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Study on Clinico-Demographic Profile, Treatment and Hospital Outcomes of COVID 19 Patients: A Retrospective Study



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ABSTRACT

The COVID-19 pandemic emerged as a major public health emergency affecting the health care services all over the world. It is essential to analyze the Epidemiological and clinical characteristics of patients with COVID-19 in different parts of our country. This study aims to describe the clinico-demographic characteristics, treatment options and in-hospital outcomes among patients with COVID-19 who are hospitalized in Navodaya medical college hospital and research center, Raichur, Karnataka, India. A retrospective study was conducted among 150 COVID-19 patients for a period of 6 months (March 2022 – August 2022) after the Institutional Research Ethical Committee Clearance was obtained. Retrospective cross-sectional study was conducted in this study. The results reveal that the mean age of the patients was 55 years, with 68% male and 32% female. Comorbidities were present in 62(41.3%) of which diabetes mellitus (n=41, 27.3%) was most common. Cough (73%) was most common symptom followed by fever (71%) and breathlessness (59%). Majority of the patients were managed with remdesivir (68%) and supportive treatment with piperacillin + tazobactam (79%) and vitamin C (85%). 79% patient required oxygen supplementation and average length of the stay was 7 days. The use of enoxaparin is an important part of COVID-19 treatment. Mortality occurred in 33 (22%). An analysis of trends related to COVID-19 in different hospital an institutional setting will help to achieve better preparedness and lead to improved patient care to combat the COVID-19 pandemic more efficiently.



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INTRODUCTION

In December 2019, an outbreak of cases of pneumonia of unknown etiology was identified at Wuhan city in Hubei province of China. In early January 2020, the Chinese authorities identified a new strain of coronavirus which was later named as 2019 novel coronavirus (2019- nCoV)^[1]. This virus spread rapidly across the globe, and the WHO subsequently declared COVID-19 (coronavirus Disease 2019) as a pandemic on March 11, 2020^[2]. As per the WHO data, as of August 06, 2022, a total of 590,631,265 confirmed cases and 6,439,905 deaths had been reported worldwide^[3]. In the case of India, where more than 44.1 million cases of COVID-19 have been reported till August 06, 2022, the mortality rate has been low compared to the western countries^[4]. Even within India, different states have reported different patterns of disease manifestation; for example, some states like Maharashtra, Delhi, Tamil Nadu, Karnataka and Andhra Pradesh have been severely affected and also reported cases at the beginning of the pandemic itself. However, other states, especially those in Northeast India, have reported a very low prevalence of COVID-19, and moreover, they started reporting cases much later in comparison to the rest of India^[5]. In Karnataka, 40,01,655 cases were confirmed out of which 39,52,381 cases were recovered and 40,097 were fatal. In Raichur 45,511 cases were confirmed out of which 45,146 cases were recovered and 359 were fatal ^[6]. Patients with SARS-CoV-2 infection may have a mild-to-asymptomatic illness, but some rapidly progress to acute respiratory distress syndrome (ARDS), multi-organ dysfunction syndrome (MODS) and death. The clinical presentation and outcomes of patients with COVID-19 have been variable in different countries. Therefore, this study describes the clinico-demographic characteristics, comorbid conditions, baseline laboratory findings, clinical course and outcomes among COVID-19 patients admitted at Navodaya Medical College Hospital & Research Center in north Karnataka, Raichur.

Very few studies were conducted in India. None of the studies were conducted in North Karnataka. So we decided to conduct a study entitled. **Study on clinico-demographic profile, treatment and hospital outcomes of covid 19 patients: a retrospective study** to describe the clinico-demographic characteristics, comorbid conditions, baseline laboratory findings, clinical course and outcomes among COVID-19 patients admitted at Navodaya Medical College Hospital & Research Center in north Karnataka, Raichur.

OBJECTIVES OF STUDY

1. To describe the clinico-demographic characteristics among COVID-19 patients at NMCH&RC, Raichur.
2. To evaluate the treatment options for COVID-19 patients.
3. To describe hospital outcomes among COVID-19 patients.

