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Clinical characteristics and outcomes of hospitalized patients with COVID-19 in a Brazilian hospital: a retrospective study of the first and second waves

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ABSTRACT

Objectives: To describe clinical characteristics, hospitalization flow and outcomes in a cohort of patients with coronavirus disease 2019 (COVID-19) in a Brazilian hospital in the first and second waves of the pandemic.
Methods: This retrospective, observational study included patients with confirmed COVID-19 who were evaluated in the emergency department (ED) between 1 March 2020 and 30 June 2021. Descriptive statistics have been used to report clinical characteristics, admissions and outcomes. Comparison between the two waves was inferred using hypothesis test techniques.
Results: During the study period, 7723 (86.54%) patients were evaluated in the ED, of which 1908 (24.70%) were admitted. Of these, 476 (24.95%) patients were initially allocated to the intensive care unit (ICU) and 1432 (75.05%) to the general ward. Of the patients initially allocated to the general ward, 349 (24.37%) were later transferred to the ICU. One hundred and fifty-eight patients were intubated (19.15% of ICU admissions) and 110 patients died (5.77% of all admissions). In the second wave, the admission rates decreased in both the ICU (from 13.84% to 9.56%; $P<0.01$) and the general ward (from 22.41% to 17.16%; $P<0.01$). The average age in the second wave decreased from 44.06 to 41.87 years ($P<0.01$). Patients with severe symptoms, such as dyspnoea, decreased from 25.51% to 13.13% ($P<0.01$) in the second wave. The death rate among admitted patients decreased by 17.84% (from 6.52% to 5.38%; $P<0.01$).
Conclusion: Despite the greater number of patients in the second wave, the admission and death rates were lower compared with the first wave. The mean age of patients was lower in the second wave, and patients arrived at the hospital with less severe symptoms compared with the first wave.

Introduction

By 30 July 2021, coronavirus disease 2019 (COVID-19) had affected more than 197 million people worldwide and caused at least 4 million deaths (Center for Systems Science and Engineering, Johns Hopkins University, n.d.).

COVID-19 is caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), and can vary in severity from asymptomatic to critical. Although the lethality of COVID-19 is approximately 5%, 15–18% of patients can become severely ill, requiring mechanical ventilation and intensive care unit (ICU) admission (Kumar et al., 2020).

The initial lack of knowledge regarding COVID-19 raised concerns about how to avoid the collapse of hospital resources. A major difficulty was related to patient characteristics, their clinical evolution and resources consumed during treatment. This type of knowledge is essential to the planning and management of health resources necessary to fight a disease.

For this reason, studies over the past year have focused on describing the clinical characteristics and outcomes of COVID-19 (Anesi et all., 2020; Grasselli et al., 2020; Huang et al., 2020; Larsson et al., 2020; Richardson et al., 2020; Wang et al., 2020; Zhu et al., 2020; Holler et al., 2021; Ludwig et al., 2021; Murthy et al., 2021; Olumade et al., 2021; Pouw et al., 2021; Sulejmani et al., 2021; Wen et al., 2021), or developing prediction models (Kang et al., 2020; Baas et al., 2021; López-Cheda et al., 2021; Mahboub et al., 2021; Velasco-Rodríguez et al., 2021; Wang et al., 2021). However, there is still a need for studies describing differences between the waves of COVID-19.

In Brazil, the first wave of COVID-19 reached its peak around the end of May 2020, then declined from September 2020 until the start of the

