Original Article

Clinical profile of first 100 cases of COVID-19 in a COVID-dedicated hospital of Bangladesh

Paul N[a], Azad NA[a], Parveen R[a], Saha TK[b], Hoque M[a], Deb SR[a], Haque A[a], Barman TK[a], Matin MHA[a], Bhuyian RZ[a], Afrin S[a], Yasmin R[a]

ABSTRACT

Background: *The novel corona virus has been identified as the cause of respiratory illness in Wuhan, Hubei province, China, since December, 2019. It has spread almost all the countries and areas (212) in world. Due to distinct demographics of infection, variation of case fatality and clinical presentation in different countries, the knowledge of demographic distribution and analysis of clinical profile from this study would help for patient management of COVID-19 till the invention of specific drug and vaccines. We aimed to analyze the clinical profile of fist 100 cases of COVID-19 admitted in a teaching hospital.*

Methods: *In this observational study, RT-PCR confirmed first 100 hospitalized COVID-19 cases, admitted in Mugda Medical College Hospital were included. With well informed consent, a structured questionnaire was fulfilled during the time of hospital stay. Data were analyzed with clinical outcome, hospital stay, clinical staging and comorbidity of admitted patient from 20th March to 10th April.*

Results: *Among the total participants, male were predominate (59%). Age groups were ranging from 9 to 80 years and mean age was 43 years. Common symptoms were fever (91%), cough (33%), dyspnea (41%), sore throat (12%), diarrhea (12%) and myalgia (2%). Mild cases (53%) were common, followed by moderate (31%), severe (13%) and critical (3%). Average hospital stay was 11 days. Common comorbidities were diabetes mellitus (21%), hypertension (17%), chronic kidney disease (11%), bronchial asthma (8%), stroke (3%) and ischaemic heart disease (2%).*

Conclusion: *Distinct demographic presentation with age variability, clinical presentation with variable fatality in different countries may help the further steps taken by the policymaker of low resource country for the prevention of infection and management of COVID-19.*

Key words: *Bangladesh, clinical profile, COVID-19, COVID-dedicated hospital.*

Author information

a. Nandita Paul, Nazim Al Azad, Rahnuma Parveen, Monjurul Haque, Sudip Ranjan Deb, Ahsanul Haque, Tusher kumar Barman, Muhammad Hasanat Al Matin, Rokanuzzaman Bhuyian, Sadiya Afrin, Rubina Yesmin, Department of Medicine, Mugda Medical College, Dhaka, Bangladesh.

b. Tarun Kumar Saha, MOMCH, Vedorganz Upazila Heath Complex & Family planning, Sharietpur, Bangladesh.

Address of correspondence: Nandita Paul, Senior Consultant, Department of Medicine, Mugda Medical College, Dhaka, Bangladesh. Email: nanditapaulbd@gmail.com

INTRODUCTION

The novel corona virus has spread rapidly in China and then almost all the countries in world after being identified in Hubei, China in December 2019. The World Health Organization (WHO) estimated 10 million are infected and almost 5 lakhs died by the June in world.[1] WHO declared COVID-19 global pandemic on 11th March 2020. The first case was declared on 8th March, 2019 in Bangladesh. Heath bulletin of Bangladesh reported total about 1.5 lac confirmed cases and 1582 death from COVID-19 by 29th June, 2020.[2] Confirmed case defined as a person with laboratory confirmation [Reverse Transcriptase of PCR (RT-PCR)

of SERS CoV-2] of COVID-19 infection, irrespective of clinical signs and symptoms.[3]

COVID-19 has wide spectrum of presentation like asymptomatic to mild, moderate, severe and critically ill. Clinical classification for the practical purpose of patient management, the six syndromes of COVID-19 has been categorized into mild, moderate, severe and critical cases. This case definition is according to national guideline.[3] Mild cases defined as symptoms are mild like fever, cough, sore throat, malaise, headache, muscle pain and without shortness of breath or abnormal imaging. Moderate cases are those with fever and respiratory symptoms with radiological findings of pneumonia and respiratory rate <30 breaths/min with pulse oximetry showing saturation >93% at ambient air. Severe cases are meeting any of the criteria: like respiratory distress (≥30 breaths/min) or finger oxygen saturation ≤93% at rest or arterial partial pressure of oxygen (PaO2)/fraction of inspired oxygen (FiO2) ≤300 mmHg (1 mmHg=0.133kPa). Critical cases are meeting any of the criteria: like respiratory failure and requiring mechanical ventilation or shock or with other organ failure that requires ICU care.

