



# Coronavirus Disease 2019 (COVID-19): we shall overcome

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Human lives are threatened by the outbreak of the novel Coronavirus Disease 2019 (COVID-19). As of 21 March 2020, COVID-19 has affected more than 267 thousand people across 184 countries (World Health Organization 2020). This new coronavirus disease is declared to be a global pandemic by the World Health Organization. Coronavirus represents a large family of viruses that are responsible for the common cold to various respiratory disorders like middle-east respiratory syndrome (MERS), severe acute respiratory syndrome (SARS), etc. These viruses are transmitted typically between animals and humans. There are many known coronaviruses in animals and have not affected humans. COVID-19 virus, also known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a new strain of the coronavirus and has recently been identified. COVID-19 virus belongs to the Coronaviridae family, order Nidovirales. It contains mainly four structural proteins: spike (S), envelope (E), membrane (M), and nucleocapsid (N). Spike glycoprotein is responsible for virus infection by promoting attachment with the membrane of the host cell. Tang et al. (2020) have identified two dominant viral strains of COVID-19 viruses as L- and S-types, with a 4% genetic difference. They observed that L-type strains, derived from S-type, are more aggressive with a higher transmission rate.

Respiratory droplets are the main mode of transmission of COVID-19 virus from one human to another. The essential advisories to prevent the spread of COVID-19 are maintaining personal hygiene, physical distancing, and respiratory hygiene. The basic reproduction number of COVID-19 virus, a measure of person to person transmission of the disease, is reported to be between 1.4 and 6.5, with an average value of 3.6 (Liu et al. 2020). The basic reproduction number for MERS, H1N1, and Ebola were less than 2.7. In comparison to these past outbreaks, the COVID-19 virus is

highly contagious. The basic reproduction number can be reduced through various containment and mitigation strategies. A significant reduction in the basic reproduction number has been estimated with travel restriction and physical distancing. Various governing bodies across the world are taking different steps to reduce the spread of the virus, especially through increased physical distancing. It is suggested to completely close down factories, offices, educational institutions, and in general, avoid mass gathering of people. Whenever it is not possible to shut down completely, it is advised to operate them with minimum capacity. With the adaptation of the strategy of systematically testing, tracing, and isolating patients, China demonstrated that it is possible to slow down the infection. The spread of the virus was slowed down in Singapore, South Korea, and Hong Kong through similar strategies.

Closure of educational institutions has impacted more than 900 million children and youths worldwide (United Nations Educational, Scientific and Cultural Organization 2020). There are strict restrictions on travel, especially international air travel. It has impacted various other sectors such as entertainment, sports, hospitality, tourism, transportation, manufacturing, and many more as they depend on the integrated supply chain on a global scale. It has a severe impact on the finance and related markets. Global aviation industries are expected to lose more than 100 billion US\$ due to such travel restrictions (Doherty 2020). The overall impact on the world economy is expected to be much more. Yu and Aviso (2020) proposed a framework to estimate the direct and indirect effects of COVID-19.

Today, these actions and restrictions are playing havoc, drastically changing social behaviors, economic activities, and environmental issues. COVID-19 virus has posed a severe health problem, and that translated to a severe financial crisis in the interconnected world. On the other hand, these restrictions have brought in a significant drop in air pollution in many regions, especially the emissions of nitrogen dioxide and carbon dioxide (McMahon 2020). It is too early to predict anything on a larger time scale. Substantial economic loss on one hand of the scale and the

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improvement in air quality, on the other, may significantly impact the future course of action and overall sustainability of this world. We may adopt to it and proceed for a better future. Or, we may rebound very strongly with more pollution to gain the lost ground. It is difficult to predict now.

The outbreak has impacted every one of us. The black swan that we are witnessing right in front of our eyes has affected our lives in multiple ways. During this challenging period, the entire team of CTEP prays for your good health and safety. We sincerely hope that the crisis be over soon without much loss of human life and guide us towards a better future.

“Deep in my heart, I do believe; we shall overcome  
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