



Water insecurity compounds the global coronavirus crisis

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Water insecurity compounds the global coronavirus crisis

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In recent weeks, people all over the world have been settling into a ‘new normal’ of restricted mobility, online working, social distancing and enhanced hand hygiene. As part of the global fight against the spread of COVID-19 (the illness caused by SARS-CoV-2), we are repeatedly reminded by public health authorities that frequent and thorough hand-washing with soap and water is one of the best ways of limiting transmission. The rationale behind this is clear: washing regularly and thoroughly physically degrades and removes viral particles from hands, and therefore lowers the likelihood of infection transmission. Many health agencies are recommending washing hands for a minimum of 20 seconds up to 8–10 times per day. If washed in running water, the average hand basin tap uses 2–3 litres per minute, which implies a total water requirement of 8–10 litres of clean water per person per day, as well as appropriate soap and drying facilities (i.e. not a reused and possibly contaminated towel or rag).

Achieving clean hands is not difficult in wealthier households that have long enjoyed water services so reliable that they have stopped thinking much about it. But if hand-washing is so important to the fight against COVID-19, what does this mean for the many people around the world who do not have access to a sufficient and secure supply of safe water to support this life-critical activity? According to UNICEF and WHO (2019), as many as one in three of the world's people do not enjoy access to safe and reliable water services, and 3 billion people across the world do not have basic hand-washing facilities (soap and water) in their home. Research published by the Household Water Insecurity Experiences (HWISE) Research Coordination Network shows that rates of household water insecurity vary greatly between and within developing nations, with urban and rural areas often faring quite differently (Young et al., 2019). This research also reveals that many households depend on multiple sources of water, including tap stands

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and kiosks as well as environmental sources such as streams and springs, further complicating not just hand-washing but also the challenge of social distancing. Consequently, these populations bear a disproportionate share of the global health burdens from viral and bacterial pathogens, including COVID-19. Even before the current crisis, we knew that every minute three people die from diarrhoeal illnesses (1.6 million per year), and six from respiratory diseases (3 million per year), and that both types of mortality are linked to lack of access to clean water and household hygiene. Now the risk is even greater because of the emergence of new zoonotic viral diseases like SARS (2003), MERS (2012) and now COVID-19. For the strategy of viral suppression to work, we all need to be able to practice hand hygiene and social distancing. If too many people cannot, then the spread of such diseases will neither be slowed in less wealthy parts of the world nor entirely suppressed in wealthier areas.

What are the current threats to safe hand-washing? Household water insecurity may exacerbate the COVID-19 pandemic and exact an even greater toll on people, especially in Africa, Asia and Latin America, simply because too many people do not have access to safe and secure water services, including water supply and sanitation, at home. Recent studies have shown that as many as a quarter of households in the Global South may be unable to practise necessary hand hygiene. In some locations, the inability to wash hands during the last 30 days rises to 80% (Young et al., 2019). Figure 1 shows the reported inability to wash hands in a number of settings involved in the global HWISE survey and reveals both the widespread persistence and the variability of this phenomenon. Of randomly selected households across sites in 23 low- and middle-income countries, about one quarter were unable to wash their hands in the previous month due specifically to problems with water, with more than 50% of respondents in some study sites, in Pakistan, Uganda, Indonesia and Colombia for example, reporting such difficulties. While relatively unheard of in some low-and-middle-income countries, it is commonplace in others, and even within individual sites there is considerable variability of experience. It is therefore crucial to know more about where personal and household water insecurity may be most present in the current moment or most likely in the future.

Megacities may be at particular risk of being unable to manage the COVID-19 pandemic due to sheer population density as well as a lack of reliable clean water and sanitation. Megacities in the Global South tend to combine areas of higher-density, lower-quality housing with poor water service coverage. Of the 12 million people in São Paulo, Brazil, 30% live in dense informal settlements (*favelas*) that do not have a secure water supply (Hylton & Charles, 2018). Some *favelas* have been adopted by municipal utilities, and in others the water supply hangs precariously on illicit connections to water mains. Lack of clear tenure for the plots they occupy is a common problem for residents of São Paulo and other informal settlements around the world. The city of Bangalore in India has grown so quickly over the last decade (becoming India's 'Silicon Valley') that accessible water sources (principally the Cauvery River) have been largely exhausted, placing the entire city at risk. Groundwater, too, has been over-exploited, causing land subsidence and desiccation, such that what was once a city of lakes is now drying up. And in Jakarta, Indonesia, a combination of rapid urbanization and water utility privatization has meant that poorer households are often left to fend for themselves. Many simply have no clean water supply at all and are forced to use natural water sources which are heavily polluted with chemicals from industry and agriculture, and

