Clinical Profile of 100 Confirmed COVID-19 Patients Admitted in Dhaka Medical College Hospital, Dhaka, Bangladesh

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Abstract:

Introduction: Since the first detection of corona virus disease (COVID-19) cases in Dhaka, Bangladesh on 8 March, 2020, numbers are rising alarmingly. Clinical data on COVID-19 in Bangladesh is lacking. We report early findings on demographic profile, clinical presentations and short-term clinical outcomes of confirmed COVID-19 patients admitted in a large teaching hospital in Dhaka, Bangladesh with preliminary analyses of their association with mortality.

Materials and Methods: In this retrospective cross-sectional study, we included reverse transcription polymerase chain reaction (RT-PCR) confirmed COVID-19 patients aged ≥ 15 years, who were admitted in Dhaka Medical College Hospital (DMCH) between May 2 and 15, 2020, the first two weeks when DMCH started admitting COVID-19 patients. Data were collected between May 25 and 29, 2020 from patients or their attendants through telephone interview by a structured questionnaire, after having appropriate consent, irrespective of outcome. One hundred and eight consecutive patients met inclusion criteria through convenient sampling from ward registrar, 102 patients could be reached over phone and data from two patients were discarded in the data cleaning process. The statistical analysis was done by the Statistical Package for the Social Sciences (SPSS) version 22.0.

Results: Among the total participants (n=100), mean age was 41.7±16.3 years, 63% were male and 60% patients had positive contact history. Appearance of symptom to hospital admission time was a median of 6 days (range 1 to 21 days) and mean hospital stay was 7.77 ± 5.62 days. Predominant presenting symptoms were fever (69%), cough (54%), breathlessness (41%), fatigue (40%), anorexia (26%) and diarrhea (19%). Hypertension (21%), diabetes mellitus (16%), heart diseases including ischemic heart disease (IHD) (8%) and renal diseases including chronic kidney disease (CKD) (8%) were frequent comorbidities. Ten out of hundred patients died. Older age (p= 0.001), male sex (p= 0.007), smoking (p= 0.001), breathlessness (p=0.001) and presence of comorbidities (p= < 0.05) were significantly associated with mortality.

Conclusion: Frequent positive contact history and significant association of breathlessness, smoking and comorbidities with mortality in our study reinforces that abiding by the prevention and containment process, smoking cessation, ensuring proper oxygen therapy and addressing comorbidities adequately are very important measures to mitigate COVID-19 in Bangladesh like the rest of the world.

Key words: COVID-19, clinical feature, comorbidity, risk factor

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Introduction:

It is June, 2020, the sixth month that the human race is fighting a large pandemic since 12 December 2019[1] caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV 2) infection termed by World Health Organization (WHO) as Coronavirus Disease, COVID-19. As of 1 June, 2020, the world has already witnessed 376 320 deaths among 6 194 533 cases[2] and Bangladesh has reported 49534 confirmed cases among which 10597 has recovered and 672 died.[3] Cases are increasing exponentially in Bangladesh over last one month. Severe acute respiratory illness with fever and respiratory symptoms, such as cough and shortness of breath, comprise the main clinical presentations.[4] But unusual manifestations, such as patients without respiratory symptoms or only very mild symptoms are rising worldwide[5]. Understanding regional features are always important. A number of studies elaborating local epidemiological and clinical features have been

published.[6-9] We report early findings on clinical presentation and short term outcome of patients with COVID-19 in a large teaching hospital in Dhaka, Bangladesh, as well as demographic and comorbidity profile with preliminary analyses of their association with mortality.

