

**A COMPREHENSIVE ASSESSMENT OF ASYMPTOMATIC INFECTIONS, CASE FATALITY, AND DURATION OF HOSPITALIZATION IN COVID-19 PATIENTS IN BANGLADESH**

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**ABSTRACT**

**Objective:** In this study, we tried to evaluate the asymptomatic rate, case fatality rate and total duration of hospital stay of admitted patients with COVID-19. **Methodology:** We conducted a retro-prospective study of 384 patients admitted into the Mugda Medical College and Hospital, Dhaka, Bangladesh in between May 1, 2020 and June 31, 2020. Data were obtained from patient charts and the hospitals' admission records using a structured questionnaire. **Result:** Among 384 patients about 34 (8.9%) were asymptomatic and in symptomatic patient the median time from illness onset (before admission) to discharge was 19.0 days, whereas the median time to death was 9.0 days. The median time from hospital admission to discharge alive was 14.0 days, whereas the median time to death was 3.0 days. The most common symptoms on admission were fever (21, 70.6%). Case fatality rate was 25.5% (98/384×100). **Conclusion:** Moving forward, we hope to continue to deliver early and optimal care, limit community transmission, and tying the case fatality to the lower end of the known range.

**KEYWORDS:** Asymptomatic Infection Rate, Case Fatality Rate, Duration of Hospital Stay, COVID-19 Pandemic.

**INTRODUCTION**

The Wuhan City of China evidenced unknown aetiology pneumonia cases at the end of December 2019.<sup>[1-10]</sup> The clinical spectrum of COVID-19 pneumonia ranges from mild to critically ill cases.<sup>[11-15]</sup> Patients with mild disease present with symptoms of fever and cough, followed by sputum production and fatigue.<sup>[4]</sup> Sepsis, respiratory failure, acute respiratory distress syndrome, heart failure, and septic shock are commonly observed in critically ill patients.<sup>[11-14]</sup> However, there are significant differences between Bangladesh, China and the US in population demographics,<sup>[13]</sup> asymptomatic rate,<sup>[14]</sup> and case fatality rate.<sup>[15-17]</sup>

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<sup>[5-7]</sup>, it soon became clear that efficient person-to-person transmission was also occurring.<sup>[1-7]</sup> The clinical spectrum of SARS-CoV-2 infection appears to be wide, encompassing asymptomatic infection, mild upper respiratory tract illness.<sup>[16-18]</sup>, and severe viral pneumonia with respiratory failure and even death, with many patients being hospitalised with pneumonia in Dhaka, Bangladesh.<sup>[9,10,11]</sup> To our knowledge, no previous

studies have been done among patients with definite outcomes regarding case fatality rate. Risk factors for severe disease and death in the first time case series are therefore not very tough. Even that, details of the clinical course of illness have not yet been well described.

Here, we tried to evaluate the asymptomatic rate, case fatality rate and total duration of hospital stay of patients admitted to the COVID-19 dedicated Mugda Medical College and Hospital in Dhaka, Bangladesh with laboratory-confirmed COVID-19 and a definite clinical outcome (death or discharge) as of June 30, 2020.

**MATERIALS AND METHODOLOGY****Study Population, Setting, and Design**

We conducted a retro-prospective study of 384 patients admitted into the Mugda Medical College and Hospital, Dhaka, Bangladesh. All patients who were diagnosed with COVID-19 according to WHO interim guidance<sup>[12]</sup> were screened, and those who died or were discharged between May 1, 2020 and June 31, 2020, were included in this study.

**Data Collection**

Epidemiological, demographic, clinical, outcome 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 for same purpose in United Kingdom<sup>[9]</sup> and China.<sup>[22]</sup> All data were collected by expert physicians and public health specialist.

**Statistical analysis**

Continuous and categorical variables were presented as median (IQR- interquartile range) and n (%), respectively. We used the  $\chi^2$  test, or Fisher's exact test to compare differences between survivors and non-survivors where appropriate. The level of significance was set at 0.05. SPSS 26.0 was used to analyse the data.

**RESULT**

During the period May 1, 2020 to June 30, 2020, a total of 443 adult patients were hospitalised in Mugda Medical College with COVID-19. Among them 384 of

the PCR confirmed COVID-19 cases. The median age of the 384 patients was 46.0 (IQR 30.0) years, for non-survivors it was 60.0 (IQR 20.0) years and for survivors 40.0 (IQR 24.0) year (**table 1**). Males accounted for 52.9% of the study subjects and 44.4% of the survivors. Survival was significantly higher in females than in males ( $p \leq 0.001$ ). Among 384 patients about 34 (8.9%) were asymptomatic and in symptomatic patient the median time from illness onset (i.e., before admission) to discharge was 19.0 days (IQR 15.25–22.00), whereas the median time to death was 9.0 days (IQR 6.0–15.0). The median time from hospital admission to discharge alive was 14.0 days (IQR 11.00-17.00), whereas the median time to death was 3.0 days (IQR 1.00-9.00). The most common symptoms on admission were fever (21, 70.6%) and cough (229, 59.6%), followed by shortness of breath (200, 52.1%), fatigue (152, 39.6%) and sore throat (141, 36.7%) (**table 1**). Among 384 patients case fatality rate was 25.5% (98/384×100). Remaining 67.2% patients were discharge alive, 3.1% transfer to other facilities and 1.6% discharge for palliative purpose.

