

## Article

# Vulnerabilities to COVID-19 in Bangladesh and a Reconsideration of Sustainable Development Goals

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**Abstract:** Bangladesh is one of the high-risk countries of the COVID-19 pandemic and its consequent losses due to social and economic conditions. There is a significant possibility that economic stagnation would push a large population back into poverty. In the present study, we have reviewed the chronology and epidemiology of COVID-19 in Bangladesh and investigated the country's vulnerabilities concerning COVID-19 impacts. We focused primarily on four areas of vulnerabilities in Bangladesh: The garment industry, urban slums, social exclusion, and pre-existing health conditions. The result implicated that the country would take time to recover its economy due to the vulnerabilities mentioned above, and many people in Bangladesh would not be able to tolerate the current situation because they do not have enough reserves to do so. We concluded that if at least some Sustainable Development Goals (SDGs) had been at least partly attained, the situation would not be as dire as it is now. Based on this conclusion, we suggested a tolerance capacity to indicate how long people can survive without outside support. It is a holistic assessment rather than the indicators presently defined in each SDG, but it should be attained through a harmonized approach to SDGs.

**Keywords:** COVID-19; SDGs; garment industry; urban slam; social exclusion; Rohingya; Dalits; NCDs; salinity; arsenic; Bangladesh

## 1. Introduction

Bangladesh is one of the high-risk countries of the COVID-19 pandemic and its consequent losses. It is the world's most densely populated and impoverished country. Although the country's recent economic growth has been outstanding, in the fiscal year 2018–2019, 20.5% of the population lived under the national poverty line, and 10.5% are in extreme poverty, according to the latest government announcement. There is a significant possibility that economic stagnation would push a large number of families back into poverty, a situation which Bangladesh has taken great pains to get out of during the past few decades. The export earning has the largest contribution to the GDP of Bangladesh, but fashion companies all over the world have already canceled or put on hold \$3.15 billion-worth in orders from the country's garment factories [1]. The ready-made garments (RMG) sector is not only the key export-earning sector in Bangladesh, but it has also been the driver of Bangladesh's economic growth during the last few decades. As a result of order cancelations and the failure of buyers to pay for these cancelations, more than 1 million garment workers in Bangladesh have already been fired or furloughed (i.e., suspended from work) [2]. The garment industry relies on informal workers as the vital working force. They work in a densely occupied environment so that even when the business restarts, the factory owners need to limit the number of workers temporarily to comply with public health requirements, or the coronavirus pandemic could be prolonged. Besides, international companies have recently become cautious about compliance, so they may be afraid of having their

contractors spread the virus, and eventually change the vendor country. Once it happens, they may not come back quickly. Thus, substantial economic losses cannot be avoided, and many garment industry workers may not be able to find job opportunities for a prolonged period.

In addition to the economic-related damage, the situation of economically and socially disadvantaged individuals should be addressed in light of the philosophy of Sustainable Development Goals (SDGs): “No one left behind”. This cluster of population in Bangladesh includes economically disadvantaged groups such as garment industry workers, day laborers, and slum dwellers, as well as socially marginalized groups such as the Rohingya and Dalits. According to the 2010 Labor Force Survey [3], about 89% of the labor force was employed in the informal economy. Informal workers are less likely than formal workers to receive a pension, social protection, and a notice of termination. They live in unstable conditions and rarely have savings, and emergencies like the COVID-19 pandemic affect these people’s lives fiercely. The Rohingya, an ethnic Muslim minority group living as refugees in Cox’s Bazar district, sheltering some 900,000 refugees in densely crowded conditions, are one of the world’s most vulnerable and disadvantaged communities and suspected to be the worst victims of COVID-19 [4]. Dalits have been regarded as belonging to a lower caste and exist in an excluded social stratum. In Bangladesh, Dalits are essential cleaning service providers and garbage management workers. Though their salaries are very low, Dalit workers are in demand because of the importance of their work and the risks associated with it. Generally, the safety of emergency service providers such as medical professionals and the police is given proper attention during COVID-19. However, different minorities and disadvantaged communities that are providing essential services are often neglected. All the above-mentioned people have limited access to health services. Some may even hesitate to see doctors because of their social status. This will not only enhance their vulnerabilities; it will also increase the risks for the whole society.

