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Evaluation of Drug Utilisation Pattern and Clinical Presentation in Covid19 Patients Based on the Disease Severity

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ABSTRACT

Coronavirus disease of 2019 (COVID-19) is an extremely communicable disease characterized by the serious acute respiratory influenza virus 2, a recently identified novel viral disease (SARS-CoV-2). Hitherto, the quantity of established instances worldwide has reached 135 million, and the number of deaths is 2.9 million. In India, the cases were found to be 20 million and the mortality rate is 3,51,000. This virus was first identified in Wuhan City, Hubei Province in China, at the end of 2019. Until now, it affected more than 200 countries. The treatment pattern and clinical presentations were assessed in COVID 19 patients. A total of 146 patients ,severe patients (n = 71) and non-severe patients (n = 75) where included in the study. The mean age of the study population was found to be 58.76±14.32 and the most common symptoms of patients include fever, fatigue, dry cough, and diarrhea there is no statistically significant difference in the clinical features between severe and non-severe patients. There is no significant difference in the laboratory findings except lymphocyte count, CORADS and N/L ratio between severe and non-severe patients. COVID-19 affects all age groups especially the elderly. The risk for severe illness with COVID-19 increases with age. COVID 19 patients were presented with various the risk factors and the clinical features in the severe and non severe conditions patients, our study shows great significance to prevent the patient turning to critical condition during diagnosis and treatment.

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INTRODUCTION

Coronavirus disease of 2019 (COVID-19) is an extremely communicable disease characterized by the serious acute respiratory influenza virus 2, a recently identified novel viral disease (SARS-CoV-2) [1]. Hitherto, the quantity of established instances worldwide has reached 135 million, and the number of deaths is 2.9 million. In India, the cases were found to be 20 million and the mortality rate is 3,51,000. This virus was first identified in Wuhan City, Hubei Province in China, at the end of 2019. Until now, it affected more than 200 coun-

Table 1: Distribution of Covid-19 Patients Based on Disease Severity

Severity	Total	Gender		P-value
		Male (n=106)	Female (n=40)	
Severe	71	52	19	0.8667
Non- severe	75	54	21	

tries. The sudden appearance of the COVID-19 deadly disease has led to a substantial loss of human existence all over the world by affecting public health, social and economic development [2, 3].

COVID-19 has a range of impacts on various persons. The majority of infected persons will experience mild-to-moderate sickness and will be able to recover without the need for hospitalisation. Symptoms can be managed at home by individuals who have minimal symptoms and are otherwise fit. Substantially it usually takes 5 to 6 days for symptoms to show when someone is infected with the virus, however it can take up to 14 days [4]. Acute respiratory discomfort syndromes (ARDS), which manifests as dyspnea and acute respiratory insufficiency is the most serious consequence of chronic COVID-19 infectious disease. Severe COVID-19 has been associated to cardiovascular sequelae, acute renal damage, neurological problems and acute ischemia strokes in addition to respiratory complications. Only a few cases of encephalitis have been documented. COVID-19 severity seems to be linked to coagulopathy, which manifests as thrombosis in many organs [5, 6].

Though the clinical characteristics of Coronavirus-19 and the pathogenicity of SARS-CoV-2 are still being investigated; The pathogenesis of COVID-19 is considered to be controlled by two mechanisms: first, initial infections is largely controlled by SARS-CoV-2 proliferation; secondly, later transmission is driven largely by an excessive inflammatory system to the influenza that contributes to tissue destruction. Antiviral treatments are expected to have the biggest impact initially in the progression of the illness whereas immunomodulatory medications are anticipated to be more effective in the latter phases of COVID-19, predicated on this understanding [7, 8]. Vaccines have been developed to fight against COVID-19. In all countries, vulnerable populations are the highest priority for vaccination. Currently, two vaccines that have granted emergency use authorization by the CDSCO in India are COVISHIELD and COVAXIN [9]. Thus far, most of the available papers on COVID-19 have been focused on epidemiologic and experimental distinctiveness of COVID-19 patients. In this paper, we report the clinical features seen in COVID-19 patients and also the treatment plan followed to treat these patients.

