

Household Clean Water Technology in Northern Ghana: Valuation, Use, and Impact

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Sector(s): Health**Fieldwork:** Innovations for Poverty Action (IPA)**Location:** Northern Ghana**Sample:** 1,500 households who lack access to clean drinking water**Target group:** Rural population**Outcome of interest:** Diarrhea Take-up of program/social service/healthy behavior Water quality**Intervention type:** Preventive health Water, sanitation, and hygiene Pricing and fees**AEA RCT registration number:** <https://www.socialscisceregistry.org/trials/1447>**Data:** <https://doi.org/10.7910/DVN/RAOYMQ>

Diarrheal diseases are a leading cause of death in the developing world, often resulting from poor water quality. Researchers in Ghana are attempting to measure households' demand for simple ceramic water filters by offering the filter at different price levels through door-to-door sales. They will also explore whether different household characteristics, such as education, income, and health, affect a household's willingness to pay for a filter.

Policy issue

Diarrheal diseases, which often result from poor water quality, are a leading cause of death in low- and middle-income countries, killing approximately 1.8 million people per year.¹ Achieving the Millennium Development Goals of reducing the proportion of people without sustainable access to safe drinking water is especially difficult for the low-income individuals living in rural areas. Delivering treated water through pipes has resulted in sustained health gains in developed countries and urban areas in low- and middle-income countries, but is not considered feasible in rural areas with dispersed populations and weak institutions for maintenance. Community interventions, such as spring improvement or communal wells, have not produced strong results, and policy makers are increasingly interested in household and point of use treatments. However, the effectiveness of such treatments in rural environments, the role of education and marketing to encourage use, and how to expand access with limited resources remain largely unknown.

Context of the evaluation

Diarrheal diseases account for 12 percent of childhood deaths in Ghana, and are the third largest cause of death for children under the age of five.² These diseases are caused by the ingestion of water contaminated by fecal matter, and 20 percent of Ghana's population does not use an improved water source.³ The sparsely populated northern region of Ghana is one of the

least developed parts of the country, and has even less access to clean water than the national statistics would suggest. The majority of its residents make their living in agriculture, living far away from one another. This low population density makes any state- or community-wide water treatment intervention costly and impractical.



A woman carries her child

Details of the intervention

This study will evaluate the demand, use, and impacts of one household level water treatment technology. The Kosim filter is a ceramic filter marketed and sold by Pure Home Water, a Ghana-based nongovernmental organization. This simple product has been proven to be highly effective at improving water quality and is appropriate for the region, since it removes particles and pathogens from water without the use of chemicals or electricity which require some form of delivery.

Researchers are measuring the willingness to pay of households for the Kosim filter by offering a random selection of households the opportunity to purchase the filter through door-to-door sales. Households will also be offered a randomized price for the filter, to determine price effects and willingness to pay for preventive health technologies.

Researchers will collect data from 1,500 households on water quality, education, income, consumption, health, diarrhea disease knowledge and water treatment and storage practices to see how these variables affect the willingness to pay for a filter. The randomized offer price provides a means to estimate the filter's health impact and health spillovers among neighbors, without letting a set price screen out households who have a lower value for clean water. Thus, researchers can evaluate different techniques for creating behavioral change, such as the adoption of new water treatment technologies and storage techniques, and the propensity of individuals to drink treated water and provide treated water to their children.

Results and policy lessons

Results forthcoming.

Berry, James, Greg Fischer, and Raymond Guiteras. "Eliciting and Utilizing Willingness to Pay: Evidence from Field Trials in Northern Ghana." Working Paper, July 2015.

1. As of 2004. WHO, "The Top Ten Leading Causes of Death" (accessed Nov. 6, 2009)
2. WHO, "Mortality Country Fact Sheet 2006, Ghana." (accessed Nov. 6 2009)
3. United Nations, Human Development Report 2009 "Ghana" (accessed Nov. 6, 2009)