



Editorial

Why are Indians having lower incidence of infections and deaths due to the COVID-19 virus?

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COVID-19 pandemic has penetrated more than 190 countries globally.^[1,2] At the time of writing this manuscript, the worldwide figures are 621,592 cases and 28,669 deaths. Total deaths in Italy are 3 times that of China. New deaths in the past 24 h are in triple digits in Spain and the UK, whereas the total deaths in India (since the beginning of the pandemic) are less than 25. The USA has maximum cases at 105,161 [Table 1].

India and Italy documented their first case of COVID-19 positivity on the same day – January 29, 2020.^[2] However, so far, we have been having a gentler trajectory, lower incidence of COVID-19 positivity, and better chance of survival among those infected as compared to the Western world.^[3]

For any infection, there are three “stakeholders” – the infective agent, the human host, and the environment, in which it can proliferate outside the host. A symbiotic relationship that balances these in favor of the infective agent will allow it to spread and create havoc. The medical services of several countries have been overrun by this pandemic and there are ample visuals circulating on social media of how the health-care infrastructure as well as personnel has been swamped by the COVID-19 tsunami.

So why is fate apparently smiling on us? Why has India been fortunate so far?^[4]

1. The virus (infective agent) is COVID-19 (also called SARS-CoV-2). Past experience indicates that such viruses undergo rapid mutation and several variants are generally circulated in different geographical regions. At least two strains have been reported from China^[5]

Researchers from Translational Bioinformatics Group and International Center for Genetic Engineering and Biotechnology in collaboration with the Department of Biochemistry, Jamia Hamdard, New Delhi, studied the viral genome using integrated sequence-based analysis. Samples from India, Italy, Nepal, China, and the USA were studied. Not surprisingly, all of them had 99% similarity. The novel mutation in the Indian COVID-19 genome was in the region coding for the spike surface glycoprotein.

Their hypothesis was that host miRNAs (microRNA) might confer some protection (especially hsa-miR-27b).^[6]

2. The human host in the COVID-19 pandemic seems to behave differently in various geographies (with respect to incidence and mortality). While China reported an overall mortality of 5.8% among their infected patients in Wuhan region, it was significantly lower (1.525) for South Korea (which did extensive testing) and 10.55% in Italy, the highest figure so far.^[1,2] Some of these differences could be attributed to the criteria used to report COVID-19

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Table 1: COVID-19 status in select countries as on March 27, 2020.

S. No.	Country	COVID-19 positive cases	COVID-19 deaths
1.	Worldwide	614,136	28,251
2.	China	81,394	3295
3.	Italy	86,498	9134
4.	USA	105,006	1715
5.	India	918	19

deaths (some countries do not report death due to COVID-19 if the patient had any other comorbidities)

The mortality with COVID-19 virus is highest for older patients and those with pre-existing cancer. Children seem to be spared all over the world.

If the lower mortality in India (and Asian countries in general) is really true, could it be because of differences in adaptive immunity between developing countries and the Western world?

We have earlier suggested that viral RNA associated with malaria plasmodium may have sensitized the immune system in people living in malaria endemic areas.^[7] This may have conferred protection due to pre-existing immunity, which protects significant number of people in countries like India from serious consequences of COVID-19 exposure.

Indians are exposed to infective antigens early in life. Potential benefits of such exposure, as published in the past, include better gut microbiota, less autoimmune diseases, and lower incidence of pediatric acute lymphoblastic leukemia.^[8]

It has also been reported that Indians have larger number of NK cells which help in fighting infections quickly.^[9]

A study is ongoing to document the effect of BCG vaccination in mitigating the effect of COVID-19 exposure.^[10]

Obviously, this study is based some evidence that suggests the potential benefit of the BCG vaccine – which is given to all Indians at birth. This could also serve to protect Indians through the T cell-mediated immunity pathway.

3. The environment is highly variable across the vast expanse of India. At one end, we have hot deserts where the summer temperature can be as high as 50°C and at the other end of the spectrum is Drass which recorded the second lowest temperature of any inhabited place on earth at -40°C.^[11]

The “Global Virus Network” says that COVID-19 requires a temperature range of 5–11°C to propagate.^[12]

If this is true, the ambient temperature in most parts of our country should be sufficient to counter the pandemic and result in lower incidence of infections and deaths due to the ongoing pandemic.

Only time will tell, whether the above factors are sufficiently strong to protect the majority of Indians during the ongoing COVID-19 pandemic.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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