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THE SCENARIOS OF COVID-19 PANDEMIC IN BANGLADESH: ANALYSIS OF DATA IN JULY ANDAUGUST'2020

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. Authors AS, ZM, HMZ conceived the idea. Authors SMMP, MAR, LK, AS, designed and prepared the first draft. Authors AS, MAR, ZM, HMZ contributed to the result preparation. All authors read and approved the final manuscript.

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ABSTRACT

The outbreak of severe acute respiratory syndrome coronavirus 2 **(**SARS-CoV-2) pandemic quickly surges throughout the world including Bangladesh from the beginning of 2020. To challenge the present detrimental situations, many countries are approving several preventive measures, e.g., international travel bans, isolated office activities, country lockdown, and most importantly social distancing, even though some medications are prescribed in some extent. The government of Bangladesh also took various preventive measures to limit the thunder of corona virus disease 20019 (COVID-19) pandemic. But, the actions are not adequate to face the challenges of COVID-19 in Bangladesh, particularly in the capital city Dhaka, remarkably because of the lower-middle-income economy with one of the world's densest populations. In Dhaka city, based on the present populations, social distancing is difficult, and with the nominal resources it would be extremely challenging to implement the mitigation measures of COVID-19. Mobile sanitization facilities, temporary quarantine sites and healthcare facilities could help to improve the pandemic effect. A rapid, caring, and empathic collaboration between the government, citizens, and health experts, along with international assistance, can enable the country to minimize the impact of the pandemic. In this review, we summarize the occurrence (RT-PCR based test) and present scenarios of COVID-19 outbreak in Bangladesh, particularly in the Dhaka city analyzing available data in July and August'2020.

Keywords: SARS-CoV-2; COVID-19; pandemic; Dhaka; Bangladesh.

ABBREVIATIONS

SARS : Severe acute respiratory syndrome;
CoV : Corona virus;

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COVID-19 : Corona virus disease-19;
WHO : World health organization.

1. INTRODUCTION

Coronavirus disease 2019 (COVID-19), occurred by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), is a major challenge in the world now-a-days. Bangladesh has been suffering largely to control the COVID-19 pandemic in spite of having months of lockdown and other preventing measures. From the present perspective (e.g., socio-economic status, health care sectors, and huge populations) of COVID-19 in Bangladesh, this study aims to understand the epidemiological features throughout the country. This study used available data (July-August'2020) from the respective clinics/health departments of the different divisions in Bangladesh. The incidence of COVID-19 was increased in the country by around 50% within a week after relaxing the lockdown. Males were disproportionately affected in terms of infections (71%) and deaths (77%) than females. Over 50% of infected cases were reported among young adults (20-40 years). The prevalence of metabolic syndrome (such as high blood pressure, abdominal fat, high triglycerides, high blood sugar, and low high density lipoprotein cholesterol) is higher in Bangladesh compared to the estimated world prevalence (30% versus 20-25%) [1]. Moreover, approximately 34% of adults are overweight in Bangladesh [2,3]. The capital Dhaka city has a population of nearly 20 million, and currently it is the epicenter of COVID-19 outbreak in Bangladesh. The first three official COVID-19 cases were reported on March 8, 2020. The Dhaka city hosts more than one million slum dwellers and marginal communities who live in close proximity and are deprived of adequate facilities for maintaining personal hygiene as bathroom/toilets and water reservoirs [4,5]. Our findings would contribute to facilitating better public health decisions for managing current and future pandemics like COVID-19 in Bangladesh.

