

## Novel Coronavirus Disease 2019 (COVID-19) outbreak: An Empirical Study on Bangladesh

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### Abstract

This research will focus on the contemporary situation of Bangladesh during novel coronavirus disease 2019 (COVID-19). Last week of December 2019, a cluster of pneumonia cases of unknown etiology was reported at Wuhan in China and CCDC (Chinese Center for Disease Control and Prevention) reported a novel coronavirus as the causative agent of this outbreak. That disease was referred to as novel coronavirus disease 2019 (COVID-19). During this time, Bangladesh had got a lot of time to make public awareness and better control management for prevention from virus affections. On March 08, 2020, through the press conference Institute of Epidemiology, Disease Control and Research (IEDCR) announced for three (03) coronavirus cases were detected where two of them had come from Italy and another one was the wife of one patient. It was the first introducing of coronavirus in Bangladesh. It did not happen if the government emphasized on public awareness and kept control over all ports through better and secured management for prevention. That is, approximately after 09 weeks of introducing of coronavirus Bangladesh was found the virus affected cases. Since the population density of Bangladesh is higher so the possibility of spreading the virus is also high.

**Key Words:** Coronavirus Disease 2019 or (COVID-19), Disease, Prevention, Outbreak, Communicable, Pandemic, and Epidemic

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### I. Introduction

The amount of any particular disease that is usually present in a community is referred to as the baseline or endemic level of the disease. The baseline level is often regarded as the expected level of any disease. **Endemic** refers to the constant presence and/or usual prevalence of a disease or infectious agent in a population within a geographic area. **Outbreak** carries the same definition of the epidemic but is often used for a more limited geographic area. Occasionally, the amount of disease in a community rises above the expected level. **Epidemic** refers to an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area. It occurs when an agent and susceptible hosts are present in adequate numbers, and the agent can be effectively conveyed from a source to the susceptible hosts. **Pandemic** refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people (CDC). Some epidemical diseases illustrated shortly in this part of the study.

Cholera is an older epidemical disease in the world. It is an acute diarrhoeal infection caused by eating or drinking food or water that is contaminated with the bacterium *Vibrio cholerae*. Cholera remains a global threat to public health and is an indicator of inequity and lack of social development. Researchers have estimated that every year, there are 1.3 to 4.0 million cases of cholera and 21,000 to 143,000 deaths worldwide due to the infection. Cholera is an extremely serious disease that can cause severe acute watery diarrhoea with severe dehydration. It takes between 12 hours and 5 days for a person to show symptoms after consuming contaminated food or water. Cholera affects both children and adults and can kill within hours if untreated. Most people infected with *Vibrio cholerae* do not develop any symptoms, although the bacteria are present in their feces for 1-10 days after infection. This means the bacteria are shed back into the environment, potentially infecting other people. Cholera is often predictable and preventable. It can ultimately be eliminated where access to clean water and sanitation facilities, as well as good hygiene practices, are ensured and sustained for the whole population (WHO).

According to Islamic history, the plague was started at Amawaasu (in between Masjid-Al-Aksa and Ramallah) in Philistine in Hizri year 18 [640 (AD)] (Kasir). In the early 1340s; the disease had struck China, India, Persia, Syria and Egypt. The plague arrived in Europe in October 1347 and over the next five years; this disease was killed more than 20 million people in Europe – almost one-third of the continent's population (History.com Editors, 2010). Plague is an infectious disease caused by the bacteria *Yersinia pestis*, usually found

in small mammals and their fleas. The disease is transmitted between animals via their fleas and, as it is a zoonotic bacteria, it can also transmit from animals to humans. Humans can be contaminated by the bite of infected fleas, through direct contact with infected materials, or by inhalation. Plague can be a very severe disease in people, particularly in its septicaemic and pneumonic forms, with a case-fatality ratio of 30% - 100% if left untreated (WHO).

SARS coronavirus (SARS-CoV) – virus identified in 2003. SARS-CoV is thought to be an animal virus from an as-yet-uncertain animal reservoir, perhaps bats, that spread to other animals (civet cats) and first infected humans in the Guangdong province of southern China in 2002. The transmission of SARS-CoV is primarily from person to person. It appears to have occurred mainly during the second week of illness, which corresponds to the peak of virus excretion in respiratory secretions and stool, and when cases with severe disease start to deteriorate clinically. Most cases of human-to-human transmission occurred in the health care setting, in the absence of adequate infection control precautions. The implementation of appropriate infection control practices brought the global outbreak to an end (WHO). Middle East Respiratory Syndrome (MERS) is a viral respiratory disease caused by a novel coronavirus (Middle East respiratory syndrome coronavirus, or MERS-CoV) that was first identified in Saudi Arabia in 2012. Coronaviruses are a large family of viruses that can cause diseases ranging from the common cold to Severe Acute Respiratory Syndrome (SARS). Typical MERS symptoms include fever, cough and shortness of breath. Pneumonia is common, but not always present. Gastrointestinal symptoms, including diarrhea, have also been reported. Approximately 35% of reported patients with MERS-CoV infection have died. (WHO, 2019)

Ebola virus disease (EVD), formerly known as Ebola hemorrhagic fever is a severe, often fatal illness affecting humans and other primates. The first EVD outbreaks occurred in remote villages in Central Africa, near tropical rainforests. The 2014–2016 the outbreak in West Africa was the largest and most complex Ebola outbreak since the virus was first discovered in 1976. There were more cases and deaths in this outbreak than all others combined. It also spread between countries, starting in Guinea then moving across land borders to Sierra Leone and Liberia. It is thought that fruit bats of the *Pteropodidae* family are natural Ebola virus hosts (WHO).

The first record of a case of probable dengue fever is in a Chinese medical encyclopedia from the Jin Dynasty (265–420 AD) which referred to a "water poison" associated with flying insects. The primary vector, *A. aegypti*, spread out of Africa in the 15th to 19th centuries due in part to increased globalization secondary to the slave trade. There have been descriptions of epidemics in the 17th century, but the most plausible early reports of dengue epidemics are from 1779 and 1780, when an epidemic swept across Asia, Africa and North America. In 1906, transmission by the *Aedes* mosquito was confirmed, and in 1907 dengue was the second disease (after yellow fever) that was shown to be caused by a virus (Wikipedia, 2014). Dengue is a mosquito-borne viral infection that is common in warm, tropical climates. Infection is caused by any one of four closely related dengue viruses (called serotypes) and these can lead to a wide spectrum of symptoms, including some which are extremely mild (unnoticeable) to those that may require medical intervention and hospitalization. In severe cases, fatalities can occur. There is no treatment for the infection itself; but the symptoms that a patient experiences can be managed. Before 1970, only nine countries had experienced severe dengue epidemics. Today, the disease is endemic in more than 100 countries in WHO's African, Americas, Eastern Mediterranean, South-East Asia, and Western Pacific regions; the Americas, South-East Asia, and Western Pacific regions are the most seriously affected (WHO).