The commonly reported laboratory confirmed cases showed common clinical symptoms like fever (88%), dry cough (68%), fatigue (38%), sputum production (33%), dyspnea (19%), sore throat (14%), headache (14%) and myalgia (15%).[4]

The objective of this paper is to describe demography with age, sex, in early COVID-19 cases in Bangladesh, describe the clinical profile of these patient ranging from clinical symptoms, diseases severity with clinical classification among the cases, comorbidity, duration of hospital stay and outcome in admitted confirmed first 100 COVID-19 cases in a tertiary hospital.

METHODS

This descriptive study was conducted in Mugda Medical College Hospital, Dhaka, Bangladesh, which is one of the tertiary hospitals declared as COVID-19 dedicated hospital since 20th March, 2020. Data was collected from 20th March to 10th April, 2020. First 100 cases were enrolled who were RT-PCR positive for SARS-CoV-2 virus, irrespective of age, gender and comorbidities. During the admission, a structured questionnaire was fulfilled by medical professional during this defined period or up to discharge. Informed

written consent was taken from each patient. The clinical outcomes with grading of diseases severity, comorbidity, death, discharges and length of hospital stay were collected in data sheet. Statistical analyses were performed in SPSS Version 21. This protocol was approved by the Ethical Committee of Mugda Medical College.

RESULTS

Total patients were 100 including 59 males. Age ranged from 9 to 80 years (Figure 1) and mean age was 43 years. Among them four patients were pregnant and the outcome of pregnancy with three live birth and one was intrauterine death.
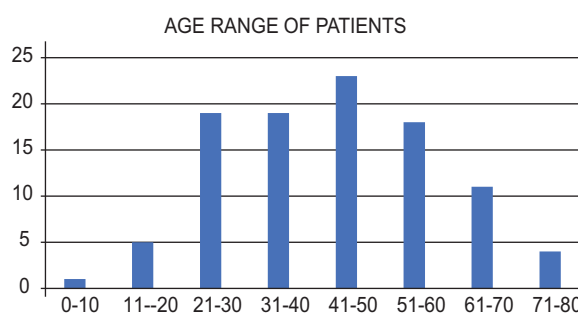

Figure 1 Age distribution of first 100 COVID-19 patients in Mugda Medical College Hospital

Among the 100 patients, fever (91%), dyspnea (41%), cough (33%) were the most frequent symptoms. Other symptoms were sore throat (12%), diarrhea (12%), myalgia (12%), rectal bleeding (2%) and convulsion (1%) (Figure 2). All cases were classified as clinical classification according to national guideline[3] by measuring the finger O2 saturation by pulse oximeter and respiratory rate. The mild, moderate, severe and critical case were 53%, 31%, 13% and 3% respectively. Total duration of hospital stay ranged from 1 day to 31 days, average hospital stay was 11 days. Common comorbidities were diabetes (21%), hypertension (17%), chronic kidney disease (CKD) (11%), asthma (8%), stroke (3%) and ischaemic heart disease (IHD) (2%) (Figure 3). Ninety patients were discharged with discharge criteria according to national guideline 1(b). Among the 100 patients, 5 patients (5%) were absconded, 2 patients were discharged against medical advice and all 3 critical cases were transferred in ICU who were admitted with very low 0₂ saturation ranging

