

## Letter to the Editor

# Novel Coronavirus Disease (COVID-19): World's Past Experience on Deadly Outbreaks

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Coronaviruses are a large family of viruses that cause a wide range of illness from the common cold to more severe diseases (Middle East Respiratory Syndrome-MERS and Severe Acute Respiratory Syndrome-SARS). Several known coronaviruses are circulating in animals that have not yet infected humans.<sup>[1]</sup>

Since December 2019, novel coronavirus (COVID-19) disease outbreak caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)<sup>[2]</sup> stressed billions of peoples around the world. The outbreak was initially originated from Wuhan, Hubei province of China with the specific animal source remaining unknown<sup>[3]</sup> and spread throughout the world within a short period of time.<sup>[4]</sup> The World Health Organization (WHO) named it as 2019 novel coronavirus (COVID-19) on 29 December 2019 to refer to it affects lower respiratory tract of pneumonia patients.<sup>[5–7]</sup>

In recent Coronavirus outbreak history, during its global outbreak in 2002/2003, it have been reported by World Health Organization that catastrophic disease resulted in more than 8400 confirmed cases and 774 mortality.<sup>[8]</sup> Even though this pandemic has been controlled, there are concerns over the recurrences ([http://www.who.int/csr/don/2004\\_04\\_23/en/](http://www.who.int/csr/don/2004_04_23/en/)). This new emerging outbreak (COVID-19) is taking superior dissemination and mortality rate over the previous SARS outbreaks. As soon as the out-

break, scientists started to research the source of the new coronavirus, and the research team led by Prof. Yong-Zhen Zhang published the first genome of COVID-19 on 10 January 2020.<sup>[9]</sup> With a high level of human mobility among Chinese people (Chinese New Year), the virus spread quickly throughout China within one month and then distributed to other parts of the world.

Accordingly, on 11th March 2020, WHO declared this outbreak as pandemic<sup>[10]</sup> and as of April 27 (4:00 UST+3), 2020, there are about 3.012.389 COVID-19 confirmed cases (1.916.431 active and 57.540 critical cases) confirmed cases with 207.073 death and 888.073 recoveries (Table 1). This showed the pandemics and infection rate is synergistically increasing through time. Thus, the world is in a great war of life sustainability and the people are getting in psychological crisis for being uncertain on that the pandemic may not calm unless it killed many millions of people in the world. In a study by United Nations in collaboration with King College, London and National University of Australia, it is estimated that about 400–600 million peoples may fall under absolute poverty and economic crisis due to COVID-19 pandemics. This will be the first poverty level record ever existed after 30 years. Even after end of the pandemics, the study estimated about half of the world population might be under poverty. The estimation reveals about 40% will be

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**Table 1.** Case reports of Coronavirus disease in the world as of April 27, 2020

S. No	Date 2020	Total COVID-19 Cases	Total COVID-19 Deaths
1	Jan 22	580	17
2	Jan 27	4.581	106
3	Feb 01	14.553	304
4	Feb 06	31.439	638
5	Feb 11	45.134	1.115
6	Feb 15	69.197	1.669
7	Feb 21	77.673	2.360
8	Feb 26	81.820	2.800
9	Mar 02	90.443	3.117
10	Mar 07	106.099	3.599
11	Mar 12	134.509	4.981
12	Mar 17	198.161	7.979
13	Mar 22	337.612	14.640
14	Mar 27	597.044	27.345
15	April 01	936.851	47.210
16	April 06	1.349.051	74.678
17	April 11	1.779.222	108.766
18	April 12	1.812.365	114.196
20	April 22	2.697.316	188.857
21	April 27	3.012.389	207.073

to the Pacific and East Asia, and one third will be on Sub Sahara and South Asian countries.

Therefore, this letter is an attempt to explore and evaluate the health and economic risk posed by COVID-19 against global population. The authors have also tried to throw some light on latest statistics of this pandemic as well as the world historical experience on different deadly outbreaks.