As an infectious disease, the virus spread from person to person mainly through the patient's sneezes or coughs. The common symptoms of coronavirus are a high temperature of above 37.8^0C, cough, change in normal taste or smell etc. [6].The outbreak of SARS-CoV-2 is a rapidly evolving and emerging situation, nearly two million people in 185 countries around the globe have been identified as confirmed cases of coronavirus disease 2019 (COVID-19) [7]. The estimated frequency of the number of the virus is significantly higher than many other infectious diseases, and this can potentially hamper the capacity of health facilities, even in the developed countries which have strong and modern healthcare systems [8]. In some irregular cases of serious illness in younger individuals, adults >60 years of age with co-morbidities make up the most vulnerable group. There are various non therapeutic approaches are available to control the spread of the virus [9]. As the prevention, in the world, billions of people are staying at home to minimize the transmission of the virus. Many countries are adopting preventive measures, e.g., remote office activities, international travel bans, mandatory lockdowns, and social distancing. Bangladesh, a lower-middle-income country and one of the world's most densely populated areas, is struggling to combat the spread of the disease. Like other countries, Bangladesh is also following various preventive measures to control the spread of SARS-CoV-2; however, there have some limitations on the ongoing debate as to whether measures are implemented satisfactorily. In Bangladesh, the first confirmed COVID-19 case was on March 7, though many experts speculated that the virus may have entered the country earlier than that [10]. Until April 13, the COVID-19 cases were 803, and the death toll was 39 [11-13]. Bangladesh government has taken several initiatives, e.g., restricted international flights, imposed thermal scanner checking, shut down schools to limit the outbreak [14]. The Institute of Epidemiology, Disease Control and Research (IEDCR) tested every single person who entered the country from abroad [15,16] and managed the 14-days quarantine facilities as per need. In this write-up, we briefly articulate the current scenario of COVID-19 in Bangladesh based on the available data of July and August'2020 and provide some recommendations on how the country can combat this pandemic.

2. MATERIALS AND METHODS

The datasets were collected from the hospitals/clinics of all divisions in Bangladesh involved to diagnose COVID-19 by RT-PCR. Usually, the government of Bangladesh keeps record of these data; these are the property of the Ministry of Health, Bangladesh. For the analysis and report, the data were collected on request. Student's t-tests were applied to distinguish the difference between the values of different cities.

3. RESULTS

3.1 Prevalence of COVID-19 Patients in Dhaka City

For the emergence of SARS-CoV-2 in late December 2019 in Wuhan, China, COVID-19 has alarmingly spread globally [17]. After that, more than 27 million cases and over 9,02,468 deaths around the globe have

been reported, and the virus was declared as a pandemic and public health emergency by WHO on March 11, 2020 [18]. With the outbreak of COVID-19, the healthcare systems of almost all countries have seriously been suffering including Bangladesh [19]. Around 20% of cases lead to clinically serious with severe diseases. Adult people with risk of co-morbidities are the most vulnerable group to COVID-19, even though in some rare cases serious illnesses in younger individuals have also been observed [20]. Until September 10, Bangladesh has 3,31,078 confirmed infections and 4,593 people have died of the virus [18]. This write up describes the occurrence (RT-PCR based COVID-19 detection tests) and pandemic in July & August'2020 throughout Bangladesh (Table 1).

As a densely populated country (over 160 million), every division of Bangladesh including Dhaka, Chittagong, Rajshahi, Barisal have been affected tremendously, though the number of reported cases and the frequency of infection in Dhaka city was much higher than other parts of Bangladesh (Table 1 & Fig. 1). Despite higher population density and low awareness of personal hygiene, a rather noticeable slow progression was observed in Bangladesh compare to the other South Asian countries. The observations from these data may be helpful to take evidence-based decisions and necessary measures to restrict and conquer the pandemic of COVID-19 in Bangladesh.

In July & August, while the infection in Dhaka (9377) division increased alarmingly, Chattogram (916) and Mymensingh (864) divisions had low frequency. The trends of infections were average in Rangpur, Barisal, Khulna, and Rajshahi as compared to Dhaka. Accordingly, the capital Dhaka city has a population of nearly 20 million, and thus it was the epicenter of COVID-19 outbreak in Bangladesh. Since the Dhaka city relies heavily on congested infrastructures where the population density is the highest, and the citizens receive reduced sunlight exposure, the infection rate in Dhaka was higher than in the other divisions. Vitamin D deficiency in the people of Dhaka may be one of the causes of more infection as well, as some studies indicated that vitamin D deficiency could be a risk factor for COVID-19 threat [21].

Table 1. List of hospitals/clinics to diagnose COVID-19 in July & August in Bangladesh

Division	Hospitals/Clinics	No. of COVID-19 patients
Dhaka	Bangabandhu Sheikh Mujib Medical University	3220
	Shaheed M. Monsur Ali Medical College	1270
	Sheikh Rasel Gastroliver Hospital	144
	Kurmitola General Hospital	277
	Shaheed Suhrawardy Medical College Hospital	659
	Faridpur Medical College Hospital	3651
	Shaheed Tajuddin Medical College Hospital	156
	Total (Dhaka)	**9377**
Rajshahi	Rajshahi Medical College Hospital	1719
Khulna	Kushtia Medical College Hospital	1104
Chattogram	Chattogram Medical College Hospital	916
	Cumilla Medical College Hospital	1318
Barisal	Sher-E-Bangla Medical College Hospital	2114
Rangpur	Rangpur Medical College Hospital	1121
Mymensingh	Mymensingh Medical College Hospital	864