MATERIALS AND METHODS

2.1. study design and sample size

A retrospective cross-sectional study was carried out for six months March 2022 to August 2022 in Navodaya Medical College Hospital & Research Centre (NMCH&RC) Raichur. 150 participants were collected. Data was pooled and analyzed. Ethical permission to conduct the study was granted by the institutional ethics committee. Study population: Data on epidemiological, demographic, clinical and laboratory, management and outcome from consecutive patients with the microbiological diagnosis of COVID-19 admitted to NMCH&RC were collected from MRD by using structured data collection form. Data analysis will be done by using suitable statistical methods. Analysis of data: The data collected were analyzed by using suitable statistical methods and findings of the study were submitted to the study department.

RESULTS

- Among the 150 patients, 102 were male (68%) and 48 were female (32%). (**Fig No. 1**)
- Among the 150 patients, the majority of patients (41%) were 46-60 age group, followed by 38% patients under age 12-45. (**Fig No. 2**)
- Among the 150 patients, it is observed that a greater number of patients (72) had a stay in hospitalin between 6-10 days. (**Fig no 03**)
- Among the 150 patients, more patients (53%) were with Co- morbidities of which diabetes mellitus was most common. (**Table No. 1**) No. of Patients with co- Diabetes Mellitus 41 (27%) which include Hypertension 28 (19%), IHD 2 (1.3%), Hypothyroidism 2 (1.3%) ACS 1 (0.6%), Asthma 1(0.6%) TB 1 (0.6%), Pulmonary edema 1 (0.6%), Cardiopulmonary 1(0.6%), Edema Hemiparesis 1(0.6%) and Without co-morbidities 71 (47%).

- Among 150 patients, cough (73%), was the most common symptom, followed by fever (71%) and breathlessness (59%). (**Table No. 2**)
- Among the 150 patients, 42% of patients shows decreased SpO₂ (>94%). (**Fig 4**)
- (**Fig 5**) shows the Distribution of patients according to CT score. 47% patients shows severe CT score.
- (**Table 3**) shows Distribution according to antiviral agents. Among 150 patients, majority of the patients (68%) were prescribed remdesivir.
- Among 150 patients, 79% patient received Piperacillin +Tazobactam antibiotic followed by 64% Doxycycline. (**Table 04**) shows Distribution of patients according to antibiotics among COVID-19.
- Distribution according to other drugs. Among 150 patients, 100% patient received pantoprazole, 92% received ondansetron, 85% received vit c 69% received ivermectin, 41% received heparin and 35% received dexamethasone. (**Table No.05**)
- (**Fig 06**) shows Distribution according to oxygen supplementation. Among 150 patients, 79% patients required oxygen supplementation.
- Among 150 patients, 78% of patients recovered and 22% of patients died. (**Fig 07**)

DISCUSSION

There were very few studies in India that focus on clinical demographic's, laboratory investigations, treatment outcomes of COVID-19 patients.

Out of 150 patients, 102 (68%) were male and 48 (32%) were female. It was similar to a study done by **Mohan A et al.** A maximum number of patients 61 (40.6%) were in the age group of 46-60 years whereas minimum number i.e. 32 (21.3%) belong to the age group of >60 years which is similar to a study done by **Shah R et al.** Among 150 patients, 48% of patients got discharged between 6- 10 days followed by 1 – 5 days (23 %). It was similar to a study done by **Alharbi A et al.**

In this study 79 (53%) patients had co-morbidities. The different types of co-morbid conditions were Diabetes Mellitus, Hypertension, Asthma, IHD, hypothyroidism, acute coronary syndrome, TB, cardiopulmonary edema, and hemiparesis. Among these co-morbid conditions, the most common conditions were DM (27%) followed by HTN (19%). It shows similar results in comparison with the study done by **Mohan A et al.**

The clinical symptoms in the studied cases were cough (73%), fever (71%), breathlessness (59%) which indicates cough was the most common symptom which is similar to a study done by **Zaferani Arani H et al.**

In our study, 47% patient showed severe CT score (>18), 32% showed moderate CT score (7-18), and 21% showed mild CT score (<7). 42% of patients shows increased SpO₂ (>94%). 37% patient's shows increased blood pressure and 32 patients shows increased pulse rate (>100)., lab reports of 68% of patients shows increased CRP, 55% patients show increased D-DIMER, 31% shows increased ferritin and 12% shows increased IL-6.

