Pharmaceutical care in patients with Coronavirus disease 2019 (COVID-19) in a private hospital in Salvador-BA

Cuidados farmacêuticos a pacientes com doença por Coronavírus 2019 (COVID-19) em um hospital privado de Salvador-BA

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ABSTRACT

Coronavirus Disease-19 (COVID-19) is characterized as a new highly contagious pandemic disease that has been challenging health managers, professionals and the entire population to face and control this infection. Many alternative compassionate-use therapies were used in patients, although the results of their studies had not been published. From this perspective, the present study aims to describe the pharmaceutical care provided to patients with suspected or diagnosed COVID-19, in line with the protocols, guidelines and clinical studies that have been developed during this period. This is a descriptive, retrospective and observational study,

carried out from March to June 2020, in a tertiary hospital in Salvador, Bahia. Data related to clinical activities provided by the clinical pharmacist were assessed, such as drug reconciliations, pharmaceutical interventions, pharmacotherapeutic follow-up, as well as problems related to medications identified in the medical records and prescriptions to hospitalized patients. Of the 241 assessed patients, approximately 75% received some pharmaceutical care that contributed to a positive outcome in the patients' clinical condition. The clinical pharmacist's performance brings benefits to the care provided to the patient and, thus, the development of their activities together with the multidisciplinary team in health services is essential.

Keywords: clinical pharmacy, Coronavirus, pharmaceutical care, COVID-19.

RESUMO

A doença de Coronavirus19 (COVID-19) é caracterizada como uma nova doença pandêmica altamente contagiosa que tem desafiado gerentes de saúde, profissionais e toda a população a enfrentar e controlar esta infecção. Muitas terapias alternativas de uso compassivo foram utilizadas em pacientes, embora os resultados de seus estudos não tivessem sido publicados. A partir desta perspectiva, o presente estudo visa descrever os cuidados farmacêuticos prestados aos pacientes com suspeita ou diagnóstico de COVID-19, em linha com os protocolos, diretrizes e estudos clínicos que foram desenvolvidos durante este período. Este é um estudo descritivo, retrospectivo e observacional, realizado de março a junho de 2020, em um hospital terciário em Salvador, Bahia. Foram avaliados dados relacionados às atividades clínicas fornecidas pelo farmacêutico clínico, tais como conciliações de medicamentos, intervenções farmacêuticas, acompanhamento farmacoterapeutico, bem como problemas relacionados a medicamentos identificados nos prontuários e receitas médicas dos pacientes hospitalizados. Dos 241 pacientes avaliados, aproximadamente 75% receberam alguns cuidados farmacêuticos que contribuíram para um resultado positivo na condição clínica dos pacientes. O desempenho do farmacêutico clínico traz benefícios aos cuidados prestados ao paciente e, portanto, o desenvolvimento de suas atividades em conjunto com a equipe multidisciplinar em serviços de saúde é essencial.

Palavras-chave: farmácia clínica, Coronavírus, cuidados farmacêuticos, COVID-19.

1 INTRODUCTION

The world has been facing a war against an invisible and potentially lethal enemy for three years. Thus, a scientific race began everywhere to discover the mechanisms used by this new etiological agent to attack its host and, consequently, how to ultimately stop it.[1]

This is a new beta coronavirus from the *Coronaviridae* family, initially called 2019-novelCoronavirus (2019-nCoV); however, due to its molecular similarity with its closest relative, the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV), it started to be called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). In February 2020, the World Health Organization (WHO) named the latest disease caused by the new coronavirus that was spreading around the world, calling it 'Coronavirus Disease 19 (COVID-19)' and in

March of the same year, it officially declared that the entire planet was experiencing a pandemic caused by SARS-CoV-2.[2]

It is known that the new coronavirus is a zoonotic virus with a higher binding affinity between SARS-CoV-2 and the angiotensin-converting enzyme 2 (ACE2), functional receptors of the SARS-CoV. And, therefore, the virus causes its host to suffer an acute viral respiratory syndrome, characterized by symptoms of fever, fatigue, and dry cough, among others. It may progress to dyspnea or, in more severe cases, Severe Acute Respiratory Syndrome (SARS), with fatal pulmonary repercussions for the individual.[3,4]