from 54% to 80% and two of them required mechanical ventilation and died within range of 1 to 7 days of hospital admission. Case fatality rate was 3%. All death cases were male, age ranging from 51 to 80 years and suffering from comorbidities with DM, HTN, asthma and one of them had CKD with maintenance on hemodialysis.
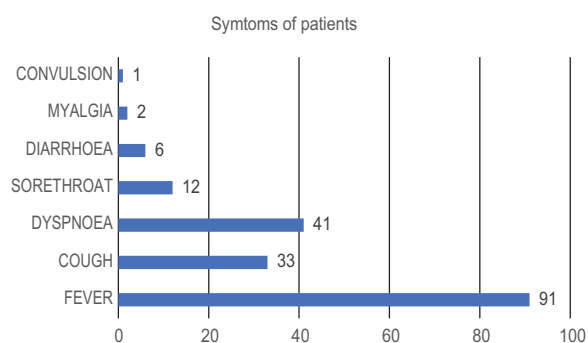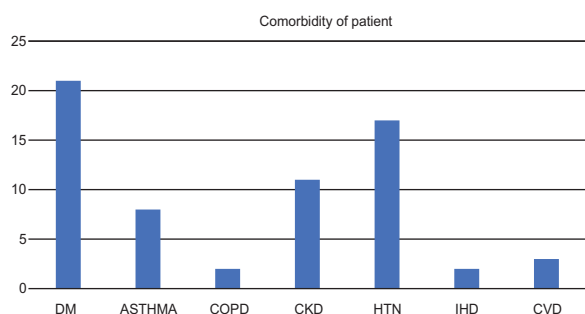

Figure 2 Symptoms of first 100 COVID-19 cases

Figure 3 Comorbidity among COVID-19 patients (N=100)

DISCUSSION

COVID-19 spreads rapidly throughout China infecting more than 85,000 people by the February 2020. Within a few months it engulfed the Europe (Italy, Spain and UK) and North America (USA) causing massive loss of life. It is now set to gain a foothold in the Asian subcontinent including Bangladesh which is one of the most densely populated countries of the world. It has spread throughout almost all the countries and area (212) of the world.

Regarding sociodemographic findings of our patients, male were predominant as in other countries. Huang et al[5] reported 73% were male, Wang et al[6] reported 54.3%

were male. In our study age variation was from 9 to 80 years. Mean age was 43 years that was similar to mean age in China[4] and India.[7] Median age was 43.5 years in a Indian study[6] and Chen et al[8] found it as 55.5 years and other reports from Bangladesh.[9] But studies from America[10] showed median age of 63 years and that of Europe[11] was 67.5 years. In Italy, the median age the infected patient was 64 years whereas in Korea, that was 40 years.[12,13] This indicates that it may be related to distinct demographics of infection.

COVID-19 has a wide spectrum of presentation from asymptomatic to mild, moderate, severe and critically illness. The commonly reported laboratory confirmed cases showed similar clinical symptoms like fever (88%), dry cough (68%), fatigue (38%), sputum production (33%), dyspnea (19%), sore throat (14%), headache (14%) and myalgia (15%).[4] In our study, most frequent symptoms were almost comparable. Among the reported cases worldwide, 80% has mild to moderate diseases, (non-pneumonia/pneumonia), 13.8% severe diseases and 6.1% were critical.[5-7,9] In our study, 81% patient comprised mild to moderate cases, 13% severe case, 3% were critically ill.

The proportion of severity or fatality of infection may also vary by location. In a model study, suggested case fatality rate in Mari Land China was 1.4%.[8] Most of the fetal cases were in advanced age or with underlying comorbidities. In Italy, case fatality rate was 7.2%, in mid-March.[11,12] At that time in South Korea it was 0.9%.[13] Case fatality in our study is 3%. But total case fatality rate in Bangladesh till June 29 is 1.26%.[2]

In a study[10] of 5700 patient admitted in different hospitals of New York City express the most common comorbidities were hypertension (56.6%), obesity (41.7%) and diabetes (33.8%). In a meta-analysis, in China[14], hypertension was the most prevalent comorbidities and diabetes, IHD and respiratory system disease were present in 9.7%, 8.4% and 1.5% respectively. In our study hypertension, DM and bronchial asthma were 34%, 27% and 8% respectively. DM was the most common comorbidity, it is inverse to the study in New York and China and obesity was the second most common in New York study. Bronchial asthma is the ranking 3rd position as (8%) in our study which is 1.5% in China. CKD was the also another comorbidity with COVID patients, they are also important risk factor of severity.

