

CHARACTERISTICS OF INPATIENTS' FATALITY DUE TO COVID-19 PANDEMIC: EXPERIENCE FROM MUGDA MEDICAL COLLEGE AND HOSPITAL, DHAKA, BANGLADESH

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ABSTRACT

COVID-19 was firstly reported in Wuhan, Hubei Province, China at the end of 2019. As of July 26, 2020, COVID-19 has cause over 16.25 million infections and over 0.65 million deaths around the world. In Bangladesh, more than 0.22 million patients infected with COVID-19 and among them near about three thousand have been died. We aimed to explore risk factors of in-hospital death for patients and describe the clinical course of symptoms, associate baseline risk factors, treatment strategy. We conducted a retrospective study of 98 deceased patients who were admitted into COVID-19 dedicated Mugda Medical College and Hospital, Dhaka, Bangladesh for treatment purpose from May 1 to June 30, 2020. Data were obtained from patient charts and the hospitals' admission records using a structured questionnaire. The overall age of 98 death patients was estimated 57.65 ± 17.597 years with the median of 60 years old. Among the fatal cases, 76 (77.6%) were males. Based on the history of underlying diseases in the dead's, it was found that most of them had diabetes (55, 56.1%) and hypertension (55, 56.1%). The main clinical symptoms were shortness of breath (90, 91.8%) and fever (72, 73.5%). Among the deceased patient about 49.0% patient need ICU/HDU support for treatment purpose. Patients with coexisting conditions and older age are at risk for severe disease followed by death. Overall, informing people in the community especially the high-risk groups providing the medical supplies, increasing laboratory tests capacity, performing social distance, banning public gathering, and announcing quarantine were panic management strategies which could moderate the death cases.

KEYWORDS: Inpatients' Fatality, Pandemic, COVID-19.

INTRODUCTION

COVID-19 was firstly reported in Wuhan, Hubei Province, China at the end of 2019.^[1,2] As of July 26, 2020, COVID-19 has cause over 16.25 million infections and over 0.65 million deaths around the world.^[3,4,5] In Bangladesh, more than 0.22 million patients infected with COVID-19 and among them near about three thousands have been died.^[3,4] Studies from China and, other Asian and European countries tried to summarize the clinical manifestations of COVID-19.^[5,6] in which a few focused on the clinical characteristics of death patients.^[7,8] It is important to summarize these data to

find out the potential risk factors that can help identify patients with underprivileged prognosis at an early stage. Furthermore, clear understanding of the potential factors related of death is very important to reduce mortality rate⁶. However, what are the potential factors of death has never been answered in previous studies.^[6,7,8] Although the outbreak is likely to have started from a zoonotic transmission event associated with a large seafood market that also traded in live wild animals, it soon became clear that efficient person-to-person transmission was also occurring.^[7,8,9,10,11]

The clinical spectrum of SARS-CoV-2 infection appears to be wide, encompassing asymptomatic infection, mild upper respiratory tract illness,^[10] and severe viral pneumonia with respiratory failure and even death, with many patients being hospitalised with pneumonia in Dhaka, Bangladesh.^[11,12]

To our knowledge, no previous studies have been done among patients with definite death outcome. The estimation of risk factors for severe disease and death in these earlier case series are therefore not very robust.^[13] In this study we tried to present details of patients have been passed away during treatment in the COVID-19 dedicated Mugda Medical College and Hospital in Dhaka, Bangladesh with laboratory-confirmed COVID-19 as of June 30, 2020. We aimed to explore risk factors of in-hospital death for patients and describe the clinical course of symptoms, associate baseline risk factors, treatment strategy.

MATERIALS AND METHODS

Study Population, Setting, and Design

We conducted a retro-prospective study of 98 deceased patients who were admitted into COVID-19 dedicated Mugda Medical College and Hospital, Dhaka, Bangladesh for treatment purpose from May 1 to June 30, 2020. All deceased patients with laboratory confirmed COVID-19 infection who were admitted for treatment purpose during the study period were enrolled.

Data collection

Data were obtained from patient charts and the hospitals' admission records using a structured questionnaire which was adopted from NOVEL CORONAVIRUS (COVID-19 RAPID VERSION) by Global COVID-19 Clinical Platform which was previously used in United Kingdom,^[14] and China.^[15] Demographic data, patient's comorbidities, treatment protocols, sign-symptoms, and in-hospital complications were collected throughout each patient's hospital admission records and registry of Mugda Medical College and Hospital.

RESULTS

The overall age of 98 death patients was estimated 57.65 ± 17.597 years with the median of 60 years old. According to the age category, it was revealed that most of the patients (54, 55.1%) were in between 55-74 years (**Table 01**). Among the fatal cases, 76 (77.6%) were males and the rest were females. Based on the history of underlying diseases in the dead's, it was found that most of them had diabetes (55, 56.1%) and hypertension (55, 56.1%) which followed by cardiovascular diseases (16, 16.3%), asthma (11, 11.2%), malignancy (3, 3.1%), and chronic kidney disease (29, 29.6%) respectively (**Table 01**). Based on the distribution of occupation about (4, 4.1%) of the victims were health-care provider. The main clinical symptoms among the deceased patients had shortness of breath (90, 91.8%), fever (72, 73.5%), cough (56, 57.1%), myalgia or fatigue (50, 51.0%), lower chest in-drawing (48, 49.0%), Muscle ache (20, 20.4%). In addition to common respiratory symptoms, the symptoms of headache or dizziness (7, 7.1%) diarrhoea (14, 14.3%), nausea, and vomiting (20, 20.4%) were also obvious in some patients (**Table 01**). Treatment strategy was administration of antibiotics (94, 95.9%) (Ceftriaxone, 20, 20.4%), experimental drug (Enoxaparin Sodium, [52, 53.1%]), glucocorticoid therapy (54, 55.1%), antimalarial agent (Hydroxychloroquine Sulphate, [22, 22.4%]), CRRT (Continuous Renal Replacement Therapies) (18, 18.4%), antiviral therapy (8, 8.2%), oxygen inhalation (95, 96.9%), support by prone position (16, 16.3), invasive mechanical ventilation (15, 15.3%), non-invasive ventilation (5, 5.1%) (**Table 01**). Support by prone position along with others supportive care found in 5.1% along with continuous renal replacement therapies, 4.08% along with the support if Isotropes/Vasotropes and, 1.02% along with invasive mechanical ventilation (**Table 02**). Among the deceased patient about 49.0% patient need ICU/HDU support for treatment purpose (**Table 01**), but due to limited accommodation of ICU/HDU bed it was difficult to arrange intensive care service for all required patients.