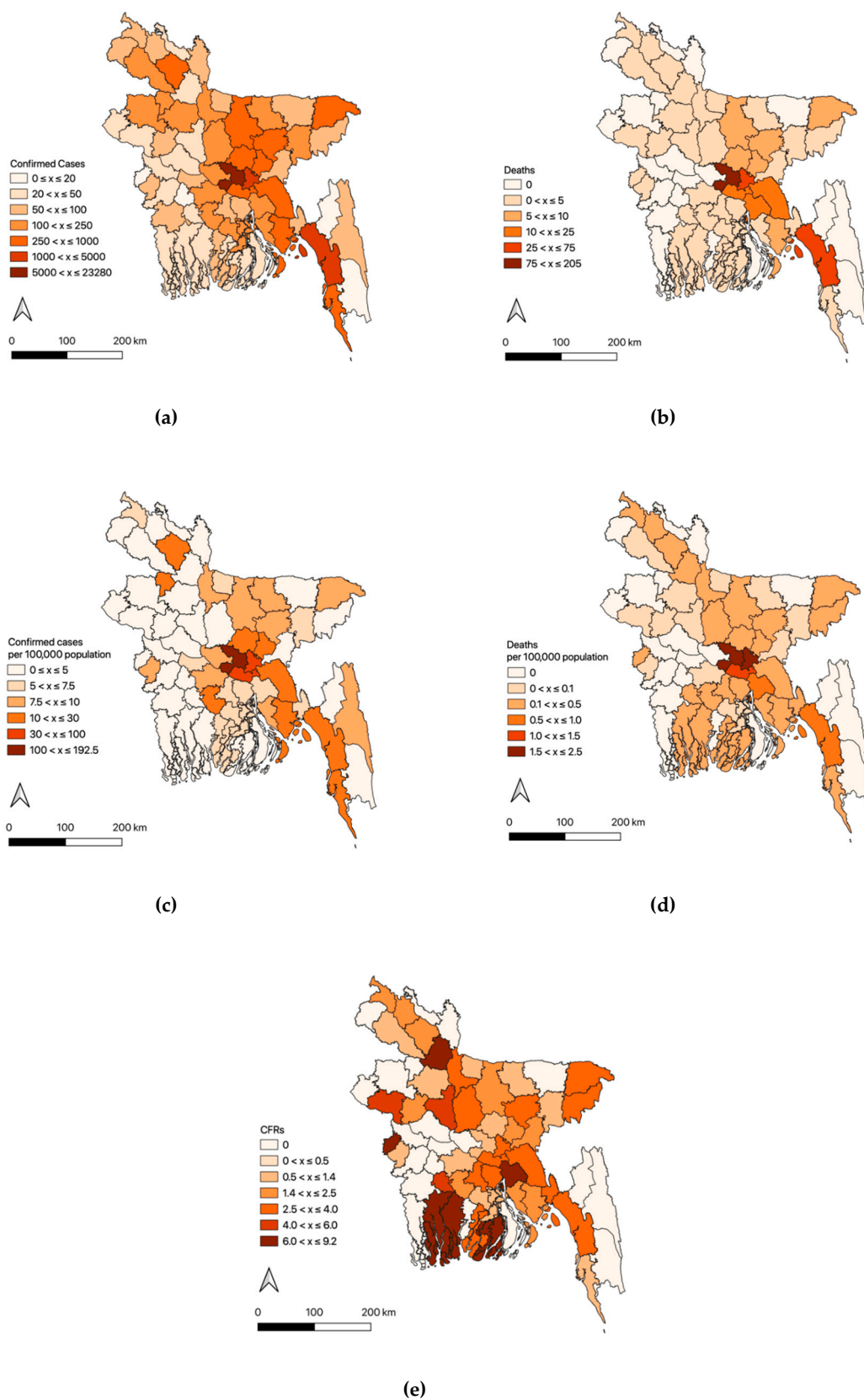
The country’s various vulnerabilities will exacerbate the impacts of COVID-19 and cause a multidimensional crisis. This study primarily focuses on four areas of inherent vulnerabilities in Bangladesh: The garment industry, urban slam, and social exclusion as socio-economic concerns, and pre-existing health conditions as a public health concern. First, we provide a comprehensive view of these vulnerabilities with respect to COVID-19 effects based on an extensive literature review that includes research articles, government reports, international organization reports, news articles, and several external websites (only those with sound references). Second, we discuss our research question “how the prior attainment of SDGs could have contributed to reducing the spread of COVID-19 and brought rapid recovery,” by seriously considering the above-mentioned vulnerabilities based on facts that were revealed in the comprehensive literature review. The Bangladesh government has taken measures to achieve SDGs since it launched the Seventh Five Year Plan 2016–2020 in 2015, which will pass over into the eighth plan starting in July 2020. However, the effectiveness of this Five-year Plan is in question because progress is rather slow. The responsibility for it should fall not only on the Bangladesh government, but also on intervening international bodies such as donors, development agencies, NGOs, banks, and private companies. A low-income and developing country like Bangladesh very much relies on international relations for its economic well-being. The activities of international bodies are deeply connected with the country’s economy and the lives of its people. A crisis such as COVID-19 tests the efficacy of the efforts made by the government and intervening international bodies to improve the essential development of the country. Thus, the discussion and suggestions below could apply to other developing countries as well.

