The ongoing outbreak of SARS-CoV-2 virus infections in humans in Bangladesh: a public health emergency

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Abstract

The coronavirus disease 19 (COVID-19) is a highly transmissible respiratory disease affecting millions of people worldwide. We summarized the current status of COVID-19 outbreaks in Bangladesh. Since the first COVID-19 confirmed case in Bangladesh on 8 March 2020, 7667 cases and 168 deaths were reported until 30 April 2020. Most cases (54%) were detected in the capital city Dhaka. Bangladesh Government declared 41 days shutdown, starting from 26 March 2020 to reduce the transmission of this highly contagious respiratory disease. Likewise, in other COVID-19 affected countries, the increasing trend of COVID-19 positive cases was continuing. People of Bangladesh are highly vulnerable to this disease mainly because of high population density, poor hygienic practice, unnecessary mobility, limited access to the hospitals, and insufficient ICU (intensive care unit) facilities. The government should focus on widespread laboratory testing and rapid response to prevent further spread of SARS-CoV-2 virus.

INTRODUCTION

The coronavirus disease 19 (COVID-19) is a highly transmissible respiratory disease of humans infecting more than 3 million people worldwide till 30 April 2020. More than 200 countries and territories reported human cases (WHO 2020). World Health Organization (WHO) declared COVID-19 a global public health emergency on 30 January 2020 (Velavan and Meyer 2020). COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which firstly emerged in Wuhan, China, at the end of 2019 (Rothan and Byrareddy 2020). SARS-CoV-2 has 70-80% genetic similarity to the severe acute respiratory syndrome coronavirus (SARS-CoV) and 96% similarity to a bat coronavirus (Arabi, Murthy et al. 2020, Zhou, Yang et al. 2020). As of 10:00 CEST, 30 April 2020, 3090445 confirmed cases were reported, and 217769 died globally (WHO 2020). The estimated case fatality rate is around 7%. The estimated mean incubation period is 3–7 days (range, 2–14 days), and the basic reproduction number is 3.28 (range, 1.4–6.49) (Li, Liu et al. 2020). Currently, no approved vaccines are available against COVID-19. Older people with underlying conditions such as cardiovascular disease, liver disease, or kidney disease showed severe illness with high case fatality (Wang, Du et al. 2020). Though the origin of SARS-CoV-2 has not been determined yet, epidemiological data suggesting people visiting Seafood Wholesale Market, a live animal, and seafood

market in Wuhan, China were affected more (Murdoch and French 2020). The lockdown of Wuhan city seems to help slow the transmission within Wuhan communities (Heymann and Shindo 2020). Bangladesh reported the first laboratory-confirmed COVID-19 case on 8 March 2020. In this short communication, we described the current situation of COVID-19 outbreak, control measures, challenges, and future perspectives. We anticipate this type of communication will help local public health authorities pay more attention to perform more laboratory testing and effective control measures to reduce SARS-CoV-2 virus transmission.

METHODS

We extracted outbreak data for all reported COVID-19 cases and deaths from March to April 2020 from the website of Directorate General of Health Services, Bangladesh and Institute of Epidemiology Disease Control Research (IEDCR) (DGHS 2020, IEDCR 2020). We considered RT-PCR confirmed case(s) for SARS-CoV-2 virus as COVID-19 case(s). We organized case(s) and death(s) data by date of reporting, sex, age, and geographic distribution. The Health Emergency Operation Centre (HEOC) and IEDCR belonging to the government's Directorate General of Health Services (DGHS) are coordinating public health response for COVID-19 outbreak in Bangladesh (DGHS 2020).

RESULTS AND DISCUSSION

As of 30 April 2020, Bangladesh reported 7667 cases since 8 March 2020. From 21 January 2020 to 16 April 2020, a total of 64666 samples were tested to detect SAR-CoV-2 using reverse transcription-polymerase chain reaction (RT-PCR) at 30 laboratories across the country. Since the first death was reported on 18 March 2020, 168 deaths have been reported as of 30 April 2020, indicating the COVID-19 case fatality rate of 2.2% in Bangladesh (Figure 1) (DGHS 2020). So far, 160 (2%) patients recovered, and 7339 (96%) patients are under treatment. According to the available age and sex data for 5097 COVID-cases, 68% were male, and 59% (2990/5097) of the COVID-19 cases belonged to the age group of 15-44 years (Figure 2). Patients aged above 45 years were most among death cases (85%). The estimated doubling time of confirmed cases was around three days (WHO 2020a). As of 30 April 2020 (8:00 AM), a total of 63 out of 64 districts confirmed COVID-19 case(s) and most of the cases were detected in the capital city Dhaka (54%) (Figure 3). Of the 168 deaths, 89 were from Dhaka city (53%) (IEDCR 2020). The estimated attack rate for COVID-19 in Bangladesh was 47.92 per million populations on 30 April 2020.

