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Pharmacological treatment for Covid-19 with various comorbidities

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ABSTRACT

Background: *A worldwide pandemic known as coronavirus illness (COVID-19), which is brought on by the SARS-CoV-2 coronavirus, first appeared in Wuhan, China. It spread swiftly, reaching over 180 nations. Our understanding of precisely who this virus would have a serious negative impact on is still very limited as the novel coronavirus continues to develop. A worse prognosis has been observed in older adults and individuals of any age who have underlying medical disorders such diabetes and hypertension.*

Objectives: *The aim of the study was to found the pharmacological treatment for covid-19 with various comorbidity.*

Methods: *This cross-section observational study was carried out in the Department of Pharmacology, Rangpur Medical College and Hospital. The duration of the period from July 2020 to July 2021. A total of 200 patients were participate in the study. Statistical analyses of the results were be obtained by using window based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-24), where required.*

Results: *The mean (± SD) age of the patients was 55 ± 2.9 years. Minimum 10(10%) of the patients were within the age group of 35-40 years and 60(30%) of the patients were within the age group of 50-60 years. About, 55% of the patients were female and 45% were male. 50(25%) of the patients had DM, HTN with cardiovascular diseases and DM, HTN with arthritis respectively. 40(20%) had DM, HTN with bronchial asthma. 15 (30%) of the respondents had DM with ischemic heart disease (IHD) and HTN with CKD, and disability with knee respectively. 10(5%) of the patients had 75-80% oxygen saturation, 40(20%) of the patients had 80-85% oxygen saturation, 60(30%) of the patients had 85-90% oxygen saturation, 50(25%) of the patients had 90-95% oxygen saturation and 40(20%) of the patients had >95% oxygen saturation. list of medicine prescribed during hospitalization were, Meropenem, Multivitamin, Moxifloxacin, Unfractionated Heparin , Human insulin, Remdesivir, Nebulizer with Windel (Salbutamol), Nebulizer with Budicort (Budesonide), Monas (Montelukast), Clopid (antiplatelet), Actemra (Tocilizumab), Napa extend ((Paracetamol), Neuro B (Vitamin B complex) and Epoetin (Erythropoietin). Regarding outcome 99% patients were survived and 1% death occur.* ***Conclusion:*** *Despite the fact that there is still a lot of research being done on COVID-19 across the globe, there is very little information currently accessible regarding the drug usage among COVID-19 patients with comorbidity. It is thought that people with specific underlying medical disorders, regardless of age, are more likely to develop a severe COVID-19 sickness and die from it. The data in this study provide the first overview of drug use among COVID-19 participants with comorbidities.*

Keywords*: Comorbidities, Pharmacology, COVID-19.*

I. INTRODUCTIN

A worldwide pandemic known as coronavirus illness (COVID-19), which is brought on by the SARS-CoV-2 coronavirus, first appeared in Wuhan, China. It spread swiftly, reaching over 180 nations. Our understanding of precisely who this virus would have a serious negative impact on is still very limited as the novel coronavirus continues to develop. A worse prognosis has been observed in older adults and individuals of any age who have underlying medical disorders such diabetes and hypertension [1]. Diabetes patients have higher rates of morbidity and death as well as more admissions to hospitals and intensive care units (ICUs). COVID-19 can cause severe illness in people with chronic obstructive pulmonary disease (COPD) or any respiratory infection [2]. According to a retrospective research of middle-aged and old COVID-19 patients, the elderly are more prone to the sickness and more likely to be admitted to the intensive care unit, where their mortality rate is higher [3]. The underlying diseases and age of the COVID-19 patient are directly correlated with the clinical outcomes and length of stay [4]. Individuals with pre-existing comorbidities including hypertension, cardiovascular disease, and