Bangladesh has faced most of the above diseases with time. The country has a population density of 1,115.62 people per square kilometer (2,889.45/square mile), which ranks 10th in the world. The surface area in Bangladesh is currently at 147,570 km<sup>2</sup> or 56,977 square miles (Bangladesh Population, 2020). Due to higher population density, communicable diseases are been spread easily within a short time over the affected area. Millions of people are affected by cholera every year in this country. In the spring, the Bay of Bengal which serves as a natural reservoir for the cholera bacteria - flows inland, observably causing the first outbreak amongst coastal communities. Waste containing the cholera bacteria enters the sewage system and remains untreated due to poor water and sanitation infrastructure. Therefore, during the late summer monsoon season, flooding of cholera-contaminated sewage into drinking water sources results in a second outbreak (The Village Zero Project). Ensuring pure water and proper sanitation Bangladesh may prevent cholera effectively in future. Bangladesh is seeing the highest number of dengue cases since 2000 when the country first started to keep records of the disease. So far in July 2019, there have been 13,182 cases had been recorded and near about 15,369 cases of dengue had been reported officially over the year 2019 (Khan, 2019). Analyzing the risk factors, if Bangladesh does not take proper initiative in all ground (public and private) and position (rural, semi-urban, urban and city areas) for prevention of coronavirus disease 2019 then the whole country will fall in a critical situation soon.

On 31 December 2019, a cluster of pneumonia cases of unknown etiology was reported in Wuhan, Hubei Province, China. On 9 January 2020, China CDC reported a novel coronavirus as the causative agent of this outbreak, which is phylogenetically in the SARS-CoV clade. The disease associated to it is now referred to

as novel coronavirus disease 2019 (COVID-19). The evidence from analyses of cases to date is that COVID-19 infection causes mild disease (i.e. non-pneumonia or mild pneumonia) in about 80% of cases and in most cases recover, 14% have more severe disease and 6% experience critical illness. The great majority of the most severe illnesses and deaths have occurred among the elderly and those with other chronic underlying conditions (ECDC, 2020). On 30 January 2020, WHO's director declared that the outbreak of coronavirus disease 2019 (COVID-19) constituted a Public Health Emergency of International Concern (PHEIC), accepting the Committee's advice and issuing temporary recommendations under the International Health Regulations (IHR) (ECDC, 2020). Now this novel coronavirus disease 2019 outbreak is a pandemic and global challenge. As of March 07, 2020, according to WHO more than 100,000 cases of novel coronavirus 2019 were reported in 100 countries where no case was detected in Bangladesh till to date.

#### **What we're learning about the novel coronavirus:**

Dr. Tom Frieden is the former director of the US Centers for Disease Control and Prevention, and former commissioner of the New York City Health Department narrated that, we learn more about this virus by the day, often by the hour and most of the news is bad. Here are five things we've learned in the past week (before March 20, 2020):

- The virus is much more infectious than influenza or the SARS virus, which it closely resembles.
- It's not just older people with underlying conditions who become very ill and can die. Younger adults, previously healthy people and some children develop viral pneumonia. Although prior reports suggested that 80% of people got only mild disease, it now appears that about half of these people, despite not needing hospital admission, have moderately severe pneumonia, which can take weeks or longer to recover from.
- Explosive spread will almost certainly overwhelm health care capacity in New York City and elsewhere, and lead to the inability to save patients who could otherwise have been saved. Today's severe cases are in people infected 10 to 14 days ago who got sick five to six days ago and have steadily progressed to severe illness.
- Health care workers are in peril. Thousands were infected in China, more than 3,000 have been infected in Italy, protective equipment is in short supply in the United States, and as health care becomes overwhelmed, it becomes harder to provide care safely.
- It's going to get a lot worse. Not only is the global economy in free-fall but supply chains for essentials, including medicines, are disrupted (Frieden, 2020).

The researcher would like to mention a few parts of Islamic instructions during communicable or epidemic diseases that had noticed after 610 (AD). If we analyze the Holy Quran the Creator uses to punish on whom or on some community He wishes by the outbreak, and similarly the Creator has kept all treatment in the world. Three verses from the Holy Quran (Al-Quran) of Surah Al-A'raf (Verse no. 130 and 133) and Surah Ar-Rum (Verse no. 41) have been mentioned with meaning below;

وَلَقَدْ أَخَذْنَا آلَ فِرْعَوْنَ بِالسِّنِينَ وَنَقْصِ  
مِّنَ الشَّجَرِ لَعَلَّهُمْ يَذَّكَّرُونَ ۝

Verse 1: Al-Quran, Surah Al-A'raf, Verse - 130

“And We certainly seized the people of Pharaoh with years of famine and a deficiency in fruits that perhaps they would be reminded” (Al-Quran, Surah Al-A'raf, Verse - 130).

فَأَرْسَلْنَا عَلَيْهِمُ الطُّوفَانَ وَالْجَرَادَ وَ  
الْقُمَّلَ وَالضَّفَادِعَ وَالدَّمَ آيَاتٍ مُّفَصَّلَاتٍ  
فَاسْتَكْبَرُوا وَكَانُوا قَوْمًا مُّجْرِمِينَ ۝

Verse 2: Al-Quran, Surah Al-A'raf, Verse - 133

“So We sent upon them the flood and locusts and lice and frogs and blood as distinct signs, but they were arrogant and were a criminal people” (Al-Quran, Surah Al-A'raf, Verse - 133).

ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ  
أَيْدِي النَّاسِ لِيُذِيقَهُمْ بَعْضَ الَّذِي  
عَمِلُوا لَعَلَّهُمْ يَرْجِعُونَ ۝

Verse 3: Al-Quran, Surah Ar-Rum, Verse - 41

“Corruption has appeared throughout the land and sea by [reason of] what the hands of people have earned so He may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness]” (Al-Quran, Surah Ar-Rum, Verse - 41).