Material and Methods:
In this retrospective cross-sectional study, we included reverse transcription polymerase chain reaction (RT-PCR) confirmed COVID-19 patients aged ≥15 years, who were admitted in Dhaka Medical College Hospital (DMCH) between May 2 and 15, 2020, the first two weeks when DMCH started admitting COVID-19 patients. Data were collected between May 25 and 29, 2020 from patients or their attendants through telephone interview by a structured questionnaire, after having appropriate consent, irrespective of outcome. One hundred and eight consecutive patients met inclusion criteria through convenient sampling from ward registrar, 102 patients could be reached over phone and data from two patients were discarded in the data cleaning process. Eventually 100 cases were enrolled. Appropriate consent was obtained from every patient or from legal guardian by reading out the written informed consent according the revised Declaration of Helsinki. The protocol was approved by the Ethical and Scientific Committee of the Dhaka Medical College (DMC). We collected demographic data (age, sex, address, contact history, etc.), clinical data (symptoms on admission, comorbidities and their durations, etc.) and correlated them with outcome. The statistical analysis was carried out using the Statistical Package for Social Sciences version 22.0 for Windows (SPSS Inc., Chicago, Illinois, USA). Qualitative variables such as fever, cough etc. were expressed as frequency and percentage. Quantitative variables like age, durations, etc. were expressed as mean ± standard deviation and median. Test of significance was performed by unpaired t-test for quantitative variable and Chi square test for qualitative variables compared separately in different clinical presentation. In addition, multivariate logistic regression analysis of possible risk factors was done to determine the association with mortality by calculating odds ratio with 95% confidence intervals. A "p" value <0.05 was be considered as significant.

Results:
One hundred patients were included in the study over a period of two weeks. The sociodemographic profile is summarized in Table-I. The mean age of participants was 41.7±16.3 years where 63% were male and 37%

female. Most of them came from in and around Dhaka city, predominantly from Keraniganj (8%), Mohammadpur (6%) and Lalbagh (5%) area. A few were also referred from outer districts (Cumilla, Gopalganj, Norshindi, etc.).

Out of 100 patients 60 had contact history with confirmed patients and/or with persons having definite symptoms of COVID-19. Seventeen out of hundred (17%) patients travelled to areas reported to have increased cases, eg. Narayanganj and rest 23% could not explain definite exposure. Symptoms appeared on an average after 5 days of contact among those with contact/exposure history. Patients got admitted predominantly with fever (69%), cough (54%), breathlessness (41%), fatigue (40%), anorexia (26%) and diarrhea (19%). Less frequent symptoms included chest pain, sore throat, headache and body ache, nasal congestion, anosmia, nausea/ vomiting (Table-II). On average, patients came to hospital after 6 days (range 1 to 21 days) of appearance of symptom (Table-III) and mean hospital stay was 7.77 ± 5.62 days. Total 51 patients (51.0%) had comorbidities. Hypertension (21%), diabetes mellitus (16%), heart diseases (8%) and renal diseases (8%) were frequent (Table-IV). Thirteen out of hundred patients had history of smoking.

Among the 100 patients, 78 patients were discharged, 7 remains admitted, 4 were referred for intensive care units (ICU) (in DMCH or other hospitals) and 10 patients died. Most of the death cases were aged more than 70 year and only 1 patient admitted in this age group survived. The mean (±SD) age were 61.9±18.1 years and 39.42±14.49 years in death and alive cases respectively and age was significantly (p<0.001) higher in death cases. All the patients who died were male (Table-V). The mean (±SD) duration of total hospital stay was 6.1±3.67 days in death cases and 7.97±5.79 days in alive cases and the mean duration of total hospital stay was not statistically significant (p>0.05) between death and alive cases. Regarding the symptom status, it was observed that breathlessness was found in 9 (90.0%) cases and in 32 (35.6%) cases in death and alive cases respectively; 8 (80.0%) in death cases and 19 (21.1%) in alive cases was treated with O_2. Prone positioning was done in 5 (50.0%) death cases and 9 (10.0%) alive cases. Breathlessness was significantly (p<0.001) associated with death. Other symptoms were not significantly (p>0.05) associated with death (Table-VI). Regarding the comorbidity status, hypertension, heart disease and renal disease were significantly (p<0.001) associated with death. Other comorbidities were not significantly (p>0.05) associated with death (Table-VII). Multivariate

logistic regression analysis revealed that only smoking and renal disease were independently and significantly (*p*<0.05) associated, having OR = 9.95 (95% CI 1.73-57.12) and OR = 9.43 (95% CI 1.12 -79.23) respectively (Table-VIII).