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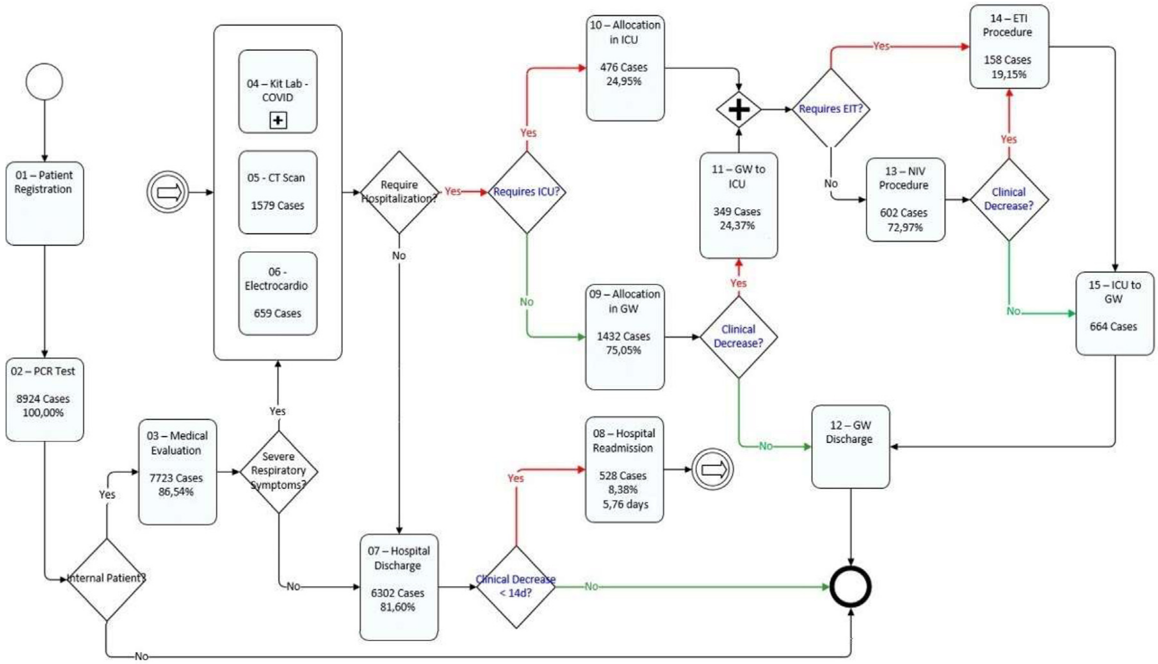

Fig. 1. General flow for patients with coronavirus disease 2019 (COVID-19). ICU, intensive care unit; GW, general ward; NIV, non-invasive ventilation; ETI, endotracheal intubation; CT, computed tomography.

second wave in early November 2020. The second wave peaked around the end of March 2021 (da Silva and Pena, 2021).

According to Bastos et al. (2021), comparison between the first and second waves of COVID-19 in Brazil shows an increase in hospital admissions by 59%, with a relative increase in the proportion of patients aged <60 years of 18%.

Despite recent advances in vaccination, further waves of COVID-19 cannot be ruled out due to new variants of SARS-CoV-2. Thus, a study that describes patient characteristics, hospitalizations and outcomes, covering more than one wave of the disease, is of relevance, even after almost 2 years of the pandemic.

In this context, this study aimed to describe clinical characteristics, hospitalization flow and outcomes in a cohort of hospitalized patients with COVID-19 in a Brazilian hospital in the first and second waves of the pandemic.

Methods

This study was undertaken at a medium-sized tertiary private hospital in São Paulo, Brazil, that comprises 300 beds in the general ward and has 50 ICU beds. The hospital treats adult and paediatric patients, and there is no the need of referral from a primary care unity.

Since the beginning of the pandemic, the hospital has defined an overall workflow for patients with COVID-19 (Fig. 1), and this has not undergone any major changes throughout the course of the pandemic. Some operational and structural adjustments have been made, but the workflow activities have been maintained.

Workflow begins in the emergency department (ED), where patients go for registration and nursing triage, after which they proceed to medical evaluation. In this assessment, the doctor decides whether to request a reverse transcription polymerase chain reaction (RT-PCR) assay, and prescribes other tests and medications. According to clinical status and test results, the doctor decides whether the patient should return home or be admitted to the general ward or ICU.

The clinical condition of patients initially admitted to the general ward can worsen, which may lead to transfer to the ICU.

In the ICU, patients receive respiratory support based on the severity of disease: non-invasive ventilation through a high-flow nasal catheter, or mechanical ventilation through endotracheal intubation.

Patients who are discharged from the ICU are transferred to the general ward, where they remain until full recovery before being discharged home.

The workflow also includes hospital re-admissions, which, in the context of this study, correspond to patients who are released home at their first medical evaluation and return to the hospital a few days later.

This retrospective, observational study included all patients with confirmed SARS-CoV-2 infection (by RT-PCR test) who were evaluated in the ED between 1 March 2020 and 30 June 2021, and those who had been discharged from the hospital at the time of database closure.

All analysed data were taken from electronic health records (EHRs). Data in the EHRs were collected routinely from arrival at the ED to discharge or death. Database storage procedures were developed for automatic data collection from the EHR, including clinical characteristics, demographics, comorbidities, patient flow tracking, and procedures executed during hospitalization.

Descriptive statistics have been used to report clinical characteristics, admissions and outcomes. Discrete variables are expressed as frequency and percentage, and continuous variables are expressed as mean and standard deviation (SD) for normally distributed data.

