

# The COVID-19 Pandemic:

## How it reinforced the importance of Primary Prevention

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The Covid-19 pandemic, caused by SARS-CoV-2, the most recently identified strain of the coronavirus, had its index case reported in Wuhan, China in December 2019. Symptoms of SARS-CoV-2 range from mild discomfort to more grievous symptoms such as breathing difficulties, cough, fatigue, fever, loss of taste and smell.

The pathophysiology behind breathing difficulties has been identified as Acute Respiratory Distress Syndrome (ARDS), caused by a multitude of cascading factors such as cytokine storm and hypercoagulability leading to multiple organ failure and septic shock. The transmission of the virus is mainly through the aerosol spread and less often through fomites.

Primary prevention according to the CDC (Centres for Disease Control and prevention), refers to intervening before health effects occur, through measures such as vaccinations, altering risky behaviours (poor eating habits, tobacco use) and banning substances known to be associated with a disease or health condition.

The World Health organisation in January 2020, after confirming the spread of SARS-CoV-2 via human-to-human contact, released an advisory document relating to measures of primary prevention, to help curb the spread of the Coronavirus. These included measures such as wearing masks, hand hygiene, social distancing and etiquette regarding coughing and sneezing.

Primary prevention has recently gained much traction in healthcare. In terms of chronic conditions such as diabetes mellitus and hypertension, primary and primordial prevention, not only help in identifying those at risk and implementing changes to one's lifestyle (such as increased physical exercise and changes to a diet with lower glycemic index) but such measures also help to eliminate the dire complications of such chronic lifestyle diseases, such as diabetic ulcers, strokes, nephropathies and retinopathies.

While the role of primary prevention in terms of chronic conditions has been well established, the emergence of the Covid-19 pandemic demonstrated that primary prevention in terms of an acute outbreak, such as a pandemic, is not implemented in many countries as well as we would have expected. To highlight the importance of primary prevention, let us look at some statistics put together by a review article "A Home Toolkit for Primary Prevention of Influenza by Individuals and Families" published in 2011. This article compares different methods of primary prevention and compares their efficacy when dealing with airborne viruses.

- According to the above mentioned article, diligent washing and hand sanitizing can reduce infections by 20%-95%. Furthermore, a 95% ethanol-based rub was shown to reduce the influenza virus to undetectable levels after 30 seconds of use.
- The study also emphasizes the importance of good ventilation in hospitals. High-efficiency particulate air (HEPA) filters, typically costing \$100, work in most homes and can remove nearly 98% of particles >0.3 µm. A more affordable solution, such as facing a fan outside the window in rooms with influenza patients was also found to be effective, creating negative pressure and thereby transporting the air from the room towards the outside, a principle that is being increasingly used in infective disease wards, for respiratory conditions in the UK.
- A hospital study found 2% and 19% rates of influenza in 2 similar buildings with and without UV lights. The effectiveness doubles when there is a continuous source of cold air at the ceiling, which sinks as warmer air rises and thus increases air circulation and hence creates greater exposure to the UV light. A ceiling fan can help facilitate this.

The fact that this information was available to us in 2011, which could have helped curb the rise of coronavirus cases, not only amongst the general public but also among healthcare workers in hospitals, leads one to the conclusion that an important pillar of primary prevention is also health education. The ongoing pandemic will always be known as one that was plagued by misinformation at all levels. Confusion regarding mask usage and the types of masks to be used was rampant. In some cases, misinformation led to worse consequences. One such example is of a couple who self-medicated with Chloroquine Phosphate, after the endorsement of Hydroxychloroquine by political figures. Within 30 minutes of ingestion, the couple started experiencing unpleasant side effects, eventually leading to the man's death. Such examples lead us to believe that health information and its responsible propagation to the masses should be the cornerstone of primary prevention.

In July 2020, the director of the CDC, Dr Robert Redfield famously claimed that if everyone in the United States wore a mask, they could have the situation under control in 4-8 weeks. While some saw this claim as a conjecture, a computer scientist by the name of De Kai, from UC Berkeley, developed a computer-based simulation that helps to compare infection rates between populations that largely wore masks and populations that had reduced mask usage.