The New Indian Express
Chennai, 10 February 2021

While we have reason to be optimistic that Covid will continue to decline in India, we shouldn't be beguiled into the belief that nationwide herd immunity has already arrived

ANTIBODY SURVEYS DO NOT SIGNAL END OF PANDEMIC

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Since July 2020, there have been predictions of imminent herd immunity ending the Covid-19 epidemic in India. After cases and daily death counts declined from September, it appeared that India was ready to see the pandemic fade away. Scattered serological surveys of high exposure zones in some cities were cited as proof of galloping herd immunity, even though reports from the Indian Council of Medical Research (ICMR) national survey, conducted in August-September 2020, revealed a prevalence of only 7.1% in August 2020.

I have consistently maintained, even after the decline from September, that India had not reached herd immunity. Data from the latest national antibody survey released by the ICMR on 4 February 2021 bear this out. This survey, conducted from 17 December 2020 to 8 January 2021 in 70 districts from 21 states, revealed a seroprevalence of 21.4% among adults and 25.3% among children. This is not close to a herd immunity threshold.

The ICMR survey reported seroprevalence of 31.7% in urban slums, 26.2% in non-slum urban population and 19.1% in the rural sample. A separate citywide survey in Delhi, conducted from January 15 to 23, reported an antibody prevalence of 56.3%. A study in Karnataka (June-August 2020) reported a statewide prevalence of 46.7%, while another survey conducted in September 2020 showed a prevalence of 27.3%. Based on all surveys thus far, there is no region in the country that can be deemed to have attained herd immunity, though some urban pockets may have crossed a 60% positivity rate by now.

It is not correct to characterise India as a homogenous country that simultaneously attains herd immunity all across its vast geography and huge population. There are differences between urban and rural areas, slums and non-slums, well developed districts and less developed districts, which lead to different levels of exposure to the virus. Southern and western Indian states, for example, are better developed than eastern and central Indian states. These differences were also reflected in the Covid-19 infection rates.

States and districts that have more airports, regularly record more international and domestic flights, have more rail services, better roads and road transport are also those where the higher crowd density of advanced urbanisation and increased population mobility of economic development offered the virus a greater opportunity to spread. Less developed regions of the country have had lower levels of viral exposure.

Virus transmission is slower in rural areas because of several reasons. The crowd density is less. Houses are mostly well ventilated. People work in open farms. Airflow is unimpeded by high-rise buildings. People commute less within and out of the village. Comorbidities are also lower than in urban areas, with less risk of serious disease that transmits more. While non-specific immunity may be higher in rural areas because of greater past exposure to infectious diseases, this is speculative. Diets in rural areas are possibly more conducive to immunity-promoting gut bacteria (microbiome) than urban diets that are high in ultra-processed foods.

We do not know the herd immunity threshold of this virus. The experience of Manaus in Brazil reveals that even a seropositivity rate of 76% had not conferred herd immunity and the epidemic is still raging there. Non-immune persons, residing in areas where a large number have become immune, may remain protected only as long they remain within that community; they would be vulnerable if they travel to another area with ongoing transmission and a large cordon of immune persons is unavailable to block the virus.

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Why is India seeing a steady decline in cases and deaths? It is possible that the transmission slowed in urban areas due to adoption of masks, physical distancing, school closures and more people working from home. The spread in rural areas is slow due to lower crowd density, less mobility and better ventilation. Around 90% of India's workforce is in the informal or unorganised sector. Many of them do not work in closed spaces. Infections in outdoor environments carry lower viral loads, explaining the large number of asymptomatic persons detected on serosurveillance.

The younger age of the population makes for less severe disease among infected persons. Only 6% of India's population is above 65 years of age, while Italy (23%), Spain (20%) and the US (16%) have much older populations. Indonesia, also at 6% in this age range, has lower deaths per million than us.

Interestingly, we have not seen super-spreader effects of large gatherings in the past three months. By Deepavali, transmission appears to have slowed down since many susceptible persons among the exposed were already infected and Covid-appropriate behaviours became more commonly practiced, protecting other susceptible persons. Events like farmers' gatherings and Kumbh Mela are natural experiments that need to be studied to understand the altered transmission dynamics of the virus. We do not have a full explanation for all the trends. We have reason to be optimistic that the pandemic will continue to decline in India and herd immunity will eventually result from a combination of natural infection and immunisation. But we should not be beguiled into the belief that countrywide herd immunity has already arrived and let our guard down.

(Dr Reddy is the author of 'Make Health in India: Reaching a Billion Plus'. Views are personal)

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