Table 01: Characteristics of Deceased Patients.

(N=98)	
Traits	N (%)
Age, (55-74 years)	54(55.1)
Gender-Male	76(77.6)
Signs and symptoms (On Admission)	
Fever	72(73.5)
Fatigue	50(51.0)
Shortness of breath	90(91.8)
Lower chest in drawing	36(57.1)
Dry cough	56(57.1)
Cough with sputum	11(11.2)
Cough with hemoptysis	3(3.1)
Runny nose	3(3.1)
Wheezing	14(14.3)
Chest pain	22(22.4)

Muscle ache	20(20.4)
Diarrhea	14(14.3)
Sore throat	39(39.8)
Comorbidities	
Hypertension	55(56.1)
Diabetes	55(56.1)
Cardiovascular disease	16(16.3)
Chronic pulmonary disease	2(2.0)
Asthma	11(11.2)
Malignancy	3(3.1)
Chronic kidney disease	29(29.6)
Treatments	
Antiviral therapy	8(8.2)
Antibiotic treatment	94(95.9)
Glucocorticoid therapy	54(55.1)
Antimalarial therapy	22(22.4)
Experimental therapy (Enoxaparin Sulphate)	52(53.1)
Angiotensin II receptor blocker	33(33.7)
Oxygen inhalation	95(96.9)
Noninvasive ventilation	5(5.1)
Invasive mechanical ventilation	15(15.3)
Isotropes/Vasotropes	18(18.4)
CRRT*	18(18.4)
Prone Position	16(16.3)
Complications	
Shock	33(33.7)
ARDS**	85(86.7)
Pneumonia	43(43.9)
Cardiac arrest	19(19.4)
Arrhythmia	3(3.1)
Acute kidney injury	12(12.2)
Anemia	7(7.1)
Electrolyte imbalance	3(3.1)
ICU/HDU Support	48(49.0)

*CRRT: Continuous Renal Replacement Therapies, **ARDS: Acute Respiratory Distress Syndrome

Table 02: Relationship between Prone position and given Supportive Care.

		Supportive Care By Prone Position			Total
		Yes	No	Unknown	
Non-invasive Ventilation	Yes	0 (0.0)	5 (5.1)	0 (0.0)	5 (5.1)
	No	15 (15.31)	76 (77.55)	1 (1.02)	92 (93.88)
	Unknown	1 (1.02)	0 (0.0)	0 (0.0)	1 (1.02)
Invasive Mechanical Ventilation	Yes	1 (1.02)	14 (14.29)	0 (0.0)	15 (15.31)
	No	14 (14.29)	67 (68.37)	1 (1.02)	82 (83.67)
	Unknown	1 (1.02)	0 (0.0)	0 (0.0)	1 (1.02)
Isotropes/Vasotropes	Yes	4 (4.08)	13(13.27)	1(1.02)	18 (18.37)
	No	11 (11.22)	68 (69.38)	0 (0.0)	79 (80.61)
	Unknown	1(1.02)	0 (0.0)	1(1.02)	1(1.02)
CRRT*	Yes	5 (5.1)	12(12.25)	1(1.02)	18 (18.37)
	No	11(11.22)	69 (70.41)	0 (0.0)	80 (81.63)

*CRRT: Continuous Renal Replacement Therapies

DISCUSSIONS

This research aimed to report the characteristics of dead patients. According to published reports, the case fatality rate in Italy was estimated 7.2%.^[16] As it was clear in our results and another announcement, there is a strong

association between age and COVID-19 fatality rate, and this while Italy is known as an ageing population. About 37.6% of Italy's population is 70 years and older.^[16,17] An interesting and controversial result was seen either in the fatality rate and population age across New York City and its boroughs. Despite the low rate of older

adults (age ≥ 65 years) in the boroughs, but a high number of deaths related to COVID-19 made a concerning issue. Some factors like poverty and low level of education may involve in this rate.^[18] Although the association between mortality of COVID-19 and comorbidities is approved in different reports but the notable point is the different pattern in underlying diseases. In current results, shortness of breath was identified as the common illness in the history of our studied patients, while other studies report hypertension and cardiovascular as the most prevalent underlying diseases.^[19,20]

CONCLUSION

Patients with coexisting conditions and older age are at risk for severe disease followed by death. Overall, informing people in the community especially the high-risk groups (elderly, patients with comorbidities), providing the medical supplies, increasing laboratory tests capacity, performing social distance, banning public gathering, and announcing quarantine were panic management strategies which could moderate the death cases.

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Declarations

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Ethical approval: All the procedures were conducted following the ethical guidelines of institution's ethical committee (Institutional Review Board) at Mugda Medical College Hospital, Bangladesh (Memo No/MUMC/2020/630). The ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards will be followed wherever applicable.

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