diabetes are at a substantially higher risk of dying from COVID-19, according to evidence from the global outbreak [5,6]. This is of tremendous concern to those who have these disorders and poses a significant challenge to biomedical research and the world's healthcare systems. Given that COVID-19 patients with comorbidities have higher death rates, it is important to have a better knowledge of the molecular mechanisms underlying this risk in order to develop effective preventative and treatment measures. During COVID-19, the immune system is crucial, and the degree of immunological dysfunction is correlated with the severity of the disease [7,8]. This illness' signs and symptoms can include cold-like symptoms like fever, coughing, shortness of breath, loss of taste and smell, acute respiratory issues, diarrhea etc [9]. Patients with COVID-19 who are asymptomatic or only mildly ill could develop hypoxemia, respiratory failure, or multisystem organ failure, necessitating intubation and intensive care management [10]. Age, heart failure, diabetes, chronic kidney disease (CKD), chronic liver disease, and hypertension are co-morbidities that raise the risk of death from the condition and may have a negative outcome [11]. However, because SARS-CoV and MERS-CoV cleared up very fast, there was little need to continue evaluating chloroquine. Additionally, even if SARS-CoV-2 can be inhibited in vitro [12]. Remdesivir is an antiviral drug that is being investigated for usage in COVID-19. Remdesivir inhibits viral RNA polymerases when it is metabolised into its active form, which results in a reduction in the synthesis of viral RNA. SARS-CoV and MERS-CoV have been found to be inhibited by remdesivir in human airway epithelium in vitro models [13]. For the induction of the cytokine storm during SARS-CoV, MERS-CoV, and SARS-Cov-2 infections, IL-6 is regarded as the primary cytokine [14]. Lopinavir/ritonavir may be more detrimental to patients because of its lack of efficacy and higher risk of toxicity in some COVID-19 patients, hence it should be avoided [15]. Thus the aim of the study was to found the pharmacological treatment for covid-19 with various comorbidity.

II. METHODOLOGY

This cross-section observational study was carried out in the Department of Pharmacology, Rangpur Medical College and Hospital. The duration of the period from July 2020 to July 2021. A total of 200 patients were participate in the study. Patients with more than two comorbidities with COVID-19 positive by RT-PCR, both male and female and gave consent to be included in the study. Patients who were not willing to give consent were excluded. Face to face interview with proper protection for COVID-19 was done to collect data with a semi-structured questionnaire. After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. Statistical evaluation of the results used to be obtained via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

III. RESULT

Table-1: Distribution of the patients by Age group

Age group (years)	N=200	%
35-40	20	10
40-50	50	25
50-60	60	30
60-70	40	20
>70	30	15
Mean ±SD	55 ± 2.9	

Table-1 shows that the mean (± SD) age of the patients was 55 ± 2.9 years. Minimum 10(10%) of the patients were within the age group of 35-40 years and 60(30%) of the patients were within the age group of 50-60 years. Here, 55% of the patients were female and 45% were male.

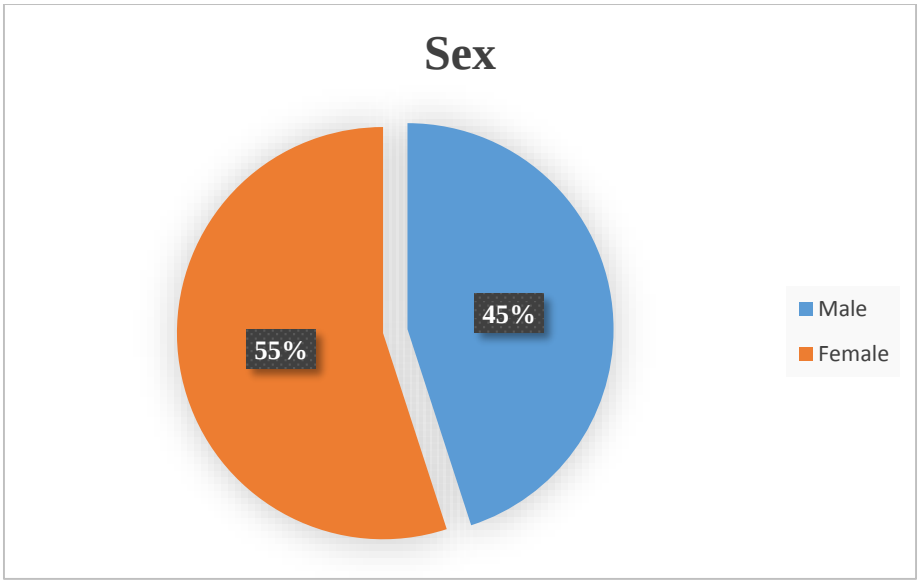

Figure-1: Distribution of the patients by sex

Regarding residence, 80% of the patients were from urban area and 20% from rural area.