## 2. Chronology and Epidemiology of COVID-19 in Bangladesh

In Bangladesh, the first infection of COVID-19 was reported on 8 March 2020. The first cases of coronavirus patients were confirmed by the Institute of Epidemiology, Disease Control and Research (IEDCR). Bangladesh reported its first confirmed COVID-19 death on 18 March 2020, 10 days after the first confirmed case. On 24 March 2020, aiming to prevent community transmission of COVID-19, the Bangladesh government declared the country’s lockdown from 26 March to 4 April. The government

also announced a countrywide shutdown of transportation services including buses, trains, and launch services [5]. Emergency services like law enforcement and healthcare were exempted from the shutdown [6]. Instead of maintaining social distance, people ignored the government's advice to stay home and continued to leave Dhaka in droves to their village homes. Later, the Ministry of Public Administration issued a notification further extending the lockdown until 14 May 2020, followed by a holiday weekend on May 15–16 [7]. According to the IEDCR, a coronavirus outbreak had been reported from all 64 districts of Bangladesh. A total number of 35,585 confirmed cases have been found in the country, 7334 of which have recovered, and a total of 501 deaths have been reported as of 25 May 2020 [8]. The infection rate has not shown a decreasing trend. Considering the population of Bangladesh, the country has tested a low number of people for COVID-19. As of 25 May 2020, Bangladesh has so far performed 235,014 tests, which amounts to only 1485.6 tests per million citizens [9]. According to data compiled on 4 May 2020 by the WHO, with a population of more than 160 million, the country had one of the lowest numbers of tests in the world. The lack of PCR machines, proper biosafety labs, insufficient testing kits, and unprepared health workers have further worsened the situation.

Figure 1 shows the distribution maps for the following infection indicators according to district: The number of the confirmed cases, the number of deaths, those divided by district populations, and the case fatality rates (CFRs); it was created based on the information of the press release from Ministry of Health & Family Welfare as of 25 May. The virus-testing capacities may not be the same throughout the districts, and some districts have so far reported only a few deaths, so the statistics are susceptible to biases. However, we can still see geographical similarities in the maps. Table 1 shows significant correlations between the above infection indicators and socio-economic data of the districts obtained from the World Bank data archive [10], which includes the 2011 Census of Population, the 2010 Bangladesh Poverty Maps, the 2011 Census of Population and Housing sample—available from the Integrated Public Use Microdata Series project (IPUMS)—and the 2012 Undernutrition Maps of Bangladesh. The results show that urban areas tend to have more cases and deaths than rural areas. The infection more often occurs in crowded places, so the result is plausible. However, there were no significantly correlated variables found for the CFRs among the above-mentioned socio-economic data. Nevertheless, the portion of the population over 65 showed the highest and most positive correlation coefficient. The Bangladesh's total CFR was 1.41% as of 25 May which is much lower than the global average of 3.4% reported by the WHO as of 3 March 2020. Table 2 shows the age distribution and age-specific CFRs for the 2640 age-known reported confirmed cases as of 27 April 2020 [11]. The age group of 25 to 34 years showed the highest share of the infections. These numbers vary from country to country due to the differences in the countries' virus-testing capacities and strategies. However, the different trend in the CFRs by age from other countries deserves attention. Because the age categories of Bangladesh's statistics are different from those of other countries, they cannot be directly compared to each other. But the 35–44 and 45–54 age groups tended to have higher CFRs than the 40–49 and 50–59 age groups in other countries, respectively [12]. The neighboring country of India also reported a higher risk for the population under 60 years old, and those between 45 and 60 years old accounted for 34% of the overall death toll [13].



**Figure 1.** District-wise maps of the present situation of the COVID-19 pandemic in Bangladesh as of 25 May 2020. (a) Number of Confirmed Cases, (b) Number of Deaths, (c) Number of Confirmed Cases per 100,000 population; (d) Number of Deaths per 100,000 population, (e) Case Fatality Rates.

**Table 1.** Major correlations between district-wise COVID-19 statistics and socio-economic variables of Bangladesh.

	Correlation Coefficient	95% CIs	p-Value	Mean	SD
<u>Confirmed Cases per population</u>					
Rural Population (%)	−0.778	(−0.859, −0.658)	0.000	82.2	10.2
Primary employment: Agriculture (%)	−0.654	(−0.762, −0.461)	0.000	57.0	15.3
Educational attainment: University completed (%)	0.796	(0.683, 0.871)	0.000	2.78	1.56
Households with tap water (%)	0.854	(0.769, 0.909)	0.000	5.04	9.74
<u>Deaths per population</u>					
Primary employment: Agriculture (%)	−0.709	(−0.813, −0.560)	0.000	57.0	15.3
Rural Population (%)	−0.569	(−0.715, −0.376)	0.000	82.2	10.2
Households with Electricity (%)	0.625	(0.448, 0.755)	0.000	50.1	17.1
Primary employment: Industry (%)	0.628	(0.452, 0.757)	0.000	10.4	8.51
<u>CFR</u>					
Population ages 65 and above (%)	0.222	(−0.025, 0.444)	0.077	4.99	0.83

**Table 2.** Age distribution and age specific case fatality rates (CFRs) in Bangladesh for the 2640 age-known reported confirmed cases as of 27 April 2020 [11].

