Lockdown—the only solution to defeat COVID-19

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Sir/Ma'am,

An outbreak of COVID-19 caused by the zoonotic 2019 novel coronavirus (SARS-CoV2) has been declared a *pandemic* by the WHO [1]. It is well known that mortality associated with this condition is high among patients with diabetes mellitus.

As it is a new strain of coronavirus and little is known about its behaviour except its potential for transmission while being asymptomatic during an incubation period of up to 14 days and its sensitivity to heat, Sophie Bushwick, technology editor at *Scientific American*, a science magazine, stated on 20 March 2020 that asymptomatic people with COVID-19 have a higher viral load. (<https://www.sciencefriday.com/articles/covid-19-questions-answers/>) One infected person (even asymptomatic) can transmit the disease to more than 400 patients in 30 days. Because it is transmitted from host to host, keeping it away from a host will cause its own death (decay). This can be achieved through a lockdown.

A lockdown period depends upon the virus' faster decay rate which is directly related to the melting point of the outer protective lipid bilayers of SARS-CoV2.

According to virologist Thomas Pietschmann, the lipid layer of SARS-CoV2 is not heat resistant unlike that of other viruses, so it is quickly broken down when the temperature rises [2]. Results of a scientific data model indicate that there was a negative correlation in the predicted number of cases with temperatures from 1 °C and above (Fig. 1). An increase in the average temperature from 1 to 9 °C was associated with a decrease in predicted cases from 24 to 19. Similarly, an increase in the average

temperature from 10 to 19 °C was associated with a decrease from 18 to 7 cases [3].

SARS-CoV2 is highly stable at 4 °C, but is sensitive to heat. At 4 °C, there was only a 0.7 log-unit reduction of infectious titres on day 14. With the incubation temperature increased to 70 °C, the time for virus inactivation was reduced to 5 min [4]. For most animals, the melting point of lipids is between 20 and 40 °C. In the case of SARS-CoV2 being zoonotic, it is presumed that the melting point of its lipid layer should be around 40 °C, resulting in its faster decay during the summer.

Outside a host, it is as good as non-existent. Because coronavirus is transmitted from host to host only, keeping it away from a host for longer than its incubation period through a lockdown can cause its own death and defeat COVID-19.

A 50% drop in the transmission doubling rate from 3 to 6.2 days in one week which was recently reported in India is an appropriate yardstick to judge the effectiveness of a lockdown. Many districts in India have become totally COVID free after a lockdown.

A lockdown is the only option to defeat COVID-19.

Fig. 1 Predicted number of cases of COVID-19 by sample report from 47 countries as a function of the average temperature during the period from the first reported case until 29 February 2020. The grey area represents the 95% confidence interval of the predicted values

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