If the above verses are analyzed then some warnings are found that have come from the Creator and also it's clear that we people are responsible for all the disaster or outbreak over the universe. The bellow Hadiths have been added for making awareness among us and the last Hadith (Hadith No. 5276) noticed that the Creator has kept treatment for all kinds of diseases within the universe.

Prophet Mohammad (SM):\*\*\*<sup>1</sup> said (as a precaution) for epidemical diseases, “The cattle (sheep, cows, camels, etc.) suffering from a disease should not be mixed up with healthy cattle” (Al-Bukhari, Hadith No. 5770). He also said, "Do not put a patient (who has the communicable disease) with a healthy person” (Al-Bukhari, Hadith No. 5771). In another Hadith, He said, “anyone who is residing in a town in which this disease (any communicable disease) is present, and remains there and does not leave that town, but has patience and hopes for Allah's reward, and knows that nothing will befall him except what Allah has written for him” (Al-Bukhari, Hadith No. 5734 & 6619). The book Al-Bukhari contains another Hadith that, “There is no disease that Allah has created, except that He also has created its treatment” (Al-Bukhari, Hadith No. 5276).

## II. Related Articles

A lot of related reports and articles are publishing over the world, though the knowledge regarding the outbreak of novel coronavirus disease 2019 (COVID-19) are confined. Yet, based on the study a few rational related issues are illustrated in this part of the study shortly.

Wang (2020) described the etiology and epidemiological characteristics of novel coronavirus 2019 in his research. One of the etiology characteristics among two is; the 2019-nCoV is sensitive to ultraviolet rays and heat and can be killed by heating for 30 minutes at 56 °C; lipid solvents such as ether, 75% ethanol, chlorine-containing disinfectants, peracetic acid, and chloroform can also inactivate the virus. The epidemiological characteristics are (a) **incubation period**: 1–14 days and generally in the range of 3–7 days; (b) **source of infection**: the main source of infection is COVID-19 patients, but asymptomatic individuals infected with 2019-nCoV may also infect others; (c) **main modes of transmission**: the main modes of transmission are via droplets and direct contact. The possibility of aerosol transmission exists in relatively closed settings with exposure to high concentrations of aerosol for a long period. Other transmission routes need further investigation, and (d) virtually the entire population is susceptible to 2019-nCoV infection.

WHO (2020) revealed the basic protective measures in its official page against the new coronavirus are; (a) **Wash your hands frequently**: regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water. (b) **Maintain social distancing**: maintain at least 1 metre (3 feet) distance between yourself and anyone who is coughing or sneezing. (c) **Avoid touching eyes, nose and mouth**: hands touch many surfaces and can pick up viruses. Once contaminated, hands can transfer the virus to your eyes, nose or mouth. From there, the virus can enter your body and can make you sick. (d) **Practice respiratory hygiene**: make sure you, and the people around you, follow good respiratory hygiene. This means covering your mouth and nose with your bent elbow or tissue when you cough or sneeze. Then dispose of the used tissue immediately. (e) **If you have fever, cough and difficulty breathing, seek medical care early**: stay home if you feel unwell. If you have a fever, cough and difficulty breathing, seek medical attention and call in advance. Follow the directions of your local health authority. (f) **Stay informed and follows advice given by your healthcare provider**: stay informed on the latest developments about COVID-19. Follow the advice given by your healthcare provider, your national and local public health authority or your employer on how to protect yourself and others from COVID-19.

ECDC (2020) has mentioned in its two reports regarding the survival environment of the virus and the use of a mask. The environmental stability of viable SARS-CoV-2 is up to 3 hours in the air post aerosolisation, up to 4 hours on copper, up to 24 hours on cardboard, and up to 2–3 days on plastic and stainless steel, albeit with

<sup>1</sup> \*\*\* Sallallahu Aalaih Owasallam

significantly decreased titres. These findings are comparable with the results obtained for the environmental stability of SARS-CoV-1. However, as these are results from experimental studies, they do not directly translate to fomite infectivity in the real world. In one study, 40–90% of particles penetrated the mask. In a cluster randomized controlled trial, cases of influenza-like illness and laboratory-confirmed viral illness were significantly higher among healthcare workers using cloth masks compared to the ones using surgical masks. Altogether, common fabric cloth masks are not considered protective against respiratory viruses and their use should not be encouraged. In the context of severe personal protective equipment (PPE) shortages, and only if surgical masks or respirators are not available, home-made cloth masks (e.g. scarves) are proposed as a last-resort interim solution by the US CDC until the availability of standard PPE is restored.

CDC (2020) responded to a pandemic of respiratory disease spreading from person-to-person caused by a novel (new) coronavirus. Coronaviruses are a large family of viruses that are common in people and many different species of animals, including camels, cattle, cats, and bats. Rarely, animal coronaviruses can infect people and then spread between people such as with MERS-CoV, SARS-CoV, and now with this new virus (named SARS-CoV-2). The SARS-CoV-2 virus is a beta coronavirus, like MERS-CoV and SARS-CoV. All three of these viruses have their origins in bats. This situation poses a serious public health risk. COVID-19 can cause mild to severe illness; most severe illness occurs in older adults even to death.

Opriş (2020) revealed the advice of the World Food Programme (WFP)'s nutrition experts that included seven (7) tips on keeping a healthy diet in the face of Coronavirus; (1) **Hydrate, hydrate**: the usual recommendation is eight glasses per day of fluid. For flavor and additional nutrients, add slices of cucumber, lemon or orange to the humble glass of water. Avoid sweetened beverages such as soft drinks and soda because of high sugar content. (2) **GO foods**: these foods are essential for energy, which is crucial for thinking, working, and fending off disease — think staples such as rice, pasta, bread and root crops. (3) **GROW foods**: these help physical growth, especially for children and are essential to be consumed daily. GROW foods rebuild your body when you are unwell or have an infection. These include meat, fish, eggs, milk and other dairy products such as cheese and yogurt. (4) **GLOW foods**: these make sure the body works well, help to protect the body from diseases and fight off illness. All foods have some vitamins and minerals, but colorful fruits and vegetables are generally rich in vitamins and antioxidants. (5) **Fortified foods and supplements**: depending on your situation, fortified foods and supplements may be required or combined with meals to supply required nutrients, especially in contexts where diets are of poor quality and limited quantity due to food insecurity. (6) **Exercise**: the World Health Organization recommends 30 minutes of physical activity a day for adults and one hour a day for children. (7) **NO foods (what to avoid)**: foods that are high in fat, sugar and salt (heavily processed foods) are not considered part of a healthy diet, particularly at this moment.

