

Role of ICU of Mugda Medical College Hospital in Patients with COVID 19 in Bangladesh

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Abstract

Original Research Article

Background: First outbreak of COVID 19 started in Wuhan, China at December 2019 and since then, it spread globally but information regarding critically ill COVID 19 patients is still limited. The role of Intensive care unit(ICU) has been described in several studies. But in Bangladesh, we have very limited research-based information regarding the role of ICU in the management of patients with COVID 19. **Aim of the study:** The aim of this study was to assess the role of ICU in the management of patients with COVID 19. **Methods:** This prospective observational study was conducted in the Department of Anesthesia & ICU, Mugda Medical College Hospital, Dhaka., Bangladesh during the period from 26 March 2021 to 21 July 2022. In total 67 ICU admitted COVID 19 patients were enrolled in this study as study subjects. Proper written consents were taken from all the participants before data collection. As per the inclusion criteria of this study, only RT-PCR confirmed COVID 19 patients were included. All the demographic and clinical information of the participants were recorded. All data were processed, analyzed and disseminated by using MS Excel and SPSS version 23.0 program as per necessity. **Results:** In this study, mean day from hospital to ICU admission of the participants was 1 day ranging from 0 to 3 days and mean day from symptoms to ICU admission was 5 days ranging from 3 to 7 days. During ICU care, for majority of the cases (51%) mechanical ventilation was used. As medicine, hydroxychloroquine was used in 72% cases and corticosteroids were used in 25% cases. The mean ICU length and hospital staying in day were 10.25 ± 2.33 and 17.47 ± 3.75 days respectively. Among total 67 cases 46% (n=31) survived whereas 54% (n=36) died. **Conclusion:** As per the procedure and findings of this study we can conclude that, adequate ventilation facilities along with ICU is necessary to manage such pandemic. Prompt hospitalization and diagnosis may save more life and can reduce the sufferings of critically ill COVID 19 positive patients.

Keywords: Role of ICU, COVID 19, RT-PCR, Mechanical ventilation, SARS-CoV-2.

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INTRODUCTION

The COVID 19 came into limelight in early December 2019, when some cases of pneumonia were observed in Wuhan, China; whose cause was found to be a novel strain of virus belonging to the Coronavirus family and was labelled SARS-CoV-2 [1]. COVID 19 targets the respiratory tract of human body and has similar clinical symptoms to SARS-CoV and MERS-

CoV [2]. Typical symptoms of COVID 19 positive cases include fever, dry cough, headache, fatigue, shortness of breath, vomiting, diarrhoea, myalgia, acute respiratory distress syndrome related symptoms and shock [3]. Many studies reported that, the patients who need intensive care tend to be older in age and male and about 40% have comorbid conditions like diabetes, cardiac diseases, asthma, hypertension and other chronic illnesses like liver or kidney disease [4, 5].

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According to the WHO, about 5% severe or critically ill COVID 19 patients, require admission to an intensive care unit (ICU) [6]. Shortages of standard healthcare resources, especially ICU (Intensive care unit) supports are causing the high mortality rate of critically ill COVID 19 patients [7]. Covid pandemic has imposed an enormous burden as well as massive challenges to the health sector across developed, developing as well as underdeveloped countries [7]. Bangladesh also falls in the category of unfortified countries because of its high population and poor health care system [8]. In Bangladesh, most of the senior citizens along with middle-aged people have comorbidities like hypertension (20%), diabetes (9.7%), asthma (5.2%), cardiac disease (4.5%) and chronic pulmonary disease (11.9%) and around 1.3 to 1.5 million cancer patients are vulnerable to COVID 19 [9]. All of those people, belong to a vulnerable group, may require immediate hospitalization and ICU support if they contract COVID-19 [5]. Compared to the eight worst affected countries, Bangladesh has the lowest number of Covid ICU beds per 10,000 inhabitants [7]. The major objective of this current study was to assess the role of ICU in the management of patients with COVID 19.