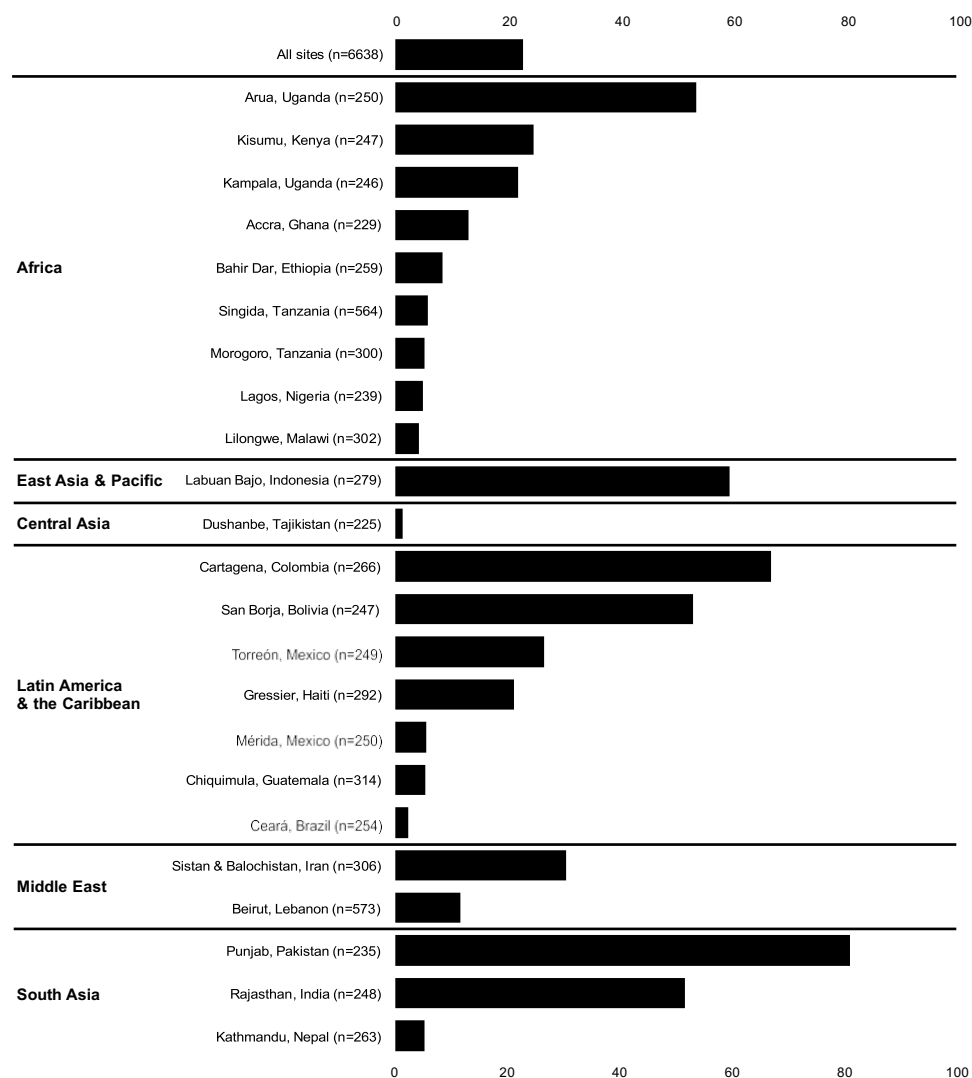


Figure 1. Proportion of respondents surveyed by the Household Water Insecurity Experiences consortium reporting inability to wash hands in the last 30 days (Young et al., 2019).

biological pollutants from poorly managed sewage. These patterns are repeated throughout the Global South, exacerbated by overcrowded and often informal housing conditions that make social distancing practically impossible.

In many settlements in low-and-middle-income countries, insufficient water supply points lead to queuing for water and therefore an extra challenge to social distancing, the mainstay of preventing the spread of infectious disease. The HWISE global survey revealed that water insecurity goes beyond mere insufficiency of water: many households in the Global South rely on a variety of water sources, including network water, vended water and groundwater, thus multiplying the vectors of viral infection related to the difficulty of social

distancing (Young et al., 2019). The necessity of travelling to fetch water from these different sources makes it very hard to practice social distancing or self-isolation, and therefore incurs risks not imposed on those with more stable, singular and uniform supply arrangements. The risks include close contact during exchange of cash and containers with vendors, contact with other people while travelling to or queueing at shared sources, and limited ability to afford and/or carry enough water home for household use. Heightened anxiety about the spread of disease in areas already crowded and affected by water insecurity is also likely to lead to discrimination and the abuse of vulnerable people. People from different ethnic or faith communities, of different caste, affected by HIV/AIDS or with disabilities often face discrimination or abuse at water sources (UNESCO World Water Assessment Programme, 2019). For example, access to water supply points by the Batwa minority in Uganda, Democratic Republic of Congo and Rwanda and by the Christian minority in Pakistani communities was already precarious even before COVID-19. Such communities may be blocked from shared water supplies or forced to seek more distant and unsafe sources because of fears that they will ‘contaminate’ the water or spread disease, as in the 2009 case of Asia Bibi in Pakistan. Furthermore, as the primary providers of domestic water labour throughout the Global South, women and girls will be more vulnerable to viral infection and intercommunal conflict. The current pandemic may therefore exacerbate existing inequalities and vulnerabilities within and between communities, with the greatest impact on those already at high risk of COVID-19 infection.