MATERIALS AND METHODS

Study Framework

At a multi-specialty clinic, this potential observational research was conducted, Bangalore over a period of six months. This study was conducted between the period August 2020 and January 2021. Patients with the following criteria were allowed to participate in this study: a) Patients with COVID-19 positive; b) Both gender; c) Age group between 15 to 80 years; d) Inpatients. The following criteria were excluded: a) Pregnant and lactating women; b) Paediatrics.

Data Collection

Prior to the start of the research, the Institutional Ethical Committee gave their approval. Patients who satisfied the survey's inclusion requirements were included. Well-versed authority was gained from the patient or attenders of patient. The patients demographic details, medical and medication history, clinical features, laboratory findings, drugs details were collected from the patients medical records and documented in a suitably designed individual case record form.

Statistical Examination

SPSS Versions 20 was used for statistical analysis. The mean and standard variation are used to depict any continuous statistics. Numbers and ratios are used to portray categorical variables. Chi-square test was conducted for the analysis of the categorical variables and T-tests for continuous variables. P-value less than 0.05 were seen as statistically substantial at 5% level of significance with confidence interval 95%.

RESULTS

A total of 146 patients were included in the study based on inclusion criteria. Table 1 shows the disease severity of study population. The patients were divided into severe patients (n = 71) and non-severe patients (n = 75). Statistically significant difference was not found in the disease severity between the gender. Of all the patients, 106 were male and 40

Table 2: Distribution of Covid-19 Patients Based on Age

Age interval	Total	Severe	Non-severe	P value
11-20	2	1	1	
21-30	7	2	5	
31-40	11	6	5	
41-50	20	8	12	0.2672
51-60	37	13	24	
61-70	32	21	11	
71-80	27	15	12	
81-90	10	5	5	

Table 3: Common Comorbidities in Covid-19 Patients

Comorbidity	Total	Severe	Non-severe	P value
Diabetes Mellitus	47	22	25	0.7616
Hypertension	47	29	18	0.0294
Hypothyroidism	18	11	07	0.2579

Table 4: Clinical Features of Patients with Covid-19

Clinical Feature	Total	Severe	Non-severe	P value
Fever	72	38	34	0.3226
Cold	9	4	5	0.7954
Cough	77	36	41	0.6317
Expectoration	5	2	3	0.6944
Sore throat	15	9	6	0.3523
Nausea & vomiting	8	5	3	0.4195
Dyspnea	18	9	9	0.9012
Headache	5	3	2	0.6047
Chills	5	1	4	0.1924
Myalgia	4	2	2	0.9557
Tiredness	20	13	7	0.1149
Loose stools	13	9	4	0.1195

were female [Figure 1].

The mean age of the study population was found to be 58.76±14.32. Age parameter reveal that 37 patients fall between 51-60 years followed by 32 patients between 61-70 years. Statistically significant difference was not seen in the disease severity based on age which is shown in Table 2 and Figure 2.

When comparing comorbidities between severe and non-severe COVID-19 patients, we found that patients in the severe COVID-19 group were significantly seen with the comorbidity of hypertension than those in the non-severe COVID-19 group. Common comorbidities observed in this population were hypertension, diabetes mellitus and hypothyroidism which was shown in Table 3 and Figure 3.

The clinical presentation of COVID-19 patients who participated in this study is shown in Table 4 and Figure 4. Most repeatedly observed features were cough and fever followed by other symptoms. Statistically significant difference was not observed in the clinical features between severe and non-severe patients.

The mean and SD values of each laboratory parameter is given in Table 5. We found no significant difference in the laboratory findings except lymphocyte count, CORADS and N/L ratio between severe and non-severe patients.