The lab reports of 84 patients show decreased hemoglobin, 45 patients shows increased ESR, 42 patients shows decreased PCV. 68% of patients show increased neutrophils, 55% patients shows decreased lymphocytes, and 35% patients show increased WBC. 20 patients show increased calcium, and 10 patients show decreased sodium levels. 15% patients have increased blood urea and 12% patients have increased creatinine. 24% patients show increased T. bilirubin and ALT, 20% patient's shows increased D. bilirubin, 19% increased ALP.

Among the different antibiotics prescribed for COVID-19, the combination of Piperacillin and Tazobactam was prescribed as the first choice of treatment in 79 % of the patients followed by Doxycycline 64 % and ceftriaxone 19%. Fluoroquinolones were the most commonly utilized antibiotics in the study done by **Ibrahim ME et al.**

Among the different antivirals prescribed for COVID-19, Remdesivir was most prescribed as the first choice of treatment in 68 % of the patients. The oseltamivir+ hydroxychloroquine is most preferred antiviral treatment for the COVID-19 patients in the study done by **Ramatillah DL, Isnaini S.** More number of patients were prescribed Ivermectin (68.6%), followed by methyl prednisolone (61.3%), enoxaparin (52%) & Dexamethasone (34.6%) during hospital stay.

The majority of patients require oxygen supplementation (79%). It shows similar results in comparison with the study done by **Zhao J et al.** Among 150 patients, 78% patients were recovered and mortality of 22% (33 patients) was observed.

The limitations that occurred in this study are the relatively short research time. This study was limited to the in-hospital clinical course only and follow up details were not available; thus, information of relapses was not reported and it is single centered study.

TABLES AND FIGURE

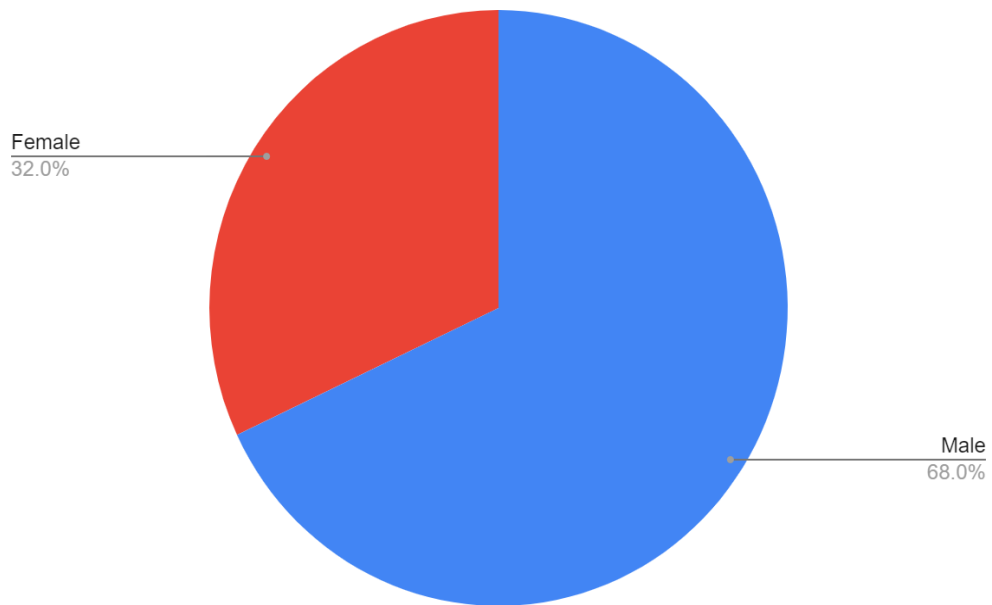


Fig 1: DISTRIBUTION ACCORDING TO GENDER (n=150)

