Original Article

Clinical profile of COVID-19 patients and their length of stay: Tertiary care hospital experience

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Abstract

Background: SARSCoV-2, a coronavirus that causes COVID-19, is spreading rapidly. By the middle of August-2021, it has affected over 3 million confirmed cases in India. The main aim of this study was to examine the clinical profile of COVID-19 patients and their length of stay during treatment in a hospital. **Materials and Methods:** It was a hospital-based retrospective study conducted by using a total enumeration technique in July–August 2021 at Nehru Hospital, Postgraduate Institute of Medical Education and Research (PGIMER) in India. The present study was conducted on 72 COVID-19 patients who took treatment in 4C and 5C wards. Structured questionnaires were used to collect data, which included bio-demographic factors and questions about their treatment and length of stay. **Results:** The majority of the 72 COVID-19 positive patients were men (62%), belonged to the age group of 41–60 years (35%), had SpO_2 levels ranging from 91%–95% (45%), and received room air O_2 therapy (63%) during their treatment in the hospital. Female patients had a longer length of stay (7.33 days), patients under the age of 20 years had the longest hospital stay (11.5 days), patients with SpO_2 less than 70% had the longest hospital stay (8 days), and patients who received oxygen using a non-rebreathing mask had the longest hospital stay (11 days). **Conclusion:** To avoid panic situations, regular admission and discharge of patients was essential due to the considerable increase in cases during the second wave. Patient length of stay was reduced as a consequence of collaboration and cooperation among all physicians, residents, staff nurses, and paramedics, with the goal of discharging the patient after a room air trial and follow up if needed.

Keywords: Clinical profile, COVID-19, hospital experience, length of stay

Introduction

SARSCoV-2, a coronavirus that causes COVID-19, is spreading rapidly. It has affected more than 3 million confirmed cases in India by the middle of August-2021.[1] COVID-19 cases started emerged in December-2019 and were classified in January-2020.[2]

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In March-2020, World Health Organization (WHO) declared COVID-19 a global pandemic.[3]

SARSCoV-2, i.e., COVID-19, which resulted in more than three million confirmed cases in India by the middle of August-2021, spreads very rapidly. The main reasons for rapid spread are a short doubling period and potentially high estimates of a regional outbreak because of newly infected cases generated from an infectious individual.[4] Large doubling rate and delay in detection of new infections lead to an unexpected increase of cases.[5] To restrict the spreading of this virus, many countries did complete lockdown of their country including India, however, without much effect.[6]

COVID-19 cases displayed a range of symptoms, which varies according to severity. About one in every five COVID-19 positive patients required hospitalization and about 20% of hospitalized patients also required intensive care.[7] All these factors of coronavirus impacted healthcare systems across the globe.

Clinical care evidence-based data were used by various hospitals to care for their corona positive cases. COVID-19 main impact on hospital capacity is divided as per two tasks.[8] First is to predict the incidence of COVID-19 cases and second is to estimate the length of stay (LoS) of patients based on their severity and healthcare needs accurately. Evidence-based clinical care data were also used to predict demand for COVID-19 wards and Intensive Care Unit (ICU) beds by COVID-19 positive cases.[9]

At present, hospital, regional, and national levels, various models were used to estimate bed occupancy and resource allocation utilization as per priorities.[10] All these models mainly used two simple assumptions for COVID-19. First, a patient's hospital stay is limited to one bed type (e.g., general ward bed or critical care bed) and second, each patient's stay is timed. These were a number of beliefs and contradictory findings by various studies on these two assumptions, i.e., various bed types and different lengths of stay in a hospital.[11]

Based on the predicted epidemic curves, it is possible to model the rate of hospitalization in a variety of scenarios. LoS in hospitals, on the other hand, necessitates careful observation of each COVID-19 individual patient.[12]

LoS is expected to vary depending on the level of care required as well as the geographic environment. Furthermore, patient bio-demographic characteristics, i.e., age and comorbidity, have an impact on COVID-19 illness severity and also affect LoS. If the disparities are large, the administrator of capacity planning needs to consider these factors into consideration to forecast accurately the number of beds needed at each level of care.[13] Therefore, this study was carried out to examine the effects of the clinical profile of the patients along with biodemographic profile on the LoS of COVID-19 patients. This may provide an estimate of the number of beds that might be required in any future surge of COVID-19 pandemic or might help future planning of hospitals for defining the proportion of isolation or infectious disease beds along with manpower, machines, and space.