Within a month of the notification of a new acute respiratory disease associated with the coronavirus, more than 70,000 cases were confirmed in the city of Wuhan, China, with a reported mortality of about 2% to 3% in these patients. Consequently, since the time of the COVID-2019 outbreak, there has been an increase in the number of clinical trials that were approved to study several aspects of SARS-CoV-2 infection, its pathogenesis, symptomatology, complications and new diagnostic alternatives and, mainly, alternative treatments.[5]

In the light of the concept of patient safety, which means reducing, to an acceptable minimum, the risk of unnecessary harm associated with health care, the hospital health professional must develop the recommended strategies to attenuate the possible risks to patients derived from medication use. Given the above facts, and considering this world scenario, the care provided to these patients needs to be as safe as possible.[6,7]

In this context, the importance of the clinical pharmacist's attributions regarding the safety and effectiveness aspects of the adopted pharmacotherapy is emphasized. Pharmacists are able to make decisions related to pharmacotherapy, evaluation of results and their direct impacts on the patient, since patient safety is a basic and essential requirement and reflects the quality of care services provided by health services.[8]

Therefore, the aim of this study is to describe the pharmaceutical care provided to inpatients from a private hospital, with suspected or diagnosed COVID-19, during the pandemic.

2 MATERIALS AND METHOD

This is a descriptive, retrospective, observational study, carried out through the analysis of medical records of patients from a tertiary hospital in the city of Salvador, state of Bahia, northeastern Brazil, admitted to the Intensive Care Unit and the COVID-19 wards, from March to June 2020. Data were collected on the pharmaceutical care provided to hospitalized patients with suspected or confirmed COVID-19 infection, in addition to sociodemographic and clinical

data. The analyzed variables were: age, gender, profession, associated comorbidities, length of hospital stay, and provided clinical pharmacy services (drug reconciliations, pharmacotherapeutic follow-up, adverse drug reactions, pharmaceutical interventions). Qualitative and quantitative data were collected from the data available in the hospital information system, forms, clinical protocols and guidelines. The quantitative analysis of the data was carried out using the IBM® SPSS software.

The study was submitted to the Research Ethics Committee of Universidade do Estado da Bahia for consideration according to Resolution N. 466, of December 12, 2012/CNS MH. The Committee approved the study under Opinion number 4,463,876.

3 RESULTS

A total of 241 patients from the ICU and COVID-19 ward were assessed. Of these, 52.0% were men, aged between 40 and 49 years (20.75%), which had some type of comorbidity. The mean age of the assessed population was 55 years and 18.26% of the patients were health professionals.

For laboratory diagnosis, positive patients underwent both laboratory tests, RT-PCR and Rapid Antibody Test, or at least one of these. All untested patients and those who tested negative were also previously admitted in the COVID-19 units for suspected COVID-19 diagnosis (Table 1).

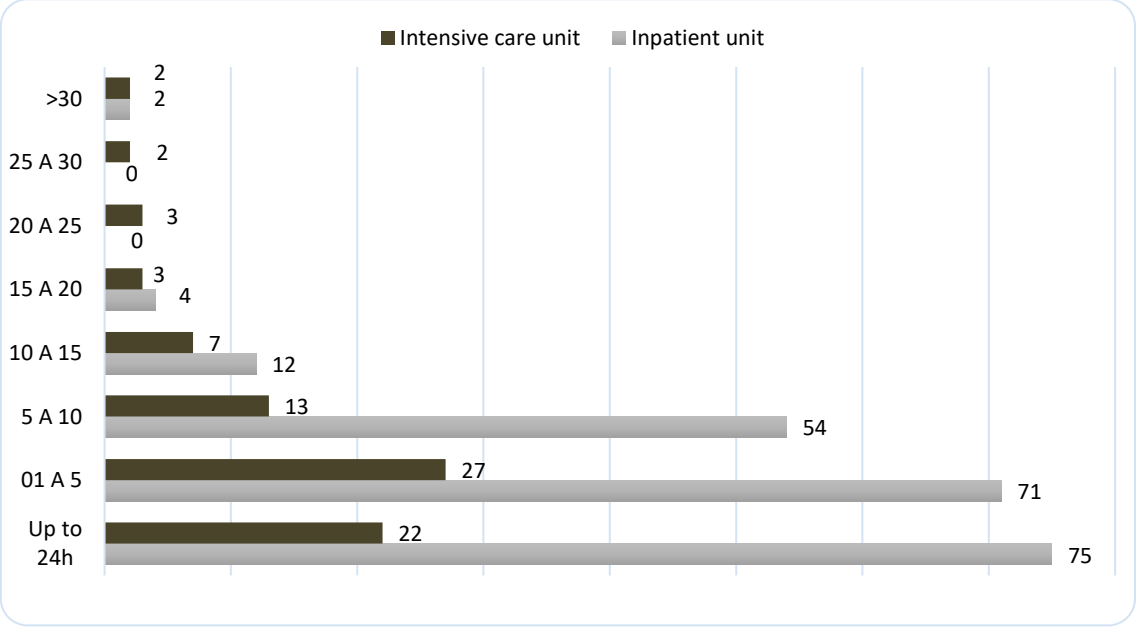
Table 1. Demographic and clinical data of the sample

