

# Household water sharing: a missing link in international health

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Water insecurity massively undermines health, especially among impoverished and marginalized communities. Emerging evidence shows that household-to-household water sharing is a widespread coping strategy in vulnerable communities. Sharing can buffer households from the deleterious health effects that typically accompany seasonal shortages, interruptions of water services and natural disasters. Conversely, sharing may also increase exposure to pathogens and become burdensome and distressing in times of heightened need. These water sharing systems have been almost invisible within global health research but need to be explored, because they can both support and undermine global public health interventions, planning and policy.

**Keywords:** multiple water sources, water insecurity, water policy, water sharing

## Introduction

Four billion people experience severe water scarcity for at least 1 month per year, and half a billion are water insecure year-round.<sup>1</sup> Water-insecure households lack access to sufficient, safe, affordable water to meet their most basic daily needs. This leads to significant health burdens, often stemming from the use of contaminated water, and undermines activities central to basic health, such as sanitation, hydration, body hygiene, household food production, safe food preparation and breast-feeding.<sup>2</sup> Chronic worrying over getting enough safe water also undermines mental health, triggering depression, anxiety and even post-traumatic stress symptoms.<sup>3–5</sup> The rural and urban poor, notably in the global south, are often most severely affected because of multiple intersecting burdens related to weak infrastructure and governance, climatic vulnerabilities, inability to pay and variable freshwater supplies.<sup>6</sup>

whether as a gift or an exchange. For example, in a Bangladesh community suffering from arsenic contamination, water sharing relationships were a lifeline for families without access to a safe tube well.<sup>7</sup> But most recently, a large team of social scientists identified a consistent pattern: interhousehold water sharing reliably occurs across a wide array of communities facing water insecurity in all world regions, from hunter-gatherer to pastoralist/agriculturalists to dense urban settlements.<sup>8</sup> For instance, the first extensive cross-cultural study of water sharing in sub-Saharan Africa revealed that 30–80% of households had received much-needed water within the last month through sharing. The frequency of sharing increased as water shortage and the cost of water increased, and households with water more consistently gifted it to those with less water.<sup>9</sup> Sharing is also shaped by varying sociocultural determinants, such as kinship, social networks and local leadership systems.<sup>8,10</sup>

## Household water sharing: emerging evidence

Recent evidence shows that water sharing emerges consistently between water-insecure households. By household water sharing, we refer to relatively small and direct transfers of water,

## Sharing systems as both a potential buffer and an exposure pathway

Water security and health are intimately connected. Given the emerging evidence that water sharing is a widespread practice across countries, regions and settlement types, it is imperative

that we determine how it relates to both health risks and benefits. Evidence needs to be systematically collected, and urgently. In the meantime, we can theorize about multiple direct and indirect mechanisms through which sharing could be health-enhancing.

When sharing increases the availability of safe water, it reduces reliance on untreated, microbiologically or chemically contaminated water sources. This is obviously important for meeting basic household needs such as drinking and food preparation. When sharing increases the quantity of water, it may support hygienic activities, including hand-washing and bathing. The safety net provided by water sharing may lower psychosocial stress and reduce the risk of depression in people experiencing severe water insecurity.<sup>3,4</sup> Better hydration reduces fatigue, increases mood and cognitive performance<sup>11</sup> and promotes breast milk production.<sup>12</sup> Water sharing can help to maintain key relationships, thus promoting trust and building health-beneficial social capital within communities.<sup>13</sup> Additional possible indirect benefits include later weaning (as observed with increased food security),<sup>14</sup> fewer dangerous and stressful water-fetching trips or savings in cash and time that can be reallocated to other household needs. Water sharing may even trigger spillover effects in public health interventions, as the provision of clean water supplies for some households may produce concomitant benefits to neighbors.

Water sharing can also create new household exposure pathways for chemical and biological contaminants, including waterborne (e.g. typhoid), water-washed (e.g. trachoma) and water-based (e.g. Guinea worm) diseases. The movement of water between storage containers increases the chances of cross contamination, and storage can provide mosquito breeding sites if containers are not covered properly. When sharing systems become institutionalized, strict obligations to share very limited water could harm the donor household. In China's Wei River basin, for example, water sharing among family members for bathing increased hygiene risks through reuse of water used for washing faces, hands and feet.<sup>15</sup> The social demands of water sharing systems may also undermine mental health. In Cochabamba, Bolivia, water sharing led to greater emotional distress<sup>16</sup> and anxiety and depression,<sup>17</sup> due to the stigma of 'begging for water'. Anger stemming from water sharing acts, failures to share and meet social expectations or shortages resulting from sharing can lead to resentment and trigger domestic or community violence.<sup>12</sup> Relatedly, water sharing can exacerbate existing health disparities if they systematically exclude or place uneven burdens on particular community or household members, especially women, children, ethnic minorities or other marginalized groups.<sup>18</sup> Finally, water sharing may even create new obligations to perform informal work or sexual favors (as seen with food sharing transactions).<sup>19</sup>

Global health efforts and interventions can interact with water sharing practices in important ways. For example, in the wake of a natural disaster, fear of cholera, typhoid and other acute epidemics might activate and sustain—however transitory—reciprocal or gift sharing of safe drinking water until potable water supplies stabilize. But even as health officials work to extinguish a waterborne outbreak, sharing could inadvertently perpetuate exposure. Likewise, sharing can increase the use of multiple water sources,<sup>20</sup> a common household water insecurity

adaptation that can undermine primary drinking water interventions if secondary sources are less safe.<sup>21</sup> Thus the sharing of safe water in a multiple-sources context may not generate a safety benefit for the recipient. Because high adherence is needed to achieve health improvements for household water treatment interventions,<sup>22</sup> even modest or ephemeral sharing of unsafe sources can limit health gains. More research is needed to determine how interventions might improve positive outcomes associated with water sharing while mitigating negative aspects.

## Conclusion

Water and health are inextricably bound, and recognition of the likely scale and impacts of household-to-household water sharing systems is a key 'missing link'. These systems have remained mostly invisible to global health and water, sanitation and hygiene (WASH) efforts, as very few studies have addressed how local water sharing practices might simultaneously enhance and mitigate household health risks. We do not fully know the conditions under which the health trade-offs of sharing become net positive, particularly when households use multiple water sources. Many municipal water policies have inadvertently ignored a basic coping strategy that seems to be institutionalized as a *de facto* social arrangement.

Most importantly, amid growing concerns about affordability and water safety in the context of increasingly commodified water services,<sup>23</sup> water sharing systems are an important, enduring—perhaps growing—communal, nonmarket water supply strategy. This raises profound implications for water policy that are not yet fully understood. Water resource managers, health and WASH policymakers and disease outbreak investigators will benefit from understanding community water sharing norms and practices under conditions of limited or failing infrastructure or during rapid responses to acute public health challenges after disasters. Any such efforts should avoid regularizing the burden of water procurement on households and inadvertently relieving municipalities from basic service provision responsibilities. In the meantime, the feedbacks between water sharing, health and water security remain a prime opportunity for future inquiry and policy development. We expect future research and its application will yield additional much-needed evidence.

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