Comparison between the two waves was inferred using hypothesis test techniques, with the first wave covering March 2020–October 2020 and the second wave covering November 2020–June 2021.

The two-tail *Z*-test was used for continuous variables and the two-tail *t*-test was used for discrete variables. The null hypothesis takes the format: $H_0: \bar{x}_{(p1)} = \bar{x}_{(p2)}$, where p_1 is the parameter evaluated for the first wave and p_2 is the same parameter evaluated for the second wave. A significance level of 5% was adopted.

Analyses of medications, procedures and therapeutic approaches were outside the scope of this study; the focus was on analysing the differences between the first and second waves of the pandemic, considering the characteristics of patients, hospitalizations and outcomes. This study analysed whether these characteristics were maintained over the two waves.

This study was approved by the local ethics committee (Ref. 4.718.282).

Results

Fig. 1 shows the general statistics for the flow of patients with COVID-19. Between March 2020 and June 2021, 8924 patients with COVID-19 were detected at the study hospital, of which 7723 (86.54%) were evaluated by a physician in the ED. The remaining 13.46% of patients only went to hospital to do an RT-PCR test.

From the patients evaluated by a physician in the ED, 6302 (81.60%) were released home on the same day; however, 528 (8.38%) patients returned to the study hospital several days later. The average time for re-admission was 5.76 days.

It was not possible to track patients who were re-admitted to another hospital; however, this was unlikely as there are no other referral hospitals in the neighbourhood.

Of the evaluated patients, 1908 (24.70%) were admitted to hospital: 476 (24.95%) patients were initially allocated to the ICU and 1432 (75.05%) to the general ward. Of those initially allocated to the general ward, 349 patients (24.37%) showed deterioration in their clinical condition and were transferred to the ICU. Of the 825 patients who were treated in the ICU, 158 (19.15%) were intubated.

Table 1 shows patient characteristics, such as demographics, symptoms and comorbidities, as well as information regarding admissions and lethality, stratified according to the first and second waves. The main results are presented below.

Patient characteristics

There were no major changes in patient characteristics between the first and second waves. A slight reduction in the average age of infected patients was observed, from 44.06 years in the first wave to 41.87 years in the second wave. This reduction was also seen for different age groups through a slight increase in the percentage of people aged 40–60 years (from 41.48% to 43.98%) and a reduction in the percentage of people aged >60 years (from 17.49% to 12.56%).

Regarding the most common symptoms, patients had more severe symptoms on arrival at hospital in the first wave. The major change was seen for dyspnoea, which decreased significantly in the second wave. In the first wave, 25.51% of patients presented with dyspnoea in their first assessment, compared with 13.13% in the second wave.

The only two symptoms that increased in occurrence in the second wave were sore throat (from 35.28% to 42.81%) and headache (from 55.54% to 60.11%).

Although the percentage of admitted patients without comorbidities was higher in the second wave (21.15% vs 18.05%), the difference was not significant. In addition, a slight decrease in the average number of comorbidities per inpatient was observed from the first wave to the second wave (3.10 vs 2.63).

The main comorbidities, and the percentage of patients with each comorbidity, remained practically unchanged for the two waves.

Admissions

A significant reduction in admission rates was seen between the first and second waves. The ICU admission rate decreased from 13.84% to 9.56%, and the general ward admission rate decreased from 22.41% to 17.16%.

Fig. 2 shows the monthly evolution of admission rates, with peak admissions occurring in May 2020 (118 admissions) in the first wave and March 2021 (335 admissions) in the second wave. However, the admission rates was much higher in the first wave compared with the second wave, especially in the first month of the pandemic when 65.71% of patients who visited the ED were admitted.

The mean length of stay (LOS) in the ICU showed a slight decrease in the second wave (from 13.47 to 12.12 days). However, this reduction was not significant (P=0.3), and the SD was very high (greater than the mean). In addition, there were numerous cases with very high LOS, considered as outliers (Fig. 3).

Considering the values shown in Fig. 3 and compiled in Table 2, 50.30% of ICU admissions had a LOS ≤7 days; however, 7.27% of ICU admissions had a LOS >37 days. The maximum LOS in the ICU was 155 days in the first wave and 102 days in the second wave.

A reduction in LOS (from 7.6 to 5.8 days) was also observed for general ward admissions. Unlike the ICU, this decrease was significant (P<0.01).

The SD for ward LOS was much higher in the first wave compared with the second wave (15.7 vs 7.8, respectively).