Variables	n	%
Sex		
Male	124	52.0
Female	117	48.0
Age (yrs.)		
18-29	9	3.73
30-39	42	17.43
40-49	50	20.75
50-59	44	18.26
60-69	33	13.69
70-79	33	13.69
80-89	20	8.30
90-99	10	4.15
Laboratory diagnosis		
Positive	141	58.51
Negative	87	36.10
No tests	12	4.98
Morbidities		
Systemic Arterial Hypertension	128	33.25
Diabetes mellitus	65	16.88
Cardiovascular diseases (except SAH[1])	37	9.61
Obesity	24	6.23
Others	21	5.45

Nervous System Diseases	19	4.94
Neoplasias	14	3.64
Chronic Kidney Disease	13	3.38
Dyslipidaemia	12	3.12
Hypothyroidism	11	2.86
Asthma	10	2.60
Dementias, including Alzheimer	10	2.60
Haematological Diseases	8	2.08
Chronic Obstructive Pulmonary Disease	8	2.08
Autoimmune Disease	5	1.30
Severe Acute Respiratory Syndrome		
Yes	113	46.89
No	120	49.79
No information	8	3.32
Health Professional		
Yes	44	18.26
No	197	81.74
Mechanical ventilation		
Yes	37	15.35
No	204	84.65
Outcome		
Deaths	21	8.71
Hospital discharges	200	82.99
Transfers	20	8.30

The mean length of hospital stay in the intensive care unit and in the inpatient unit was 6.2 days and 4.3 days, respectively. The month of May was the period with the highest number of hospitalizations, both in the inpatient unit (n=90) and in the ICU (n=40) (Graphic 1).

Graphic 1. Distribution of admissions days/sector.



During the hospitalization period, from hospital admission to discharge, the patient is assisted at least once by the clinical pharmacist. Of the 241 assessed patients, about 75%

received some pharmaceutical care during the hospital stay. Of these, 65.56% received a visit from the pharmacist for a drug reconciliation interview during hospital admission (43.98% were reconciled) (Graphic 2) and 34.44% of the patients were monitored with pharmacotherapeutic follow-up/pharmaceutical evolution (Table 2).