METHODOLOGY

This was prospective observational study which was conducted in the Department of Anesthesia & ICU, Mugda Medical College Hospital, Dhaka, Bangladesh during the period from 26 March 2021 to 21 July 2022. In total 67 ICU admitted COVID 19 patients were enrolled in this study as study subjects. As per the inclusion criteria of this study, only RT-PCR confirmed COVID 19 patients were included. On the other hand, according to the exclusion criteria of this study pregnant women, patients with tuberculosis and chemo or radiotherapy using cancer patients were excluded. The whole intervention was conducted in accordance with the principles of human research specified in the Helsinki Declaration [10] and executed in compliance with currently applicable regulations and the provisions of the General Data Protection Regulation (GDPR) [11]. Management of all the ICU admitted Covid patients were implemented according to

the regulations set nationally for the management of covid patients in Bangladesh [12]. For severe patients having serious respiratory distress, having respiratory rate of ≥ 30 beats per minute in a resting state and an oxygen saturation $\leq 92\%$ SpO₂, or having Sepsis and shock ventilation facilities were provided. All the demographic and clinical information of the participants were recorded. Collected data were processed, analyzed and disseminated by using MS Excel and SPSS version 23.0 program as per necessity. In statistical analysis, P value <0.05 was considered as the indicator of significance.

RESULTS

In this study, among total 67 participants, 57% were male whereas the rest 43% were female. So male participants were dominating in number and the male-female ratio of the participants was 1.3:1. The highest number of participants were from 31-40 years' age group who contributed 29%. Besides this, 24% and 17% patients were from 21-30- and 41-50-years' age groups respectively which were noticeable. In more than one third (34%) of our patients, hypertension was found as comorbidity. Besides this 22%, 18%, 15% and 12% cases were with DM, CAD, obesity and pulmonary disease respectively as some more frequent comorbidities. One fourth (25%) of our total participants were free from any comorbidity. Fever, cough, weakness and dyspnea were found as most frequent symptoms among our patients which were observed in 87%, 81%, 76% and 72% cases respectively. In this study, mean day from hospital to ICU admission of the participants was 1 day ranging from 0 to 3 days and mean day from symptoms to ICU admission was 5 days ranging from 3 to 7 days. In this study, during ICU care for majority of the cases (51%) mechanical ventilation was used. As medicine, hydroxychloroquine was used in 72% cases and corticosteroids were used in 25% cases. In this study, in analyzing the outcomes we observed that, the mean \pm SD ICU length and hospital staying in day were 10.25 ± 2.33 and 17.47 ± 3.75 days respectively. Among total 67 cases 46% (n=31) survived whereas 54% (n=36) died.

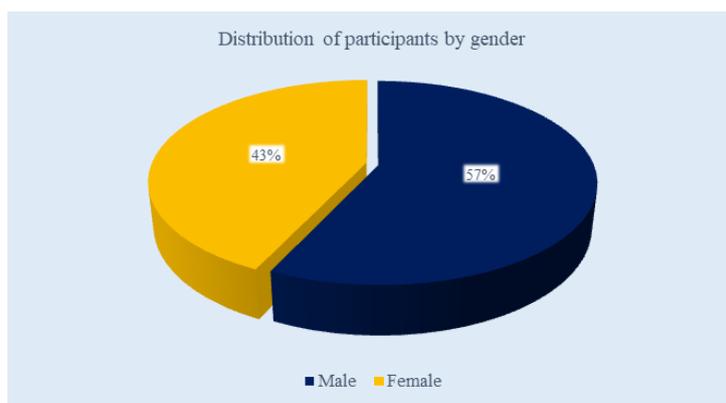


Figure 1: Pie chart showed gender wise patients distribution, (N=67)

Table 1: Patients group wise age distribution, (N=67)

Age (Year)	n	%
<20 yrs.	7	10%
21-30 yrs.	18	27%
31-40 yrs.	22	33%
41-50 yrs.	13	20%
51-60 yrs.	4	6%
>60 yrs.	3	4%

