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Epidemiological Study on Laboratory Confirmed 300 Bangladeshi COVID-19 Patients with Their Clinical Outcome at a Tertiary Care Hospital in Dhaka city

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Abstract

Background: The novel corona virus (COVID-19) pandemic is a major global health threat of the twenty-first century. Clinical presentation, rapid identification of causes and isolation are vital for containments of rapidly spreading disease. **Objective:** The objective of the study was to report early findings on demographic profile, clinical presentation of the confirmed COVID-19 patients with their clinical outcome. **Methodology:** This prospective cohort study was conducted in Laboratory Medicine department of National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh for the period of February 01, 2021 to March 31, 2021. The positive COVID-19 patients were included and interviewed. Informed written consent was ensured before participation. After collection, Data were analyzed to show the characteristics of COVID-19 cases and their clinical outcome after treatment. **Results:** Among the 300 cases 222 (74%) patients were male and 78 (26%) patients were female. Average age of the patients was 38 years. The most commonly observed symptoms were fever (71%), followed by cough (54%), breathlessness (40%), dysgeusia (38%), anosmia (24%). Respiratory symptom was the dominant feature of clinical presentation. The most prevalent affected age groups were 108(36%) patients in 41 to 50 years' age, 102 (34%) patients in 31 to 40 years' age. Among the total cases 252(84%) patients were Urban residents and 225 (75%) had contact history. Among 300 patients 108(36%) patients had co-morbidities and presence of co-morbidities ($p<0.01$) were significantly associated with mortality. The death rate was 2.0% cases. **Conclusion:** Male patients were more affected than female. Typical presentations were fever, cough, breathlessness, dysgeusia and anosmia.

Keywords: COVID19; RT-PCR; Bangladesh

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Introduction

The novel corona virus (COVID-19) pandemic is a major global health threat of the twenty-first century and was first detected on 31 December 2019 in Wuhan, China[1-2]. On 31 December 2019, 27 cases of pneumonia of unknown aetiology were identified in Wuhan city, Hubei province in China[3]. The causative agent was identified from throat swab samples conducted by the Chinese Centre for Disease Control and prevention (CCDC) on 7 January 2020 and was subsequently named Severe Acute Respiratory Syndrome Corona virus 2 (SARS Cov-2). The disease was named COVID-19 by the World Health Organization (WHO)[4]. COVID-19 is mainly transmitted through respiratory droplets and contact[5]. At present patients with COVID-19 are the main source of infection[6].

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In Bangladesh, from the first case identified on 8 March, 2020. About 290360 individuals have tested positive for COVID-19; 172615 cured and 3,861 died with infection fatality rate of 1.32% cases, till August 22, 2020[7]. Despite extensive efforts to prevent onward rapid spread, about 213 countries and territories with 23,121,366 confirmed cases and 803,223 deaths till 22 August 2020 has been reported worldwide[8]. Regional clinical features are important to understand the short outcome of patient and their association with mortality, as asymptomatic and mild symptomatic cases are rising exponentially[9].

As epidemiological features vary from countries to countries, knowing the details in country scenario is utmost essential particularly for future planning and management. The objective of the study was to evaluate the sociodemographic profile of COVID 19 positive Bangladeshi patients and also see co-morbidity profile with preliminary analyses of their association with mortality.

Methodology

Study Design and Participants: This study was conducted in the Department of Laboratory Medicine at National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh for the period of February 01, 2021 to March 31, 2021. The patients from COVID isolation ward of this hospital were selected as study population. All patients were confirmed real-time polymerase chain reaction and were diagnosed as having covid-19 according to WHO interim guidance. Under aged (<20) and pregnant women were excluded from the study. Diagnosis of Covid-19 was based on the results of real time RT-PCR using throat swab samples[10].

Data Collection Methods: Data were collected either from patients or their attendants/ relatives through direct interview or reached over phone by a semi-structured questionnaire. In all cases, informed written consent was ensured before participation. A preformed questionnaire was used for data collection. The clinical parameters included age, sex, duration of illness, onset to hospital admission, co-morbidities like systemic hypertension, diabetes mellitus, heart disease and chronic obstructive pulmonary disease and so on, symptoms, clinical signs and outcome (mortality) collected through the questionnaire and were evaluated by trained physicians. Outcome was designated as alive or dead within the hospital admission. All collected data were recorded in structured case record form and later on accumulated and compiled.

Confirmed COVID-19 case was detected in according to the case definition of the National guidelines of clinical Management of coronavirus disease 2019, Bangladesh .