Materials and Methods

Study context

It was a hospital-based retrospective study, using a total enumeration technique, conducted in Nehru Hospital, Postgraduate institute of Medical Education and Research (PGIMER), India in July–August 2021. COVID-19 ward was a normal ward, which was converted for COVID-19 patients due to an abrupt increase in COVID-19 patients during the second wave. Ethical approval was obtained from Institutional Ethics Committee. A written informed consent was obtained from each study participant. Confidentiality and anonymity of study participants were maintained during the study.

Study participants

The study was conducted in 4C and 5C wards on 72 patients who were admitted in COVID-19 wards where patients were receiving ventilators facilities, high flow nasal oxygen (HFNO), oxygen concentrators, and centralized oxygen supply to all beds of the wards where patients were admitted through an emergency, even from other states. Inclusion criteria for this study were patients who were admitted in COVID-19 wards, positive by RT-PCR, and patients who were discharged after COVID-19 negative status.

Data collection

Data were collected by reviewing treatment records of the patients who were admitted in 4C and 5C wards of Nehru hospital. As being COVID-19 patients, 72 patients were included. Data collection tool was a structured questionnaire including bio-demographic variables and questions related to their treatment and LoS.[14] Research tools were validated and had excellent reliability (r = 0.90) to use for the present study.

Data analysis

Data analysis was performed by using SPSS version 23.0.

Results

Of 72 COVID-19 positive patients, the majority were males (62%), belonged to the age group of 41–60 years (35%), had SpO_2 level ranging from 91%–95% (45%), and were receiving room air O_2 (63%) [Table 1].

Female patients' stay was long (7.33. days) as compared to male patients' stay (6.84 days) [Figure 1]. Patients aged less than 20 years had the highest LoS (11.5 days) as compared to other patients, whereas patients with the age group of 21–40 years had the least number of LoS in the hospital (6 days) [Figure 2].

Patients with SpO_2 less than 70% had the highest number of hospital stay (8 days), whereas patients with SpO_2

ranging from 96%–100% had the lowest length of hospital stay (5.85 days) [Figure 3]. COVID-19 patients receiving oxygen through non-rebreathing mask had the highest number of hospital stay (11 days) as compared to others [Figure 4].

Discussion

In the present study, we reported demographic factors and the treatment and LoS of the 72 COVID-19 patients discharged from the wards of COVID-19 dedicated hospital from Nehru Hospital, Postgraduate institute of Medical Education and Research (PGIMER), India.

Our present study results showed that male patients are affected more than female patients. Other studies also reported similar findings, i.e., the majority (60%) of COVID-19 patients were males[15,16] being more prone to the infection than females. Another study also reported concordant findings, i.e., the majority of COVID-19 patients (93%) were males as compared to females.[9]

Other findings of the present study were the majority belonged to the age group of 41–60 years, had SpO_2 level ranging from 91%–95% (45%), and received room air O_2 (63%) while in treatment.

It is very crucial to know how long COVID-19 patients will stay in the hospital to plan and estimate bed occupancy. Other study findings suggested that considering the average duration of stay of those discharged alive, which ranged from less than a week–2 months, this variation was only noticeable in terms of total stay but not for ICU stay.[17] In terms of practical ramifications, this difference between survivors and non-survivors is less useful for administrators because the outcome will not be known in advance and which is automatically influencing decision-making too. Other studies also suggested that a median of 1–3 weeks in critical care, it was shorter and less varied. The LoS was found to be shorter

Table 1: Bio-demographic variables (*n*=72)

Variables	Options	Frequency	Percentage
Gender	Male	45	62
	Female	27	38
Age (Years)	<20 years	02	02
	21-40 years	21	30
	41-60 years	25	35
	61-80 years	23	31
	>80 years	01	02
SpO_2 at admission (%)	96-100	13	18
	91-95	32	45
	81-90	21	30
	71-80	04	05
	<70	02	02
Method of oxygen delivery	Room air	46	63
	Nasal Prong	07	10
	Non-rebreather mask (NRM)	01	02
	Ventimask	18	25