**Table 1: Asymptomatic Infection Rate, Case Fatality Rate and Duration of Hospital Stay.**

Variables		Total (n=384) ‡		Non-survivor ‡ (n=98) (25.5)		Survivor ‡ (n=286) (74.5)		p value
Age, years		50-69 years	139 (36.2)	50-69 years	52 (53.1)	30-49 years	111 (43.0)	0.000**
Gender	Female	181 (47.1)		22 (22.4)		142 (55.0)		≤0.001**
	Male	203 (52.9)		76 (77.6)		116 (45.0)		
Asymptomatic		34 (8.9)						
Symptomatic	Fever	271 (70.6)		72 (73.5)		184 (71.3)		0.211
	Cough	229 (59.6)		56 (57.1)		156 (60.5)		0.921
	Cough with sputum	40 (10.4)		11 (11.2)		24 (9.3)		0.850
	Cough with haemoptysis	7 (1.8)		3 (3.1)		4 (1.6)		0.998
	Sore throat	141 (36.7)		39 (39.8)		93 (36.0)		0.830
	Runny nose	22 (5.7)		3 (3.1)		17 (6.6)		0.848
	Wheezing	24 (6.3)		14 (14.3)		9 (3.5)		0.054
	Chest pain	52 (13.5)		22 (22.4)		21 (8.1)		0.003**
	Muscle ache	68 (17.7)		20 (20.4)		40 (15.5)		0.493
	Joint pain	45 (11.7)		9 (9.2)		33 (12.8)		0.854
	Fatigue	152 (39.6)		50 (51.0)		92 (35.7)		0.105
	Shortness of breath	200 (52.1)		90 (91.8)		93 (36.0)		0.000**
	Inability to walk	88 (22.9)		55 (56.1)		29 (11.2)		0.000**
	Chest in-drawing	66 (17.2)		48 (49.0)		17 (6.6)		0.000**
	Headache	58 (15.1)		7 (7.1)		44 (17.1)		0.257
	Altered consciousness	50 (13.0)		31 (31.6)		16 (6.2)		0.000**
	Abdominal pain	31 (8.1)		4 (4.1)		26 (10.1)		0.031
Nausea/Vomiting	70 (18.2)		20 (20.4)		46 (17.8)		0.000**	
Diarrhoea	56 (14.6)		14 (14.3)		40 (15.5)		0.000**	
Time from illness onset to death or discharge in days <i>mean (range)</i>		17.0 (12.0-21.0)		9.0 (6.0–15.0)		19.0 (15.25–22.0)		0.000**
Time from admission into hospital to death or discharge in days <i>mean (range)</i>		13.0 (7.0-16.0)		14.0 (11.0-17.0)		3.0 (1.0-9.0)		0.015**
Case Fatality Rate		98 (25.5%)						
‡ Percentages in parentheses								
** Statistically significant								

## DISCUSSION

In our study population about 219 patients hadn't fever at admission. Additionally, 34 of the included COVID-19 patients did not exhibit any symptoms and were found to be positive only via the results of the SARS-CoV-2 PCR test. Most patients had systemic, respiratory, and digestive symptoms. Fever, dry cough, and fatigue were the three most common symptoms. The case fatality rate in our study was lower than that indicated in a previous report but higher than that reported in another study.<sup>[9,18]</sup> This heterogeneity is probably due to differences in the case inclusion criteria. However, our results were closer to the case fatality rate indicated by official national statistics in China.<sup>[23]</sup> Cumulative studies confirmed that older age was associated with poor fatality rate in COVID-19 patients.<sup>[24]</sup> In our study, older patients were prone to have severe COVID-19 symptoms and unimprovement, and were more likely to die in hospital. In previous findings in animal studies, older animals were shown to have stronger host innate immune responses to SARS-CoV infection.<sup>[24]</sup> The unsatisfactory control of viral replication and more prolonged pro-inflammatory responses in older individuals due to age-dependent defects was found to lead to a marked decline in cell-mediated immune function and reduced humoral immune function, which potentially leads to poor outcomes.<sup>[17,19]</sup> Fever, dizziness, muscle ache, expectoration, dyspnoea, and chest tightness at admission were also found to influence patients' improvement in hospital. Dyspnoea and unconsciousness were the only two symptoms which were associated with mortality.<sup>[25-27]</sup> A recent study reported the presence of SARS-CoV-2 nucleic acid fragments in the stool samples of patients with abdominal symptoms and suggested that SARS-CoV-2 might also be transmitted via the faecal-oral route.<sup>[24]</sup> In our study, approximately one third COVID-19 patients had digestive symptoms, especially nausea/vomiting and diarrhoea, which is more than was reported in a previous study.<sup>[18]</sup> The digestive symptoms of most COVID-19 patients were mild, which seemed to be inconsistent with the pathogenicity of SARS-CoV-2. A possible explanation is that SARS-CoV-2 in the sputum of COVID-19 patients is transmitted to the digestive tract through swallowing. There, under the action of various digestive enzymes, the virulence of SARS-CoV-2 in the digestive tract is weakened and the virus is degraded into fragments that cause only mild digestive symptoms but not serious gastrointestinal damage.

## CONCLUSIONS

This retrospective study of 384 cases of COVID-19 in Mugda Medical College and Hospital, Dhaka found that the epidemic was typically presented as a viral pneumonia involving both lungs, with half of cases requiring oxygen therapy. Time from onset to admission and the high proportion of mild illness suggested patients presented early in their disease course. Moving forward, we hope to continue to deliver early and optimal care, limit community transmission, and tying the case fatality to the lower end of the known range.

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## Declarations

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**Conflict of interest:** No competing interests relevant to this study to disclose for all authors. Full forms submitted and on file for all authors.

**Ethical approval:** All the procedures were conducted following the ethical guidelines of institution's ethical committee of Mugda Medical College Hospital (Memo No/MUMC/2020/647). 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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