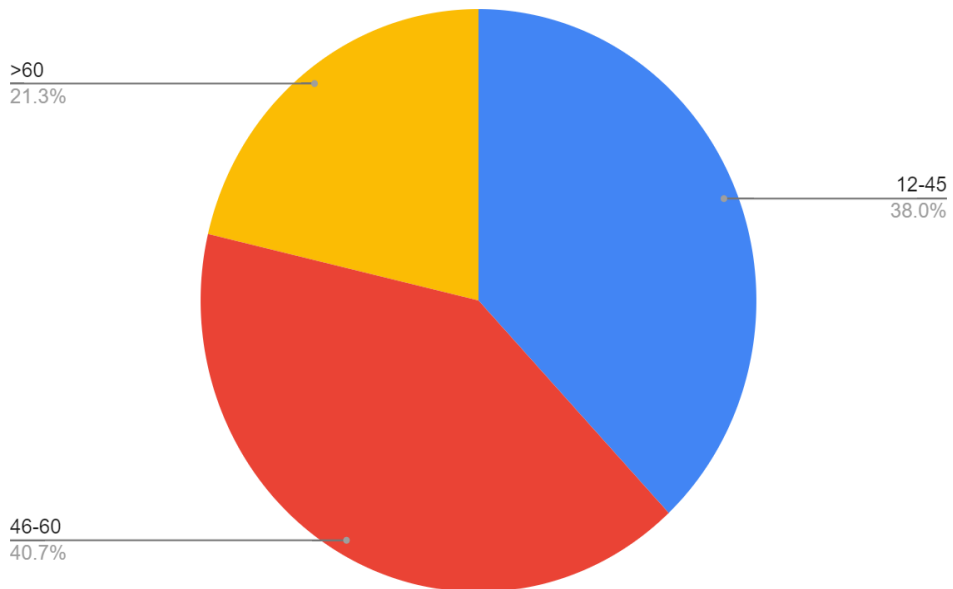


Fig 2: DISTRIBUTION ACCORDING TO AGE GROUP (n=150)

