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Water-Efficient, Foaming Soap Handwashing Stations in Kenya

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Timeline

2013-2017

Sample Size

400 households, 30 schools, and 4 clinics

Research Implemented by IPA

Yes

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Abstract

Regular handwashing with soap is one of the best ways to prevent diarrheal and respiratory disease, which are two of the primary causes of death among children worldwide. In many places in the developing world, however, soap is a luxury and water must be carried long distances, and handwashing with soap is not always practiced at critical times. In Kenya, researchers worked with Innovations for Poverty Action to design and introduce an innovative handwashing system in a variety of settings, evaluate demand for the technology in a pilot study, and identify optimal pricing structures for a potential scale-up. Results from the pilot indicate that the new handwashing station design reduced the cost of water and soap per handwashing by half compared to other designs. Having stations at clinics and schools substantially increased handwashing with soap. Household demand for the handwashing stations was strong, but it will be important to keep the price of the handwashing stations low as over 75 percent of households purchased one at a subsidized price of \$4 whereas less than 10 percent purchased at \$12.

Policy Issue

Research shows that regular handwashing with soap after defecation and before food preparation is one of the best ways to prevent diarrheal and respiratory illness, two of the primary causes of death among children worldwide. It is estimated that universal adoption of handwashing with soap could save 1 million lives annually. In addition to the mortality burden, diarrheal and respiratory illness lead to school absenteeism, reducing human capital development and potentially depressing productivity in the long-run. While the positive effects of handwashing are established, it is less clear how to make the practice of handwashing with soap more widespread. Some efforts focus on advocating handwashing through public health messaging or through the promotion of simple handwashing stations, but ensuring soap is available for handwashing is rare. This project introduces an innovative Soapy Water Handwashing Station (called the “Povu Poa,” or “Cool Foam” in Kiswahili), evaluates adoption of the technology, and identifies optimal pricing structures for a potential scale-up in Kenya.

Context of the Evaluation

Diarrheal disease and pneumonia account for 30 percent of child mortality in Kenya. Due to the large potential benefits of improved hygiene, Kenya and other East African countries have become more active in promoting safe handwashing practices, particularly through behavior change programs in schools and public campaigns. However, purely educational and behavior change efforts that just instruct people to wash their hands have had limited results. This study was conducted in densely populated areas surrounding Kisumu, in western Kenya, among households, public health clinics and public primary schools that lacked access to reliable piped water and handwashing facilities.

Before the study began, 25 percent of the clinics provided soap for handwashing and all of them had a water available for handwashing, though this was often not located by the washroom (for example, an outdoor source of piped water in the yard). About 10 percent of doctors, nurses, and patients at clinics were washing their hands with water after using the latrine and none were observed using soap.

Details of the Intervention

Researchers evaluated the acceptability and scale-up potential of the Povu Poa handwashing system among 300 households, four public health clinics, and 30 public primary schools in peri-urban areas of Kisumu, Kenya. Willingness to pay was also evaluated in the households.

The Povu Poa stations were designed by Innovations for Poverty Action and Catapult Design, an engineering firm. We used a human-centered design approach to create a functional, durable, and cost-effective system. The station is a water-efficient, soap-frugal handwashing system. It is also portable and adaptable to multiple settings, with an innovative soap foam dispenser that conserves soap, and a swinging water tap that is hygienic, easy to use, and conserves water.

To gauge the demand for the handwashing stations and identify the optimal pricing structure for them, researchers conducted a willingness-to-pay evaluation among 300 households outside the city of Kisumu, and also measured use of the technology at schools and clinics.

Researchers investigated the optimal pricing structure by randomly assigning the 300 households to three different offer prices equivalent to US\$12, \$8, and \$4 (i.e., from 0-75 percent subsidy) and sold two different types of Povu Poa systems – a dual bucket model that holds more water and a hanging pipe model that takes up less space. The research team followed up with households that purchased the systems to find out to what extent they were used and maintained.

At the 30 primary schools and four health centers, researchers assessed adoption and user perceptions of the handwashing systems. While all schools in the study received the systems during the study period, the schools were randomly assigned to receive them at three different points in time, which enabled the research team to compare schools with the systems to those without them. The clinics received the systems at around same time.

Results and Policy Lessons

Pilot results

Cost: The cost of 100 handwashes was estimated to be \$0.10 with the Povu Poa, while the average cost of conventional stations available is \$0.45 per 100 handwashes. Especially in institutional settings like schools and clinics, this may translate into large savings.

Willingness to pay: For all Povu Poa products offered at the low price points 86 percent of households made a purchase. The proportion of households making a purchase at the medium and high prices were 29 percent and 11 percent, respectively. Researchers estimated that the handwashing station would pay for itself in just one year thanks to savings on water and soap.

Handwashing in schools: Soap went from being available in less than 1 percent of schools to more than 50 percent of schools. Handwashing with soap increased from 0 percent to 32 percent.

Handwashing in clinics: In the clinics researchers saw a jump from 0 percent handwashing with soap to 76.5 percent handwashing with soap.

Given these promising pilot results on demand and willingness to pay, the team hopes to conduct further research to investigate the health impacts of the Povu Poa system and to develop a scalable business model.

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