Age Group in Years	Number of Cases	% of Total	Number of Deaths	CFR
0 to 4	17	0.6	2	11.8
5 to 14	134	5.1	0	0.00
15 to 24	526	19.9	1	0.20
24 to 34	556	21.1	2	0.40
35 to 44	492	18.6	9	1.60
45 to 54	417	15.8	18	4.30
55 to 64	283	10.7	30	10.6
65 to 74	116	4.4	18	15.5
75 to 84	69	2.6	4	5.8
> = 85	30	1.1	4	13.3
Total	2640	100	87	3.3

### 3. Vulnerabilities to COVID-19

#### 3.1. Garment Industry: Garment Workers

Bangladesh is the second largest garment exporter in the world after China, and is heavily reliant on European and American orders. The garment industry contributes 84.21% of the country's total exports and 20% of the GDP [14]. Four-point-one million workers are engaged in this industry. However, the COVID-19 pandemic hit this sector very hard and lowered the employment rate drastically. On 24 March 2020, the government announced a 10-day shutdown, effective from 26 March to 4 April. This announcement led to people, including garment workers, leaving the capital for their village homes in droves. As the shutdown was supposed to end on 4 April, many workers came back to the capital under the assumption that they would return to work on 5 April. However, after their arrival, they learned that the shutdown had been extended until 12 April. Due to this lack of coordination between the garment sector and the government, factories did not reopen, which caused garment workers immense suffering from the lack of transportation, lodging, and food amidst the lockdown. On 10 April, Bangladesh Garment Manufacturers and Exporters Association (BGMEA) and Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) announced in a joint statement that the RMG factories would remain closed until 25 April [15]. During one month of lockdown (26 March to 25 April), China and Vietnam opened their factories. BGMEA feared the loss of these markets, so they decided to partially reopen factories starting from 26 April 2020 in a phased manner by maintaining



the necessary health protocols. Still, BGMEA failed to control the number of factories reopening and, on the very first day, almost half of the RMG factories in Dhaka reopened, with the number increasing daily. However, it was not evident to what extent safety and social distancing measures were being maintained inside the factory. According to media reports, 97 RMG workers had become infected by 8 May, and 52% of them were infected after the reopening.

Besides the fear of infection, RMG workers are still struggling for their wages and against layoffs [14]. The gross monthly pay for the lowest grade of garment workers is 8000 BDT (approximately US \$97), which covers house rent, medical allowance, transport, and food costs [16]. Workers need 16,000 BDT (approximately US \$198) to live comfortably, but this is still a low wage compared to that of workers outside the industry [17]. Their living conditions are also of poor quality. For example, the arranged accommodations for garment workers are group quarters or rooming houses where three or four people share a room or even a bed. The average size of living space per individual is only a few square meters, where social distancing is impossible. RMG workers often feel compelled to take on a lot of overtime hours to make ends meet [17]. From the beginning of the shutdown, workers have been demonstrating and saying, “We are afraid of the Corona Virus and heard a lot of people are dying of this disease. But we don’t have any choice. We are starving. If we stay at home, we may save ourselves from the virus. But who will save us from starvation?” [18]. Though the government urged the industry to provide payments in arrears by 16 April, as of 7 May, 169 factories have yet to pay the March wages, with an estimated 200,000 workers still not receiving their salary. This number contradicts that cited by BGMEA, which reports that only 48,200 workers from 92 factories have yet to receive their March salaries [14]. However, the factories also face difficulties: 98.1% of buyers refused to pay for the order cancellations; about 72% buyers refused to cover the costs of raw materials the supplier had purchased; 91% declined to pay the production costs [2].

Gender discrimination is also a big issue in the garment sector. Approximately 90% of garment workers in Bangladesh are women [19]. They are viewed as being physically weaker and less capable, and have tightly controlled social and economic lives [20]. According to the Bangladesh Bureau of Statistics, which conducted a study on the wage gap between men and women in the garment sector from 2009 to 2010, the monthly wages for men and women were 6161 BDT (approximately US \$75) and 4264 BDT (approximately US \$52), respectively. Promotion rates for female trainees are significantly lower (55%) than for male trainees (85%), even if female trainees are equal or more effective managers than their male counterparts [21]. Against 90% of female workforce, only 10% of them occupy managerial positions. The environment in factories is unfriendly and unhealthy for women. Male supervisors often force their female subordinates to do overtime until late at night. Thus, women’s labor rights and compliance are often violated. Moreover, the majority of female garment workers suffer from diseases such as chronic fatigue and lethargy, gastric ulcers, and backaches, all of which are the direct result of long hours of work, irregular eating and poor nutrition, lack of access to regular bathroom breaks, and other work-related factors [20]. With these real situations already present in the garment sector, the COVID-19 crisis has added to the fire in the furlough of a million workers, no doubt most of them being women.