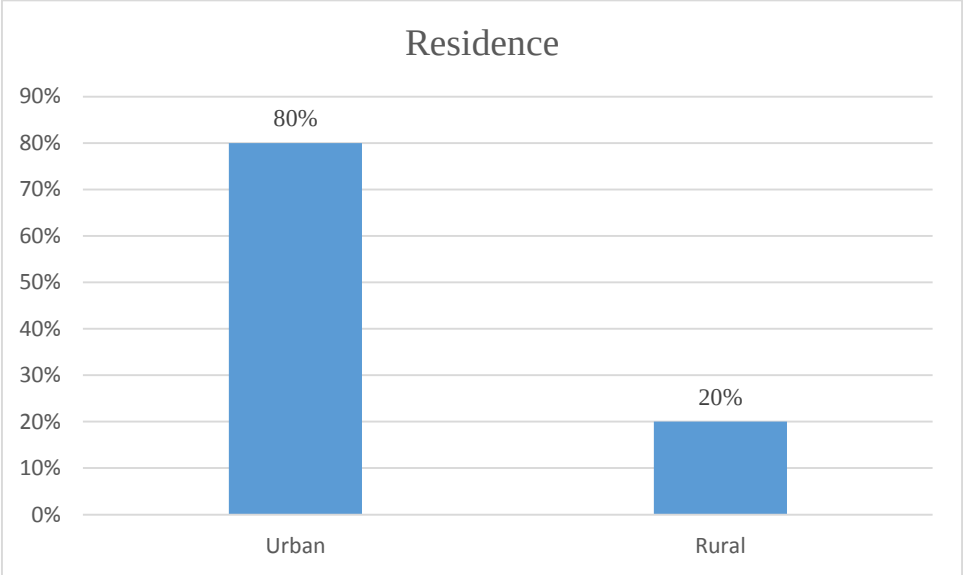

Figure-2: Distribution of the patients by Residence

Table-2: Distribution of the patients by BMI

BMI	N=200	%
Undreweight	50	25
Normal range	60	30
Overweight	90	45

Table-2 shows that, 50(25%) of the patients were underweight, 60(30%) of the patients were in normal range and 90 (45%) of the patients were overweight.

Table-3: Distribution of the patients by comorbidities

Comorbidities	N=200	%
DM, HTN with cardiovascular diseases	50	25
DM, HTN with bronchial asthma	40	20
DM, HTN with arthritis	50	25
DM with ischemic heart disease (IHD)	30	15
HTN with CKD, and disability with knee	30	15

Table-3 shows that, 50(25%) of the patients had DM, HTN with cardiovascular diseases and DM, HTN with arthritis respectively. 40(20%) had DM, HTN with bronchial asthma. 15 (30%) of the respondents had DM with ischemic heart disease (IHD) and HTN with CKD, and disability with knee respectively.

Table-4: Distribution of the patients by symptoms of COVID-19

Symptoms	N=200	%
Fever	150	75
Worsening throat pain	198	99
Generalized body aches	200	100
Burning on the surface of the skin	90	45
Chills with a severe respiratory disorder	200	100

Regarding clinical symptoms 150(75%) of the patients had Fever, 198(99%) had Worsening throat pain, 200(100%) of the patients had Generalized body aches and Chills with a severe respiratory disorder respectively and 90(45%) had Burning on the surface of the skin.

Table-5: Distribution of the patients by oxygen saturation

Oxygen saturation (%)	N=200	%
75-80	10	5
80-85	40	20
85-90	60	30
90-95	50	25
>95	40	20

Table-4 shows that, 10(5%) of the patients had 75-80% oxygen saturation, 40(20%) of the patients had 80-85% oxygen saturation, 60(30%) of the patients had 85-90% oxygen saturation, 50(25%) of the patients had 90-95% oxygen saturation and 40(20%) of the patients had >95% oxygen saturation.