Graphic 2. Distribution of medication reconciliations performed

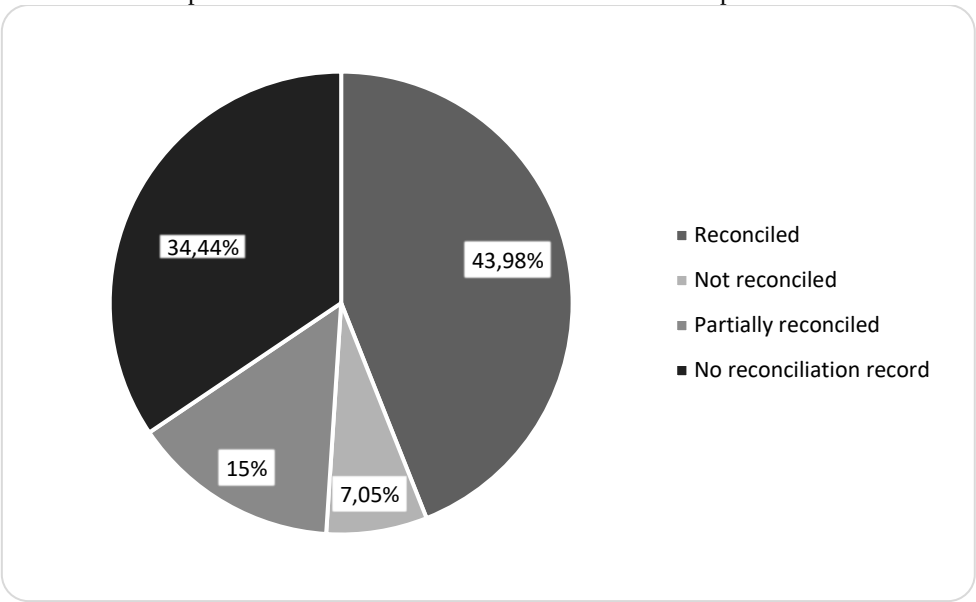


Table 2. Pharmaceutical care provided.

Activities	n	%
Drug reconciliation		
Yes	158	65.56
No	83	34.44
Pharmacotherapeutic follow-up		
Yes	83	34.44
No	158	65.56
Pharmaceutical interventions		
Yes	57	23.65
No	184	76.35
Interventions per unit		
Intensive Care Unit	156	86.67
Inpatient unit	24	13.33

The level of accepted interventions was higher than that of non-accepted ones throughout the study period. The month of May was the period with the most performed interventions (n=90) and 70% of them were accepted by the health team (Graphic 3). The mean interventions/patients from the COVID ICU and wards were 3.5 and 1.7, respectively. Interventions carried out during the period were categorized according to the prevalence of reasons for the interventions, with dose adjustment being the most prevalent one (Table 3).

Graphic 3. Acceptability of interventions per month from March to June 2020.

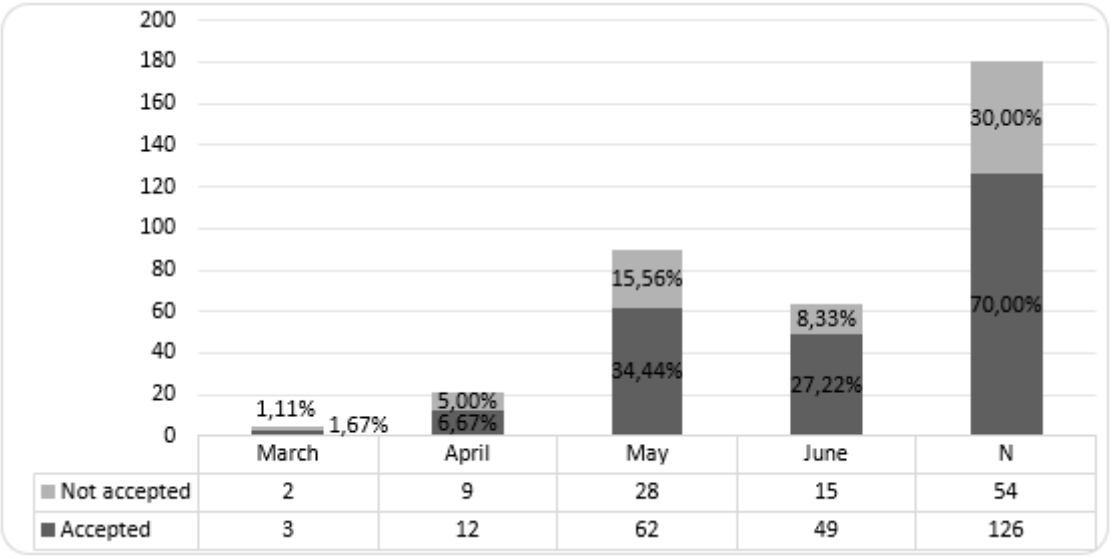


Table 3. Types of pharmaceutical interventions performed.