Regarding the mean age of patients admitted to the ICU, patients were almost 6 years younger in the second wave compared with the first wave (62.23 vs 56.26 years, respectively). Interestingly, among patients admitted to the general ward, mean age increased slightly from 52.56 years in the first wave to 53.56 years in the second wave. However, this increase was not significant (P=0.36).

Lethality

The death rate among patients admitted to hospital decreased by 17.84% in the second wave (from 6.52% in the first wave to 5.38% in the second wave); this reduction was significant (P<0.01). Among infected cases (patients evaluated in the ED), the reduction in death rate was even greater at 42.51% (from 2.07% in the first wave to 1.19% in the second wave).

Fig. 4 shows the monthly evolution in death rate, computed from admission date. For example, of the 69 patients admitted in March 2020, 11 had died (in March or in subsequent months).

A similarity was noted between Figs. 4(b) and 2(b), indicating that the highest death rates coincided with the highest admission rates, particularly in the peak months and in the first month of the pandemic.

Among the ICU admissions, the mean age of patients who died in the second wave was approximately 6 years lower compared with the first wave (77.71 years in the first wave vs 71.31 years in the second wave).

An increase in deaths among patients aged 40–60 years was observed in the second wave compared with the first wave (from 4.76% to 23.53%). In contrast, the percentage of deaths among patients aged >60 years reduced significantly (from 92.86% to 75.00%) in the second wave.

Discussion

Four main differences were found between the first and second waves of COVID-19:

1 Reduction in admission rate, despite the increase in the number of infections.
2 Reduction in death rate.
3 Reduction in the mean age of patients (both in terms of infections, admissions and deaths).
4 Reduction in severe symptoms at first clinical evaluation in the ED.

The reduction in the admission rate, despite the increase in the number of cases, has been reported in other national (Bastos et al., 2021) and international (Wolfisberg et al., 2021) studies.

In the context of this study, the last two items contribute, albeit partially, to the first two items. As the second wave affected younger patients with fewer comorbidities, and those patients arrived at the hospital with less severe symptoms, the need for hospitalization tended to be lower. However, other factors may also have influenced this reduction. Perhaps the most important is the assertiveness in the criteria for patient admission. This was due to improved knowledge about the management of COVID-19 in the second wave, given that in the first wave, especially

Table 1
Demographics, symptoms,comorbidities, admissions and lethality, stratified according to the first and the second waves.