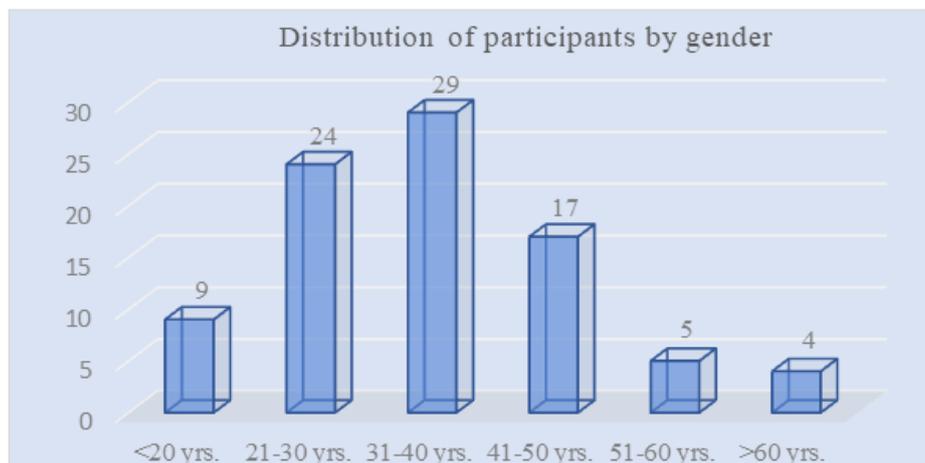


Figure II: Column chart showed age wise participants, (N=67)

Table 2: Distribution of patients as per comorbidities, (N=67)

Comorbidities	n	%
HTN	23	34%
DM	15	22%
CAD	12	18%
Obesity	10	15%
Pulmonary disease	8	12%
CKD	6	9%
Chronic liver disease	4	6%
Neurological disease	3	4%
Cancer	2	3%
Immunosuppression	1	1%
No comorbidities	17	25%

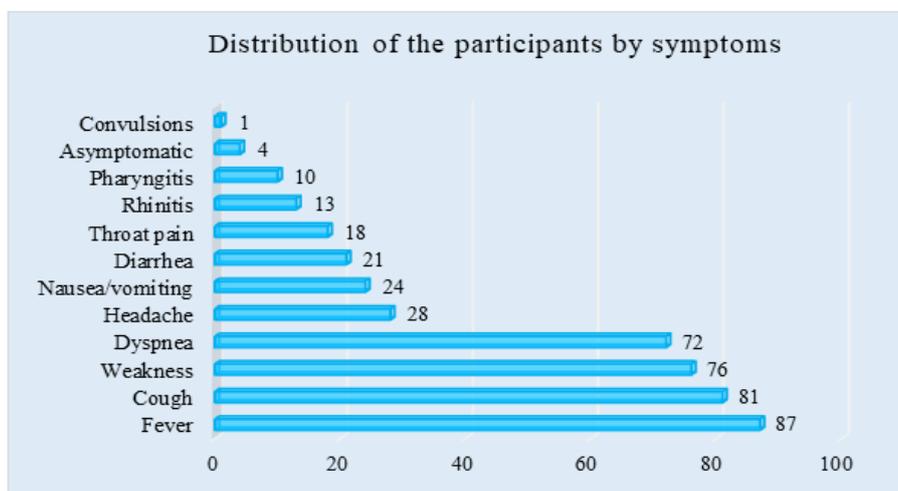


Figure III: Bar chart showed distribution of patients as per symptoms, (N=67)

Table 3: Distribution of participants as per the status for ICU admission, (N=67)

Characteristics	n (Range)
Day from hospital to ICU admission	1(0-3)
Day from symptoms to ICU admission	5(3-7)
PaO ₂ on ICU admission (mmHg)	67(54-79)
PaCO ₂ on ICU admission (mmHg)	35(32-39)
pH on ICU admission	7.47(7.38-7.51)
Lactate on ICU admission (mmol/L)	1.29(0.9-1.9)
Creatinine on ICU admission (mg/dL)	1.12(0.89-2.17)
Lymphocytes on ICU admission (n/mm ³)	588(172-965)
LDH on ICU admission (IU/L)	468(347-616)
CRP on ICU admission (mg/dL)	147(91-237)