Classification	n	%
Adequacy to available pharmaceutical presentation	2	1.07
Dose adjustment	49	26.20
Dilution adjustment	7	3.74
Treatment duration adjustment	6	3.21
Frequency adjustment	5	2.67
Infusion adjustment	6	3.21
Most adequate therapeutic alternative	12	6.42
Contraindication	7	3.74
Description of prescription items	7	3.74
Typo	9	4.81
Drug interaction	1	0.53
Dual therapy	2	1.07
Medication in duplicate	4	2.14
Additional treatment required	26	13.90
Pharmaceutical advice	3	1.60
Patient using non-prescription medication	11	5.88
Request for laboratory tests	2	1.07
Medication withdrawal	11	5.88
Route of administration not recommended	8	4.28
Route of administration different from that used by the patient	9	4.81

The most frequent interventions were those related to: anticoagulant use (Enoxaparin), with all of them related to the adequacy of use to the hospital protocol of Venous Thromboembolism, Sedatives (Midazolam, Dexmedetomidine) with 57.89% of them related to overdose, 26.32% to infusion adjustment and 15.79% to the use of non-prescribed medication.

Antimicrobials (Azithromycin, Sodium Piperacillin/Tazobactam and Teicoplanin) had 45.16% of interventions related to dose adjustment, 19.35% to discontinuation of use and treatment duration, respectively, 6.45% to route of administration not used by the patient and

3.23% to duplicate prescription, frequency of administration and incorrect description of the item, respectively.

Antivirals (Oseltamivir) also received interventions related to discontinuation of use (30%), treatment duration (10%), dose adjustment (30%), frequency/interval of administration (10%), route of administration used by the patient (10%) and description of the prescription item (10%) (Table 4).

Table 4. Medications with the highest number of identified interventions.

Drugs	n	%
Nitazoxanide	4	1.66
Hydroxychloroquine sulphate	5	2.07
Ivermectin	34	14.11
Dexamethasone	35	14.52

During the study, some patients used pharmacotherapies based on clinical studies that were still under development in the year 2020 for COVID-19 (Table 5). Sixteen patients without SARS used hydroxychloroquine (n=3), ivermectin (n=9) and nitazoxanide (n=3).

Table 5. Drugs in clinical trials for COVID-19 used in the patients.

Drugs	ATCC[1]	n	%
Enoxaparin sodium	B01AB05	18	10.59
Midazolam	N05CD08	13	7.65
Azithromycin dihydrate	J01FA10	12	7.06
Piperacillin Sodium / Tazobactam Sodium	J01CR05	10	5.88
Oseltamivir phosphate	J05AH02	10	5.88
Dexmedetomidine Hydrochloride	N05CM18	10	5.88
Teicoplanin	B05XA01	9	5.29

1:ATCC =Anatomical Therapeutic Chemical Code

4 DISCUSSION

Middle-aged adult men (40 to 49 years old) and with some type of comorbidity represented the predominant profile in the study. For Hua et al.[9] (2020), the data also disclosed that the proportion of infected men (54.8%) was higher than that of women, and the age group of 50 to 59 years old comprised the highest proportion (36.59%), followed by the age group of 40 to 49 years old (20.12%) and 30 to 39 years old (18.37%).

According to the Health Secretariat of the State of Bahia, in the period equivalent to the study period, the gender of confirmed cases was predominantly female (54.66%), while males represented 45.24% of cases. The most affected age group was 30 to 39 years old, representing 23.59% of the total, followed by 40 to 49 years old.[10]

Of the total number of COVID-19 cases in the state of Bahia (18,898), for the corresponding period of the present study, approximately 2,764 were health professionals. In Salvador, there were 237,166 cases, of which 7% were health professionals. The sample analysis showed that 44 cases (18.26%) were health professionals, who were from the institution itself and also from other institutions.[10]

Among the comorbidities, Systemic Arterial Hypertension (SAH) and Diabetes Mellitus (DM) were the most frequent ones, followed by obesity. In the state of Bahia, the most frequent comorbidity among patients hospitalized for COVID-19 during the study period was also SAH, followed by DM and other cardiovascular diseases.[10]

