

SARS-CoV-2 infection and herd immunity: A public health perspective

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The majority of the global population has been affected by the covid-19, which started in the Wuhan province of China in December 2019. Since then the local epidemic has evolved into a rapidly spreading pandemic affecting multiple countries all over the globe. There have been many attempts by researchers all over the world to define the exact strategy to contain the covid-19 spread. The fact is we know several things but have some major gaps in the knowledge.¹ When covid-19 started spreading within the population without any resistance, virtually nobody was immune to this novel virus. One question that was mostly discussed within the researchers was how much it would cost us to create immunity in the population against this viral spread. Another most discussed part was how can we get to that point?² When the majority of Asian nations like India, China, and Pakistan were closing down schools, universities, and business hubs to adapting entire lockdown strategies. European countries like the United Kingdom, France, and Italy were of the view to adapt an alternating strategy to tackle the covid-19 pandemic. The strategy was to allow the causal virus SARS-CoV-2 to spread in the community to achieve what we call Herd immunity.³ Simply herd immunity is when the majority of the people are immune to any infectious disease, a kind of protection is provided to those who are not immune.² Research studies from China and other parts of the world reported high mortality among older populations and those with co-morbid conditions. Protecting the high-risk population and adapting a novel strategy of Herd immunity was soon called off by European nations as they suffered the majority of deaths in higher age groups.

The concept of herd immunity came from other infectious diseases like measles, mumps, poliomyelitis, and chickenpox which were much common in older times. But with the introduction of vaccines for such infectious diseases, herd immunity played an important role in limiting such diseases all over the globe. We often

report outbreaks of infectious diseases like measles whenever there are higher dropouts or left-outs. For infectious diseases which have no vaccine available, natural infection with the infectious agent may provide a kind of immunity. The main point of discussion here is how much the population needs to get infected before they could provide herd immunity to others. In the United Kingdom, Vallance suggested that 60% of the population must get infected to achieve a safety status of herd immunity but at the cost of more than an estimated 3 lac deaths.¹ This proposal was soon turned down. Getting over with the SARS-Cov-2 infection is not a good idea as the disease carries a much higher risk of severity and death. The current mortality rate for SARS-CoV-2 infection is unknown but reports suggest that it is 10 times higher than seasonal flu.²

Herd immunity can be achieved either through natural infection or through mass vaccination. To achieve such a state, a large proportion of the population needs to get immune to SARS-CoV-2. One important piece of information is that many who have the infection are either asymptomatic or show milder symptoms. This is because of the possibility of partial immunity provided by cross-reactivity of antibodies from other seasonal coronavirus infections.⁴

At this point, we must focus on only one thing, that's prevention. That prevention can be achieved by either by perform physical distancing or enact other measures like hand washing and cough etiquettes. Developing an effective vaccine against SARS-CoV-2 and that too for all age groups including immune-compromised and pregnant women is a challenge for those trying to make a vaccine. Trials have begun but reports suggest it may take a year to have those for effective use. Until that time, there might be explosive outbreaks of SARS-CoV-2 infections among those who have remained unaffected. This may overwhelm our health care system and may lead to higher mortality. The physical distancing strategy

needs to be more stringent until a vaccine arrives; as life will not be normal as before if we take risk of infecting millions of people with SARS-CoV-2 infection for establishing herd immunity.

Conflict of Interest

None.

References

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