Table-6: Distribution of the patients by list of medicine prescribed during hospitalization

Name of medicine	Route of administraion	Time
Meropenem	I/V	12 hourlies
Multivitamin	I/V	12 hourlies
Moxifloxacin	I/V	
Unfractionated Heparin	S/C	6 hourlies
Human insulin	S/C	20+0+14
Remdesivir	I/V	
Nebulizer with Windel (Salbutamol)	Inhalation	4 times
Nebulizer with Budicort (Budesonide)	Inhalation	2 times
Monas (Montelukast)	Oral	0+0+1
Clopid (antiplatelet)	Oral	0+1+0
Actemra (Tocilizumab)	I/V	First Second (after 3 days)
Napa extend ((Paracetamol)	Oral	0+0+1
Neuro B (Vitamin B complex)	Oral	1+0+1
Epoetin (Erythropoietin)	S/C	Every 15 days

Tble-5 shows that, patients by list of medicine prescribed during hospitalization that were, Meropenem, Multivitamin, Moxifloxacin, Unfractionated Heparin , Human insulin, Remdesivir, Nebulizer with Windel (Salbutamol), Nebulizer with Budicort (Budesonide), Monas (Montelukast), Clopid (antiplatelet), Actemra (Tocilizumab), Napa extend ((Paracetamol), Neuro B (Vitamin B complex) and Epoetin (Erythropoietin).

85% of the patients needed ICU service.

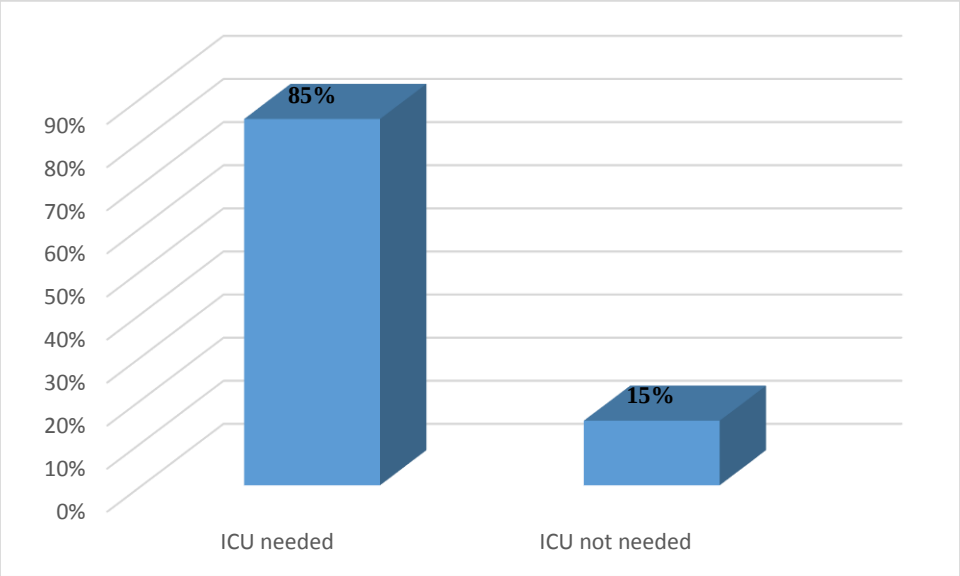

Figure-3: Distribution of the patients by necessity of ICU

Here, regarding outcome 99% patients were survived and 1% death occur.

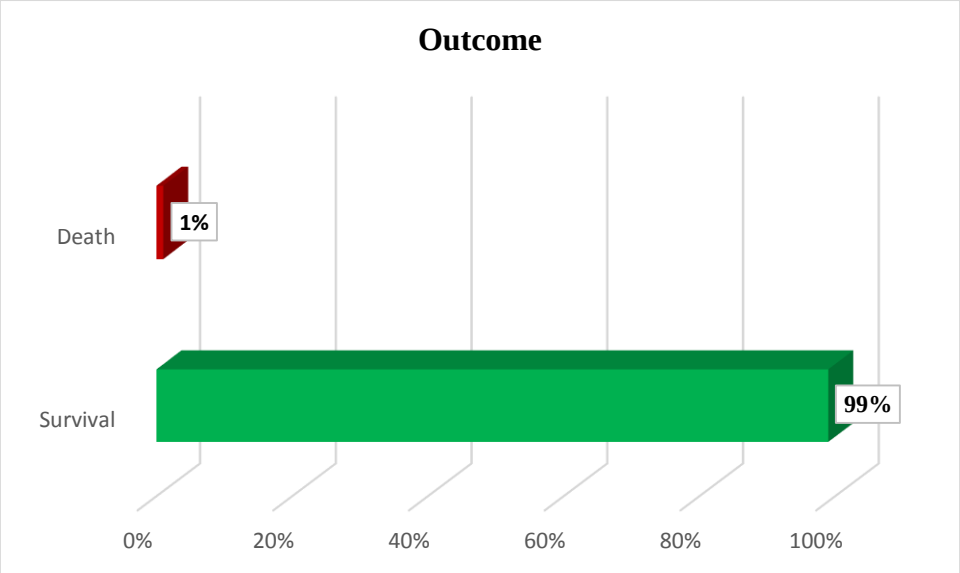

Figure-4: Distribution of the patients by outcome following treatment.

