

Widely used sanitation programs do not necessarily improve health

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A sanitation program currently being widely implemented in low-income communities in India significantly increases latrine coverage but does not actually improve health, a study involving 100 rural villages, published in *The Lancet Global Health* has found.

The [sanitation](#) intervention delivered under the terms of the Government of India's Total Sanitation Campaign—the world's largest sanitation initiative—provided almost 25 000 individuals in rural India with access to a latrine. However, it did not reduce exposure to faecal pathogens or decrease the occurrence of diarrhoea, parasitic worm infections, or [child malnutrition](#).

"The program is effective in building latrines, but not all households participate", explains lead author Professor Thomas Clasen from Emory University, Atlanta, USA and the London School of Hygiene & Tropical Medicine in the UK. "Moreover, many householders do not always use the latrines. This, combined with continued exposure from poor hygiene, contaminated water, and unsafe disposal of child faeces, may explain the lack of a health impact."

Worldwide, around 2.5 billion people lack access to basic sanitation facilities such as a latrine, a third of whom live in India. Two-thirds of the 1.1 billion people who practice open defecation and a quarter of the 1.5 million who die every year from diarrhoeal diseases caused by poor hygiene and sanitation also live in India.

This cluster randomized trial involved 9480 households (50 951 individuals) in 100 rural villages in Odisha, India with a child younger than 4 years or a pregnant woman. Households in 50 villages were randomly assigned to receive the sanitation intervention in early 2011; control villages received the intervention after a 14-month surveillance period.

The intervention increased the average proportion of households in a village with a latrine from 9% to 63%, compared an increase of 8% to 12% in control villages. However, the researchers found no evidence that the intervention protected against diarrhoea in children younger than 5 years: 7-day prevalence of reported diarrhoea was 8.8% in the intervention group (data from 1919 children) and 9.1% in the control group (1916 children). What is more, the intervention did not reduce the prevalence of parasitic worms that are transmitted via soil and can cause reduced physical growth and impaired cognitive function in children. There was also no impact on child weight or height—measures of nutritional status.

The researchers say that further studies are needed to identify why the [intervention](#) failed to improve health, but suggest a number of possible explanations including insufficient coverage and inconsistent use of latrines, or that a lack of handwashing with soap or animal faeces could also be contributing to the disease burden.

Writing in a linked Comment, Dr Stephen Luby, Research Deputy Director at the Centre for Innovation in Global Health, Stanford University in the USA says, "This rigorous assessment is important, because it provides the best evidence so far for the uncomfortable conclusion that well-funded, professionally delivered sanitation programs, even when they reach coverage levels that are quite commendable for large scale interventions, do not necessarily improve health."

He adds, "This absence of sound data for the health effect of sanitation results in a paucity of evidence to guide decisions about whether to invest scarce funds in the improvement of sanitation. Might communities be healthier if the funds were instead invested in water infrastructure, handwashing promotion, rotavirus vaccine, nutritional supplementation, or improvement of clinical management of diarrhoea with oral rehydration and zinc treatment?"

Provided by Lancet

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