It is evident that in light of SDGs, the garment sector is contributing to reduce poverty and hunger. But other important goals like gender equality, health and well-being, decent work, and economic growth are still far from being achieved. The COVID-19 crisis has pushed such goals even further back. Since the crisis began, the Bangladeshi government has announced a \$588 million stimulus package for the sector to pay wages. It will charge 2% interest on loans to factory owners. Dividing the sum by the number of workers, this financial package would only cover wages for one month [22].

### 3.2. Financial Vulnerabilities: Slum Dwellers

Dhaka is the ninth-largest and sixth-most densely populated city in the world, with a population estimated by the UN at over 21 million [23]. Roughly 10 million people in urban Bangladesh live in slums [24]. Currently, there are 3394 overcrowded slums in Dhaka that house day laborers,

rickshaw-pullers, tea-stallers, CNG auto-rickshaw drivers, housemaids, small business owners, mass-transport workers, street hawkers, and garment workers [23]. A slum is an illegal, unauthorized, and temporary settlement in an urban area; thus, its dwellers are always threatened with eviction. They are at excessive risk of income loss and they live hand-to-mouth. In response to the government's lockdown order, many domestic migrants returned to their village but, strikingly, most of the floating population remained in the capital amidst the deadly disease, and most of them are unaware about it [25]. They lacked shelter and work in the rural areas and, thus, were bound to live in slums. During the shutdown, when all work was suspended, a very limited number of people were moving, and only on an emergency basis. Tea stalls, restaurants, and roadside shops were forced to close, public transports were not allowed on the streets, and no household had maidservants. So, those who lived in slums completely lost their income in this moment of crisis. The average income in the slums of Bangladeshi cities and among the rural poor has dropped by more than 80% since the outbreak. A total of 63% of slum dwellers became economically inactive during this time, and per capita income in the slums dropped by 82% from 108 BDT (\$1.30) to 27 BDT (\$0.32) [26]. Alongside the slum dwellers, a huge chunk of the floating population includes beggars. Their income was also drastically reduced during this crisis [23]. Moreover, the panic buying by middle to upper-class consumers with the ability to stock large amounts of goods had a devastating impact on the people with lower incomes. Although people were advised to stay at home, some rickshaw pullers and CNG auto-rickshaw drivers continued working in the streets, thus violating the order. According to our private interviews with them (while maintaining social distance), they said, "Without earning, how can we manage to feed our family . . . though we keep working, but the reality is that our income is not enough, as the numbers of passengers are limited." In some cases, they requested people to ride on their vehicles; otherwise, they would fail to bring food and essential medicine for their family members. Many of the slum dwellers found that in different places in the city, there were relief supports from government, NGOs, and the rich from the onset of this crisis [27]. Their temporary identity prevents them from receiving financial supports from government sources. Though private organizations and NGOs are coming forward to support them, this is still insufficient to bring them under the social safety net.

### 3.3. Social Exclusion: Rohingya Refugees and Dalits

Social exclusion is a multidimensional process and is the outcome of unjust social relations and organizational barriers faced by individuals or groups due to their social identities and locations [28]. Buvinic [29] defines social exclusion as the "inability of an individual to participate in the basic political, economic and social functioning of society", and it involves "the denial of equal access to opportunities imposed by certain groups in society upon others" [30,31]. This section aims to document the observations and unexpected outcomes of social exclusion and discrimination during the outbreak of COVID-19 within Rohingya refugee and Dalit populations.

The 855,000 Rohingya refugees, who currently reside in 34 makeshift camps in Cox's Bazar, one of the world's biggest and most densely populated refugee camps, are highly vulnerable to COVID-19 [4]. The overcrowded and unhygienic conditions increase the potential for the rapid spread of disease. The first coronavirus case in Cox's Bazar was identified on 24 March 2020, and since then the entire Cox's Bazar district including the camps have been locked down; no Rohingya is even allowed to move between the camps until further notice [32]. The camp authority reported the first case of COVID-19 on 15 May 2020 [33]. As of 16 May 2020, four Rohingya in Cox's Bazar had tested positive for COVID-19 [34]. According to a risk report by ACAPS on the effects of COVID-19 on the Rohingya, it can be expected that the primary impact of the coronavirus outbreak on the 855,000 Rohingya refugees will be widespread transmission across the camps and higher than average mortality and morbidity rates in comparison to other impacted populations [35]. Rohingya refugees are often not vaccinated, and experts/scientists worry about an outbreak of vaccine-preventable diseases [36]. If the COVID-19 outbreak grows in the upcoming days, then it could lead to another catastrophic humanitarian crisis. Besides, Rohingya refugees fled the camps to local host communities as well as different districts of

Bangladesh, and there is a high likelihood that some of the escaped Rohingya with positive symptoms are not reporting at all, as they are afraid of being exposed by their fake identifications.