Pisano, Sadun, and Zanini, 2020 were mentioned four (04) issues in their article that published in Harvard Business Review web site and the purposes were to help U.S. and European policymakers at all levels learn from Italy's mistakes so they can recognize and address the unprecedented challenges presented by the rapidly expanding crisis. (a) **Recognize your cognitive biases**. In its early stages, the COVID-19 crisis in Italy looked nothing like a crisis. The initial state-of-emergency declarations were met by skepticism by both the public and many in policy circles — even though several scientists had been warning of the potential for a catastrophe for weeks. (b) **Avoid partial solutions**. A second lesson that can be drawn from the Italian experience is the importance of systematic approaches and the perils of partial solutions. (c) **Learning is critical**. Finding the right implementation approach requires the ability to quickly learn from both successes and failures and the willingness to change actions accordingly. Certainly, there are valuable lessons to be learned from the approaches of China, South Korea, Taiwan, and Singapore, which were able to contain the contagion fairly early; and (d) **Collecting and disseminating data is important**. Italy seems to have suffered from two data-related problems. In the early onset of the pandemic, the problem was data paucity.

Department of Global Communications (UN) (2020) mentioned in its official site regarding daily activities of children and people basis on lockdown life for COVID-19 that the United Nations Educational, Scientific and Cultural Organization (UNESCO) is rallying international organizations, civil society and private sector partners in a broad coalition to ensure that learning never stops. The closure of gyms, sports facilities and stadiums, public pools, dance studios, and playgrounds means that many are not able to actively participate in individual or group sporting or physical activities. But that does not mean, people should stop being physically active, nor should they disconnect from the coaches, teammates and instructors.

### III. Objective Of The Study

The main objectives of the study are;

- ✓ To illustrate the overall scenario of Bangladesh during coronavirus disease 2019.
- ✓ To show the awareness and controlling level of Bangladesh.
- ✓ To show some effects of this outbreak.

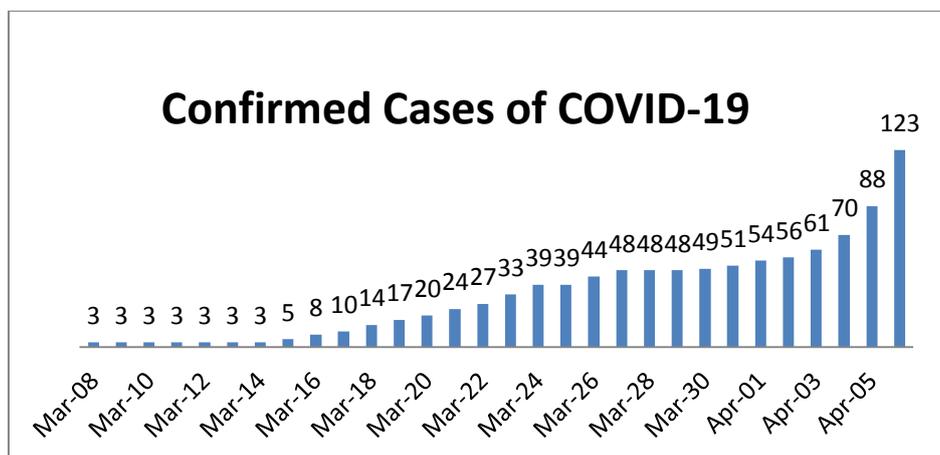
✓ To reveal some recommendations for the preparation of public awareness and control management of any kind of epidemical disease in the future.

#### IV. Methodology Of The Study

This study is based on only secondary data and required secondary data that have been collected from the internet, newspapers, magazines, TV channels, youtube and different kinds of social media. The collected data are analyzed in a descriptive method. The data collection has been started since end of the January 2020 and consideration of the data collection period, the time frame of the article is from January to April 7, 2020, but the scenario has been illustrated from March 7, to April 6, 2020. Whereupon, the researcher of this study is not a doctor or the field is not related with his previous background so there are some limitations in this study; such as medical terms or the technical issues of the medical field are absent and every aspect of the outbreak was not included in this study elaborately. American English has been used for this research paper.

#### V. Findings Of The Study

It's a war without any sound. No bullets no bombing, yet it's a global war where more than 207 countries are fighting for life. As of April 6, 2020 (BDT 19:50), according to official information of WHO, the total numbers of confirmed cases of coronavirus were 1,174,855 along with 64,471 deaths and numbers of affected countries were 209 (WHO, 2020). Meanwhile, the confirmed detected positive cases were 123 and the numbers of death were 13 in Bangladesh (The Daily Star, 2020). Maybe it will be the deadliest crisis after WW2 in this world. The novel coronavirus disease 2019 (COVID-19) is a pandemic epidemic disease that has no specific medicine or vaccine. On March 11, 2020, the Director-General of WHO characterized the new coronavirus (COVID-19) as a pandemic (WHO Director-General, 2020). Bangladesh is also fighting with this pandemic disease as others. Nevertheless, we had got enough time (from last week of 2019 to March 07, 2020) to take necessary steps for public awareness, and preventative control management over the ports (land, sea, and air). But the government of Bangladesh was late to do so and now the virus affection cases are increasing with time over the country. A figure of confirmed cases of novel coronavirus disease 2019 for thirty (30) days (from 8<sup>th</sup> March to 6<sup>th</sup> April 2020) in Bangladesh is given below;



Source: The Daily Star

**The First Case:** Bangladesh announced the first confirmed coronavirus cases in the country after three people tested positive for the infectious virus in the capital Dhaka on March 08, 2020. The Director of IEDCR said at a press conference in Dhaka that two men and a woman tested positive for the coronavirus and that the three were admitted to a hospital. The patients, aged between 20 and 35, are under treatment and their conditions are stable (Sakib, 2020). IEDCR didn't disclose their name and identities on security ground. Two of them returned to Bangladesh from Italy and the woman got infected from contact with one of them.