The government of Bangladesh has taken several control measures to prevent COVID-19 transmission. Many local and international organizations supported the government efforts by providing PPE (personal protective equipment), sample collection kits, testing kits, performing laboratory testing, increasing awareness of social distance, and personal hygiene to reduce COVID-19 transmission. To reduce COVID-19 community transmission, the government initially issued an order to close all public and private offices from 26 March 2020 to 4 April 2020, which was later extended till 5 May 2020 (MOPA 2020). All public transports, including trains, buses, launches, and domestic flight were also halted during this shutdown period. All educational institutes, industries, shopping malls, and public gathering places were enforced to close during this period. On 16 April 2020, the government declared entire Bangladesh at risk of COVID-19 pandemic under the Infectious diseases (Prevention, Control and Elimination) Act 2018 (WHO 2020c).

Thirty government/non-government laboratories performed laboratory testing throughout the country till 30 April 2020. Among these laboratories, 14 were located within Dhaka, and the rest 16 were located outside Dhaka. So far, 341 ICU beds and 9638 isolation beds were arranged to treat COVID-19 patients. From 10 March 2020 to 30 April 2020, 186519 people were quarantined either at the hospital or home, and 115037 completed quarantine. More than 650,000 visitors were screened for fever and respiratory illnesses at airports, land ports, and seaports till 30 April 2020 (DGHS 2020).

Though Bangladesh has entered into the community transmission phase, reported the number of COVID-19 cases was lower compared to other affected countries in Europe and the United States of America (WHO 2020). The reasons for low detection of the cases are not clearly understood yet. Insufficient laboratory testing, poor health advice-seeking behavior, poor reporting practices, low rate of viral transmission, host immunity, virological factor, and high environmental temperature could contribute to the current low inci-

dence. In spite of the large population, Bangladesh has so far tested a low number of samples (Figure 4). As of 30 April 2020, Bangladesh tested 393 samples per million populations whereas, USA, Italy, India, and Pakistan tested 18585, 31603, 602, and 788 samples, respectively (Worldometers 2020).

Rapid detection of hidden cases, contact tracing, community-level active case searching, ensuring more healthcare facilities, enforcing public health workforce, establishing more intensive care unit (ICU), arranging more ventilators, lockdown monitoring, maintaining social distance, restricting unnecessary public movement and securing economic stability are the biggest challenges at this point. People of Bangladesh are very reluctant to follow social distance during the lockdown. According to the Google mobility data, the rate of public movement to the food markets, food shops and drug stores on 11 April 2020 were reduced to 55% from the baseline on 29 February 2020. A similar reduction in mobility was observed in India (Google 2020). Wet markets can pose a serious threat to SARS-CoV-2 transmission among people during the shutdown period. In order to maintain social distance among people, congested wet markets should be shifted to the nearest spacious places such as school fields and playgrounds. Healthcare workers are at high risk of catching SARS-CoV-2 virus. According to the Bangladesh Medical Association (BMA), more than 650 healthcare workers including 295 doctors were tested positive for COVID-19 till 27 April 2020 (DhakaTribune 2020). Police personnel have played an important role in ensuring social distancing practices in crowded areas throughout the country. Till 23 April 2020, more than 200 police personals were infected with SARS-CoV-2 virus (DailyStar 2020).

In conclusions, the number of the tests being carried out for laboratory confirmation of COVID 19 cases was quite low so far compared to other affected countries. More comprehensive testing to identify suspected COVID-19 symptomatic as well as asymptomatic patients should be considered to contain this outbreak. Special attention should be given to patients with underlying conditions, older people, and healthcare providers during treatment. Adequate and proper PPE should be supplied to doctors, nurses, and other healthcare workers. Human, animal, and ecosystem health people should work together using one health approach to address emerging infectious diseases threat of zoonotic origin. One health surveillance should be implemented throughout the country to detect SARS-CoV-2 in humans, wild animals, and the environment. As the facts and fiction of this evolving situation are unknown for the people, mass awareness builds on the importance of social distance, personal hygiene, and wearing PPE to the community people according to the instructions of the World Health Organization (WHO) must be enhanced.