	Overall (*n*=7723)	First wave (*n*=2030)	Second wave (*n*=5693)	*P*-value[a]
Demographics				
Gender, male, *n* (%)	3907 (50.58%)	1035 (50.98%)	2872 (50.44%)	0.68
Age (years), mean ± SD	42.42 ± 17.79	44.06 ± 18.64	41.87 ± 17.44	**<0.01**
Age <40 years, *n* (%)	3307 (42.82%)	833 (41.01%)	2474 (43.46%)	0.06
Age ≥40 and ≤60 years, *n* (%)	3346 (43.33%)	842 (41.48%)	2504 (43.98%)	**0.04**
Age >60 years, *n* (%)	1070 (13.85%)	355 (17.49%)	715 (12.56%)	**<0.01**
***Frequent symptoms** (at first medical evaluation)*				
Cough, %	71.48%	76.75%	69.04%	**<0.01**
Fatigue, %	55.85%	61.81%	53.28%	**<0.01**
Fever, %	48.28%	53.50%	46.03%	**<0.01**
Muscle pain, %	60.45%	60.35%	60.06%	0.92
Headache, %	59.20%	55.54%	60.11%	**0.02**
Unwell, %	43.91%	49.71%	41.48%	**<0.01**
Nasal congestion, %	39.76%	39.50%	39.57%	0.81
Dyspnoea, %	16.52%	25.51%	13.13%	**<0.01**
Loss of appetite, %	20.01%	28.28%	16.85%	**<0.01**
Sore throat, %	41.01%	35.28%	42.81%	**<0.01**
Diarrhoea, %	17.11%	21.06%	15.55%	**<0.01**
Nausea, %	11.82%	14.14%	10.90%	**0.02**
Vomiting, %	2.45%	2.99%	2.23%	0.13
***Comorbidities** (admitted patients)*				
No. of comorbidities, mean ± SD	2.79 ± 2.68	3.10 ± 2.82	2.63 ± 2.60	**<0.01**
Admitted patients w/o comorbidities, *n* (%)	376 (20.13%)	111 (18.05%)	265 (21.15%)	0.12
Arterial hypertension (%)	29.73%	30.43%	29.03%	n.a.[b]
Diabetes mellitus (%)	15.08%	15.99%	14.16%	n.a.[b]
Dyslipidaemia (%)	14.74%	14.29%	15.19%	n.a.[b]
Hypothyroidism (%)	10.38%	10.71%	10.05%	n.a.[b]
Depression (%)	5.91%	6.21%	5.62%	n.a.[b]
Obesity (%)	4.86%	4.50%	5.22%	n.a.[b]
Asthma (%)	3.21%	3.73%	2.69%	n.a.[b]
Anxiety (%)	3.61%	3.11%	4.11%	n.a.[b]
Arrhythmia (%)	2.98%	3.26%	2.69%	n.a.[b]
Gastritis (%)	2.07%	2.64%	1.50%	n.a.[b]
Admissions				
Total admissions, *n* (% of cases)	1908 (24.70%)	644 (31.72%)	1264 (22.20%)	**<0.01**
Admissions to GW, *n* (% of cases)	1432 (18.54%)	455 (22.41%)	977 (17.16%)	**<0.01**
Transferred from GW to ICU, *n* (% of admissions to GW)	349 (24.37%)	92 (20.21%)	257 (26.30%)	0.28
Admissions to ICU (incl. transfers), *n* (% of cases)	825 (10.68%)	281 (13.84%)	544 (9.56%)	**<0.01**
GW admission details				
LOS (days), mean ± SD	5.71 ± 10.95	7.06 ± 15.70	5.08 ± 7.80	**0.01**
Gender, male, *n* (%)	861 (60.13%)	267 (58.68%)	594 (60.80%)	0.72
Age (years), mean ± SD	53.25 ± 17.91	52.56 ± 19.63	53.56 ± 17.07	0.36
ICU admission details				
LOS (days), mean ± SD	12.58 ± 15.86	13.47 ± 19.13	12.12 ± 13.84	0.30
LOS ≤7 days, *n* (%)[c]	415 (50.30%)	150 (53.38%)	265 (48.71%)	0.13
LOS >7 and ≤16 days, *n* (%)[c]	206 (24.97%)	59 (21.00%)	147 (27.02%)	0.07
LOS >16 and ≤37 days, *n* (%)[c]	144 (17.45%)	46 (16.37%)	98 (18.01%)	0.62
LOS >37 days, *n* (%)[c]	60 (7.27%)	24 (8.54%)	36 (6.62%)	0.42
Gender, male, *n* (%)	515 (62.42%)	168 (59.79%)	347 (63.79%)	0.39
Age (years), mean ± SD	58.27 ± 18.70	62.23 ± 19.90	56.26 ± 17.74	**<0.01**
Age <40 years, *n* (%)	112 (13.58%)	36 (12.81%)	76 (13.97%)	0.60
Age ≥40 and ≤60 years, *n* (%)	355 (43.03%)	92 (32.74%)	263 (48.35%)	**<0.01**
Age >60 years, *n* (%)	358 (43.39%)	152 (54.09%)	206 (37.87%)	**<0.01**
Intubations				
Intubations, *n* (% of ICU admissions)	158 (19.15%)	55 (19.57%)	103 (18.93%)	0.69
Gender, male, *n* (%)	110 (69.62%)	31 (56.36%)	79 (76.70%)	**0.03**
Age (years), mean ± SD	61.57 ± 14.66	66.26 ± 15.25	59.20 ± 13.84	**<0.01**
Re-admissions				
Admissions after ED discharge, *n* (%)	528 (8.38%)	130 (7.94%)	398 (8.54%)	0.28
Days until re-admission, mean ± SD	5.76 ± 3.20	5.53 ± 3.11	5.85 ± 3.22	0.39
Gender, male, *n* (%)	322 (60.98%)	79 (60.77%)	243 (61.06%)	0.80
Age (years), mean ± SD	52.43 ± 15.02	51.47 ± 14.47	52.74 ± 15.19	0.41
Deaths				
Deaths, *n* (% of cases) (% of admissions)	110 (1.42%) (5.77%)	42 (2.07%) (6.52%)	68 (1.19%) (5.38%)	**(<0.01) (<0.01)**
Age (years), mean ± SD	73.75 ± 14.43	77.71 ± 13.41	71.31 ± 14.59	**0.02**
Age <40 years, *n* (%)	2 (1.82%)	1 (2.38%)	1 (1.47%)	0.73
Age ≥40 and ≤60 years, *n* (%)	18 (16.36%)	2 (4.76%)	16 (23.53%)	**<0.01**
Age >60 years, *n* (%)	90 (81.82%)	39 (92.86%)	51 (75.00%)	**0.02**

SD, standard deviation; ED, emergency department; ICU, intensive care unit; GW, general ward; n.a., not applicable.