Table 6 and Figure 5 depicts the drugs utilized to treat severe and non-severe COVID-19 patients in the present study. Among various antibiotics prescribed, doxycycline and piperacillin/tazobactam were commonly prescribed to these patients fol-

Table 5: Laboratory Findings of Patients with Covid-19

Parameter	Severe	Non-severe	P value
AST	67.09±30.25	50.67±12.42	0.3976
ALT	67.23±33.73	51.67±14.15	0.3127
Lymphocytes	11.39±9.33	19.84±15.99	0.0294
WBC	10184±6527	7219±5164	0.0811
CRP	54.32±41.34	55.58±42.78	0.9538
CORADS	5.88±0.32	5.55±0.86	0.0062
CT scan findings			
Glass opacity	45	13	-
Pleural effusion	2	3	
Consolidation	13	2	
Nodular lesion	2	1	
Viral pneumonitis	11	3	
Serum ferritin	466.8±394.4	456.1±385.1	0.9486
D- dimer	1017±627	1088±883.5	0.8166
LDH	464.2±254.8	345.8±106	0.2814
N/L ratio	7.6±9.07	13.7±11.27	0.0494

lowed by corticosteroids, anti-pyretic, leukotriene receptor antagonist and other drugs.

The distribution of study population based on corticosteroids use in COVID-19 patients who participated in this study is shown in Table 7. Statistically significant difference was observed in the severity, WBC count, Neutrophil count and serum ferritin between severe and non severe patients.

Flow chart on distribution of study population based on corticosteroids use in COVID-19 patients who participated in this study is shown in Figure 6. It was found that use of corticosteroids was more in non severe group compared to severe group patients.

DISCUSSION

COVID-19 is a virus that first appeared in China in December 2019 and has since spread around the world. Depending on clinical symptoms and laboratory findings, COVID-19 sufferers are classified as low, moderate, serious, or sensitive [10]. In our study, we included only two groups: serious or non serious. COVID-19 affects all age groups especially the elderly. The risk for severe illness with COVID-19 increases with age [11]. This is similar to our report showed the mean age of 58 years. An increased number of positive patients was noticed above 50 years since they are at higher risk, compared to severe group non severe sub group population were older between the age group of 50-60years. When compared to individuals without comorbidities, COVID-19 patients with comorbidities have poorer results. COVID-19 individuals with a background of hypotension, overweight, chronic lungs diseases, diabetes, or heart diseases had the poorest expectancy, with worsening consequences such as pneumonia and acute respiratory distress syndrome [12]. Diabetes mellitus, hypertension, and hypothyroidism were three common comorbidities seen in our study population. The clinical features and disease outcomes among COVID-19 patients vary from person to person. COVID-19 can cause a wide range of symptoms, from symptomless individuals to septic shocks and multi-organ failure [13]. Fever, tiredness, a sore throat, and diarrhea are the most frequent indications of sufferers, which resembles the present study report.

When a patient has moderate to extreme breathing problems, chest screening is recommended. Chest computed tomography (CT) findings in Instances of COVID-19 exhibit consolidation, vertical opacity, septal thickness and/or reticulations, crazy-paving framework, air bronchogram, pleural thickening, halo sign, bronchiectasis, nodules, bronchial wall thickening, and reversed halo sign [14]. The above findings coincide with the CT findings of our study population. Aside from CT results and medical presentations the majority of COVID-19 patients had laboratory abnormalities such as complete blood counts CBC, heart and coagulation measures, renal and liver functioning testing and inflammation-linked variables [15]. Our study population has shown a change in the following parameters: AST and ALT(increased), CRP (increased), serum ferritin (increased), D- dimer (increased), and LDH (increased). Neutrophil to lymphocyte ratio (NLR)

Table 6: Drugs Prescribed to Covid-19 Patients

Drug	Severe	Non-severe
Antibiotics		
Doxycycline	48	55
Tigecycline	0	1
Clarithromycin	2	1
Azithromycin	9	5
Moxifloxacin	2	2
Levofloxacin	1	0
Teicoplanin	2	0
Amoxicillin/clavulanic acid	1	2
Meropenem	17	1
Colistin	0	1
Piperacillin/ Tazobactum	91	8
Ceftriaxone	17	13
Cefoperazone/ Sulbactum	5	4
Cefuroxime	2	1
Cefotaxime	1	0
Cefipime/ Tazobactum	0	1
Antifungal		
Voriconazole	2	1
Anti Helminthics		
Ivermectin	28	31
Anti Asthamatcs		
Montelukast/Levocetirizine	9	11
Salbutamol/Ipratropium bromide	12	12
Salbutamol/Formoterol	2	0
Acebrophylline	8	2