FUNDING

Not required.

ETHICAL APPROVAL

Not required.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Figures

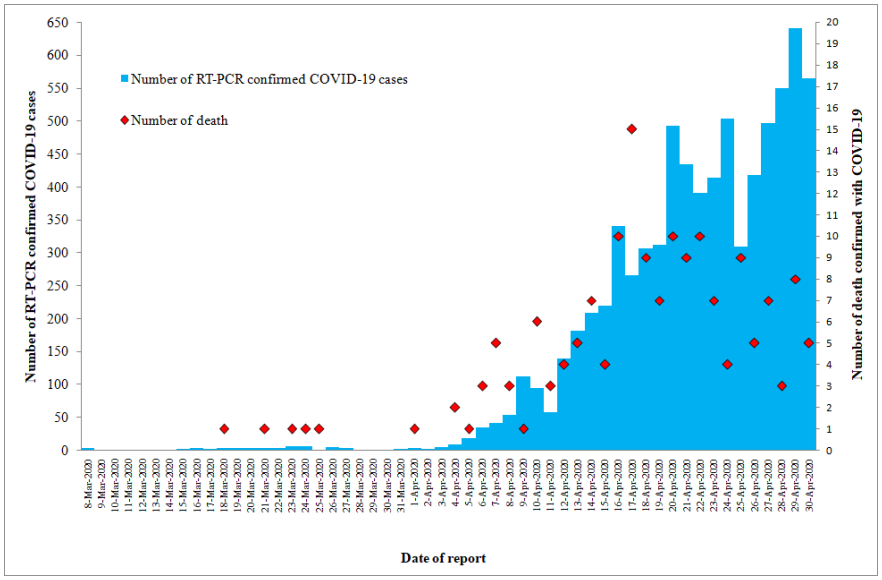

Figure 1: Epidemic curve of COVID-19 confirmed cases and death, by date of report, 8 March 2020 - 30 April 2020, Bangladesh

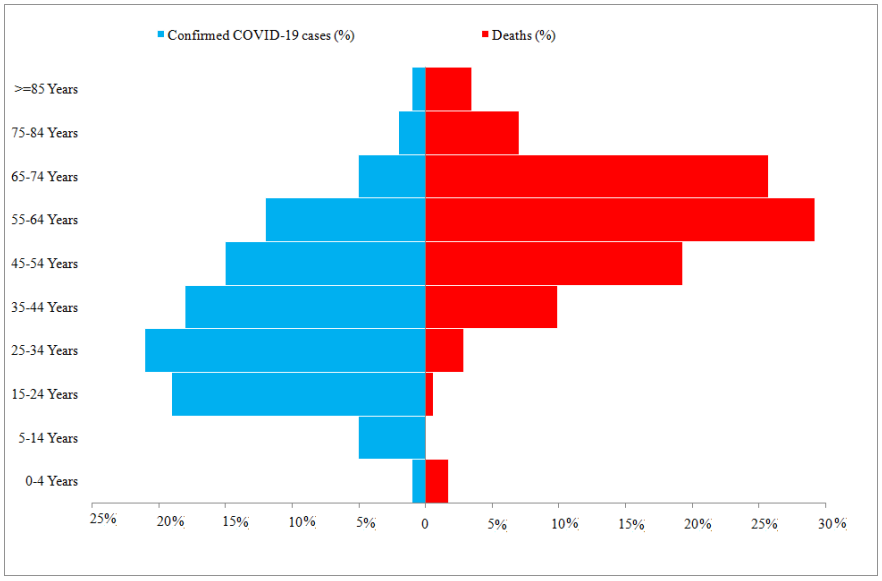

Figure 2: Distribution of COVID-19 cases (n=5097) and deaths (n=171) by age group, 8 March 2020 - 27 April 2020, Bangladesh