Discharged patients remained well without any complications till 29 May, 2020, the last date of data collection. Almost all discharged patients (96%) went into isolation for a mean of 12.82 ± 3.39 days, median 14 days after discharge.

Table-I

Distribution of Socio-demographic variables (n=100)		
Age (in years)	Frequency	Percent
15 – 20	6	6.0
21 – 30	23	23.0
31 – 40	31	31.0
41 - 50	10	10.0
51 – 60	17	17.0
61 - 70	8	8.0
> 70	5	5.0
Mean	41.67	
Std. Deviation	16.259	
Minimum	15	
Maximum	85	
Sex	Frequency	Percent
Male	63	63.0
Female	37	37.0

Table-II

COVID-19 symptoms of the study patients (n=100)					
COVID-19 Symptoms	Yes		No		Duration (days) (Mean±SD)
	Frequency	Percent	Frequency	Percent	
Fever	69	69.0	31	31.0	7.0±3.77
Cough	54	54.0	46	46.0	10.10±5.11
Breathlessness	41	41.0	59	59.0	6.65±4.64
Fatigue	40	40.0	60	60.0	11.64±5.09
Anorexia	26	26.0	74	74.0	8.54±5.29
Diarrhea	19	19.0	81	81.0	4.11±3.46
Chest pain	14	14.0	86	86.0	7.50±3.86
Throat pain	14	14.0	86	86.0	7.23±3.46
Rhinitis/Nasal congestion	13	13.0	87	87.0	7.00±2.88
Body ache	13	13.0	87	87.0	5.92±3.27
Headache	12	12.0	88	88.0	7.67±3.35
Anosmia	10	10.0	90	90.0	5.80±2.86
Nausea/Vomiting	9	9.0	91	91.0	5.44±3.84
Shivering	8	8.0	92	92.0	4.25±4.13
Sputum	7	7.0	93	93.0	6.57±2.50
Abdominal pain	4	4.0	96	96.0	5.75±3.40
Hemoptysis	3	3.0	97	97.0	5.50±4.95
Unconsciousness	1	1.0	99	99.0	1

Table-III

Duration from appearance of symptom to admission in DMCH (n=100)		
Duration (in days)	Frequency	Percent
1 – 5	42	42.0
6 - 10	43	43.0
>10	6	6.0
Missing	5	5.0
No Symptom	4	4.0
Mean days	6.38	
Median	6.00	
Std. Deviation	3.521	
Minimum	1	
Maximum	21	

Table-IV

Comorbid condition of the study patients (n=100)		
Comorbid condition of the study patients	Yes	Duration of comorbid conditions in Day or Year (Mean±SD)
	Frequency	Percent	
Hypertension (HTN)	21	21.0	10.60±7.97 (Year)
Diabetes Mellitus (DM)	16	16.0	11.73±8.11 (Year)
Heart disease	8	8.0	7.62±6.43 (Year)
Renal disease	8	8.0	5.50±4.59 (Year)
Asthma/COPD	6	6.0	15.00±7.07 (Year)
Obesity	5	5.0	10.00±5.00 (Year)
Liver disease	3	3.0	1.67±1.15 (Year)
Pregnancy	3	3.0	170.00±86.60 (Day)
Cancer	2	2.0	45.00±21.21 (Day)
Stroke	1	1.0	18.00 (Year)

Table-V

Distribution of sociodemographic variables according to outcome (n=100)					
Socio-demographic variable	Death (n=10)		Alive (n=90)		P value
Age (years)					
15 – 20	0	0.0	6	6.7	
21 – 30	1	10.0	22	24.4	
31 – 40	0	0.0	31	34.4	
41 - 50	2	20.0	8	8.9	
51 – 60	1	10.0	16	17.8	
61 - 70	2	20.0	6	6.7	
> 70	4	40.0	1	1.1	
Mean±SD	61.9±18.1		39.42±14.49		[a]0.001^{s}
Range (min, Max)	26, 85		15, 73		
Median	67.5		37.0		
Sex					
Male	10	100.0	53	58.9	[b]0.007^{s}
Female	0	0.0	37	41.1	