IV. DISCUSSION

The 2019 Coronavirus Disease (COVID-19) is characterised by immunological dysregulation and hyperinflammation, including increased levels of interleukin-6. This current study was carried out in the Department of Pharmacology, Rangpur medical College and Hospital. The duration of the period from July 2020 to July 2021. A total of 200 patients were participate in the study. In this study the mean (± SD) age of the patients was 55 ± 2.9 years. Minimum 10(10%) of the patients were within the age group of 35-40 years and 60(30%) of the patients were within the age group of 50-60 years. Here, 55% of the patients were female and 45% were male. 50(25%) of the patients were underweight, 60(30%) of the patients were in normal range and 90 (45%) of the patients were overweight. A previous study showed that, People with type 2 diabetes, hypertension, and cardiovascular disease had a slight reduced risk of hospital admission and ICU admission due to COVID-19 related with unit increase in BMI than those without these morbidities [16]. In this study 50(25%) of the patients had DM, HTN with cardiovascular diseases and DM, HTN with arthritis respectively. 40(20%) had DM, HTN with bronchial asthma. 15 (30%) of the respondents had DM with ischemic heart disease (IHD) and HTN with CKD, and disability with knee respectively. It is crucial to remember that comorbidities can also alter exposure risk, both raising and decreasing it (for instance, through protective behaviours in outbreaks in nursing homes). Comorbidities, multimorbidity, and frailty all have a significant impact on the clinical decisions to initiate organ

support or admit a patient to the hospital. Even an objective outcome like mortality can be challenging to interpret because different biological events can result in death [17]. In this study 10(5%) of the patients had 75-80% oxygen saturation, 40(20%) of the patients had 80-85% oxygen saturation, 60(30%) of the patients had 85-90% oxygen saturation, 50(25%) of the patients had 90-95% oxygen saturation and 40(20%) of the patients had >95% oxygen saturation. Low oxygen saturation in the emergency room is a sign of a bad prognosis according to Covid-19 [18]. patients by list of medicine prescribed during hospitalization that were, Meropenem, Multivitamin, Moxifloxacin, Unfractionated Heparin , Human insulin, Remdesivir, Nebulizer with Windel (Salbutamol), Nebulizer with Budicort (Budesonide), Monas (Montelukast), Clopid (antiplatelet), Actemra (Tocilizumab), Napa extend ((Paracetamol), Neuro B (Vitamin B complex) and Epoetin (Erythropoietin). 85% of the patients needed ICU service. Regarding outcome 99% patients were survived and 1% death occur. Health professionals worldwide are experimenting with a variety of therapy procedures employing combinations of repurposed medications while still searching for particular treatments for COVID-19. The only trusted treatment for COVID-19 is symptomatic management because there is no licenced medicine for the condition. As a result, given the current situation, reports on drug usage patterns for the management of COVID-19 in various healthcare settings around the world may prove to be a useful tool for evaluating the effectiveness and impact of such treatment protocols as well as for prioritising the medical needs of the community at large. The most commonly prescribed class of drugs were antimicrobials (853, 36.52%), followed by nonsteroidal antiinflammatory drugs (NSAIDs) (374, 16.01%), proton pump inhibitors (299, 12.80%), antihistamines (232, 9.93%), immunosuppressant drugs (103, 4.41%), and others. For the management of comorbidity a total of 532 drugs were prescribed to the study participants for the management of comorbidity(s). Out of these, most commonly prescribed were antihypertensive (310, 58.60%) drugs, followed by antidiabetic drugs (166, 31.38%), bronchodilators (34, 6.43%), thyroid hormones (11, 2.08%), immunosuppressant drugs (7, 1.32%), and others [19].

V. CONCLUSION

Despite the fact that there is still a lot of research being done on COVID-19 across the globe, there is very little information currently accessible regarding the drug usage among COVID-19 patients with comorbidity. It is thought that people with specific underlying medical disorders, regardless of age, are more likely to develop a severe COVID-19 sickness and die from it. The data in this study provide the first overview of drug use among COVID-19 participants with comorbidities.

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