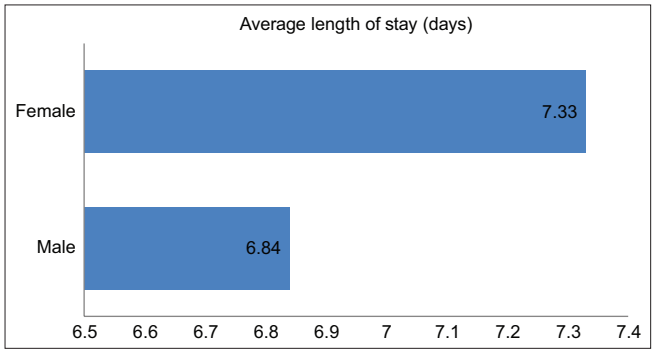

Figure 1: Average length of stay of patients as per gender

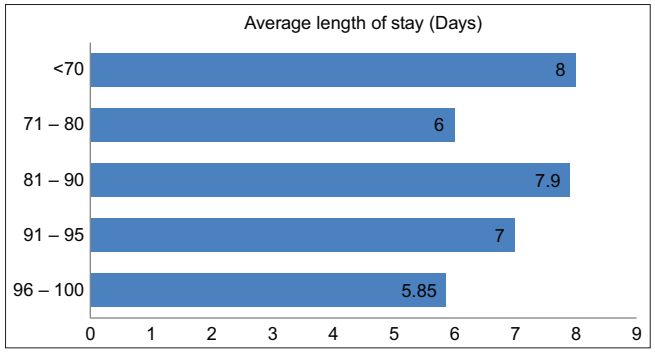

Figure 3: Average length of stay of patients as per SpO_2 level

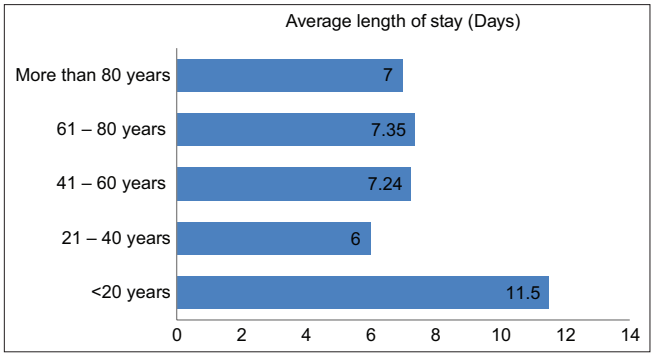

Figure 2: Average length of stay of patients as per age of patients

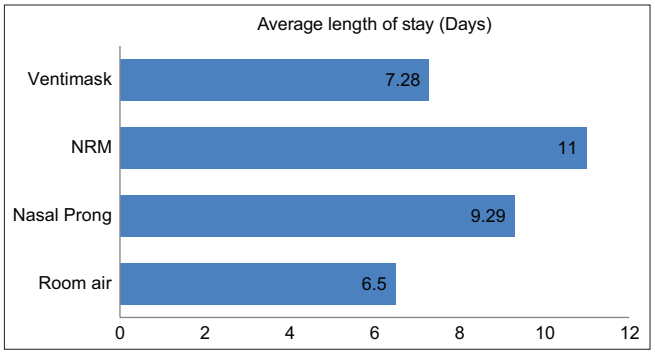

Figure 4: Average length of stay of patients as per method of oxygen delivery

when LoS was reported according to discharge status.[13] In the present study, female patients have a longer stay (7.33 days) than male patients (6.84 days). Patients under the age of 20 years had the longest hospital stay (11.5 days) compared to other patients, while those between the ages of 21 and 40 had the shortest hospital stay (6 days).

Other findings of the present study also showed that patients with a SpO_2 of less than 70% had the longest hospital stay (8 days), whereas those with a SpO2 of 96%–100% had the shortest hospital stay (5.85 days). When compared to other COVID-19 patients, those who received oxygen using a non-rebreathing mask had the longest hospital stay (11 days).

Our team of doctors was able to keep LoS short. It was mostly a team effort, with daily meetings and ward rounds conducted by experts. Each and every patient was discussed in meetings, and the treatment plan was discussed in meetings. Whenever possible, it was usually recommended at meetings to put patients on a minimum oxygen demand or room air route.

This study has some limitations, such as the data were not collected formally due to time and human resource constraints, and the sample size was not sufficient for statistical measurement to conclude a valid result. Therefore, this study may not be appropriate to draw conclusions that can be generalized, but it may lead to the planning of future studies on this subject with an appropriate sample size.

Conclusion

The patient was discharged if the patient maintained saturation in room air and the COVID-19 result was double negative, which was beneficial to both the patient and the hospital. Patient LoS decreased as a result of teamwork and coordination among all consultants, residents, staff nurses, and paramedics with clear goals to discharge the patient after a room air trial and follow up if necessary. Because of the significant increase in cases during the second wave, regular admission and discharge of patients was required to avoid panic situations. Therefore, we would like to remind to healthcare workers that adhering to the treatment procedure and applying it consistently are very important in lowering LoS of each patient.

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Conflicts of interest

There are no conflicts of interest.

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