[a]p value reached from unpaired t-test
[b]p value reached from Chi Square test

Table-VI

Distribution of symptom according to outcome (n=100)					
Symptom	Death (n=10)		Alive (n=90)		P value
Fever	9	90.0	59	65.6	0.108^{ns}
Breathlessness	9	90.0	32	35.6	0.001^{s}
Cough	8	80.0	45	50.0	0.069^{ns}
Anorexia	5	50.0	21	23.3	0.079^{ns}
Fatigue	5	50.0	34	37.8	0.231^{ns}
Chest pain	3	30.0	11	12.2	0.145^{ns}
Shivering	2	20.0	6	6.7	0.182^{ns}
Sputum	2	20.0	5	5.6	0.144^{ns}
Diarrhea	2	20.0	16	17.8	0.572^{ns}
Hemoptysis	1	10.0	2	2.2	0.273^{ns}
Throat pain	1	10.0	13	14.4	0.576^{ns}
Rhinitis/Nasal congestion	1	10.0	12	13.3	0.616^{ns}
Anosmia	1	10.0	9	10.0	0.738^{ns}
Unconsciousness	1	10.0	0	0.0	0.101^{ns}
Abdominal pain	0	0.0	4	4.4	0.652^{ns}
Muscle ache	0	0.0	13	14.4	0.231^{ns}
Eye complaint	0	0.0	0	0.0	0.335^{ns}
Headache	0	0.0	13	14.4	0.231^{ns}
Stroke	0	0.0	0	0.0	-
Others	0	0.0	0	0.0	-

p value reached from Chi Square test

Table-VII

Distribution of comorbidity according to outcome (n=100)

Comorbidity	Death (n=10)		Alive (n=90)		P value
Hypertension	5	50.0	16	17.8	0.032[s]
Heart disease	4	40.0	4	4.4	0.003[s]
Renal disease	4	40.0	4	4.4	0.003[s]
Diabetes Mellitus	4	40.0	12	13.3	0.051[ns]
Asthma/COPD*	2	20.0	4	4.4	0.109[ns]
Cancer	1	10.0	1	1.1	0.191[ns]
Liver disease	0	0.0	3	3.3	0.727[ns]
Stroke	0	0.0	1	1.1	0.900[ns]
Obesity	0	0.0	5	5.6	0.584[ns]
Pregnancy	0	0.0	3	3.3	0.727[ns]
No comorbidity	1	10.0	50	55.6	0.007[s]

Chronic Obstructive Pulmonary Disease

p   value reached from Chi Square test

Table-VIII

Multivariate logistic regression analysis of risk factors associated with outcome (n=100)

Risk Factors	b	S.E.	OR	95% CI of OR		P value
Smoking	2.297	0.892	9.95	1.73	57.12	0.010[s]
Renal Disease	2.244	1.086	9.43	1.12	79.23	0.039[s]
Hypertension	1.060	0.853	2.89	0.54	15.37	0.214[ns]
Heart disease	1.296	1.073	3.65	0.45	29.94	0.227[ns]

s= significant

ns= not significant

Discussion:

First COVID-19 cases were declared by Bangladesh in Dhaka City on 8 March, 2020[10], highest number of cases have been detected in Dhaka[3] and thus it is considered as the core of the disease transmission in Bangladesh. Hossain I, *et al.* have shown that most of the confirmed cases (about 48.9%) of Bangladesh reported that they lived in or had come to Dhaka within 14 days before the onset of illness or had been in close contact with any Dhaka resident.[11] So, we believe that this study among the COVID-19 confirmed patients admitted in DMCH, a prime tertiary care hospital in Dhaka, will give good insight about the epidemiological and clinical characteristics of COVID-19 patients of Bangladesh.