### World's Past Experience on Deadly Outbreaks

Disease and illness overwhelmed the health of human beings since ancient times. Widespread trade exchange and community interaction opportunities have increased the chance of epidemicity and disease pandemic. Through time there were different epidemic and pandemic disease outbreaks and have killed many millions of people around the world.<sup>[11]</sup> To date, with more civilized human of larger cities, high volume trade exchange, and increased contact with different populations of people, animal and ecosystems likely speed up the chance of pandemics to occur. In history there were various disease outbreaks and here below are listed the most deadly pandemics ever occurred over time (Table 2).

**Table 2.** Most historical deadly pandemics events

S. No	Name of Outbreak	Year of Outbreak	Source of Origin/Country	Pre/Human Host	No of Deaths
1	Antonine Plague	165-180 AD	Rome	Either Small Pox or Measles	5 Million <sup>[12]</sup>
2	Plague of Justinian	541-542 AD	Egypt	Yersinia pestis bacteria/Rats, fleas	30-50 Million <sup>[13]</sup>
3	Japanese Smallpox Epidemic	735-737	Dazaifu, Fukuoka, Japan	Variola major virus	1 Million <sup>[14, 15]</sup>
4	Black death	1346-1353	Central and East Asia,	Yersinia pestis bacteria/Rats, fleas	200 Million <sup>[16]</sup>
5	New World Small Pox Outbreak	1520-onwards	Tenochtitlan, present Mexico	Variola major virus	56 million <sup>[17]</sup>
6	Italian Plague	1629-1631	Italy	Yersinia pestis bacteria/Rats, fleas	1 Million <sup>[18, 19]</sup>
7	Great Plague of London	1665-1666	England	Yersinia pestis bacteria/Rats, fleas	100.000 <sup>[20]</sup>
8	Cholera Pandemic 1-6	1817-1923	Jessore, India	Cholera/Bacteria	>1 Million <sup>[21]</sup>
9	Third Plague	1885	Yunnan, China	Yersinia pestis bacteria/Rats, fleas	>12 Million <sup>[22]</sup>
10	Yellow Fever	Late 1800s	USA, Spain	Virus/Mosquitoes	100.000-150.000 <sup>[23]</sup>
11	Russian Flu	1889-1890	Russia (Former Soviet)	H2N2 Virus/Avian	1 Million <sup>[24]</sup>
12	Spanish Flu	1918-1920	Controversial origin	H1N1 Virus/Pig	40-50 Million <sup>[25]</sup>
13	Asian Flu	1957-1958	East Asia, China	H2N2 Virus	1.1 Million <sup>[26]</sup>
14	Hong Kong Flu	1968-1970	Hong Kong, China	H3N2 Virus	1 Million <sup>[27]</sup>
15	HIV/AIDS	1981-Present	West Africa	Virus/Chimpanzee	25-35 Million <sup>[28]</sup>
16	Swine Flu	2009-2010	Mexico	H1N1 Virus/Pig	151.700-575.400 <sup>[29]</sup>
17	SARS	2002-2004	Guangdong, China	Coronavirus/ Bat, Civets	774 <sup>[8, 30]</sup>
18	Ebola	2014-2016	West Africa, Guinea	Ebolavirus/Wild animals	11.325 <sup>[31]</sup>
19	MERS	2015-Present	Korea Republic (South)	Coronavirus/Bat, Camel	850 <sup>[32]</sup>
20	COVID-19	2019-	Wuhan, China	Coronavirus/ Unknown	207.073 Until 27/04/2020 <sup>[33]</sup>