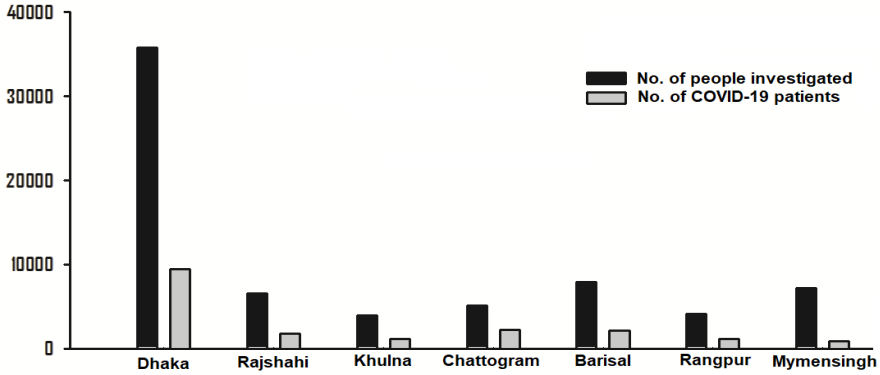

Fig. 1. The district-wise burden of COVID-19 in July & August

3.2 Preventive Measures to Combat the COVID-19 Pandemic

Therefore, considering two months observations of the pandemic of COVID-19, we all should take proper steps to control the outbreak of pandemic, such as we should be more careful in the number of tests done, positive and negative cases in some of the test centers across the country. Then we need to compare the infection status of Dhaka city to other areas of Bangladesh. Along with the public awareness, e.g., wearing mask, using hand sanitizer etc., the health care facilities and humanitarian support may be strengthened in the present pandemic situation in Bangladesh as well. For the betterment to mitigate the worst situation in the Dhaka city the following factors should keep in the consideration.

3.2.1 Incidence and mortality

The data on the mortality of COVID-19 patients were collected from the Directorate General of Health Services (DGHS), the government of Bangladesh, the websites of Bangladesh Medical Association, major newspapers and online portals, professional societies and then verified with the government press releases whenever possible [22-27]. For the publicity and awareness, more steps should be taken.

3.2.2 Social distancing

As the declaration of WHO, social distancing is a major factor to combat COVID-19. The main problem with social distancing in Bangladesh is the huge population and city-based consolidated facilities. The healthcare system in Bangladesh is largely dependent on the metropolitan city. So, the social distancing protocol is tough to maintain in many areas of Bangladesh. For this, we should take the initiatives to minimize the rural-urban inequality in the healthcare facilities.

3.2.3 COVID-19 testing facilities

At first, the IEDCR was the only place to diagnose COVID-19, and up to first 3 weeks after the detection of the first COVID-19 case in Bangladesh, the IEDCR was the sole diagnostic facility in the country [28]. Until April 11, 2020, there are 17 labs were working on testing cases of COVID-19, and a few more labs are being established in different districts [29]. After that, different RT-PCR laboratories including all the divisional regions were established to diagnose COVID-19 throughout Bangladesh.

3.2.4 Limitation in the availability of resources

As a developing country, the situation in Bangladesh is rapidly evolving, a significant proportion of the total population lives hand to mouth, the effect of lockdown is miserable here. Without jobs and economic savings, the poor and marginal people live with extreme difficulties. In this hardship, all people including the rich man should come forward to resolve this burning issue.

3.2.5 Mental fitness during the outbreak

In the pandemic, panic and stress are causing devastating trauma for everyone [30,31]. Social activists, media, social workers, leaders should come forward to help in the dissemination of logically factual information on COVID-19 among the mass population of Bangladesh.

3.2.6 A significant amount of funds

Bangladesh collected a modest amount of money to support people to fighting this crisis. The business organizations and international funders should come forward to help Bangladesh, to fight the COVID-19 challenge [32]. Only a supportive and collaborative effort can help the world, especially the low and lower-middle-income countries like Bangladesh, to overcome this crisis.

3.2.7 Clinical concern

In the developing countries, the public health is constrained by the financial support and trained manpower, it should not be dependent only on the RT-PCR (costly and time consuming), so Bangladesh could focus on syndromic diagnosis based on the pattern of symptoms and signs of COVID-19. Thus, the burden of expensive testing could be largely reduced, the suspected patients identified earlier.