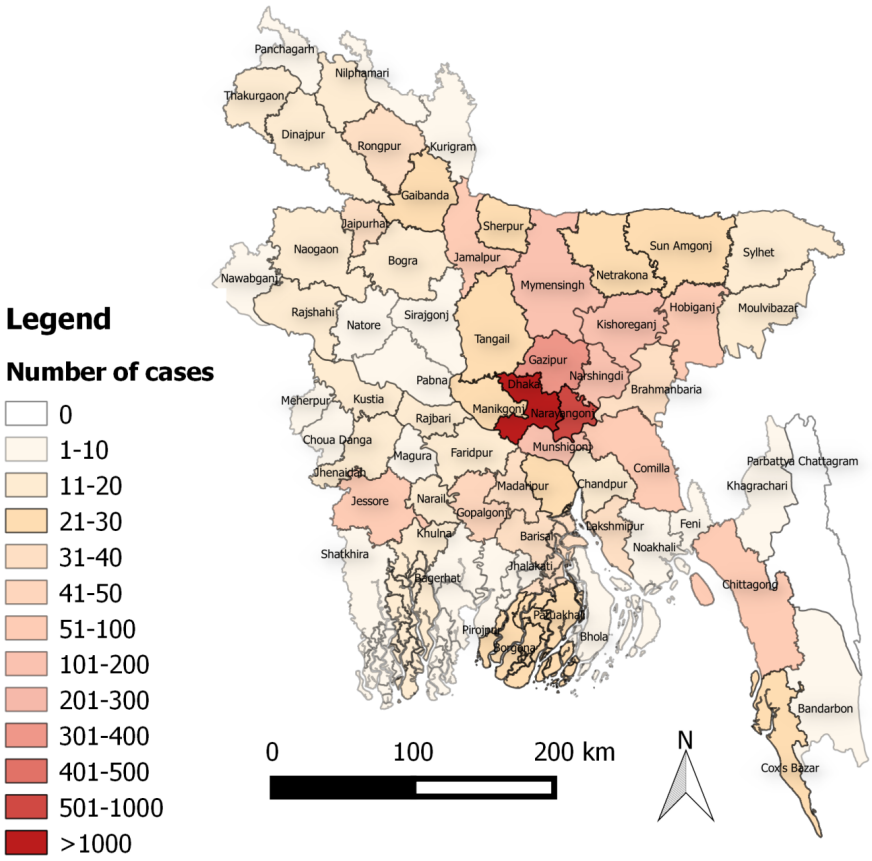

Figure 3: Distribution of laboratory-confirmed COVID-19 case(s), by district, 8 March 2020 – 30 April 2020 (8:00 AM), Bangladesh

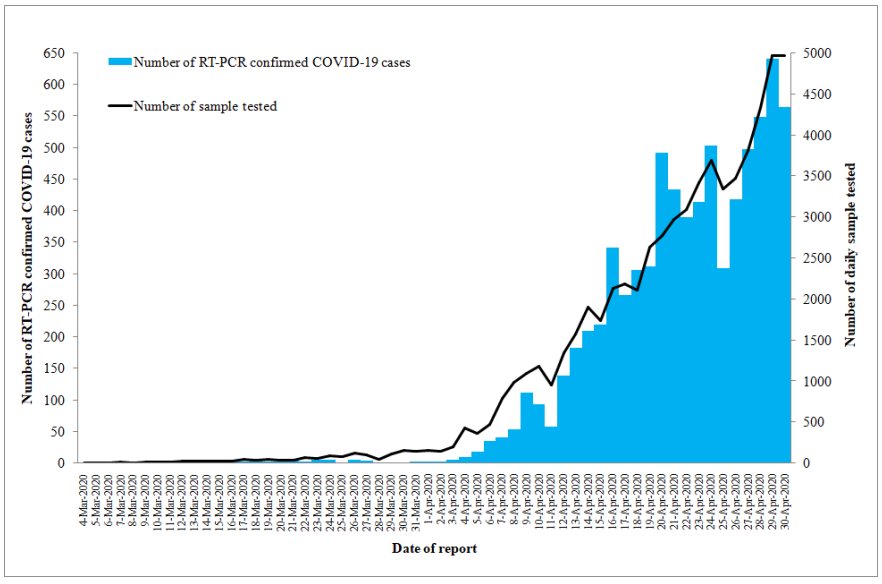

Figure 4: Daily tested samples, by date of report, 4 March 2020 - 30 April 2020, Bangladesh