**The First Death:** Institute of Epidemiology, Disease Control and Research (IEDCR) announced officially on March 18, 2020 that a Bangladeshi who tested positive for coronavirus infection has died and she was 70 years old with multiple pre-existing complications. The patient who was died she had multiple pre-existing complications like chronic obstructive pulmonary disease (COPD), high blood pressure, heart problems, diabetes, and she had heart stenting done previously (Star Online Report, 2020).

**Public Awareness:** First awareness started in Bangladesh through social media against the novel coronavirus disease 2019 (COVID-19). The government has started to make public awareness since January 28, 2020 through electronic and print media over the country (IEDCR, 2020). But until March 8, there was no noticeable

initiative to make awareness in the society against the ongoing outbreak. On March 16, 2020, the cabinet issued a set of directives, including sending returnees from abroad to a 14-day compulsory quarantine as part of precautionary measures against the coronavirus (BSS, Dhaka, 2020). To avoid the spreading of COVID-19 over the country the local government of some cities announced to lockdown the shop in the market except medical, food, meat shops and vegetable market after March 24, 2020. Many hotline numbers were given to conduct from home for consulting with doctors regarding COVID-19 and its symptoms or collecting sample. A few given hotline numbers are motioned here; by IEDCR: 01550064901-5, 01401184551, 01401184554-6, 01401184559-60, 01401184568, 01927711784-5, 01937000011; by a2i<sup>2</sup>: 333; by DGHS: 16263; and another hunting numbers: 01944333222, and 10655 (Alif, 2020). IEDCR had also given an email address (iedrcovid19@gmail.com) and Facebook messenger id to communicate with them regarding COVID-19 symptoms or collecting samples from home. After March 22, 2020, local MP (Member of Parliament), mayor and chairman in different areas in the country announced using microphone regarding novel coronavirus disease 2019 to make more awareness among the people. Later on (last week of March, 2020), the government of Bangladesh announced to notice the people mentioning “**Dos and don’ts**” through the microphone of mosques over the country. Many individuals had started to distribute leaflet or handbill among the people in front of the educational institutions, mosques, and market places as per their possible way. Some organizations had done same and even they made awareness through advertisement in print or electronic media.

**Awareness through Mobile Operators:** According to governmental instructions, on March 21, 2020, some mobile operators of Bangladesh had started to provide awareness instructions by IVR (Interactive Voice Response) during an outgoing call. On March 22, 2020, the mobile operators had started to call customers through IVR such as number 20540 (airtel) with some precautionary instructions and also informed them to make a call to talk with doctors for free regarding any issues of coronavirus disease or its symptoms. The operators also added “Stay Home” with network name in the same day like **Airtel-Stay Home|airtel** or **Stay Home – GP**.

**Educational Institutions Closed:** Some universities of Bangladesh were closed without any concern of the government before 16<sup>th</sup> March. On March 16, 2020, the education minister announced to close all educational institutions from the next day till March 31, which was extended with a declaration of general holiday up to April 4, 2020. All the examinations under National University and Bangladesh Public Service Commission (BPSC) had been postponed till March 31, 2020 (Star Online Report, 2020) which was also extended with the general holiday. HSC (Higher Secondary Certificate) examinations of 2019 were also postponed. Meanwhile, Unicef and partners will work with the Government to provide information to parents and caregivers on how to support and engage with their children’s learning during this COVID-19 outbreak period. They will work with 145 countries to support governments’ crisis response plans including technical assistance, rapid risk analysis, data collection, and planning for the reopening of schools (Independent Online, 2020). To avoid spreading of virus the closing time of educational institutions were extended up to April 11, 2020. On April 05, 2020 the closing time was extended up to April 14, 2020, to avoid a crowd of the celebration of Pahela Boishakh (The first day of Bangla New Year) along with the general holy day.

**Treatment Facilities:** The government had taken this outbreak more seriously when the first three (3) cases were disclosed on March 18, 2020, through a press conference of IEDCR. Later on the government went for making isolation and quarantine facilities and the first opening of those facilities was in Dhaka (since the first cases were detected in Dhaka and it is the capital). But firstly, personal protective equipment (PPE) for the doctors and nurses were inadequate for ensuring treatment. Yet, the treatment was started since March 18, 2020, and isolation, and quarantine centers were facilitated in most of the districts of Bangladesh. End of March 2020, Bangladesh ordered 10,000 test kits and as much personal protective equipment or PPE from China to fulfill the current requirements for treatment (bdnews24.com, 2020) and received on March 27, 2020. The public hospitals in Dhaka and other parts of the country are yet to take any foolproof preventative measures. There are not many hospitals that are checking temperatures of people at the entrance, and only a few public hospitals have mandatory hand-washing or sanitizing facilities (Tithila, 2020).

**Quarantine Facilities:** On 19<sup>th</sup> March 2020 (Thursday), the government gave responsibility to the army to open two quarantine centers in Hajj Camp at Ashkona and the residential apartment of RAJUK at Uttara in Dhaka. But the building owner and dwellers on 20<sup>th</sup> March 2020 (Friday) demonstrated in front of the building protesting at the decision to open a quarantine center there holding banners (Prothom Alo English, 2020). The same day, on the 20<sup>th</sup> March 2020 government of Bangladesh assigned Army to build quarantine facilities for people with coronavirus symptoms at the Biswa Ijtema ground in Tongi on the outskirts of the capital (The Independent, 2020).

**Religious Activities:** The first massive prayer ware on March 18, 2020, around 10,000 Muslim worshippers gathered in a prayer session at Raipur in Lakshmipur, southern Bangladesh to pray “healing verses” from the

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<sup>2</sup> \*A whole of government program of ICT Division, Bangladesh (a2i).

Holy Quran to protect the country from the pandemic. The local police confirmed about the gathering of 25,000 attendees (Ng, 2020). On March 20, 2020, a special doa (blessing to Allah) has been done in every mosque of Bangladesh after Jum'a salat (prayer) to get rid of coronavirus disease 2019. After March 25, 2020, the Muslim people were requested to perform their prayer at home. Though, Islamic scholars in Saudi Arabia and Gulf countries reached a decision earlier in line of the Holy Quran and Hadith that people should say prayers now at home instead of mosques for safety reasons and check the coronavirus outbreak (Hossain, 2020). Then, on March 27, 2020 (Friday), the presence of Muslims at mosques across the country, including the capital, for offering Jum'a prayer was comparatively low following the outbreak of deadly coronavirus (Independent Online, 2020). Christian, Hindu, Buddhist and other religious people of Bangladesh worshiped in their own prayer hall together and individually in a different time for being rescued from novel coronavirus disease 2019.