[a] *P*-values for comparisons between first and second waves using two-tailed *Z*-test for continuous variables and *t*-test for discrete variables; considering a significance level of 5%. Thus, $P<0.05$ is considered a significant difference between the two waves.

[b] Hypotheses testing was not applied for each comorbidity because failures in filling in this information may have occurred as they were recorded as free text. Thus, only the frequent comorbidities were shown to analyse the number of comorbidities per patient.

[c] The periods chosen for analyzing length of ICU stay are based on the values obtained from analysis of the mean, median and outliers (Fig. 3).

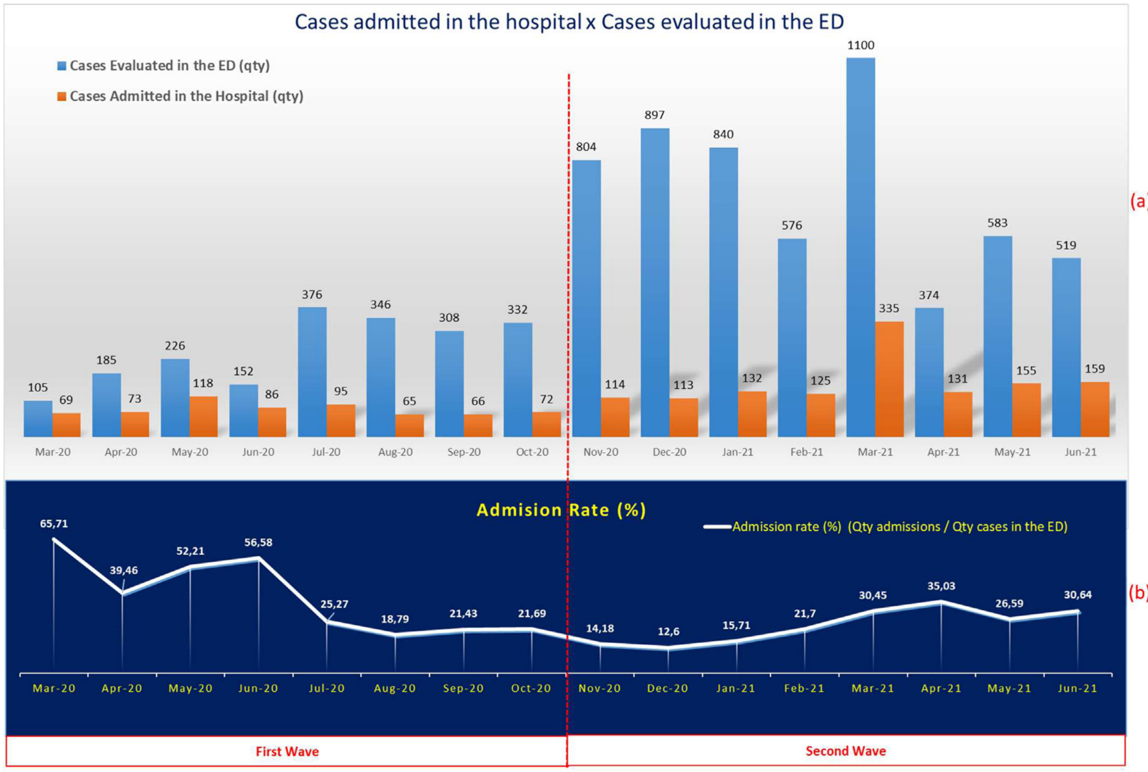

Fig. 2. Cases admitted to hospital and cases evaluated in the emergency department (ED).