Our study has few limitations. First, we used only available data of July and August'2020 for analysis. Second, the lockdown and social distancing are not so controlled in Bangladesh that there are equal chances of contact with every other person among the population. Third, unofficial death counts with COVID-19 like symptoms (not confirmed by the test) were not included in the analysis. To overcome these burning problems, world health organization (WHO), food and agricultural organization (FAO) and other charitable foundations in the world should come forward, in particular, to rescue from the devastating situations.

4. CONCLUSION

After the official announcement of COVID-19 cases in Dhaka, the government took a number of initiatives to reinstate the testing facility, medical equipment

supply, and nationwide surveillance. For the higher population density and low awareness of personal hygiene, Bangladesh faced a rather noticeable slow progression. It was observed that the post-lockdown COVID-19 infection was disappearing quickly from the cities (especially Dhaka city) towards the peripheral districts. Bangladesh had significantly fewer deaths over time compared to the other western countries. Our finding would contribute to better public health decisions for managing current and future pandemic like COVID-19 in Bangladesh. In the lockdown, the country has to expand its testing and healthcare facilities, ensure the supply of personal protective equipment (PPE) for healthcare workers. Since, the government will not be able to fight the lethal virus situation alone [33], individual efforts from the citizens, the involvement of the general public health experts, and international help are also needed.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and analyzed during the current study are not publicly available as they are the property of the Ministry of Health, Bangladesh, but are available from the corresponding author on reasonable request.

CONSENT AND ETHICAL APPROVAL

Ethics approval was obtained from the respected authority to report the data.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Chowdhury MZI, Anik AM, Farhana Z, Bristi PD, Abu Al Mamun BM, et al. Prevalence of metabolic syndrome in Bangladesh: A systematic review and meta-analysis of the studies. BMC Pub Health. 2018;18:308.
   DOI: 10.1186/s12889-018-5209-z
2. Mitra DK, Mistry SK, Afsana K, Rahman M. Demographic, socio-economic and lifestyle determinants of under- and over-nutrition among Bangladeshi adult population: results from a large cross-sectional study. J Epidemiol Glob Health. 2018;8:134-142.
   DOI: 10.2991/j.jegh.2018.03.002
3. World Health Organization - noncommunicable diseases (NCD) country profiles | Bangladesh; 2018.
   Available:https://www.who.int/nmh/countries/bgd_en.pdf?ua=1
   [Accessed July 14, 2020].
4. Anwar S, Nasrullah M, Hosen MJ. COVID-19 and Bangladesh: challenges and how to address them. Front Public Health. 2020;8:154.
   DOI: 10.3389/fpubh.2020.00154
5. Ahmed N, Jahangir RR, Tuz ZK. Social distancing challenges for marginal communities during COVID-19 pandemic in Bangladesh. J Biomed Anal. 2020;3:5-14.
   DOI: 10.30577/jba.v3i2.45
6. Adhikari SP, Meng S, Wu YJ, Mao YP, Ye RX, et al. Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: A scoping review. Infect Dis Poverty. 2020;9:29.
7. Dong E, Du H, Gardner L. An interactive web based dashboard to track COVID-19 in real time. Lancet Infect Dis; 2020.
   DOI: 10.1016/S1473-3099(20) 30120-1
8. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med. 2020;382:1199-207.
   DOI: 10.1056/NEJMoa2001316
9. Bootsma MCJ, Ferguson NM. The effect of public health measures on the 1918 influenza pandemic in U.S. cities. Proc Natl Acad Sci USA. 2007;104:7588-93.
   DOI: 10.1073/pnas.0611071104
10. Perera W. Bangladesh Government Downplays COVID-19 Threat as Job Losses Mount; 2020.
    Available:https://www.wsws.org/en/articles/2020/03/16/bang-m16.html
    (Accessed March 26, 2020).
11. Directorate General of Health Services. Novel coronavirus (COVID-19) press release; 2020.
    Available:https://www.dghs.gov.bd/index.php/en/home/5373-novel-coronavirus-covid-19-press-release
    (Accessed April 11, 2020).
12. Institute of Epidemiology DC and R. COVID-19; 2020.
    Available:https://www.iedcr.gov.bd/index.php/component/content/article/73-ncov-2019
    (Accessed April 11, 2020).
13. Worldometer. Covid-19 Coronavirus Pandemic; 2020.
    Available:www.worldometers.info/coronavirus/
    (Accessed April 13, 2020).
14. Javed HAl. Passengers From Europe Land in Dhaka Despite Ban; 2020.