Statistical Analysis: Collected data was compiled, checked and edited. Data processing and analysis was done with the help of computer using statistical software SPSS (Statistical Package for Social Science) version 22.0 for windows. The test statistic used to analyze the data was descriptive statistics and Chi-square test. The level of significance was set at 0.05 and $P<0.05$ was considered significant.

Ethical Consideration: All procedures of the present study were carried out in accordance with the principles for human investigations (i.e., Helsinki Declaration) and also with the ethical guidelines of the Institutional research ethics. Formal ethics approval was granted by the local ethics committee. Participants in the study were informed about the procedure and purpose of the study and confidentiality of information provided. All participants consented willingly to be a part of the study during the data collection periods. All data were collected anonymously and analyzed using the coding system.

Results

Total 300 Covid-19 patients were enrolled. Among them 222(74.0%) were male and 78(26.0%) patients were female. Most patients were from 41 to 50 years which was 108(36%) then from 31 to 40 years' age group 102(34.0%) cases, from 21 to 30 years' age group 75(25%) cases, from 51 to 60 years' age group 9(3.0%) cases and 6(2.0%) patients above 60 years (Table 1).

Table 1: Age and Gender Distribution of Patients with Covid-19 (n=300)

Variables	Frequency	Percent
Age Group		
21 to 30 Years	75	25.0
31 to 40 Years	102	34.0
41 to 50 Years	108	36.0
51 to 60 Years	9	3.0
More Than 60 years	6	2.0
Gender		
Male	222	74.0
Female	78	26.0

Average age of the patients was 38 years. Fever was the dominant clinical presenting feature. 213 (71%) patients presented with fever, followed in decreasing

order by cough162 (54%), Breathlessness120 (40%), Dysgeusia114 (38%), anosmia 72 (24%), parosmia 63 (21%), chest pain 60 (20%), diarrhoea 54 (18%), and Sore throat 42 (14%). The duration of illness was 1 to 3weeks in 61% cases, less than 1week in 33% cases and >3weeks in 6% cases (Table 2).

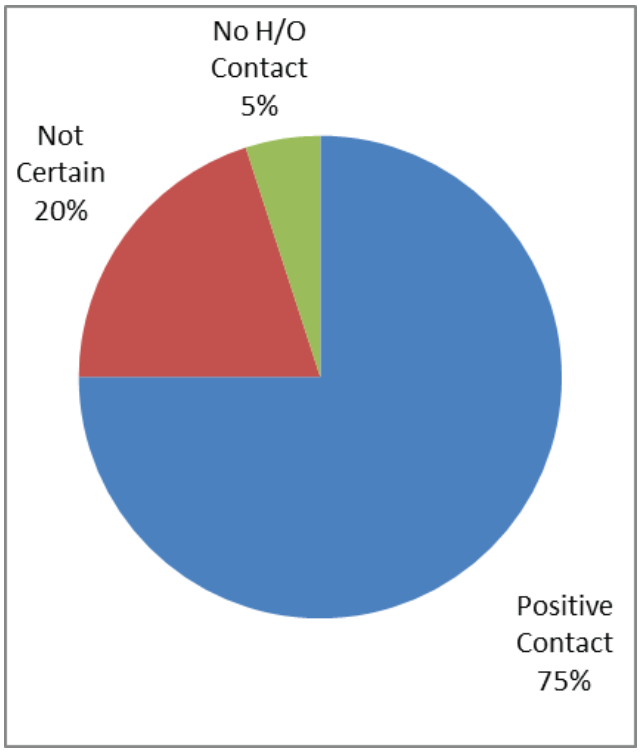

Figure I: Show H/O contact with COVID-19 patients (Positive contact 75.0%, Not certain 20.0%, No H/O contact 5.0%)

Table 2: Clinical Characteristics of Patients (n=300)

Variables	Frequency	Percent
Duration of Illness		
Less Than 1week	99	33.0
1 to 3 weeks	183	61.0
More Than 3 weeks	18	6.0
Symptoms		
Fever	213	71.0
Cough	162	54.0
Breathlessness	120	40.0
Dysgeusia	114	38.0
Anosmia	72	24.0
Parosmia	63	21.0
Chest pain	60	20.0
Diarrhoea	54	18.0
Sore throat	42	14.0

Among 300 patients, 252 (84%) patients were Urban residents. Majority 78 (26%) of the patients had graduation and 225 (75%) patients had contact history (Table 3).