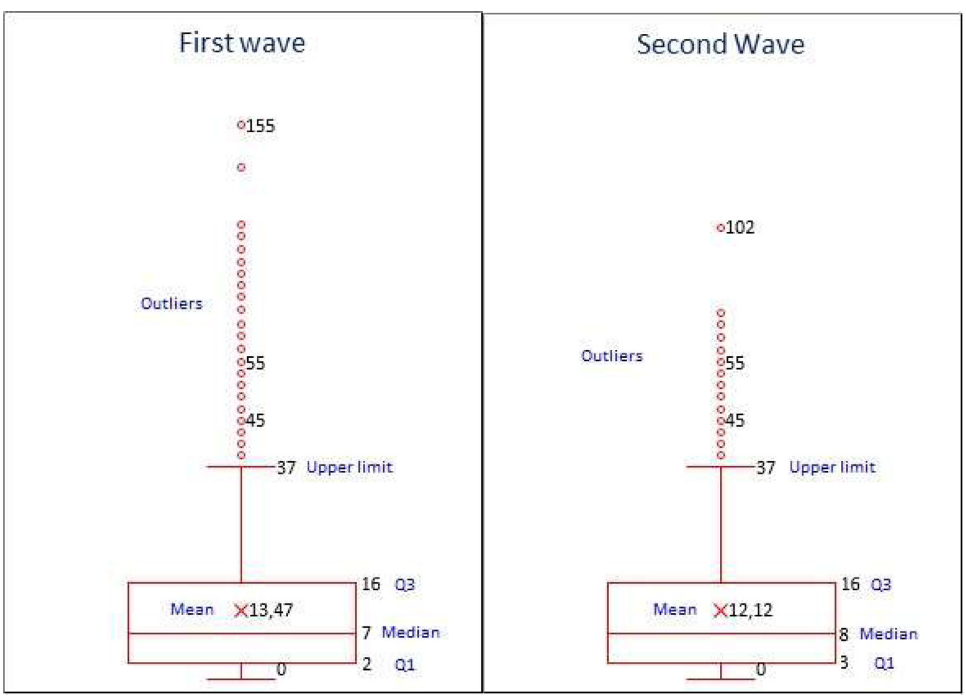

Fig. 3. Boxplot graph for mean length of stay in the intensive care unit.

in the first few months, the disease was totally unknown. This fact has also been reported by Jain et al. (2021).

Another factor that may have contributed to the reduction in admission rate in the second wave is the under-reporting of positive cases in the first wave. Due to the scarcity of resources at the beginning of the pandemic, especially RT-PCR tests which were intended only for patients with severe symptoms, the number of confirmed diagnoses may have been under-reported, which would have affected the calculation of admission rate. This was also suggested by Da Silva and Pena (2021).

Finally, the recommendation of the health authorities at the beginning of the pandemic that patients should only go to hospital if they had severe symptoms, to avoid the collapse of the health system, meant that most patients arriving at the hospital needed to be hospitalized.

This recommendation of the health authorities may also partially explain Item 4, especially the considerable reduction in the percentage of patients with dyspnoea at the first assessment in the second wave.

Another factor that contributed to the reduction in the percentage of patients with severe symptoms at their first assessment was the expan-

