

Analysis finds that WASH interventions are effective at preventing diarrheal disease, saving lives

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Researchers at the Emory Rollins School of Public Health, in collaboration with the WHO, UNICEF, and others, have estimated the

effectiveness of various water, sanitation, and hygiene (WASH)-related interventions on early childhood diarrhea for children in low- and middle-income countries. The work relies heavily on randomized controlled trials led by Emory researchers over the past decade, in a shift from observational studies that form the traditional evidence base in environmental health. It provides the most rigorous assessment to date on the expected reduction in diarrheal disease burden through investing in improvements in WASH infrastructure and programming.

WASH interventions are effective at reducing diarrheal risk, and the review found that interventions supplying either point-of-use filtered water, higher quality water from an improved source on premises, or basic sanitation services with sewer connection provided even greater rates of success at preventing [diarrheal disease](#).

"Diarrheal disease persists as one of the greatest causes of [morbidity](#) and [mortality](#) among young [children](#). Our findings present a compelling case for the role of improving WASH among the world's poorest, though much more work is needed to determine how best to deliver these services to achieve universal access and prevent disease," says Matthew Freeman, Ph.D., MPH, Asa Griggs Candler Professor of Environmental Health.

The systematic review included 124 studies encompassing a range of [intervention](#) types, assessing movement from complete lack of access to basic services and piped water and sewerage. Unlike several previous reviews, this article looked beyond the impact of basic WASH interventions and examined additional WASH methods for preventing diarrhea, including the impacts of providing safe drinking water (either on the premises through filtration systems or at regular and reliable delivery), handwashing with soap and [water](#), and sewage removal or treatment systems. Further, this is the first WASH review to identify the dearth of sex-disaggregated data.

"Only 4% of articles reported how the interventions impacted diarrhea outcomes by sex. Without disaggregated data, understanding if and how impacts of WASH interventions may vary by sex is not possible. By highlighting this data gap, we are hopeful that this high-impact review will motivate a necessary and long-called for change in WASH research reporting," says Bethany Caruso, Ph.D., MPH.

This study is part of a series of articles as part of *The Lancet* Commission on Water, Sanitation, Hygiene, and Health, of which Freeman and Caruso serve as commissioners. Other Emory co-authors included Sydney Hubbard, MPH; Valerie Bauza, Ph.D.; and Thomas Clasen, Ph.D., Rose Salamone Gangarosa Professor of Sanitation and Safe Water.

More information: Jennyfer Wolf et al, Effectiveness of interventions to improve drinking water, sanitation, and handwashing with soap on risk of diarrhoeal disease in children in low-income and middle-income settings: a systematic review and meta-analysis, *The Lancet* (2022). [DOI: 10.1016/S0140-6736\(22\)00937-0](https://doi.org/10.1016/S0140-6736(22)00937-0)

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