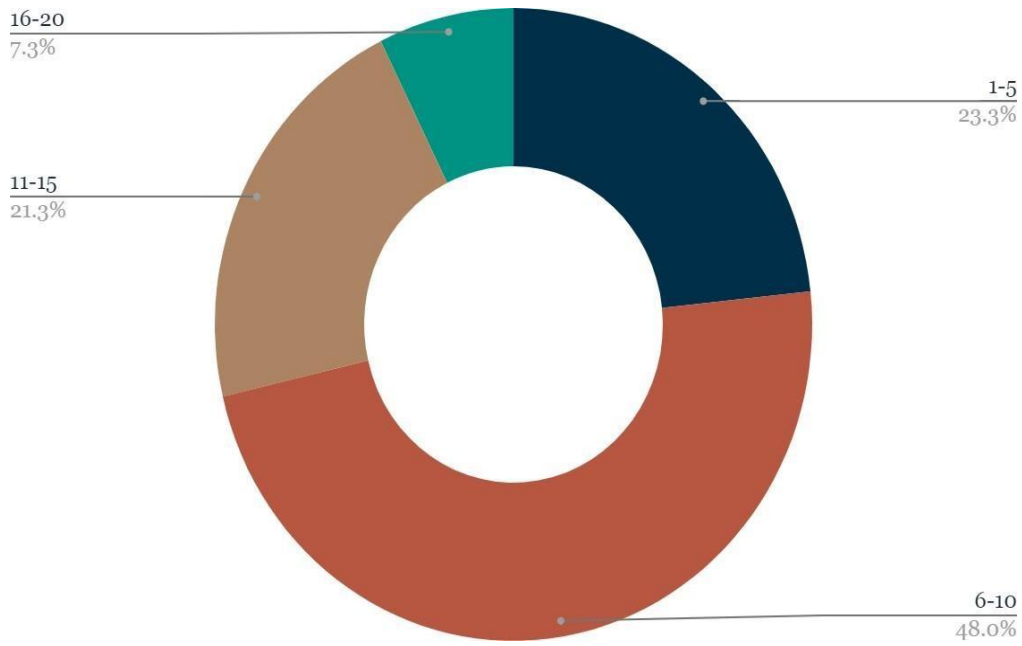


Fig 3: DISTRIBUTION ACCORDING TO LENGTH OF STAY (n=150)

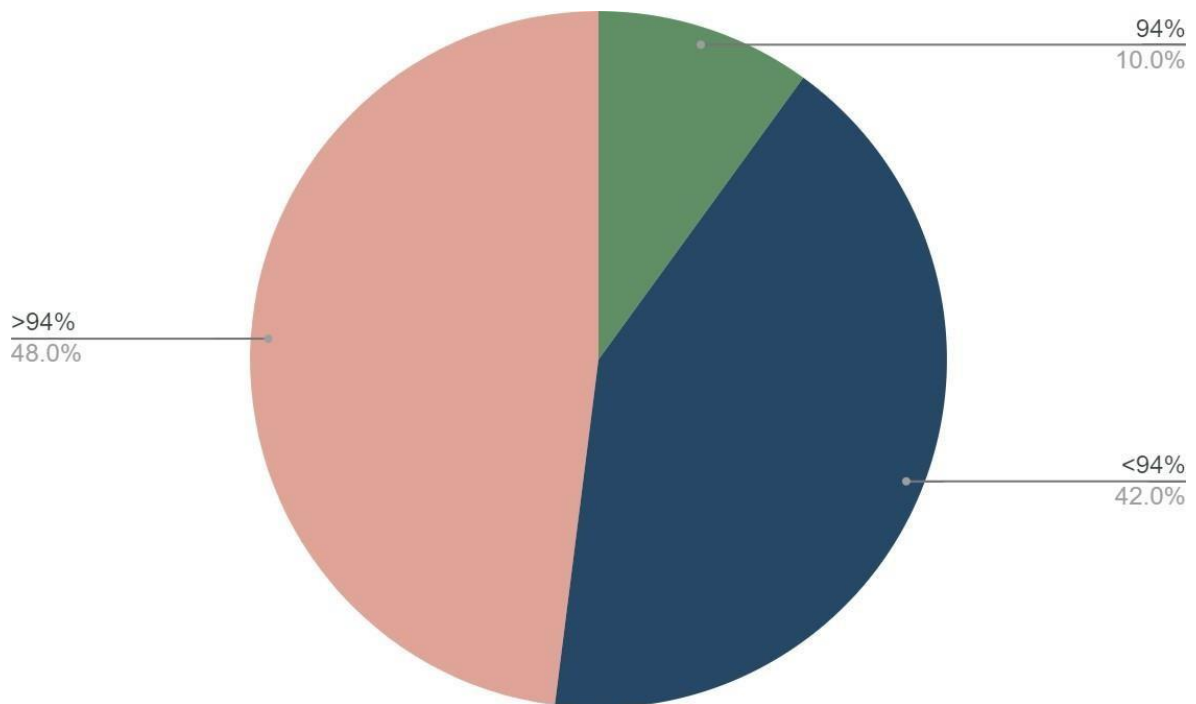


Fig 4: DISTRIBUTION ACCORDING TO SPO2 (n=150)