Continued on next page

Table 6 continued

Drug	Severe	Non-severe
Corticosteroids		
Methylprednisolone	40	33
Budesonide	13	15
Dexamethasone	10	15
Anticoagulants		
Dabigatran	5	12
Enoxaparin	45	53
Heparin	7	5
Antivirals		
Remdesivir	22	17
Oseltamivir	4	15
Ulinastatin	1	1
Favipiravir	1	3
Multivitamins	57	45
Anti Tussives		
Levocloperastine	2	4
Acetylcysteine	20	19
Anti Inflammatory		
Colchicine	5	3
Pirfenidone	1	1
Tocilizumab	0	1
Statins		
Atorvastatin	4	6
Anti Platelets		
Aspirin	16	4
Antipyretic		
Paracetamol	8	6
Mefenamic acid	0	2
Oral Hypoglycemics		
Insulin	1	1

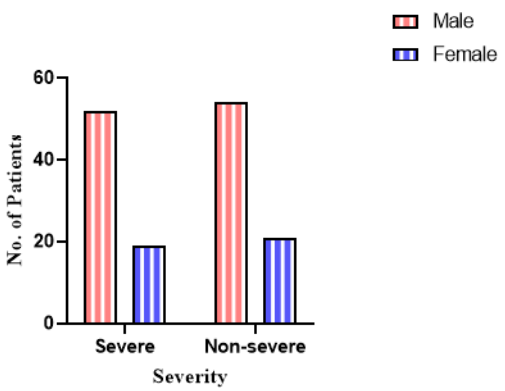

Figure 1: Distribution of Covid-19 Patients Based on Disease Severity

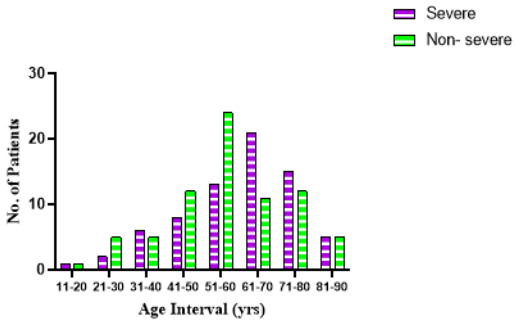

Figure 2: Distribution of Covid-19 Patients Based on Age

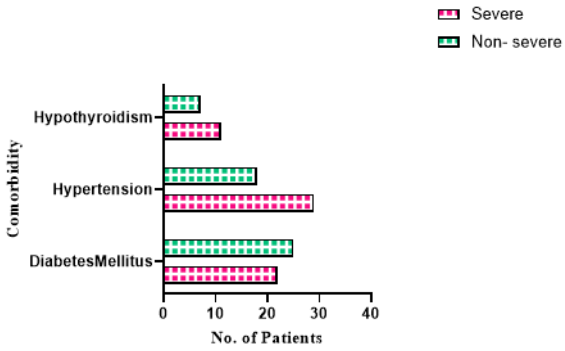

Figure 3: Common Comorbidities in Covid-19 Patients

test combination assists in confirming the state of hyper inflammation and prognosis of patients [16].

The present study reported an increased NLR which discloses the studied population has hyper inflammation.

Among 146 patients n= 4(2.73%) patients died during hospitalization and 3 patients had steroids induced hyperglycemia treated by administration of Insulin. Overall n=115 patients received corticosteroid therapy. There is a statistical differences in Severity, WBC count, Neutrophil count, D dimer