Our socio-demographic findings, mean age 41.7±16.3 years, 63% male and 37% female, matched that of Asia, e.g. China[4] (median age: 47 years; 41.9% female), India[7] (mean age 40.3 years, 66.7% male) and other reports from Bangladesh[11] (43% were in the age range of 21 to 40 years, female: male ratio 1:2.33). But studies from America[8] (median age, 63 years) and Europe[9] (Median age, 67.5 years) showed higher age of patients but same male preponderance. It is important to note that 60% of patients had positive contact history in our study highlighting the importance of preventive and containment processes of pandemic including distancing, hand washing and proper usage of mask, etc.

The earliest reports from China described fever, dry cough, breathing difficulties (dyspnoea), headache and pneumonia as the typical clinical symptoms of COVID-19.[1,4,6] Our patients also got admitted predominantly

with fever (69%), cough (54%), breathlessness (41%) and fatigue (40%). Gastrointestinal symptoms followed with anorexia (26%), diarrhea (13%), nausea or vomiting (9.0%) and abdominal pain (4.0%) without any occurrence of GI bleeding. With an incidence of 3% (1/41)-79% (159/201), globally gastrointestinal symptoms of COVID-19 included anorexia 39.9% (55/138)-50.2% (101/201), diarrhoea 2% (2/99)-49.5% (146/295), vomiting 3.6% (5/138)-66.7% (4/6), nausea 1% (1/99)-29.4% (59/201), abdominal pain 2.2% (3/138)-6.0% (12/201) and gastrointestinal bleeding 4% (2/52)-13.7% (10/73)[12]. Anosmia, a rare symptom, occurred in 10% of our patients. Studies from Europe first urged the international scientific community that the sudden anosmia or ageusia need to be recognized as important symptoms of the COVID-19 infection[13]. Hypertension (21%) and diabetes (16%) remains the most common comorbidities found in our patients like the world.[14,15]

Death rate 10 out of 100 is higher in respect to WHO reported Case Fatality Rate of Bangladesh, which is 1.36% on 2 June, 2020[3]. Causes remain old age (4 cases were > 70 years), comorbidities, terminal cases are commonly referred to this reputed tertiary care referral hospital (2 patients died just on the day of admission) and unavailability of adequate ICU beds. Older patients are established high risk group worldwide and 4 out of our 5 admitted patients with age > 70 years died. WHO, in a recent review published online on 26 May, 2020 stated that the available evidence suggests that smoking is associated with increased severity of disease and death in hospitalized COVID-19 patients[16]. We also found smoking to be independently and significantly associated with mortality of our patients (Table-VIII). Other studies also report the same findings that male gender, people older than 65 years, and smoking were risk factors for disease progression in patients with COVID-19.[17] Breathlessness was the only symptom significantly (p<0.001) associated with death which strengthens the fact that patients with breathlessness should seek medical help immediately and proper O2 therapy remains the corner stone of COVID-19 case management. Physicians should also pay particular attention to identifying treatable etiologies of dyspnea including exacerbations of underlying pulmonary and cardiovascular disease and treat the exacerbation as they would have done prior to the pandemic. It is also important to keep high blood pressure and diabetes controlled along with continuation of ongoing treatments of heart, lung, renal, liver or other comorbidities as we as others find that all are associated with severe disease and mortality.[14,15,17]

We find that our study is limited with small sample size. Asymptomatic patients, patients with mild symptoms at home and severe cases in ICU were left out. We could not collect data on physical examination (eg. respiratory rate, O2 saturation, etc.) and laboratory findings (i.e. chest X-ray, d-dimer, etc.) in our study. Thus, disease severity of the patients could not be assessed. Further studies highlighting these are needed.

Conclusion:

This is an early data, showing the epidemiological and clinical profiles of Bangladeshi COVID-19 patients hospitalized at DMCH. Frequent contact history among positive COVID-19 patients and significant association of breathlessness, smoking and comorbidities with mortality in our study reinforces that abiding by the prevention and containment process, smoking cessation, ensuring proper oxygen therapy and addressing comorbidities adequately are very important measures to mitigate COVID-19 in Bangladesh also.

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