with COVID-19 was observed, those were deceased during 9 June to 15 September 2020. We have made four different groups based on age for understanding the causes of mortality including comorbidities as well as other complications. Different age group was found to have different patterns of comorbidities and other complications leading to cause of mortality as seen in table -1 and it also reflecting the duration of stay in the hospital.

3.1.1 For age group bellow 45 years 26 patient were deceased and only 19.23% had no comorbidity rest were having one or more. The major comorbidities that were observed includes hypertension (30.76%), diabetes (26.92%), kidney disease (23.07%). These comorbidities were associated with greater ICU admissions and ventilator requirement more over leading to higher mortality. Septic shock was measure complication (50.00%); ARDS (38.46%) followed by pneumonia (34.61%). Average duration of stay in the hospital was 4.5 days ranging from 1-14 days for this age group.

3.1.2 For age group 45 to 59 years A total 22 patients were deceased in which 18.18% had no co morbidities. Rest was having one or more co morbidities. The major co-morbidity was hypertension that was observed (36.36%), diabetes (31.81%), kidney disease (31.81%) and chronic liver disease (22.72%). Average period in hospital stay observed was 4.9 days ranging from 1-18 days for this age group.

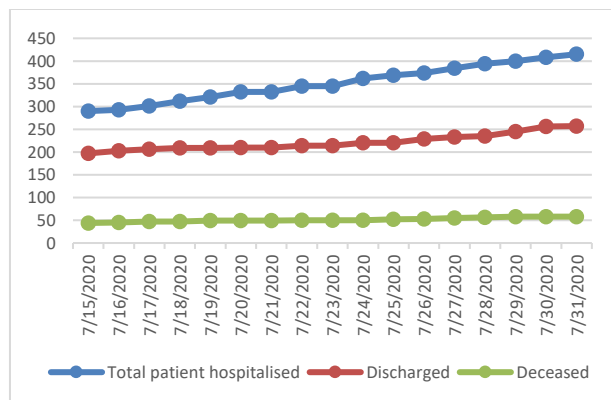


Figure 1: Showing total COVID-19 patients hospitalized, discharged alive and deceased till 31 July 2020.

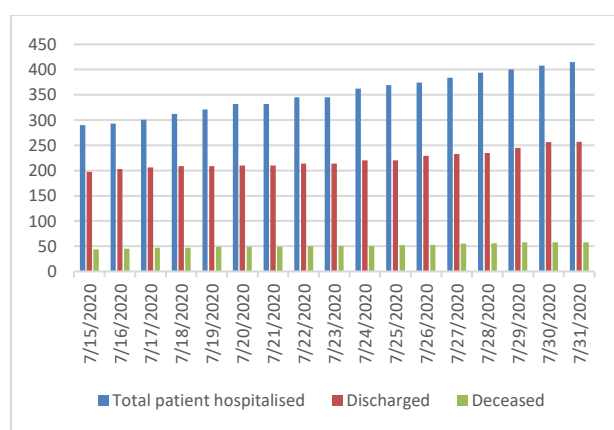


Figure 2: Showing COVID-19 patients hospitalized, discharged alive and deceased during 15 – 31 July 2020.

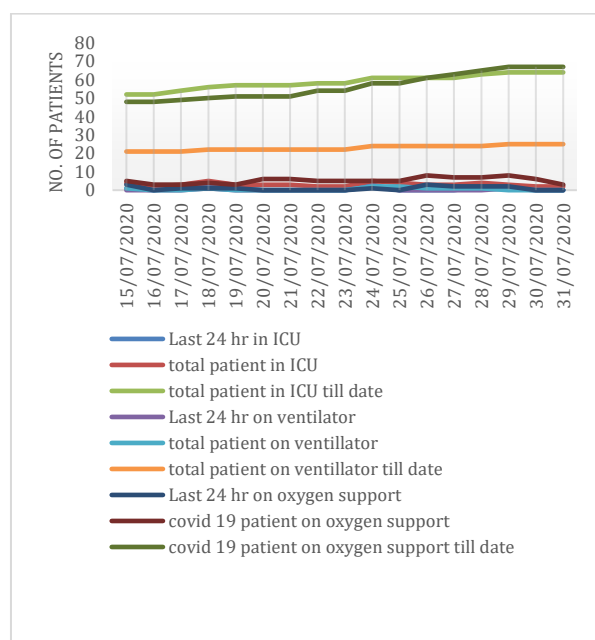


Figure 3: Showing COVID-19 patients' trends in ICU, ventilator and oxygen support during 15 – 31 July 2020 at rural tertiary care hospital.