**Election:** During this crisis moment election commission (EC) of Bangladesh conducted election in three (3) constituencies on March 21, 2020. Bangladesh witnessed the voting in the three constituencies at a time when many countries have postponed their local government and national-level elections. Voting in Dhaka-10, Gaibandha-3, and Bagerhat-4 constituencies went on from 9 am to 5 pm without any break despite repeated warnings from two separate wings of the Health Ministry (Dhaka Tribune, 2020). The candidate who won the by-election to the Dhaka-10 constituency, which was only 5.28% votes from among 312,281 voters being cast for the parliamentary seat.

The researcher would like to share some polls postponed issues in a part of the world;

In the neighboring Indian state of West Bengal, several civic bodies, including the Kolkata Municipal Corporation (KMC), panchayet polls were postponed.

France rescheduled its second round of polls, which were slated for March 16 and March 22, while Sri Lanka on March 19 postponed its April 25 general election, in the wake of the COVID-19 outbreak.

Britain on March 13 postponed local and mayoral elections in May. In the US, seven states and one territory postponed their presidential primaries.

Presidential polls in the Turkish Republic of Northern Cyprus set for April 29 were postponed too. North Macedonia also did the same about its prescheduled April 12 national election (Dhaka Tribune, 2020).

**Declaration of General Holiday:** All government and private offices were closed from March 26 to April 4, 2020 to prevent the spread of coronavirus. Government offices, except those involved in emergency services such as police, health services and foreign services, had been declared closed. This announcement comes in the wake of three deaths and 33 infections -- including six new cases -- in connection with coronavirus in the country (Star Online Report, 2020). Considering the overall situation of the country and to prevent the outbreak, on March 31, the government extended the general holidays up to April 11, 2020. The government had extended the ongoing general holiday for three days from April 12 to avoid the crowd of Pahela Boishakh (the first day of Bangala New Year) aiming to prevent the transmission of deadly coronavirus (Observer Online Report, 2020).

**Lockdown:** The government of Bangladesh announced for lockdown from March 26 to April 4 2020 for the whole country and the army was in the field along with the police for monitoring unnecessary movement of the people to prevent the virus spreading. On March 31, 2020, the lockdown time was extended up to April 11, with the general holiday. On April 05, 2020, the Public Administration Ministry had extended another three days of lockdown with the general holiday aiming to prevent the communicable of COVID-19.

**Role of World Organizations:** Many world organizations have kept a significant role in publicity to make public awareness and gave suggestions for prevention from communicable disease threats. A few of them mentioned below;

UNICEF Bangladesh broadcasted a new animation episode on March 20, 2020, on their official social page (Facebook) for children's awareness. Unicef's popular children's animation Meena had aired a new episode to teach children how to protect themselves from viral infections, such as the much-dreaded coronavirus COVID-19. Unicef developed the Meena Communication Initiative (MCI) as a mass communication project aimed at changing perceptions and behavior that hamper the survival, protection, and development of girls in South Asia (Dhaka Tribune, 2020). Unicef and partners also supported to the government for child education during this critical risk period.

The World Health Organization (WHO) had suggested Bangladesh to go into lockdown and declare emergency in the wake of coronavirus outbreak. The experts of the WHO advised the outgoing mayor of Dhaka South City Corporation (DSCC) at a meeting in the city on March 21, 2020, afternoon. A delegation of WHO and Communicable Disease Control and Protection (CDCP) of the USA sat in a meeting with mayor at the latter's residence at Banani in the capital in a bid to check the coronavirus infection. Meanwhile, on March 21, 2020 (Saturday), Bangladesh confirmed the second death from COVID-19 and four more cases pushing the number of confirmed coronavirus cases to 24 (National News Desk, 2020).

World Bank was ready for funding US\$100 million in response to coronavirus issue. The government sent a project concept paper to the World Bank (WB) in the second week of March 2020, seeking funds for facilitating surveillance, investigation and a rapid response system to stop spreading the coronavirus outbreak in

Bangladesh. It sought funds worth US\$100 million for implementing the project, which will also be used to improve the country's public sector health service capability. The Economic Relations Division (ERD) sought the funds from the Washington-based lender on an emergency basis in response to the COVID-19 epidemic in Bangladesh (Kabir, 2020).

## **VI. Effects Of The Outbreak**

The researcher thinks that the effects of this outbreak will depend on how quickly we will overcome this crisis. Some remarkable effects were mentioned below;

**Economic Crisis:** Perhaps, a critical economical situation is going to raise for this outbreak in the country. We will not be able to measure economical damage right now and it will depend on how quickly we will get relief from this outbreak. Bangladesh is an agricultural based country where approximately 2,86,95,763 families are involved with agriculture directly and more than 120 crops like vegetable and others are being grown in the country (Hasan, 2019). The price of onion, ginger, garlic and other vegetables were fallen because of the novel coronavirus disease 2019 outbreak which will be created a crisis in future production for the farmers. The earnings of low-income groups were fallen because of this ongoing outbreak in Bangladesh. The daily labors such as loaders, rickshaw-pooler or vanpooler were affected more during this time and they were expending their life either from savings or loans. All kinds of export-import businesses were closed so that the prices of imported products were highly increased and the exporters had to stop their productions or product collections during the whole period of outbreak. The food exporters (productions and processing units) were affected badly. The main rut of foreign revenue of Bangladesh is garments sectors where 1.94 million workers were directly affected and approximately 954 factories had reported that the buyers canceled orders of 822.91 million pieces of clothes. According to BGMEA, global buyers have canceled orders worth at least \$2.65 billion of readymade garment products from Bangladesh (Independent Staff Reporter, 2020). The government is also seeking a large amount of loans for tackling this crisis.

According to Asian Development Bank (ADB), the ongoing novel coronavirus (COVID-19) outbreak will have a significant impact on developing Asian economies through numerous channels, including sharp declines in domestic demand, lower tourism and business travel, trade and production linkages, supply disruptions, and health effects. The analysis, *The Economic Impact of the COVID-19 Outbreak on Developing Asia*, projected a global impact in the range of \$77 billion to \$347 billion, or 0.1 percent to 0.4 percent of global gross domestic product (GDP) due to this virus (BSS, 2020).