Available:https://www.dhakatribune.com/bangladesh/dhaka/2020/03/16/defying-bar-european-flight-lands-in-dhaka

15. The New Age. Six of seven thermal scanners in Bangladesh inoperative; 2020. Available:https://www.newagebd.net/article/101488/six-ofseven-thermal-scanners-in-Bangladesh-inoperative
16. Sujan MA, Hasan R. Coronavirus outbreak: screening still lax at Dhaka Airport; 2020. Available:https://www.thedailystar.net/frontpage/ news/coronavirus-outbreak-screening-still-lax-dhaka-airport-1878607
17. Wang Y, Zhang Y, Yu Q, Zhu K. Convalescent plasma coupled with medications for the treatment of a severe COVID-19 patient: drugs analysis and pharmaceutical care based on the newly established guidelines for COVID-19 remedy. Front Pharmacol. 2020;11:966.
18. John Hopkins University. Covid-19 Dashboard by the Center of System Sciences and Engineering at John Hopkins University. 2020;2507:1-9.
19. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect Dis; 2020. DOI: 10.1016/S1473-3099(20) 30120-1
20. Anwar S, Nasrullah M, Hosen MJ. COVID-19 and Bangladesh: challenges and how to address them. Front Public Health. 2020;8:154. DOI: 10.3389/fpubh.2020.00154
21. Ning Z, Song S, Miao L, Zhang P, Wang X, Liu J, et al. High prevalence of vitamin D deficiency in urban health checkup population. Clin Nutr. 2016;35:859-863. DOI: 10.1016/j.clnu.2015.05.019
22. Coronavirus Disease (COVID-19) Information Bangladesh. corona.gov.bd; 2019. Available:https://corona.gov.bd/ [Accessed July 14, 2020].
23. BMA, District wise total number of affected doctor, nurse & staff (COVID-19); 2020 Available:https://bma.org.bd/covid-19/Total Affected Doctor, Nurse & Staff.pdf [Accessed July 12, 2020].
24. BMA, List of death doctors due to COVID-19; 2020. Available:https://bma.org.bd/covid-19/List of Death Doctors Due to COVID-19_Detail.pdf [Accessed July 12, 2020].
25. The number of police personnel affected by corona exceeded 11,000 | Ittefaq; 2020. Available:https://www.ittefaq.com.bd/capital/163701 [Accessed July 14, 2020].
26. Covid-19: 3,477 from armed forces infected so far in Bangladesh | Dhaka Tribune; 2020. Available:https://www.dhakatribune.com/health/coronavirus/2020/06/13/covid-19-3-477-from-armed-forces-infected-so-far-in-Bangladesh [Accessed July 14, 2020].
27. 378 media workers of 99 organizations affected by Corona;2020. Available:https://www.jagonews24.com/mass-media/news/591082 [Accessed July 14, 2020].
28. Dhaka Tribune. Bangladesh Expands Covid-19 Testing; 2020. Available:https://www.dhakatribune.com/bangladesh/2020/04/03/bangladesh-expands-covid-19-testing
29. Rana BJ, Sakka HEl, WHO-BAN. COVID-19 Situation Report No 06; 2020. Available:https://www.who.int/docs/default-source/searo/ bangladesh/covid-19-who-bangladesh-situation-reports/who-ban-covid-19-sitrep-06.pdf?sfvrsn=36254da0_6 (Accessed April 11, 2020).
30. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, et al. The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry Res. 2020;287:112934. DOI: 10.1016/j.psychres.2020.112934
31. Xiao H, Zhang Y, Kong D, Li S, Yang N. Social capital and sleep quality in individuals who self-isolated for 14 days during the coronavirus disease 2019 (COVID-19) outbreak in January 2020 in China. Med Sci Monit. 2020;26:e923921. DOI: 10.12659/MSM.923921
32. Dhaka Tribune. Tackling Covid-19: Bangladesh Will Need $378 Million Fund; 2020. Available:https://www.dhakatribune.com/bangladesh/ foreign-affairs/2020/03/29/bangladesh-will-require-378mn-fund-for-covid-19-preparedness
33. Wang J, Xu C, Wong YK, He Y, Adegnika AA, Kremsner PG, et al. Preparedness is essential for malaria-endemic regions during the COVID-19 pandemic. Lancet. 2020;395:1094-96. DOI: 10.1016/S0140-6736(20) 30561-4