Besides the Rohingya, social exclusion has also impacted the life of the Dalit community during the outbreak. The term “Dalit” is commonly used to refer to low-caste Hindus who are largely identified by their traditional menial occupations [31]. Among marginalized populations, Dalits, especially those in urban areas, are considered as extremely vulnerable due to their limited economic opportunities to engage in economic activities and other constraints [37,38]. The Department of Social Services states that there are about 1,432,749 Dalit people living in Bangladesh [28]. However, the ethnic classification of “Dalit” is not included in the census, so the exact number of Dalit communities as well as their total population is yet unknown. The overall unhygienic conditions in which they live expose them to health risks and diseases. Scarcity of safe water, inadequate sanitation and drainage systems, lack of hygiene, lack of knowledge of proper menstrual hygiene management, lack of solid waste disposal management systems, and congested and unhygienic living spaces are among the very serious problems and health hazards faced by the urban Dalits [38].

Dalits play a significant role in securing the country’s environment. The major economic activity for urban Dalits in Bangladesh has been sweeping and cleaning, which they have been doing for generations. Many Dalits are employed as cleaners and sweepers by the Dhaka North City and Dhaka South City Corporations. The daily activities of street sweepers in Dhaka include removal of debris from streets, solid waste collection, and disposal and recycling of waste materials. Although the exact occupational risk factors for Bangladeshi street sweepers is not known, they manually handle a variety of waste daily including domestic, industrial, and commercial sweeping and dumping of garbage [39]. During the outbreak of the highly transmissible coronavirus, the waste collectors are at a higher risk of infection, as they do not have any Personal Protective Equipment (PPE) or any proper training; they work now as they always have: With their bare hands [40]. As COVID-19 continues to spread across the country, experts are recommending that people avoid large crowds, practice hygiene, and stay home from work and contact the government helpline or a doctor if they feel ill. However, waste and sanitation workers cannot afford to follow such recommendations while living in urban slums in one of the most densely populated countries in the world. These people can hardly afford to maintain hygiene and use sanitizing products. Authorities have started to realize the need for urban cleaning workers and are doing their utmost to fight the public health crisis brought on by COVID-19. Stressing the safety of frontline workers during this pandemic, the Local Government Ministry has been providing PPE to cleaning workers. The United Nations Development Program and Government of Australia have provided 5000 PPEs for urban waste cleaning workers in Dhaka North, South, City, Chattogram, and Narayangaj City Corporations [41]. However, this is very insufficient, considering the total number of workers countrywide.

#### *3.4. Pre-Existing Health Conditions: High Non-Communicable Diseases Risk Holders*

Patients with pre-existing conditions, such as diabetes, hypertension, cardiovascular disease, chronic respiratory disease, chronic kidney disease, and cancer, comprising non-communicable disease (NCDs), are reported to have higher risks of dying from a COVID-19 infection. Previously, NCDs were regarded as associated with those of a higher socioeconomic status. In recent statistics, however, NCDs are more prevalent in low and middle-income countries as, among the world’s 56 million deaths in 2012, NCDs caused 38 million fatalities, which included 28 million deaths in low and middle-income countries (WHO, 2014). Furthermore, in most countries, impoverished or marginalized people have a higher risk of death due to NCDs than other groups [42]. This is also the case in Bangladesh. A total of 522,300 dying from NCDs in 2012 accounted for nearly half of the total mortality rate in the country [43]. Recent papers reported that urban slum dwellers have high prevalence rates of NCDs. Khalequzzaman et al. [44] revealed from over 2000 slum residents’ data, including a questionnaire survey and physical and biochemical measurements, that the prevalence of hypertension was 18.6% in men and 20.7% in women. Moreover, the prevalence of diabetes was 15.6% in men and 22.5% in women,



which was much higher than the national rate (7%) estimated by the WHO [45]. Rawal et al. [46] found that NCD risk factors were markedly high among the adult residents of urban slums and further elucidated that the NCD risk factors increased as a respondent was younger and as one's education level was lower.