Table 3: Sociodemographic profile of covid-19 patients (n=300)

Variables	Frequency	Percent
Residence		
• Urban	252	84.0
• Rural	48	16.0
Education		
No formal education	33	10.0
Complete primary education	63	21.0
SSC	69	23.0
HSC	57	19.0
Graduation and above	78	26.0
Occupation		
Employed	246	82.0
Unemployed	54	18.0

Total 108 (36%) patients had one or more than one co-morbidity where Hypertension (19%), diabetes mellitus (16%), Heart disease (6%), renal disease (8%), COPD (5%) were frequent. Regarding co-morbidity status hypertension, heart disease, renal

Table 4: Comorbid condition of the study patients (n=300)

Comorbidities	Frequency	Percent
HTN	57	19.0
DM	48	16.0
Heart disease	18	6.0
Renal disease	24	8.0
COPD	15	5.0
Liver disease	12	4.0
Obesity	15	5.0
Hypothyroidism	9	3.0
Cancer	6	2.0

HTN=Hypertension; DM=Diabetes mellitus; COPD=Chronic obstructive Pulmonary Diseases

Table 5: Factors associated with outcome of covid-19 patients (n=300)

Variables	Outcomes		P value
	Alive	Death	
Comorbidity			
• Present	96	5	<0.01
• Absent	198	1	
ICU Requirement			
• Needed	8	4	<0.01
• Not Needed	286	2	

P value was determined by chi-square test

disease was significantly ($p<0.01$) associated with death (Table 4).

Among 300 patients, 294 (98%) patients were alive and 6 (2%) patients died. ICU support was needed 12 (4%) of the patients (Table 5).

Discussion

In this study 222(74.0%) male patients were infected by COVID-19. Male patients were more affected than female. This study was consistent with the results of a study conducted in India performed by Gupta et al[12]. Another study of Murad et al conducted in Bangladesh reported similar findings where 77.0% patients were men[13]. Average age of the patients were 38 years. Age group distribution showed that younger age groups were more affected than older age groups. Majority (36.0%) of the patients were aged between 41 to 50 years. This is consistent with the data from the Institute of Epidemiology, Disease Control and Research (IEDCR), Bangladesh on Covid-19[14].

It is important to note that 75.0% patients had positive contact history in our study highlighting the importance of preventive and containment process of pandemic including distancing, hand washing and proper use of mask. In this study, majority had fever (71.0%) followed in decreasing order by cough (54.0%), breathlessness (40.0%), dysgeusia (38.0%), anosmia (24.0%), parosmia (21.0%), chest pain (20.0%), diarrhoea (18.0%), sore throat (14.0%). These findings are similar with the findings of other studies conducted in Bangladesh[9,13]. In present study, fever was the dominant symptom. About 213(71.0%) patients presented with fever which was consistent with Guan et al[12], Wang et al[15], Zhang et al[16].

In present study, 36.0% of patients had one or more than one co-morbidity where majority had HTN (19.0%) and diabetes (16.0%) followed by heart disease (6.0%), renal disease (8.0%), COPD (5.0%), liver disease (4.0%) and obesity (5.0%). Similarly, in other studies conducted in Bangladesh and other countries, HTN and DM were found to be the two most common comorbidities among patients[9,17-19]. In present study, death rate was 2.0% cases. This is consistent with the finding of other study conducted in Bangladesh observed that 1.0% death in their study[19].

Death is associated with the presence of a significantly higher proportion of comorbidities (any) (96 VS 5 for alive and dead respectfully. Overall recovery from ICU was poor and higher number of death counted in this group. In this study, supporting the result, we observed that Male sex, presence of comorbidities, needed ICU support were significantly associated with mortality. Yang et al[20] also assessed same issue and found that overall prevalence of comorbidities in the COVID-19 patients and found that underlying disease, including HTN, respiratory system disease, cardiovascular disease could be significant risk factors for severe patients compared with non-severe patients.

Conclusion

COVID-19 affects male more than female. Common symptoms are fever, cough, breathlessness, dysgeusia, anosmia and so on. Many patients have comorbidities and death rate 2%. Diagnosing the patients by clinical presentation and confirmed by RT-PCR lead us to give proper treatment and reduce the morbidity and mortality rate also reduce the community transmission of SARS CoV-2 by isolation of COVID positive patient. Frequent contact history among positive COVID-19 patients and significant association of breathlessness, co-morbidities with mortality in our study reinforces that abiding by the prevention and containment process, ensuring proper oxygen therapy and addressing co-morbidities adequately are very important measure to mitigate COVID-19 in Bangladesh.

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Conflict Of Interest
The authors have no conflicts of interest to disclose.

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Authors' contributions
Bhuya MSK and Jahan F conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Yusuf MA contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript.
Bhuya MHA and Sultana N involved in the manuscript review and editing. All authors read and approved the final manuscript.

Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. As this was a prospective study the written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations

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