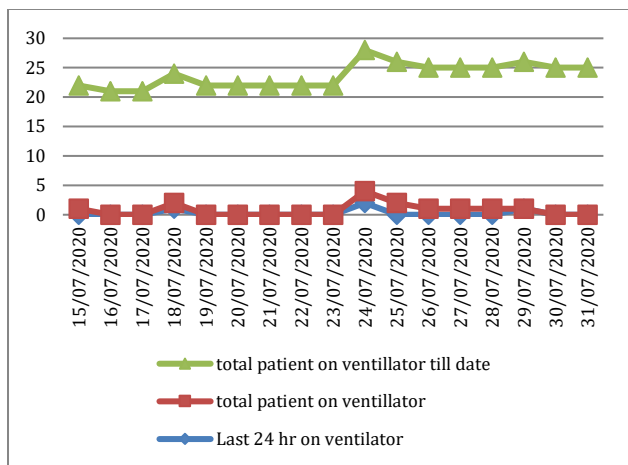


Figure 4: Showing trends of patients with COVID-19 on ventilator during 15–31 July 2020 at rural tertiary care hospital.

Table 1: Distribution of cases by total, sex, number of comorbidities, complications and deaths Age -Group.

Characteristic	Total		Age group (years)							
	Count	%	≤ 45		45-59		60-74		≥ 75	
All cases	82	100	26	31.70	22	26.82	26	31.70	8	9.75
Sex										
Male	55	67.07	16	61.53	14	63.63	18	69.23	7	87.50
Female	27	32.92	10	38.46	08	36.36	08	30.07	1	12.50
No. of comorbidities										
0	15	18.29	5	19.23	4	18.18	4	15.38	2	25.00
1	21	25.60	7	26.92	6	27.27	7	26.92	1	12.50
2	17	20.73	5	19.23	4	18.18	6	23.07	2	25.00
≥3	29	35.36	9	34.61	8	36.36	9	34.61	3	37.50
No. of complications										
0	06	07.31	1	03.84	3	13.63	2	07.69	NA	NA
1	20	24.39	11	42.30	4	18.18	4	15.38	1	12.50
2	28	34.14	6	23.07	5	22.72	13	50.00	4	50.00
≥3	28	34.14	8	30.76	10	45.45	7	31.81	3	37.50

3.1.3 For age group bellow 60-74 years (No. 26) A total 26 covid-19 patients were deceased in this age group in which 15.38% had no co morbidities. While 26.92% was having at least one, 23.07% was having two and 34.61% were having more than three comorbidities. The major comorbidity was again hypertension that was observed (34.61%), followed by diabetes (30.76%), and obesity (23.07%). Septic shock and pneumonia were major complications (42.30% each), while ARDS (34.61%) followed by sepsis and MODS etc. Average period in hospital stay observed was 6.1 days ranging from 1-22 days for this age group.

3.1.4 For age group 75 and above years (No. 08) in this age group total 08 patients with COVID-19 were deceased, in which 25.00 % had no comorbidity. While 12.50% was having at least one, 25.00% was having two and 37.50% were having more than three comorbidities. The major comorbidity was COPD and chronic liver disease both 37.50% while tuberculosis and kidney disease contributed 25.00% each followed by diabetes 12.50 %. ARDS 75%, Septic shock 62.50%, and pneumonia 37.50% were major complications. Average period in hospital stay observed was 4.7 days ranging from 1-11 days for this age group.

WHO’s strategic objectives regarding COVID-19 is to reduce viral transmission that can achieved by identification, isolation and care for patient as early as possible and to communicate event information to all communities so that social and economic impact of COVID-19 can be minimized [19].

4. Conclusion

Out of 82 cases 26 (31.70%) were of bellow 45 years, 22 (26.82%) 45-59 years, 26 (31.70%) 60-74 years and 8 (9.75%) above 74 years. Males were significantly higher male 55 female 27. While this ratio was significantly higher for the age group 75 or above indicating that this age group was targeted more by COVID-19. The hospital stay for ICU patients were higher. Although results are not exciting, we shall continue or wait for the effective treatment and vaccination [20]. Our patients had little higher prevalence of hypertension (33.91%), diabetes (25.49%) and CKD (22.25%) if we see the outcome from USA, UK, Italy and China [21-23].

AIIMS-Patna reported that 42.4% patients with COVID-19 died till August 2020 and majority were having comorbidities including hypertension [24]. Hypertension coronary heart disease, congestive heart failure and stroke are major risk factor [25]. Mortality rate at our COVID-19 hospital was little higher (0.7%) than that of research carried out by Dr. Abhay Indrayan et.al. [26] in five multispecialty hospitals across Delhi and Mumbai where mortality rate was 10.5%. average duration of stay for those deceased was found to be 5.5 days while it was higher (6.1 days) in case of age group 60-74 years.

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Competing interest

There are no conflicts of interest.

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