



Fight against Viruses (COVID-19): Peace among Nations

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Novel coronavirus disease named covid-19 is an infectious disease first identified in Wuhan in the People's Republic of China, and caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (1).

So far (Date of writing this article), according to WHO statistics, more than 1,282,931 cases have been reported in more than 211 countries, 72,774 of which have resulted in deaths. Percentage of reported deaths per number of reported confirmed cases are in France (14.28%), followed by Italy (12.72%), the UK (12.25%), Spain (9.99%), Iran (6.20%), China (4.02%), the US (3.44%), and Germany (2.09%) (2).

The average age of the patients was 59 years. The mortality and morbidity rate of COVID-19 were higher among the elderly and people with pre-existing health conditions such as heart disease, respiratory problems, asthma, and immune deficiency (3).

Blood group A is more at higher risk for the infection with SARS-CoV-2 whereas blood group O was associated with a lower risk compared with other blood groups (4).

It was initially reported that there were no cases of children under 15 years of age, but afterwards in several countries such as Iran and the United States, both confirmed a few affected cases and deaths were reported under 15 years (5).

Among patients, men compared with women accounted for 58% of all cases with COVID-19,

and more likely to die than women which includes 72% of deaths. As it was also reported in severe acute respiratory syndrome (SARS), the mortality rate for males was 21.9%, which was higher than the mortality rate for females of 13.2% (6). This may be due to the higher rate of smoking in men, which primes them for inflammation because of lung disease and reducing lung capacity (7). Besides, women have a higher life expectancy than men.

Hormonal and sex-based differences suspected to play a key role in immune response. A mouse model study also reported severe acute respiratory syndrome in male mice compared with female mice. The death rates of female mice rose up when their ovaries were removed and this theory reinforced the protective aspect of estrogen in female in response to the ravages of coronaviruses (8).

Immune system may react more efficiently to this novel virus in women than in men. In general, males generate less robust immune responses and are more susceptible to various infections. At the cell level, the first difference is the numerical difference of the X chromosome between female and male because the X chromosome governs many of the immune system responses (9).

The symptoms of the disease, recovery and the long-term consequences of this disease will probably follow the Precision medicine. According to genetic analysis of SARS-CoV-2, it was reported

that the angiotensin-converting enzyme-2 is the receptor for both the SARS-coronavirus and the human respiratory coronavirus. This study also suggests a higher expression of ACE2 gene in Asian men. But among different populations the expression of ACE2 is different (10). So biologists have high hopes for treating the coronavirus disease by blocking these receptors (11).

Awareness and Consideration

- Altogether, after decades of declining infectious diseases and increasing risk of NCD (non-communicable diseases), we are again facing a serious re-emergence of infectious diseases.
- In general, the influx of viruses in different variations will continue every year.
- The human population is growing and their requirement for food products is increasing. Therefore, it is probable that humans are responsible for the infection and spread of certain viruses by contacting and using different animals in their dietary habits.
- The presence of these viruses in the lives of people around the world will have a great impact on the lifestyle, life pattern and food habit of humans.
- No other disease, epidemic or pandemic in the world has caused such a challenge, economic and social disruption.
- The devastating effects of the virus on the world economy will be more than billions of dollars, and will particularly affect the health economics. People are witnessing the shift in market supply and demand methods from traditional trade to E-commerce (electronic commerce).
- Many current businesses have been damaged and some newfound businesses have emerged. Also, the disequilibrium in the economic condition and unemployment has increased domestic violence.

- The disruption of economic relations between governments may also lead to conflicts between countries.
- On the other hand, in terms of civic, many ethical values are evident in human behavior.
- The mortality rate index, in addition to doubting the accuracy of the COVID-19 diagnosis, shows the social order, the closeness and obedience of the people to government laws about quarantine and adherence to health principles, and Health literacy in different societies.
- Factors such as extent of areas, population density, being on communication routes and economic centers, the presence and influx of war refugees are very effective in transmitting the disease.
- The introduction of new technologies such as nanotechnology and artificial intelligence can be helpful in managing and controlling of COVID-19.
- The resilience and adaptability of people and governments in the fight against viruses is also effective in controlling, diagnosing and treating these diseases.

Conflict of interest

The authors declare that there is no conflict of interests

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