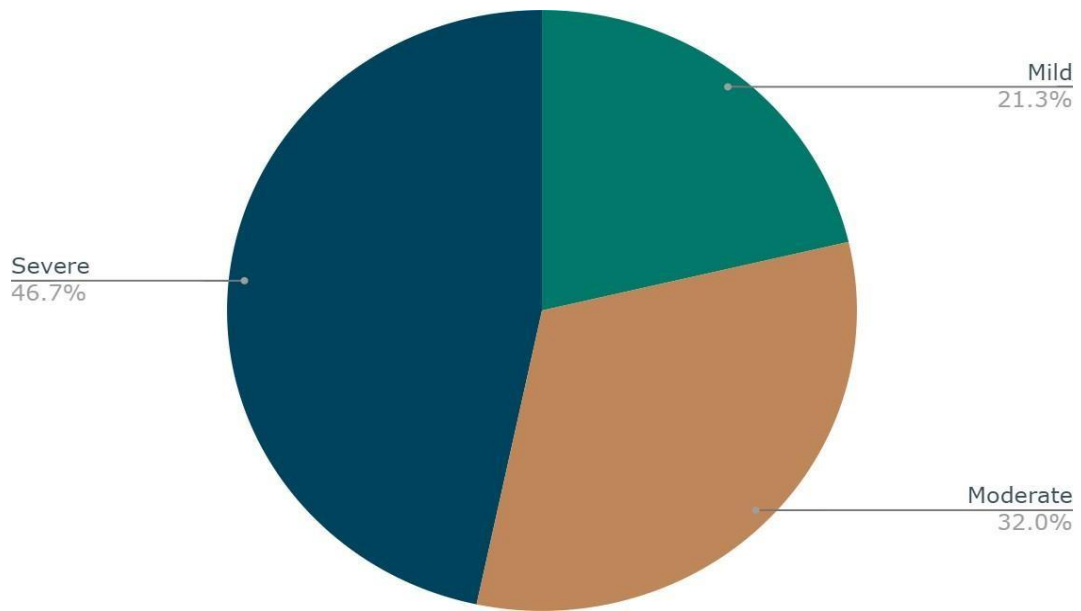


Fig 5: DISTRIBUTION ACCORDING TO CT SCORE (n=150)

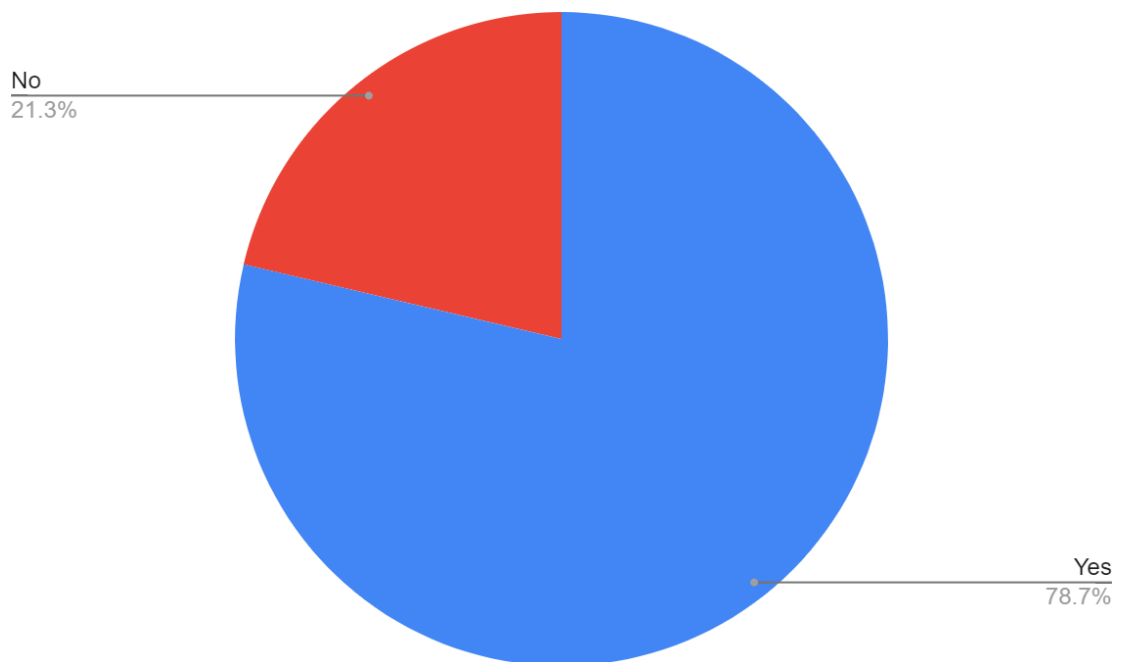


Fig 06: DISTRIBUTION ACCORDING TO OXYGEN SUPPLEMENTATION (n=150)