In addition to the ordinal NCD risk factors, namely, tobacco use, physical inactivity, the harmful use of alcohol, and unhealthy diets, the Bangladeshi population is exposed to inherent NCD risk factors related to poor quality of drinking water, which might make people more vulnerable to COVID-19. One inherent factor is increasing salinity in coastal areas, and another is arsenic contamination found in 61 of 64 districts in the country. Bangladesh is a low-lying country located in the Ganges–Brahmaputra Delta and facing the adverse effects of sea level rises. Jenkins [47] estimated a maximum sea level increase of 30 cm by 2030. This can cause the seawater to invade water bodies inland, and the saltwater intrusion has been estimated to extend 100 km inland from the bay [48]. Most of the people living in the coastal zones get water from ponds or tube wells, both of which are susceptible to saltwater intrusion. Nahian et al. [49] reported prehypertension and hypertension were found significantly associated with drinking water salinity in the coastal population. In particular, for the 35-years-and-above age group, both prehypertension and hypertension prevalence were higher than the national rural statistics (50.1%) for saline water categories (53.8% for the 1000–2000 mg/l intake group, and 62.5% for the over 2000 mg/l intake group). Naser et al. [50] investigated the effect of water salinity on kidney health by collecting samples from residents in the southwest coastal communities. They found an association between drinking water sodium and urinary sodium with increased protein excretion, which is a powerful marker for progressive kidney disease. The problem of increasing salinity in drinking water occurs in rural coastal areas where the spread of COVID-19 was not found significant, so far, compared to urban areas. However, if the urban industries go bankrupt, many migrants from rural to urban areas would return to their homeland and cause community clusters of infection. This is worth knowing for the population under higher health risks.

Another risk factor is arsenic contamination in drinking water. Arsenic contamination of tube-well water in Bangladesh was first confirmed in 1993 [51]. Because of its scale, it was quoted as “The largest mass poisoning of a population in history” [52]. Long-term exposure to arsenic can cause adverse health effects, mainly related to skin and respiratory, digestive, cardiovascular, and nervous systems. Many international aid organizations have supported the Bangladeshi government in the mitigation of this problem in collaboration with domestic institutions and organizations. In the recent report of the Department of Public Health Engineering (DPHE), published in 2018, the DPHE concluded that the target of supplying public safe water sources, one for every 30 households, was achieved on average in all the districts [53]. Despite such progress, however, there are still some people who keep using unsafe water sources [54]. Also, Roh et al. [55] found that first exposure at a young age was associated with significant increases in mortality in adults for bronchiectasis, bladder cancer, and laryngeal cancer. They studied the Chilean population who were exposed to very high levels of water arsenic concentration and were freed from the exposure 30–40 years ago. So, even though people stopped drinking arsenic some time ago, they could still hold higher risks of the diseases, probably due to the organ damage already developed in their youth. Rahman et al. [56] conducted a 13-year follow-up study (2003–2015) on 58,406 individuals in Bangladesh since they were 4–18 years old. They found a higher risk of deaths among young adults due to all the cancers among those who were exposed to the current arsenic level of  $As > 138.7 \mu\text{g/L}$  compared to  $As \leq 1.1 \mu\text{g/L}$ . The arsenic level of  $138.7 \mu\text{g/L}$  is higher than Bangladesh's standard for drinking water, but it is not that high as a contamination level, and higher contamination well water can be frequently observed in the country. In the correlation analysis in Section 2, CFR did not have a significant association with the broad socio-economic variables. However, it had significant positive correlations with the mean arsenic contamination level of each district (cor: 0.38, 95% CI: [0.148, 0.572]), as well as with the median level (cor: 0.39, 95% CI: [0.159, 0.58]). The mean and median of the arsenic concentration level were calculated from 3534 water-testing data [57]. It is a quite preliminary result, but the analysis is worth

pursuing. The above-mentioned NCD risk factors might make the young generation in Bangladesh more vulnerable and would partially explain why the mortality rate due to COVID-19 is higher at younger generations compared to other countries.

#### 4. Discussion

As was described above, Bangladesh has various vulnerabilities that make it one of the high-risk countries during the COVID-19 pandemic. A positive factor is the low number of deaths and CFR, which are also observed in other Asian countries. However, there is a fear that the virus will continue to spread via some population, such as urban slum dwellers, Rohingya refugees, and unprotected Dalits, who may not be able to get proper medical services and knowledge. It is very hard to control their level of infections because it is largely related to how they reside—urban slums and the refugee camps, which are the most densely populated areas in the world. The low level of government spending on public health exacerbates the situation. Due to this deficiency, health infrastructures and facilities are very inadequate in terms of both quantity and quality, and this also caused the low numbers of PCR tests.

Considering that the country's situation, the international community should pay special attention to the country and provide it with resources, primarily food aid, and medical support. The extension of temporary moratorium on foreign debt payments should be also considered. However, the impacts of the pandemic on the country's economy could be long-lasting. Bangladesh largely relies on international relations for its economy by way of official development assistance, foreign direct investments (FDIs), and exports. International intervening bodies may well decline to come to work in Bangladesh until the country's infection clearance has been confirmed, especially those from countries experiencing a significant death rate and severe hardships, such as European countries and the United States. Impoverished and marginalized people would not be able to tolerate such a situation because they lack the reserves with which to do so.