The uncertainty of lockdown over the world is falling us in the global financial crisis also. The G20 economies will experience an unprecedented shock in the first half of this year and will contract in 2020 as a whole and GDP of these countries already decreased. (AFP, London, 2020). With more than two billion people on virus lockdown from India to California and energy demand had plunged. Only the old large company like the Coffeyville oil refinery was doing its operations through proper offering in March 2020. On the other hand, the small Kansas plant in the heart of rural America was offering just \$1.75 per barrel in the same time (Blas, 2020). The S&P 500 had fallen since mid-February, the fastest decline from a record to a bear market in history for the outbreak of COVID-19. The volatility had also been unprecedented. The index had swung 5.2% on average each day in March 2020, on course to top the previous record of 3.9% from November 1929 (Osipovich, 2020). Unemployment will be increased over the world for this pandemic.

**Social Impact:** The novel coronavirus disease 2019 pandemic is a major issue for the public health of the world. As of March 29, 2020, more than 575,444 confirmed cases have been detected and 26,654 people have died officially where 202 countries were affected worldwide in COVID-19 (WHO, 2020). Bangladesh was also on that list and there were 48 affected people where tested cases were 1,185 and 15 people recovered who went back home, and 5 people had died up to March 29 (IEDCR, 2020). In this pandemic situation the people were worried about self and family protection. Yet some individuals helped poor people around him or her personally by giving food items or cash and even masks or sanitizer or antiseptics items free. Some organizations and individuals also donated cash to the government for tackling the COVID-19 crisis. The disaster management and relief ministry had allocated Tk. 11.24 crore and 39,667 tons of rice as humanitarian assistance for temporary jobless and poor people across the country as per the demand of deputy commissioners of each district (The Independent, 2020). It is very difficult to maintain distance in our culture but the people had started to follow this after the first detected case of COVID-19. Many shops and houses were kept water and soap in front of the entrance with instructions of washing hands for the outbreak of this virus. People had started to clean around their homes, and factories as well as the government had taken many initiatives to clean city, urban, and semi-urban areas of the country. During the lockdown period the people expended their time with family at home and they were seen at the rooftop of the building with family at afternoon. The people were conscious about using of mask, coughing, spitting, and sneezing that they did earlier. Religious activities of the people increased more at that time. But visiting the patient or dead people was the cause of fear during the outbreak of novel coronavirus disease 2019.

**Crisis of Consumer Products:** Panic purchasing made a crisis of availability of consumer products such as hand wash, sanitizer, and antiseptics along with rice, oil, biscuits and so on in many areas of Bangladesh for the outbreak of novel coronavirus disease 2019. This is called as 'irrational panic buying' in social theories of health (Star Health Desk, 2020). At first the surgical masks were vamoosed from the local markets and then the prices of cloth masks were highly increased and had less quality. People expected supply shortage that learned from China and they started to the panic purchase of consumer products from the local market. As a result some medical and grocery consumer products were short in the market after the closing of educational institutions. Some cased it was fully closed to supply such as milk that comes from villages to semi-urban, urban, and city areas. On the other contrary, the price of milk was down in villages that will affect the firms badly. Alike, the price of vegetables was increased in the city and decreased in the village due to a lack of transportations during the lockdown. Many developed countries also faced such problems as Bangladesh.

**Crisis of Transportations:** The ambulance, covered vans, and vehicles carrying medicine, fuel and perishable items were out of the purview of the lockdown considering emergencies. The people of the semi-urban and rural areas were affected deadly after a few days of lockdown. Especially the villagers are never conscious about any disaster or outbreak and its impact. Generally, the small shops do not get any products or services directly from the manufacturers. The small entrepreneurs of semi-urban and rural areas collect their products from the dealers of urban or city areas around them that was hindered for lockdown. So the crisis of transportations affects the semi-urban and rural areas more badly and the emergency movement of the people was also impossible during this time.

While the world is in lockdown and then the nature is free from air, water or soil pollution. The researcher wants to add environmental issues as the last effect of this pandemic.

**Natural Environment:** Though we don't want to face any further pandemic. Yet, we learned about the rate of air or water pollutions that we do every day. Pollutions of air, water, and soil increase the global health risk of humans along with the environment those are vast issues for the green world.

Lead author Jos Lelieveld of the Max Planck Institute in Mainz, Germany said that air pollution is a larger public health risk than tobacco smoking. The scientists said that a pandemic of air pollution shortens lives worldwide by nearly three years on average and causes 808 million premature deaths annually. Eliminating the toxic cocktail of molecules and lung-clogging particles cast off by burning oil, gas and coal would restore a full year of life expectancy. A study found that compared to other causes of premature death, air pollution kills 19 times more people each year than malaria, nine times more than HIV/AIDS, and three times more than alcohol (AFP, 2020). Air pollution has also increased the global temperature that affects on atmosphere and melts down the ice in the seas those are causes of the death of many aquatic organisms and disrupt many marine habitats.

Water covers over 70% of the Earth's surface and is a very important resource for people and the environment. Water pollution affects drinking water, rivers, lakes and oceans all over the world. This consequently harms human health and the natural environment (Water Pollution). There are many ways of water pollution such as the use of chemicals for multipurpose, wastewater (industrials or residential) pelting, dumping households and so on. Tiny bits of broken-down plastic smaller than a fraction of a grain of rice are turning up everywhere in oceans, from the water to the guts of fish and the poop of sea otters and giant killer whales (AP, 2020). It also makes people sick seriously and also creates epidemical diseases like cholera.

Soil is the base of our environment that we don't realize deeply. "Soil pollution" refers to the presence of a chemical or substance out of place and/or present at a higher than the normal concentration that has adverse effects on any non-targeted organism. Based on scientific evidence, soil pollution can severely degrade the major ecosystem services provided by soil. It reduces food security by both reducing crop yields due to toxic levels of contaminants and by causing crops produced from polluted soils to be unsafe for consumption by humans and animals (Eugenio, McLaughlin, & Pennock, 2018). Soil pollution must be stopped for securing food and the green world along with global health.