Some studies have shown that individuals with hypertension tend to be more severely affected by COVID-19. Angiotensin II Converting Enzyme (ACE2), being a membrane glycoprotein found in epithelial cells of the heart, kidney, lung and intestinal tissue, converts angiotensin II into angiotensin I. Thus, the presence of ACE2 counteracts the inflammatory effects of angiotensin II, reduces the levels of the pro-inflammatory cytokine Interleukin-6, increases the anti-inflammatory and antioxidant roles of angiotensin I, increases the levels of alveolar surfactant protein and triggers vasodilation.[11]

The month of May was the study period with the most hospitalizations, a scenario that was proportional to what was observed in the capital of the state, Salvador, which showed that 91% of the COVID-19 ICU beds were occupied May 2020, whereas the rate for the month of June was 73%. In September 2021, the occupancy rate in the COVID-19 ICU was 33%, and according to the Health Department of Bahia, 468 patients remained hospitalized for COVID-19, with 276 in the ICU and 192 in clinical beds. [12]

Considering the health crisis, bedside activities and face-to-face contact with patients were restricted to only a few professionals, and the pharmacist was limited to electronic medical records, telephone contact and assistance to the multidisciplinary team to obtain information about the patient.[13]

The eventual absence of information about the patients' previous medication use in the multiprofessional records, added to the difficulty of communication with the family members of the non-contacting patient, resulted in the detected percentage of patients without drug reconciliation. Another justification is that these patients develop into more severe cases and drug reconciliation is not carried out or it is too delayed.

Pharmacotherapeutic follow-up is an important pharmaceutical tool in the identification, correction and reduction of possible risks associated with drug therapy, with the patient

receiving the most benefits. Studies show that pharmacotherapeutic follow-up can reduce medication error rates by up to 78%.[14,15]

In a study carried out by Medeiros et al.[16] (2020), which included the analysis of the prescription, pharmacotherapeutic follow-up and pharmaceutical interventions from April 15 to June 15, 2020, in COVID-19 ICU and ward patients, the total pharmacotherapeutic follow-up rate observed in the units was 38.91% (n=100). These data corroborate the results found in the present study.

Patients without pharmaceutical follow-up usually have a length of stay in the units of less than the minimum established for follow-up (less than 48 hours for the ward and 24 hours for the ICU). Moreover, the protocol criteria for the follow-up profile by the clinical pharmacy service prioritize patients using restricted antimicrobials, those treated with anticoagulant therapy and patients at high risk of developing a pharmacotherapeutic problem, starting from the patient's admission to the sector.

The clinical pharmacy service uses these criteria to define care due to hospital demand, regardless of whether or not the patients have been diagnosed with COVID-19. This adopted strategy aims to make indicator results and the clinical pharmacy follow-up surveys real, based on the availability of the team's human resources. That is, even if the patient has been diagnosed with COVID-19, they also need to meet at least one profile criterion to have a record of the pharmaceutical evolution.

Minimizing medication errors is one of the priorities of the clinical pharmacist. Through the prescription evaluation, the pharmacist identifies and prevents drug-related problems, ensuring the correct use of the adopted pharmacotherapy. Prescription errors are the main cause of adverse events that can prolong the patient's hospital stay, cause irreversible damage to the patient or even their death.[17]

The rate of interventions found for the COVID-19 ICU in the assessed institution was higher than that found by Medeiros et al.[16] (2020), of 28.9%, although they had more than two-fold the number of patients in their sample (n= 100) when compared to the present study. A total of 34.6% of the performed interventions were carried out in patients admitted to the ward and the authors associated this number with the higher turnover and shorter length of stay of patients in this sector.

Of the total number of interventions related to dose adjustment, the reasons varied between adjustment for renal function (creatinine clearance, pre- and post-hemodialysis), maintenance dose, and anticoagulant dose adjustment, among others. Approximately 15

interventions were related to hydroelectrolytic disorders, with potassium being the most frequently adjusted electrolyte.

According to the cross-sectional, retrospective study carried out at the COVID-19 ICU by Brito et al.[18] (2020), of the 276 interventions carried out in a period similar to that of this study, the largest number was related to treatment duration, (31%) followed by dose adjustment (23%). The main outcome of the interventions was the prevention of adverse events (67%), followed by prevention of illness (24%). For the authors, 100% of the pharmaceutical interventions had a clinical impact, 92% had a preventive impact and 58% reduced costs.