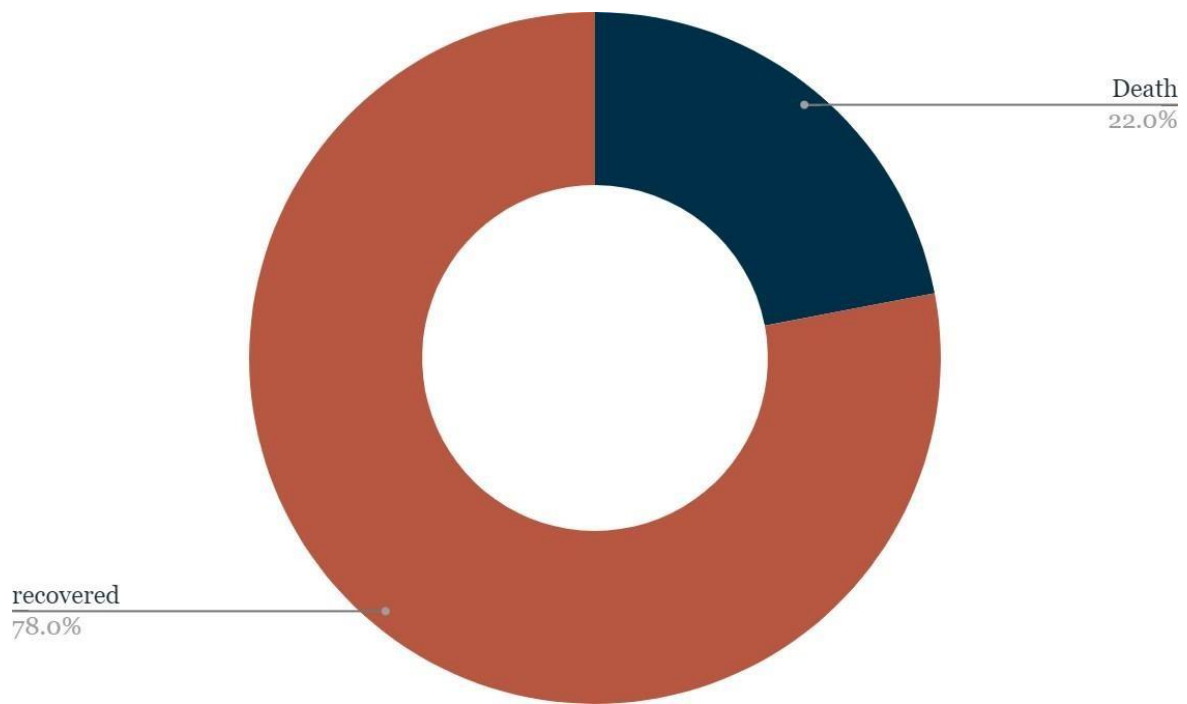


Fig 07: DISTRIBUTION ACCORDING TO HOSPITAL OUTCOMES (n=150)

Table 1: DISTRIBUTION ACCORDING TO THE CO-MORBIDITIES (n=150)

		No. of Patients	Percentage(%)
With co-morbidities	Diabetes Mellitus	41	27%
	Hypertension	28	19%
	IHD	2	1.3%
	Hypothyroidism	2	1.3%
	ACS	1	0.6%
	Asthma	1	0.6%
	TB	1	0.6%
	Pulmonary edema	1	0.6%
	Cardiopulmonary edema	1	0.6%
	Hemiparesis	1	0.6%
	Without co-morbidities		71