Human is in lockdown where animals are enjoying nature as it like. Indeed, a thing is valued where it belongs. After lockdown many environmental changes have been occurred such as reduction of NO<sub>2</sub> in air, and industrial sewerages carry away to water sources or soil. NO<sub>2</sub> is mainly produced by vehicles, industrial sites and thermal power stations. Experts said that, air quality is improving in countries under coronavirus quarantines, but it is far too early to speak of long-term change. Images by the US space agency NASA are clear, in February the concentration of nitrogen dioxide (NO<sub>2</sub>) fell dramatically in Wuhan, China, the epicenter of the COVID-19 pandemic, passing from an indicator that was red/orange to blue. Alike recent images by the European Space Agency (ESA) show a resurgence in NO<sub>2</sub> emissions. The European Environment Agency (EEA) reports a similar change in Barcelona and Madrid, where Spanish authorities issued confinement orders in mid-March. (AFP, 2020)

After few days from lockdown, the locals in Cox's Bazar noticed in social site with some photos where dolphins are playing near the bank of the sea (Bay of Bangal) that never seen within the last twenty years. India had been placed under a three-week (on April 2, 2020) lockdown since March 24 with its 1.3 billion people

instructed to stay home because of the coronavirus outbreak and the experts said that the health of Ganga River had seen significant improvement since enforcement of the nationwide lockdown that has led to a reduction in dumping of industrial waste into it (The Economic Times, 2020). Contrariwise, locals in Venice had noticed that the water in the city's canals had become much clearer, with small fish visible swimming around when the whole country was under lockdown as coronavirus continued to spread (Guy & Donato, 2020). In the same way the soil of the earth got away from pollution for the time being.

Finally, the researcher acquiesces with Dr. Enric Sala, marine ecologist and part of National Geographic's Campaign for Nature, that there are going to be more diseases like this in future if we continue with our practices of destroying the natural world, deforestation and capturing wild animals as pets or for food and medicine (Boyle, 2020).

**Recommendations:** Based on the overall study, some marked recommendations are given below for future preparation of public awareness and control management of any kinds of epidemic or pandemic outbreak;

- ✓ We should obey and follow the Sunnah of Prophet Mohammad (SM:) and scientific instructions during any outbreak of communicable disease.
- ✓ According to Hadith (No. 7276) the Creator has kept treatment for all kinds of diseases, so we should concentrate on research for finding vaccine or medicine for all epidemical diseases from every possible angle.
- ✓ Since the cell phone is the easiest communication device, so the government could notice the preventive message over the country to make public awareness earlier.
- ✓ The government should have handled strictly before March 16, 2020 for sending returnees from abroad to stay a 14-day compulsory quarantine as part of precautionary measures against the coronavirus.
- ✓ All educational institutions should have closed earlier and awareness sessions or training could be arranged for all students before closing.
- ✓ The personal protective equipment and testing kits should have collected earlier and distributed to some specific health complex over the country as precautionary preparation.
- ✓ The election commission should have changed the date of the election.
- ✓ There are many sand spouts in Bangladesh which aloof from residences that might be used as places of quarantine by making different territories over the country.
- ✓ The lockdown should have been announced after detecting the first positive case of COVID-19, whereas it was a communicable disease.
- ✓ All kinds of public transportations must be closed before announcing general holidays (March 26 to April 04, 2020) to avoid public movement.
- ✓ To protect the natural environment we may take some initiative such as a one-day private vehicle lockdown in a week, use of water treatment plants in the industries that are using water for its production process, use of plastic households or others in road carpeting, etc.
- ✓ Since the whole world is affected by COVID-19 so the prevention systems should be globally and all crises should be tackled globally.
- ✓ We should follow 'prevention is better than cure' strategy always.

## VII. Conclusion

Prevention is better than cure. Since, there is limited epidemiological and clinical information regarding COVID-19 and its risk factors for infection. So, according to Islamic and scientific rules during such communicable disease, everyone in the country must stay home and should not go outside expect any essential work. If the world is failing to prevent this pandemic, then it will be the deadliest crisis after WW2. Bangladesh should have been done lockdown earlier to prevent spreading novel coronavirus disease 2019. Because of the high population density the risk factors of spreading the virus are more here. There are five (5) ways to help prevent the spread of COVID-19 out; (a) wash your hands regularly with soap and water for 20 seconds or use an alcohol-based hand sanitizer, (b) cough or sneeze into your elbow or a tissue, throw it in the bin and wash your hands properly, (c) avoid touching your eyes, nose, and mouth without washing your hands first, (d) try to stay at least one (1) to two (2) meters away from other people, and (e) if you feel unwell, stay at home (ECDC, 2020). No achievement is possible against such type of outbreak without the help of the people of a country.

## ACRONYMS

Some acronyms have been used in this study which given below;

a2i – Access to Information

AD – Anno Domini (Latin Word)

ADB – Asian Development Bank

AIDS – Acquired Immune Deficiency Syndrome

AFP – Agence France-Presse

BDT – Bangladesh Time  
BGMEA – Bangladesh Garment Manufacturers and Exporters Association  
BPSC – Bangladesh Public Service Commission  
BSS – Bangladesh Sangbad Sangstha (National News Agency of Bangladesh)  
CDCP – Communicable Disease Control and Protection  
CDTR – Communicable Disease Threats Report  
CCDC – Chinese Center for Disease Control and Prevention  
CDC – Centers for Disease Control and Prevention  
COPD – Chronic Obstructive Pulmonary Disease  
COVID-19 – Coronavirus Disease 2019  
DGHS – Directorate General of Health Services  
DSCC – Dhaka South City Corporation  
EC – Election Commission  
ECDC – European Centre for Disease Prevention and Control  
EEA – European Environment Agency  
ERD – Economic Relations Division  
ESA – European Space Agency  
EVD – Ebola Virus Disease  
GDP – Gross Domestic Product  
HIV – Human Immunodeficiency Virus  
IEDCR – Institute of Epidemiology, Disease Control and Research  
IHR – International Health Regulations  
IVR – Interactive Voice Response  
KMC – Kolkata Municipal Corporation  
MCI – Meena Communication Initiative  
MERS-CoV – Middle East Respiratory Syndrome Coronavirus  
NASA – National Aeronautics and Space Administration  
NO<sub>2</sub> – Nitrogen Dioxide (Chemical Formula)  
PHEIC – Public Health Emergency of International Concern  
PPE – Personal Protective Equipment  
SARS-CoV – Severe Acute Respiratory Syndrome Coronavirus  
S&P – Standard and Poor  
UN – United Nations  
UNESCO – United Nations Educational, Scientific and Cultural Organization  
UNICEF – United Nations International Children's Emergency Fund  
US – United States  
WB – World Bank  
WFP – World Food Programme  
WHO – World Health Organization  
WW2 – Second World War

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