With the advancement of the pandemic, the ambiguity of information about new therapeutic approaches for these patients led the institutions and the medical community to constantly improve protocols and guidelines based on several ongoing studies.

According to the abovementioned information, the interventions related to enoxaparin use involved therapeutic adequacy to the hospital protocol for Venous Thromboembolism (VTE), in which the reasons comprised: prophylaxis replacement therapy, contraindication of pharmacological measure, omission of prescribed prophylaxis, dose adjustment, dual therapy and reassessment of VTE risk. It was also observed that the prophylaxis dose used by the patients started to be 40mg every 12 hours.

In a document issued by the Brazilian Society of Thrombosis and Hemostasis (SBTH, *Sociedade Brasileira de Trombose e Hemostasia*) and the Thrombosis and Hemostasis Committee of the Brazilian Association of Hematology, Hemotherapy and Cell Therapy (ABHH, *Comitê de Trombose e Hemostasia da Associação Brasileira de Hematologia, Hemoterapia e Terapia Celular*), the recommendation is that all patients hospitalized for suspected or confirmed COVID-19 receive pharmacological thromboprophylaxis in the absence of absolute contraindications.[19]

In a cohort study of patients with severe COVID-19 pneumonia in China, about 25% of patients who did not receive thromboprophylaxis developed lower-extremity VTE during hospitalization. The cumulative incidence of in-hospital thromboembolic events can reach 60% in critically-ill COVID-ICU patients.[20,21,22]

Therefore, some studies and medical societies recommend the use of intermediate or therapeutic doses of Low Molecular Weight Heparin (LMWH) for VTE prophylaxis in ICU patients with COVID-19. The suggested dose regimens are enoxaparin 40mg twice daily and/or enoxaparin 1mg/kg daily.

Although the abovementioned studies have reported that the risk of thromboembolic events is high in severe COVID-19 patients, for SBTH and ABHH there is no evidence to date

to support the increase in the dose of pharmacological thromboprophylaxis to intermediate or therapeutic doses. The suggested use is the standard dose of LMWH for thromboprophylaxis, adjusted for body weight and renal function, in patients admitted to the general ward or ICU, unless there are contraindications.

It is evident that the SARS-CoV-2 pandemic has transformed the profile of patients admitted to intensive care units. The patients develop SARS due to COVID-19, in which individuals maintain high parameters in mechanical ventilation for a longer period of time, and sedation becomes a viable and assertive conduct that offers better mechanics and patient adaptability to the support therapy, since invasive procedures and the prone position itself are considerable painful stimuli.[23]

However, it is known that prolonged sedation can cause adverse effects, such as hyperalgesia, tolerance and tachyphylaxis, and critical polyneuropathy, phenomena that can be exacerbated by a high cumulative dose of these drugs, a context that can even be expanded, if the use of neuromuscular blockers is added.[24]

The study showed that both midazolam and dexmedetomidine received overdose-related interventions, with more than half of them being accepted by prescribers for adjustments. In addition to these drugs, there were also interventions related to fentanyl for non-prescription use in patients and propofol for infusion adjustment and non-prescription use, as well.

Prolonged hospital stay, use of mechanical ventilation, use of intravenous devices (such as catheters) in addition to the viral infection itself are risk factors that can trigger bacterial coinfections. These risk factors increase the empirical use of antimicrobials. When analyzing the results, the antimicrobials teicoplanin and piperacillin sodium/tazobactam sodium and azithromycin were the ones that received the most pharmaceutical interventions, which were related to the dose and frequency/duration of the treatment. In the study by Brito et al.[18] (2020) 54% of the interventions in COVID-19 ICU patients were for antimicrobials.

The percentages of acceptance related to pharmaceutical interventions carried out in the period were higher both for the total count of interventions and in those carried out only for the COVID-19 ICU patients. These percentages are among those found in retrospective cross-sectional studies carried out in periods similar to that of the present study, during the pandemic.