Table 2: DISTRIBUTION ACCORDING TO SYMPTOMS (n=150)

Symptoms	No. of patient's	Percentage {%}
Fever	107	71%
Cough	109	73%
Breathlessness	88	59%
Generalized weakness	16	11%
Loss of appetite	11	7.3%
Cold	6	4%
Body pain	4	3%
Myalgia	4	3%
Headache	3	2%
Vomiting	3	2%
Diarrhea	2	1.3%

Table 03: DISTRIBUTION ACCORDING TO CORADS (n=150)

CO RAD Score	No. of patients	Percentage
1	0	0
2	16	11%
3	28	19%
4	28	19%
5	46	31%
6	32	20%

Table 04: DISTRIBUTION ACCORDING TO ANTIVIRAL AGENTS (n=150)

Antivirals	No. of patients	Percentage
remdesivir	102	68%
Other	00	00%

Table 05: DISTRIBUTION ACCORDING TO ANTIBIOTICS AMONG COVID-19

Antibiotics	No. of patients	Percentage
Piperacillin Tazobactam	118	79%
Doxycycline	96	64%
Ceftriaxone	28	19%
Meropenem	22	15%
Azithromycin	9	6%
Clindamycin	3	2%
Cefeperazone+salbactam	2	1.3%

Table 06: DISTRIBUTION ACCORDING TO OTHER DRUGS (n=75)

Drugs	No. of patients	Percentage
Pantoprazole	150	100%
Ondansetron	139	92%
Paracetamol	121	80.66%
Vitamin C	128	85.33%
Methylprednisolone	92	61.33%
Enoxaparin	78	52%
Heparin	61	41%
Ivermectin	103	68.66%
Zinc	97	64.66%
Dexamethasone	52	34.66%
Acebrophyline +Acetylcysteine	80	53.33%
Montelukast +Levocetizine	50	33.33%
Insulin	24	16.0%
Budesonide	18	12.0%

RECOMMENDATIONS

- 1) It is self-evident that the COVID-19 pandemic has profound consequences for individuals and societies. Most research has understandably been focused on understanding the dynamics of the pandemic and the biology of the infection to develop diagnostics, vaccines and treatments.
- 2) This study is important to analyze and document the clinical behavior of this disease in the local population as the presentation and outcomes of patients with COVID-19 have been variable in different countries.
- 3) This study is useful for policy makers to improve the healthcare system overall. This study investigated the potential role of epidemiological, clinical and laboratory findings of COVID-19-infected patients of different ages to identify the effective indication associated with the disease.
- 4) This study focused on comorbidities associated with COVID-19 patients, which can help clinicians in early screening of high-risk patients and judicious utilization of healthcare resources among these patients to prevent the more severe disease.
- 5) This study helps to identify and quantify the association between baseline characteristics on hospital admission in patients with COVID-19 infection and mortality rate.

6) By such studies the mortality rate may be decreased by identifying symptoms, and clinical and demographic characteristics of patients and identifying the high-risk groups exposed to the ease the mortality rate.

7) To determine the suitability of mitigation strategies and to set goals for managing and preventing COVID-19.

CONCLUSION

The COVID-19 pandemic is not only a huge burden on healthcare facilities but also a significant cause of disruption in societies globally.

COVID-19 tend to affect males more significantly than females. The majority of patients with COVID-19 infection presenting to our hospital were middle-aged. Patients of advanced age with comorbidities were found to have more complications. Majority of patients showed severe CT score, increased oxygen saturation, increased CRP, increased D-DIMER, increased neutrophils and decreased lymphocytes.

The use of enoxaparin is an important part of COVID-19 treatment. The most effective antiviral agent in the study based on treatment duration was remdesivir. Mortality occurred in 33 patients.

An analysis of trends related to COVID-19 in different hospitals an institutional setting will help to achieve better preparedness and lead to improved patient care to combat the COVID-19 pandemic more efficiently.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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