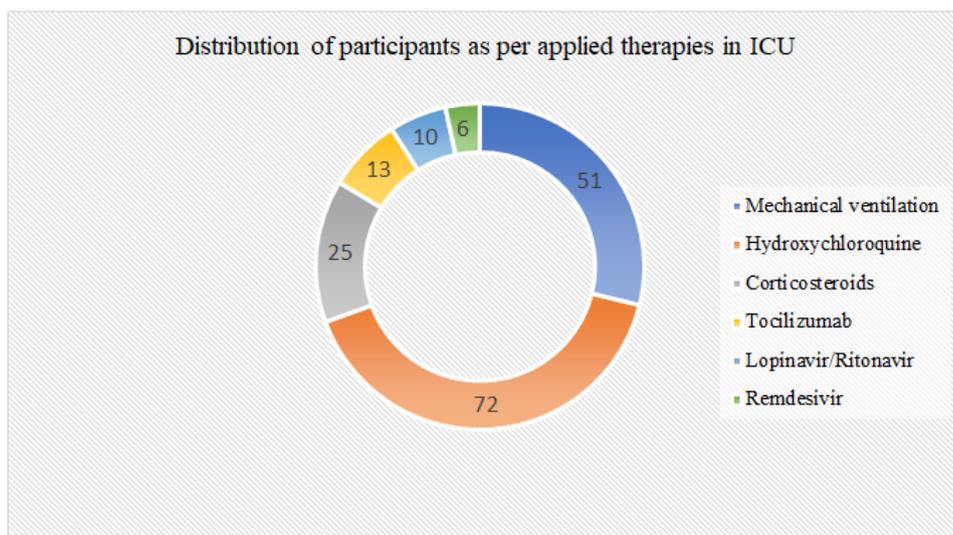


Figure IV: Ring chart showed distribution of patients as per applied therapies in ICU, (N=67)

Table 4: Distribution of participants as per outcomes, (N=67)

Characteristics	Mean ±SD/n(%)
Mean ±SD ICU length in days	10.25 ±2.33
Mean ±SD Hospital stay (day)	17.47 ±3.75
Survived	31(46%)
Death	36(54%)

DISCUSSION

The aim of this study was to assess the role of ICU in the management of patients with COVID 19. In this study, among total 67 participants, the male-female ratio of the participants was 1.3:1. In another male dominating study [13] male participants were double than female. The highest number of participants were from 31-40 years' age group who contributed 29%. Besides this, 24% and 17% patients were from 21-30 and 41-50-years' age groups respectively which were noticeable. All these findings are comparable to that of other recent study [14]. In more than one third (34%) of our patients, hypertension was found as comorbidity. Besides this 22%, 18%, 15% and 12% cases were with DM, CAD, obesity and pulmonary disease respectively as some more frequent comorbidities. One fourth (25%) of our total participants were free from any comorbidity. A recent study has found that, older (≥50) Bangladeshi male patients with previous comorbidities

like DM, hypertension as well as heart diseases are profoundly susceptible to COVID19 which is comparative to the pattern that has been revealed in Italy, China and New York [15, 16]. Fever, cough, weakness and dyspnea were found as most frequent symptoms among our patients which were observed in 87%, 81%, 76% and 72% cases respectively. In another study it was reported that, the most frequent clinical symptoms are fever and cough; although, some patients develop severe illness, that results in ICU admission and even death [17]. In this study, during ICU care for majority of the cases (51%) mechanical ventilation was used. As medicine, hydroxychloroquine was used in 72% cases and corticosteroids were used in 25% cases. In a study [18, 19] it was reported that, treatment with hydroxychloroquine was associated with a lower risk of in-hospital mortality and the same observational Belgian surveillance data focusing on all hospitalized COVID-19 patients. In this study, in analyzing the outcomes we observed that, the mean ICU length and

hospital staying in day were 10.25 ± 2.33 and 17.47 ± 3.75 days respectively. Among total 67 cases 46% (n=31) survived whereas 54% (n=36) died. In a similar study conducted in Bangladesh found 56.5% (n=95) death in intensive care units (ICU) during their study period. Dexamethasone reduced deaths by about one-third in critical covid patients who were on ventilator support [20]. All the findings of this current study may be helpful in further similar studies.

LIMITATION OF THE STUDY

Though it was a single centered study with small sample size, so the findings of this study might not reflect the exact scenario of the whole country.

CONCLUSION & RECOMMENDATION

As per the procedure and findings of this study we can conclude that, adequate ventilation facilities along with ICU is necessary to manage such pandemic. Prompt hospitalization and diagnosis may save more life and can reduce the sufferings of critically ill COVID 19 positive patients. For getting more specific results, we would like to recommend for conducting similar more studies in several places with larger sized sample.

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