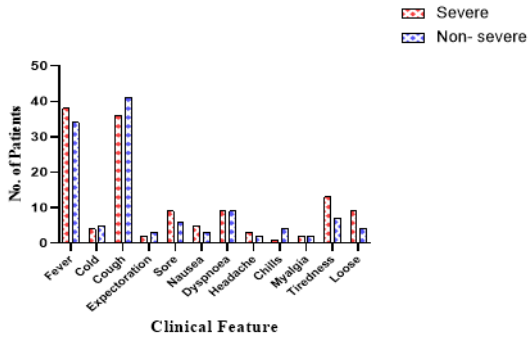

Figure 4: Clinical Features of Patients with Covid-19

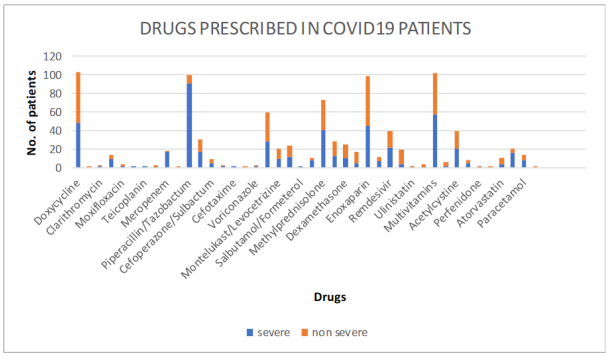

Figure 5: Drugs prescribed to covid patients

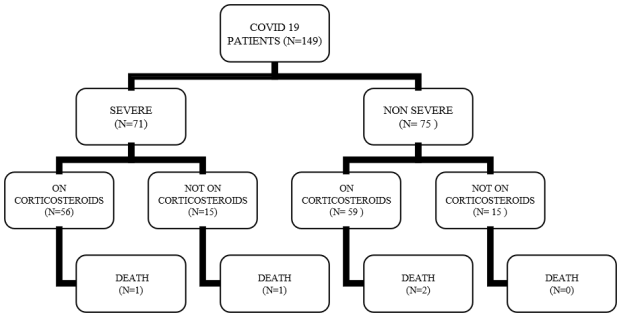

Figure 6: Flow chart on distribution of study population based on use of corticosteroids

and serum ferritin values in those who did and did not receive corticosteroids. Based upon the disease severity of COVID 19, non severe were more likely to receive corticosteroids. In the present study nearly all patients received antibacterial, antivirals and glucocorticoids.

Currently, there is no cure for COVID-19. The goal of treatment is to manage and reduce symptoms until you recover from the disease. Remdesivir is the only antiviral medication authorized by the FDA for the diagnosis of COVID-19. It is advised to utilize it in admitted individuals who need supplementary oxygen. Dexamethasone is a corticosteroids that has been shown to enhance survival in individuals who need supplementary oxygen and mechanized ventilation in the hospital. As a result, the usage of dex-

Table 7: Distribution of study population based on corticosteroid use

	Corticosteroids	No Corticosteroids	P value
No. Of patients	115	31	0.022994*
Age	59.869±14.625	51.6±18.553	0.652
Severity			
Severe	56	15	0.301*
Non-severe	59	15	0.021*
Lab parameters			
WBC Count	10125±6292	5272.72±4450.704	0.0351*
Platelets	1.63±0.7503	1.2±0.52	0.825
Neutrophils	79.304±14.186	68.4±22.5	0.0468*
Lymphocytes	14.74±12.61	24.4±19.93	0.323
LDH	428.2±22.1667	370.1667±141.21	0.427
D Dimer	1816.79±220.39	666.14±105.9	0.0310*
CRP	52.29±41.827	69.5±22.2	0.913
Sr. Ferritin	528.88±415.42	357.18±246.2702	0.0301*

amethasone is highly suggested [17]. Concerning the above statement, our study population has been prescribed corticosteroids, remdesivir, antibiotics, antipyretics, pain killers, and other medications to cure Coronavirus-19.

CONCLUSION

The global pandemic COVID-19 has an impact on the mental health and psycho-social concerns of people due to isolation and quarantine. Among various measures, Segregation is the most beneficial COVID-19 suppression strategy. Hence, in addition to the pharmacological management, psychological support is very essential to COVID-19 patients to overcome their stress, anxiety and depression. The major limitations of this study were selection bias and the small population size. Therefore, a study with larger population size should be carried out to determine clinical features, risk factors and management accurately.

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Conflict of Interest

The authors have no conflicts of interest regarding this investigation.

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