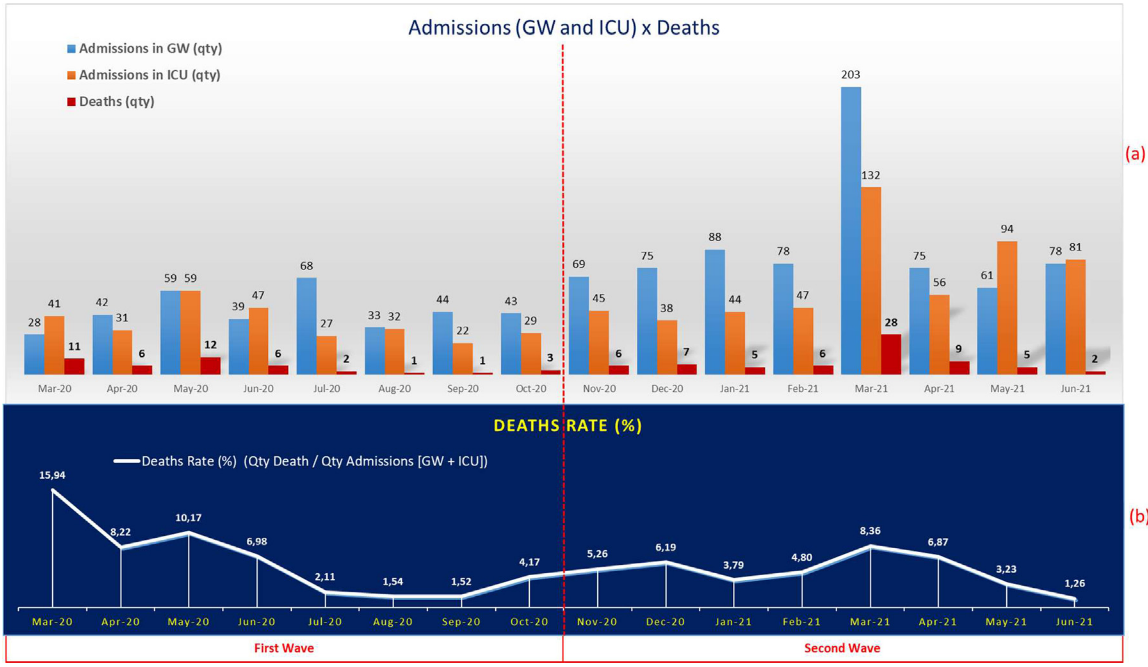

Fig. 4. Death rate by admissions [intensive care unit (ICU) and general ward (GW)].

sion of the health system. Many hospitals in Brazil, including the study hospital, expanded their care resources considerably after the onset of the pandemic. Thus, in the second wave, more patients went to hospital at the first onset of symptoms, which may also explain the increase in sore throats reported in the second wave.

Other studies have also reported that patients had less intense symptoms at their first clinical evaluation in the second wave (Jain et al., 2021; Soriano et al., 2021).

The reduction in the mean age of hospitalized patients has been observed in other national studies. Bastos et al. (2021) found numbers very close to those reported in the present study. They observed a reduction in the average age of patients from 63 to 59 years, compared with values of 62 and 56 years in the present study.

This reduction in mean age is thought to be due to two factors. The first is the fact that the prevalent variant in the second wave in Brazil, the E484K mutation, was much more transmissible than the prevalent variant in the first wave, thus affecting younger people more than in the first wave (Wise, 2021). Second, and probably more relevant, is vaccination, which started in February 2021 for elderly people. Vaccination among people aged <60 years commenced in June 2021. Thus, at the peak of the second wave, a large percentage of the elderly population had been vaccinated, whereas younger people had not been vaccinated.

Regarding the lower mortality rate in the second wave, this is believed to be due to the combination of all the factors mentioned above. Younger patients infected with SARS-CoV-2 tended to have fewer comorbidities; the clinical team had more knowledge of COVID-19 and were better able to manage it; the hospital had expanded their infrastructure; and patients went to hospital earlier, as soon as their symptoms appeared.

It is likely that the lower age of patients affected in the second wave was the most relevant factor for the reduction in the mortality rate, as age is the greatest predictor of survival in COVID-19.

Unfortunately, some hospitals in Brazil did not experience a reduction in mortality rate in the second wave. On the contrary, in the national context, the second wave was more lethal than the first. Bastos et al. (2021), who worked with data at the national level, reported an increase in in-hospital mortality of 18.47%, although they recommend that this number should be analyzed with caution.

Various factors may explain the lower mortality rate found in the present study compared with the national rate. First, the national rate measured by Bastos et al. (2021) also included public hospitals, which had higher mortality rates than private hospitals. Da Silva and Pena (2021) reported the collapse of the public health system during the second wave, and also reported a higher mortality rate than measured in the present study. Second, the hospital where this study was undertaken is in an upper-middle-class neighbourhood and, consequently, the population served tends to have a better general state of health compared with populations from poor neighbourhoods. Another reason is that the study hospital has expanded their care resources considerably since the beginning of the pandemic. In this way, it was not as pressured as hospitals that were unable to expand their resources as quickly.

Limitations

This study had a few limitations. The mortality rate used in this study refers to patients who died in hospital; it was not possible to track patients after hospital discharge. There may have been omissions when reporting initial symptoms, and comorbidities may have occurred as some professionals recorded them as free text. Finally, the different clinical protocols adopted during the pandemic were not analysed; better protocols may have been adopted in the second wave compared with the first wave.

Conclusion

This study provides insights into characteristics, hospitalization flow and outcomes in a cohort of hospitalized patients with COVID-19 in a medium-sized tertiary private Brazilian hospital in the first and second waves of the pandemic.

The results suggest that hospital resources were more pressured in the second wave due to a higher volume of patients. However, admission and death rates were lower in the second wave compared with the first wave.

The mean age of patients was lower in the second wave compared with the first wave, and patients arrived at hospital with less severe symptoms in the second wave compared with the first wave. However, the average LOS in the ICU did not change.

This study provides valuable information that can help managers to plan the bed logistics and hospital resources needed for the treatment of patients with COVID-19.

Conflict of interest statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Ethical approval

This study was approved by Internal Ethics Committee from Hospital Samaritano.

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