In a private general tertiary hospital, 97% of the performed interventions were accepted by the prescribers. The most frequent interventions were related to the inclusion of medications due to the need for treatment (15%), which corroborates the result found here for this cause of intervention, which was 13.47%. The antimicrobial class was the therapeutic class with the

most interventions (15%) for that study. For the authors, all of them contributed to adequate treatment and patient safety.[25]

As a health professional working on the front line of the pandemic caused by the new coronavirus, the pharmacists have faced the challenge of constantly updating themselves on the new therapeutic alternatives that fed the expectations of the pandemic reversal and social normalization. *A priori*, therapeutic alternatives were available and accessible.

Since the off-label use of drugs that are still undergoing clinical studies brings the risk of adverse drug reactions to the patient, continuous monitoring of the adopted pharmacotherapy is necessary, according to each patient's clinical condition, offering pharmacological efficacy and safety.

Hydroxychloroquine was the drug with more interventions in clinical studies during the study period, and these interventions were related to dose adjustment and route of administration only. Only five patients used hydroxychloroquine, and no adverse reactions were reported as a result of the association between hydroxychloroquine and azithromycin or hydroxychloroquine use alone. For Brito et al.[18] (2020) of the interventions performed in the COVID-19 ICU of a university hospital, 26% were related to antimalarials.

There were no Ivermectin-related interventions in this study. Drugs that have their use approved and are considered effective and safe may have new indications, becoming a fast alternative and, thus, ivermectin could have become a therapeutic alternative. Another factor that contributed to the rapid spread of ivermectin use in the pandemic was its low cost.[26]

The spread of fake news about the use of this antiparasitic drug, the fear caused by social isolation, in addition to its use in the so-called "kit COVID", increased the number of dispensations of this drug to 1533.33%, as shown in a study of March 4, 2020, when compared to the previous year. The most critical point related to the use of ivermectin was the announcement by ANVISA through RDC 405 of July 22, 2020, that the dispensation of ivermectin should be carried out only with prescription retention. [27.28]

At the time of the investigation, some clinical studies were being carried out on the use of oseltamivir in patients with COVID-19. This antiviral has been empirically used in several COVID-19 patients in China, due to the overlap with the peak of the influenza season. Despite the lack of results proving the effectiveness of this drug in the treatment of COVID-19, this may have been a bias found amidst the anxiety, despair and yearning for improvement of patients in a scenario of increasing mortality in the middle of the pandemic.[29]

The use of corticosteroids in patients with suspected or diagnosed COVID-19 infection was discussed early on in the pandemic. The controversies regarding their use were related to

the immunomodulation caused by this therapeutic class. Clinical studies have shown benefits in specific subpopulations, but other studies have shown increased viral load, increased length of hospital stay, and exacerbated risk of secondary infection.[30,31,32]

In clinical practice, corticosteroids are widely used in the symptomatic treatment of severe pneumonia. Some retrospective studies have previously reported the use of corticosteroids (methylprednisolone) in patients infected with the closest relative of the new coronavirus, SARS-CoV, and the results showed that patients with severe conditions were more likely to require corticosteroid therapy.[33]

Until the month of June, it was verified that methylprednisolone was the most widely used corticosteroid in the patients from the sample (n=44). After the results of clinical studies and the recommendations of the Brazilian Society of Infectious Diseases, on the efficacy of dexamethasone use, as demonstrated at a dose of 6mg/day for 10 days (in critically-ill patients with oxygen supplementation and/or mechanical ventilation), its use was identified in 70 patients. Among the three interventions for dexamethasone, one was drug withdrawal (patient with suspended oxygen supplementation), one was due to drug interaction, and one to dose adjustment.

5 CONCLUSION

The present study allowed the analysis of the follow-up of patients under pharmaceutical care. Positive outcomes in the patients' clinical conditions can be attributed to the pharmaceutical care provided to them, in the entire pharmacotherapy adopted during hospitalization. It is, therefore, essential to include pharmacists in the multidisciplinary team, developing actions to expand care for patients, favoring the rational use of medications within the maximum parameters of efficacy and the minimum parameters of toxicity, considering care mainly for patients with severe and unstable conditions in the ICU, especially in the context of empirical treatments, which occurred during the pandemic.

DECLARATION OF CONFLICTS OF INTEREST

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