The results from meta-analysis in China[14] showed the most prevalent clinical symptom was fever (91%), followed by cough (67%), fatigue (51%) and dyspnea (30%). The most prevalent comorbidities were hypertension (21%) and diabetes (9.7%), followed by cardiovascular disease (8.4%) and respiratory system disease (1.5%). This meta-analysis provided a details systematic evaluation, which estimate the prevalence of comorbidities in all patients, and assess the risk of underlying diseases in severe patients compared to non-severe patients. The results may aid in patient management while helping to develop policies for prevention and response to COVID-19 and its critical outcomes.

The associations were also observed in hypertension, cardiovascular disease, and respiratory system disease groups.[13-15] Overall, the severe patients were older and had more significant number of comorbid conditions than those who were non-severe. These results may suggest that age and comorbidities are risk factors for critical patients. Diseases such as hypertension, diabetes, respiratory system disease, cardiovascular disease, and their susceptibility conditions may be linked to the pathogenesis of COVID-19. Chronic diseases share several standard features with infectious disorders, such as the pro-inflammatory state and the attenuation of the innate immune response. For instance, diabetes occurs in part because the accumulation of activated innate immune cells in metabolic tissues leads to the release of inflammatory mediators, especially IL-1â and TNFá, which promote systemic insulin resistance and â-cell damage.[16] Additionally, metabolic disorders may lead to low immune function by impairing macrophage and lymphocyte function which may make individuals more susceptible to disease severity.[17]

As there is no specific drugs against COVID-19, symptom and complication based treatments are continuing including oxygen supplementation, antibiotics for secondary bacterial infection, heparin for prevention of micro-embolism and invasive ventilation for the treatment of ARDS, dialysis for renal failure. In our study, 6 patients received dialysis and one of them had died.

Regarding outcome of 100 patients, mean hospital stay was 11 days. According to discharge criteria, it was initially long due to 2 negative sample of RT-PCR after afebrile state. Also social stigma causes the patient waiting for negative RT-PCR. Among the 45 female patient 5 patient were pregnant and their outcome is one IUD and 3 health baby was born, one transferred to another hospital. None of their children were COVID positive. Three patients died. All three patients received treatment according to hospital protocol and were transferred to ICU.

The proportion of severity or fatality of infection may also vary by location. In a model study, suggested case fatality rate in Mariland China was 1.4%.[9] Most of the fetal cases were in advanced age or with underlying comorbidities. The mortality in our study also in 50 to 80 years age group and related with comorbidity like as other country of the world.

In Italy, case fatality rate was 7.2% in mid-March.[12,13] At that time in South Korea it was 0.9%.[11] Due to lack of any specific treatment and vaccine in every country, especially the low resource countries in south Asia, should understand the demographic distribution, clinical manifestation, laboratory evaluation and treatment outcome in their settings. This knowledge will help further research and intervention for the management of COVID-19 patients. It is also important to control blood pressure and diabetes and continuation of ongoing treatments of other comorbidities as we as others find that all are associated with severe disease and mortality.[14-17]

We find that our study is limited with small sample size. We could not collect data by details physical examination and laboratory findings in our study. Thus, disease severity of the patients could not be assessed properly and appropriately. Further studies highlighting these issues are needed.

Conclusion

In spite of limitation of very small size of sample, lacking proper evaluation of severity assessment due to unavailability of investigation facilities initially, this study will help for further evaluation with larger study in clinical profile of COVID-19 patient for the prevention and management in Bangladesh. As low resource country, case fatality can be lower than most of the country in the world if we can further research about demographic profiles, risk factor and comorbidity. So, we will be able to increase our strength for further management of COVID-19.

