

# COVID-19 puts 'hygiene hypothesis' to test

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A town pool in Bihar, which is used for bathing, laundry, and for other domestic uses. The new study associates low COVID-19 mortality rate with poor access to water, sanitation, and hygiene. Credit: Melissa Cooperman/IFPRI (<https://www.flickr.com/photos/ifpri/34989936695/in/album-72157684454567045/>) (CC BY-NC-SA 2.0, <https://creativecommons.org/licenses/by-nc-sa/2.0/>)

Indian researchers from the formidable Council of Scientific and Industrial Research (CSIR) and two other institutes have put to test the "hygiene hypothesis" with a study suggesting that areas with high

prevalence of infectious diseases are likely to see fewer COVID-19 deaths.

They cite the fact that Bihar state, notorious for the worst human development indices in this country of 1.3 billion people, have so far shown a COVID death rate of 0.5 percent, which is about third of the national average.

Published 19 October in MedRxiv, the study awaits peer review but states boldly: "Paradoxically, better [sanitation](#) leads to poorer 'immune training' and thus could be leading to higher deaths per million."

While several developmental parameters were involved in the study most particularly it found that the poorer the water and sanitation indices, the lower the deaths per million.

That might seem to be a blow for the [hygiene hypothesis](#), which holds that as the incidence of infections decreases in developed and developing countries there is a corresponding rise in allergies and autoimmune diseases.

However, the study hastens to warn against pursuing weak hygiene as a strategy in dealing with COVID-19 or other diseases. "Although we provide a possible explanation based on sanitation practices on the CFR (death rate) differences among economically stronger and weaker countries, this should not be inferred as our advocating a move towards weaker hygiene practices for handling future pandemics."

So, what are the researchers pushing? They are looking at new possibilities for "immune training" and at microbiome therapies that may supplement conventional [hygiene](#) and sanitation practices.

Earlier studies have also suggested that exposure to pathogens boost the

immune system against infections, but this is still to stand up to close scientific scrutiny. Indeed, research in Sub-Saharan Africa, again awaiting [peer-review](#), associates higher COVID-19 [death](#) rates with [poor access](#) to WASH, acronym for Water, Sanitation and Hygiene.

So, anyone seeking comfort in India's situation of poor WASH indices is doomed to disappointment. India has undertaken a drive to eliminate open defecation and other practices that are linked to a high burden of water-borne infections that are linked to stunting and avoidable infections.

A rapid review by a peer, Manu Raj, professor and senior consultant at the Amrita Institute of Medical Sciences and Research Center, Kochi, Kerala, holds that the study has too many assumptions. "I'm sure the second wave will destroy all their conclusions and new assumptions will come into play," Raj tells SciDev.Net.

"The biggest hurdle for such data is that poor countries don't have accuracy for variables that we use in the model. They are just some assumptions while in the rich countries, these are more accurate," says Raj, pointing to "differential reporting of deaths from countries like China, Iran, Russia, Turkey and many Latin American countries."

"The corona scene is highly volatile and most early assumptions are gone," says Raj "So, I would just say, looks interesting but we will have a second look post [second wave](#)."

**More information:** Bithika Chatterjee et al. The mortality due to COVID-19 in different nations is associated with the demographic character of nations and the prevalence of autoimmunity, (2020). [DOI: 10.1101/2020.07.31.20165696](#)

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