Problems of water insecurity are not restricted to the Global South but extend into higher-income countries as well. In 2015, an estimated 57 million people in Europe and North America lacked piped water at home. In March 2020, 90 US cities and states halted water shutoffs – which usually happen due to unpaid domestic water bills – as a temporary response to the COVID-19 pandemic. The highest shut-off rates are concentrated in southern states, including Louisiana, Arkansas, Florida and Oklahoma, with the largest Black, Hispanic and Native American populations. ‘Plumbing poverty’ – the lack of piped water access and sewerage – affects 471,000 households in the United States, most of them (73%) in metropolitan areas and nearly half (47%) in the 50 largest metros, including some of nation’s largest and most affluent cities, San Francisco, New York and Los Angeles (Deitz & Meehan, 2019). Native American, Black and Hispanic households are being affected much more than the national average. In Europe, Roma and other traveller communities have been unable to follow government guidelines around social distancing and hand hygiene, and have been harassed by police for their failure to do so. In Canada, First Nations’ homes are 90 times as likely to be without running water as the homes of other Canadians (Boyd, 2011). Clearly, the lack of piped water complicates basic hygiene tasks such as hand-washing and sanitary food preparation.

Other often-overlooked populations include prisoners, the homeless, refugees, undocumented migrants and displaced people. In 2019, almost 568,000 people experienced homelessness in the United States, with more than one-third (37.2%) residing in unsheltered locations (Demyers et al., 2017). There are an estimated 65 million displaced people around the world, many living in overcrowded refugee camps. Danny Sriskandarajah, chief executive of Oxfam GB, has said:

For many of the world’s most vulnerable, basic preventive measures like staying at home or washing hands more frequently, are simply impossible. For those in overcrowded camps

living in a space smaller than the average British bathroom, social distancing is not an option. Women are usually hardest hit during emergencies as they carry out most of the care work and so are especially vulnerable to exposure to the virus. (Oxfam GB, 2020)

Only 13% of countries have a dedicated budget for collecting gender statistics, and there is no standardized or universal methodology for gendered analysis of data on water and sanitation. To highlight discrepancies between women and men, it is critical to assess household water insecurity (i.e. HWISE), together with gendered analysis tools such as the Empowerment in WASH Index. Ensuring that women are specifically included in analysis and actions is critical to successfully managing this crisis.

The steady decline in provision of public sanitation around the world, even in wealthy countries, makes adequate hygiene an even more intractable problem. In such settings, and in other low- or middle-income regions, already stressed and understaffed health services are ill-prepared and likely to be unable to mobilize sufficient resources to cope with the pandemic. Before the pandemic, one in four health care facilities in the world lacked basic water services, and one in five had no sanitation services, while 42% had no hand-hygiene facilities at points of care (WHO & UNICEF, 2019). This indicates that health care facilities in the Global South may not only be unable to cope with an influx of acutely ill patients with COVID-19, but also may become a site of disease spread, with even higher rates of infection and subsequent deaths among health care professionals and other patients attending the facility. Universal health coverage, which includes access to health care services with safe water, sanitation and hygiene (WASH) facilities, must be key in the management of future pandemics. Similarly, water security must be established to ensure that safe WASH facilities are maintained for other essential premises and services, to support crucial supply chains, and on premises away from the home when they are in use, for example in schools, shopping malls and markets, before and after 'lockdown'.

Humanity has entered a new chapter in its existence; never before have we had the combination of political, administrative and scientific resources necessary to attempt to deal with a global pandemic in real time, as we have now. Will we also recognize that universal access to clean water is not only a vital tool in this global endeavour but also consistent with the commitments of the UN's Sustainable Development Goals? A recent World Bank study estimates that meeting the sixth of those goals could cost USD116 billion per year through 2030. This is a large number in absolute terms, but it is only a fraction of the amount wealthy countries have already pledged to invest in their own recovery from the COVID-19 pandemic (Hutton & Varughese, 2016). These costs unbundle into the separate costs of providing safe water (USD37.6 billion per year), safe sanitation (USD19.5 billion per year), safe faecal waste management (USD49 billion per year), and hygiene facilities and education (USD2 billion per year). Will the current pandemic change the collective view of universal access to safe and clean water from something that would be 'nice to have' to something that it is imperative to achieve?

Recognizing that the COVID-19 pandemic is also a water crisis is central to addressing it.

Author contributions

CS conceived of and led the construction of the paper, with specialist material provided by ME, JMytton, TO, NQ, SY, JDM, KC, JB, JG, KM, EGJS, JMiziniak and JV. WP and CS copy-edited the finalized text for submission to the journal.

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