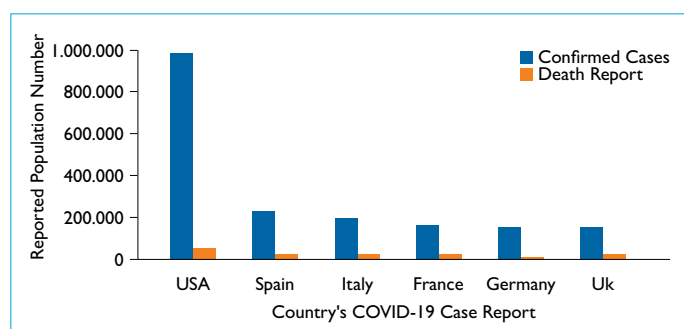
Bacterial disease outbreak (1346-1353) named Black Death which had been killed more than 200 Million peoples was recorded as the most deadly pandemic in history. From the outbreak history, it is understood that even if the pandemic might be controlled, there were some chances of recurrences and persist over time. The current outbreak of COVID-19 is also going in a faster rate of increment and it has infected more than 3 Million and killed more than 200,000 people within four months in 210 countries. The number is changing day to day. The historic outbreaks have highly devastated the life and economy of many peoples. It was noted that, even if pandemic, most outbreaks were not covering the whole world like COVID-19. Thus, if it continues by this speed, COVID-19 will be the craziest deadly outbreak in history touching every continent, country, society and family.

### Epidemiology of COVID-19

As of April 27, 2020, COVID-19 cases are reported by more than 210 countries. Initially, the first four cases of an acute respiratory syndrome with unknown etiologic agent were reported in Wuhan, Hubei Province, China on 29 December 2019.<sup>[5]</sup> Within one month as of 31 January 2020, about 11,791 cases were confirmed and 17,988 cases were suspected in 34 provinces of China.<sup>[34]</sup> The spread of COVID-19 was relatively quick and countries like Australia, Canada, Cambodia, France, Finland, Germany, India, Italy, Japan, Nepal, Malaysia, the Philippines, the Republic of Korea, Singapore, Sri Lanka, Thailand, United States of America, United Arab Emirates and Vietnam sooner reported COVID-19 confirmed cases outside China.<sup>[35]</sup> Now the pandemic affects more than 210 countries throughout the globe exceeding 3 million confirmed cases and the problem is more likely higher in USA, Spain, Italy, France, Germany and UK, which reported huge number of confirmed and dead cases (Fig. 1).

### Economic impact of COVID-19

According to the United Nations Tuesday March 17, 2020 report, apart from tragic human consequences, COVID-19 has sparked the world economy and it will lose about \$ 1trillion in 2020.<sup>[36]</sup> Similarly, in other report on April 3 Friday by Asian Development Bank, the globe will lose with a range of 2.3%-4.8% which is estimated \$4.1 trillion.



**Figure 1.** Top six COVID-19 Pandemic Countries as of April 27, 2020.

Due to COVID-19 pandemic, the world economy is just becoming in a pendulum motion. According to the study by global auditing firm McKinsey and Company's experts, Africa's economy could experience about \$90 billion-\$200 billion loss in 2020. The study noted the losses are caused mostly from cuts from private spending and widespread travel bans in Africa, supply chain disruptions, lowered demand for continent's non-oil exports, and delays or cancellations of foreign investment. The report argued rough of 15% is due to oil price effects. This is also becoming the global economic problem in multidirectional prospects. Moreover, since the import export exchange lines are highly limited or stopped, most African countries will experience economic disturbance and to deem this the study suggests an organizing framework for action. So, to mitigate the impact, African governments and development partners should explore several far reaching solutions such as stimulus packaging or economic development plans modelled on the Marshall Plans that provided aid to Europe following World War II. The study also recommends the African Solidarity Fund to allow the businesses and individuals to contribute relief efforts for more vulnerable households and business sectors. Moreover, the liquidity fund for private sectors could be established to support businesses and job losses. The governments are also in need to "Common African Platform" to procure medical supplies and equipments. Since, the access of diagnostic equipments determines the number of known infected cases; procurement and supply of medical facilities (self-protective equipments, diagnostic kits, sanitary materials and others) play a crucial role. Even though, the transmission rate to date seems as it is lower in Africa than in Europe and others, the pandemic could take heavy toll across the continent. This is because the only known number is the case confirmed only after an exhaustive examination has been done. Thus, it may be recorded more than the reported worldwide, if the number of examinations were much enough. Therefore, countries across the world shall aggressively work on containment measures and united hands.

### Disclosures

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