Conflicts of interest: Nothing to declare

REFERENCES

1. Coronavirus disease (COVID-19) Situation Report – 162 , world health organization (covid-19), 30th June 2020   Data as of *10 AM CEST,. 30 June 2020***. Reporting Country/ Territory/Area Total confirmed *cases*. Total confirmed new *cases*. Total deaths

2. https://www.who.int/bangladesh/emergencies/coronavirus-disease-(covid-19)-   update/coronavirus-disease-(covid-2019)-bangladesh-situation-reports

3. National Guidelines on Clinical Management of Coronavirus Disease 2019 (COVID-19)6th version 18th May 2020. p. 11-17.

4. Chen, H., Guo, J., Wang, C., Luo, F., Yu, X., Zhang, W., et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. Lancet 2020; 7; 395 (10226): 809-15.

5. Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., et al. Clinical features of patients infected   with 2019 novel coronavirus in Wuhan, China. The Lancet 2020; 395 (10223): 497-507.

6. European Centre for Disease Prevention and Control. Novel coronavirus disease 2019 (COVID-19) pandemic: increased transmission in the EU/EEA and the UK – sixth update 2020. 20 March.

7. Bhandari S, Bhargava A, Sharma S, Keshwani P, Sharma R, Banerjee S. Clinical Profile of Covid-19 Infected Patients Admitted in a Tertiary Care Hospital in North India. J Assoc Physicians India. 2020 May;68(5):13-17. PMID: 32610859.

8. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, Qiu Y et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study (published Jan 29, 2020) Lancet. 2020 Feb 15;395(10223):507-513.   doi: 10.1016/S0140-6736(20)30211-7. Epub 2020 Jan 30. PMID: 32007143; PMCID: PMC7135076.

9. W. Guan, Z. Ni, Yu Hu, W. Liang, C. Ou, J. He, Liu.L et al. Clinical characteristics of 2019 novel coronavirus infection in China, medrxiv 316 2020: 2020.02.06.20020974)

10. Richardson S, Hirsch JS, Narasimhan M, Crawford JM, McGinn T, Davidson KW; the Northwell COVID-19 Research Consortium, DP.B. et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. JAMA 2020. May 26;323(20):2052-2059. doi: 10.1001/jama.2020.6775. Erratum in: JAMA. 2020 May 26;323(20):2098. PMID: 32320003; PMCID: PMC7177629.

11. Verity R, Okell LC, Dorigatti I, Winskill P, Whittaker C, Imai N, Cuomo-Dannenburg G, Thompson H,. Estimates of the severity of coronavirus disease 2019: a model-based analysis. Lancet Infect Dis. 2020 Jun;20(6):669-677. doi: 10.1016/S1473-3099(20)30243-7.

12. Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. JAMA. 2020 May 12;323(18):1775-1776. doi: 10.1001/jama.2020.4683. Erratum in: JAMA. 2020 Apr 28;323(16):1619. PMID: 32203977.

13. .Grasselli G, Pesenti A, Cecconi M. Critical Care Utilization for the COVID-19 Outbreak in Lombardy, Italy: Early Experience and Forecast During an Emergency Response. *JAMA*. 2020;323(16):1545–1546.   doi:10.1001/jama.2020.4031

14. Guan WJ, Liang WH, Zhao Y, Liang HR, Chen ZS, Li YM, et al. Comorbidity and its impact on 1590 patients with COVID-19 in China: a nation wide analysis. Eur Respir J 2020; 55(5): 2000547. doi:10.1183/13993003.00547-2020

15. Lechien JR, Chiesa-Estomba CM, Siati DR, Horoi M, Bon SDL, Rodriguez A, et al. Olfactory and gustatory dysfunctions as a clinical presentation of mild- to-moderate forms of the coronavirus disease (COVID- 19): a multicenter European study [published online ahead of print, 2020 Apr 6]. Eur Arch Otorhinolaryngol 2020;1-11. doi:10.1007/ s00405-020-05965-1

16. Odegaard JI, Chawla A. Connecting type 1 and type 2 diabetes through innate immunity. Cold Spring Harb Perspect Med 2012; 2(3): a007724. doi:10.1101/ cshperspect. a007724

17. Dooley KE, Chaisson RE. Tuberculosis and diabetes mellitus: convergence of two epidemics. Lancet Infect Dis 2009;9(12):737-746. doi:10.1016/S1473-3099(09)70282-8

18. World Health Organization. (2020). WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March