At this point, the pandemic and SDGs become one story. Coming back to the initial question of the extent to which the prior attainment of SDGs could have contributed to reducing the spread of COVID-19 and brought a rapid recovery from its damage, the answer is “substantially.” How long people can survive without outside support is one of the key issues in this pandemic, and this is also an important consideration in evaluating the degree of SDGs attainment. This capacity of tolerance is a holistic assessment rather than a measure of the indicators presently defined in each SDG. Moreover, this capacity can be increased through a harmonized achievement of SDGs. Depending on countries' situations and types of crisis, critical SDGs may vary based on several factors. In the case of COVID-19 in Bangladesh, SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), and SDG 11 (Sustainable Cities and Communities) would have been critical in securing the capacity for tolerance among the people. If people had been wealthier, they would have more reserves. If people had more social protection, they would not need to worry about their current employment status. Finally, if the settlement in Dhaka had been more organized, it would be much easier to control the infection and prevent the emergent situation from being prolonged. The present experiences as well as those from previous historical, natural, and economic disasters suggest that at least three months are required to achieve tolerance and recovery from the initial catastrophic shocks. The tolerance capacity assessment will encourage people who work for the country's development to have a systematic view and to unite their work.

The Bangladesh government is primarily responsible for the current non-attainment of SDGs, especially since in 2015, Bangladesh was no longer “one of the poorest countries” in the world [58]. Bangladesh does not need the support of international organizations to achieve SDGs as much as it did before 2015. However, it is also true that the country is still largely influenced by present and past outside interventions. The lack of proper urban and national planning as well as the lack of proper water infrastructure may well make the present pandemic more severe than it would otherwise have been. This could be due to the lack of leadership of the international intervening bodies at the

time when Bangladesh needed it a couple of decades ago. Development is a path-dependent process, and therefore intervening bodies need to be responsible for their actions and have a holistic view of SDGs rather than focusing on the segregated SDG that is related to their work.

Private companies are taking on larger responsibilities in the country's development since FDIs started to increase. As was suggested in Section 3.1, the garment industry is a driving force of the country's economy, but it did not truly contribute to reducing poverty and providing decent work. The country's economic growth has been supported by sacrificing the quality of life of low-wage workers, especially women. By depending on the low-wage workforce, original contractors—such as foreign apparel companies—are cutting production costs and maximizing companies' profits. If RMG subcontracted companies declare an increase in price to cover the deficiency in relation to the standard salary, the cost to the welfare of employees, and the investment in the work environment, those companies will weaken their competitive power against other developing countries. Therefore, the local RMG companies are less likely to do so. The question then is: In this situation, who is responsible for the poor conditions of life experienced by those in the downstream of the whole production process? It should be those in the most upstream, those who are capable of it. Seven years have passed since the Rana Plaza accident happened, where at least 1132 people were killed and more than 2500 were injured after collapse of the overcrowded textile factory building in Dhaka [20]. Especially since then, the problems of the RMG sector, including serious water pollution around Dhaka areas [59], have been recognized by the global community. But their problems have not essentially changed.

Some consumers are becoming aware of this kind of problem, are more interested in production processes, and want to be responsible for their purchasing activities. What would happen if the RMG contractors increased the price of goods due to an increase of the cost paid to subcontractors? Consumers who enjoy these products will keep buying them by reducing the number of other items to buy. This would not drastically decrease their quality of life. Furthermore, in an era when most people, even in developing countries, have a mobile phone or smartphone, how can original RMG contractors be unaware of the problems existing in the subcontracted factories? Establishing a system to monitor their subcontracted companies and check their compliance by the bottom-up approach should not be very difficult nor very costly for original contractors. Through such a system, people in different lines of work can connect with each other and be responsible for each other if they have the will to do so.

## 5. Conclusions

In this paper, we have reviewed and investigated the vulnerable populations in Bangladesh during the COVID-19 pandemic: Garment workers, slum dwellers, the Rohingya refugees and the Dalits, and high NCDs risk holders. Our observations about the possible damages from the pandemic were that until the infection clearance has been completely confirmed, which is not easy due to some of the above-mentioned vulnerabilities, foreign agencies and investors may well decline to come to work in Bangladesh for a long time because of a fear that the pandemic will continue. Many people in Bangladesh will not be able to tolerate the current situation because they do not have enough reserves to do so. We also discussed how the prior attainment of SDGs related to these vulnerabilities could have contributed to reducing the spread of COVID-19 and brought a rapid recovery from its effects. Our conclusion was that if at least some SDGs had been at least partly attained, the situation would not be as dire as it is now, and people would feel less fear and worry about the pandemic, unemployment, and hunger. Based on this conclusion, we suggested the tolerance capacity that indicates how long people can survive without outside support. It is a holistic assessment rather than the indicators presently defined in each SDG—however, it should be attained through a harmonized approach to SDGs. A tolerance capacity is required for a country to be strong in the face of catastrophe shocks and to make the country's development sustainable. Our suggestion was extended to private companies. They should be expected to take more responsibility to unite each segment of work and enable people to monitor compliance. This is necessary to make subcontracted work to developing countries

more humane, and would not be technically demanding, nor very costly, for original contractors of developed countries.

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