

Lack of Handwashing Access: A Widespread Deficiency in the Age of COVID-19

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Along with social distancing, handwashing has been repeatedly advised as a strategy for controlling the spread of SARS-CoV-2, the coronavirus behind the COVID-19 pandemic.^{1,2} A new study in *Environmental Health Perspectives* reports that billions of people lack access to the handwashing resources needed for protection against this and other viruses.³ The most acute shortages are in sub-Saharan Africa, South Asia, and the Caribbean, according to study leader Michael Brauer, a professor at the Institute for Health Metrics and Evaluation at the University of Washington and the University of British Columbia's School of Population and Public Health in Vancouver.

Handwashing is known to disrupt the transmission of respiratory diseases.⁴ Soap molecules disrupt SARS-CoV-2's outer lipid membrane, killing the microbe; running water then flushes away the viral fragments.⁵ For many people, handwashing is a routine activity that is taken for granted. "But that's often not the case for people in low-income countries," Brauer says.

Even some populations in wealthier countries lack access to handwashing. For instance, almost 19% of the occupied dwellings on the Navajo Nation lack complete plumbing facilities, according

to the latest data from the American Community Survey.⁶ As of 24 June 2020, the Navajo Nation, which occupies more than 17 million acres across Arizona, Utah, and New Mexico, had the highest COVID-19 rates in the United States, with 347 deaths and approximately 4,137 cases per 100,000 people.⁷

For the current study, Brauer's team set out to estimate how many people in the world have access to handwashing facilities with soap and water. They reviewed surveys conducted between 1990 and 2019 at 1,062 locations in 88 countries. Many of the 153 surveys they assessed were observational, meaning that investigators had visited households and seen handwashing stations for themselves.

Where observational data were lacking, the team predicted access to handwashing stations based on surveys that documented the presence of piped water. They also considered demographic surrogates that correlate with access to handwashing, such as per capita income and education levels. Households were weighted according to the number of inhabitants to estimate access at the individual level.

Based on these analyses, the investigators estimated that approximately 2 billion people globally lacked handwashing



Handwashing is a basic and critically important component of sanitation. Lack of access to proper facilities contributed to hundreds of thousands of deaths in 2017 from diarrheal diseases and lower respiratory infections.¹² That means scaling up handwashing access to address COVID-19 can have long-term benefits by preventing other diseases. Image: © Riccardo Mayer/Shutterstock.

access in 2019, “which is a stunning number and a call to action,” says Stephen Luby, a professor of infectious disease and geography at Stanford University, who was not involved in the study. However, as high as it is, that number may actually be quite conservative—the Joint Monitoring Program for Water Supply, Sanitation and Hygiene put the estimate at just over 3 billion people in 2017.⁸

The Brauer team’s model, which also estimated long-term trends over the 30-year study period, did show expansion of access in some locations. This reflects progress toward improving sanitation and reducing childhood mortality, Brauer says. Yet, the study showed access is still limited overall, particularly among rural populations and informal urban slums in the developing world. Modeling suggested that more than half the population in the provinces of Addis Ababa, Ethiopia, and Nairobi, Kenya, lack access to handwashing facilities.

Should the COVID-19 pandemic coincide with water shortages in such areas, the study authors wrote, “access will be further restricted and will disproportionately harm those who can least afford to pay for water.” Hand sanitizers may provide a temporary alternative, and evidence from prior epidemics shows they can slow viral transmission.⁹ However, the potential toxicity and flammability of alcohol-based sanitizers,¹⁰ plus the cost of these products,¹¹ have been cited as barriers to their use.

Soap and water offer more equitable and lasting protection. “Before a vaccine for SARS-CoV-2 becomes available, and where there’s too much crowding for social distancing, providing access to water and soap in slums and low-income communities can save lives,” says Luby.

Brauer says that approach could pay long-term dividends even after the COVID-19 pandemic subsides. “We should think of the current crisis as an opportunity to address longstanding problems with limited access to handwashing that also impact on diarrheal infections and pneumonia,” he says. “We can implement a patchwork of temporary solutions for now, such as bringing in water tanker trucks and making sure people have [isopropyl] alcohol and hand sanitizer. But our hope is that we will also implement strategies that are more sustainable.”

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