Learning what works for better programs and policies

SENEGAL: Do Hygiene and Handwashing Make for Better Brain Development?

Good hygiene practices play an important role in preventing diarrhea and other infectious childhood diseases. Handwashing with soap and water—particularly after coming in contact with fecal matter or before handling food—can cut down on transmission of illnesses that sap children's strength and development and hurt their ability to thrive in school. Given the difficulties of improving handwashing rates, especially in environments where clean water may not be always available, understanding and measuring the impact on children's brain and body development can help build support for integrated water supply and hygiene programs.

The World Bank works with governments to promote improved sanitation, clean water and better hygiene practices, such as handwashing, all necessary to prevent the spread of disease. Doing this successfully means understanding what works when it comes to campaigns to encourage people to wash their hands, conduct proper hygiene management within the household and what the impacts are on children's health and development. In Senegal, researchers evaluated a program that focused on local media and community events to encourage regular handwashing with soap and water. The evaluation found that children's socio-emotional development was improved in households with radios and televisions, but it wasn't possible to separate out the effects of the program being evaluated from a national media campaign promoting handwashing that was rolled out at the same time.

While identifying the best routes for effective handwashing and campaigns remains a key goal for researchers, this evaluation underscores the challenges of both changing behavior and measuring impacts.

Context

Poor hygiene is a particular problem when it comes to children because they are more susceptible to diarrhea and repeated or severe episodes can harm their health and development. Every year, 800,000 children under the age five die from diarrheal disease. Recurrent episodes of diarrhea can also hurt a child's ability to absorb nutrients and this can contribute to health problems and physical and mental stunting. As a result, many governments and organizations have created programs to encourage better hygiene practices and handwashing with soap during critical times, such as before eating and after using the toilet. These simple practices have been proven to substantially reduce the spread of illnesses.

Handwashing with soap at critical times isn't common in Senegal and other countries in sub-Saharan Africa and rates of diarrheal disease are high. In Senegal, an estimated 23 percent of people wash their hands after using the toilet and just 18 percent after cleaning a baby's bottom. Soap is usually far from the toilet or water source and most households do not have a specific place for handwashing. Senegal is one of the four countries targeted by the Global Scaling up Handwashing initiative, which uses innovative promotional campaigns to improve handwashing with soap and water among poor and vulnerable communities. The initiative, which is being implemented through the multi-donor Water and Sanitation Program at the World Bank, has been rolled out in Peru, Senegal, Tanzania and Vietnam.

The Government of Senegal, working with the Water and Sanitation Program, launched a three-month national promo-
A randomized controlled trial was implemented to measure the impact of the second phase of the hygiene campaigns on children’s health and development. In the seven regions where the campaign was going to take place, 110 urban and rural villages were randomly selected and divided into 55 treatment and 55 control groups. The treatment group received the full campaign, which included handwashing promotional advertisements through local media, community events and direct meetings run through local women’s associations and in health clinics. The control group wasn’t supposed to receive any part of the program.

Researchers interviewed 1,150 households in these 110 groups, focusing on women and other caregivers between the ages of 14 and 49. The baseline survey was done in June-August 2009, before the local program was launched and the endline survey was done in early 2011. The surveyors conducted face-to-face interviews, watched households’ hygiene behaviors and collected stool samples.

Children’s development was measured using the “Ages and Stages Questionnaire,” which screens for developmental milestones. The questionnaire covers a comprehensive list of development indicators for children between four and 24 months old that includes communication skills such as understanding of commands or the ability to say basic words; gross motor skills such as crawling or walking; and social-personal skills such as smiling or expressing fear of strangers.

Once data had been collected, it became clear that people in the control group had received information about handwashing through either the national media campaign or through parts of the local campaign or even from other households exposed to the campaign. It wasn’t possible to figure out exactly through which campaign they had received the information, but in the follow-up surveys it became clear that the control group had been exposed to parts of one or both of the campaigns. At the same time, there was some question whether people in the treatment group had been affected by the local media campaign, or whether their information came from the national campaign that was ongoing around the same time.

Given this “contamination,” researchers then conducted a quasi-experimental analysis of the survey data along with government data from 2008 and 2011. The government data created a large enough sample to match households with similar characteristics. This enabled them to compare the hygiene campaigns at different levels of intensity by comparing households with television and radio (high intensity) to households with little to no access to television and radio (low intensity). They assumed that television and radio facilitated the delivery of the hygiene messages. The researchers avoided bias by employing a matching technique to control for income, demographics, and other observable and unobservable differences between households.

**Results**

Children in households that were exposed to the local handwashing campaign and had access to television and radio showed better socio-emotional development, highlighting the importance of technology in getting across critical messages.

Young children in households with television, radio, computers or similar technologies generally showed greater improvements in communication, gross motor, and socio-personal skills two years after the program, compared with children in families without access to these technologies. This was re-
Regardless of whether the children were in households that were supposed to be in the treatment or control group.

Children in households that didn’t have television, radio or other technologies didn’t show any changes in socio-emotional scores, even if they lived in areas that were exposed to the local handwashing campaign. Researchers controlled for differences in wealth between the groups to make sure that this wasn’t because families with radios or televisions may have had higher incomes and as a result might have been more receptive to sanitation messages.

However, it’s possible that owning television or radio might indicate that the family valued communication and information and, as a result, their children might have had better social and personal skills, apart from any hygiene information program they received. Thus, these results should be interpreted with caution.

When researchers looked solely at households in areas where the local handwashing campaign took place, some skills critical for healthy development improved, but only up to a point.

As it turned out, children in the control and treatment groups weren’t the same at baseline, posing challenges to evaluating the data. Infants in the control group—households that weren’t supposed to receive the community-based handwashing campaign—showed stronger communication skills before the program started. But children in households that received the full handwashing promotion program quickly caught up in their communications skills.

When it came to motor skills, the result was different. Again, young children in the control group had more advanced motor skills at baseline and while this narrowed, children who started from a lower point never caught up.

It wasn’t possible to measure if the campaign had any impact on cognitive development.

There wasn’t any conclusive evidence that the hygiene information impacted children’s cognitive development, but some evidence suggested that children under age five in households that had a television, a radio or both showed improvement in cognitive development. However, researchers pointed out this could be because of the parents and how they stimulated the children rather than any hygiene campaign.

One thing was clear, even before the program was launched; children in households without a handwashing station had higher rates of diarrhea symptoms than those who lived in households with access to a place to wash hands with soap and water.

Based on the survey data, one in ten children had diarrhea in the previous 14 days. The incidence of diarrhea among children in Senegal appeared partly correlated to the presence or absence of a handwashing station and didn’t appear to be correlated to income. Overall, families without access to a handwashing station with soap and water, or without access to an improved water source or improved sanitation spent more hours dealing with children’s illnesses and had slightly higher rates of anemia. But in general, many children in Senegalese households, whether poor or not, have anemia.

It proved impossible to isolate the impact of community-level activities from the impact of media campaigns.

While the evaluation design sought to measure the impact of using local media and community events to inform people about the importance of handwashing, it turned out that this campaign couldn’t be limited to just the villages in the treatment group. Households in different villages may have shared information, received information via the national media campaign, or local media wasn’t so local after all. Households that received the full local campaign, including media, community and direct meetings, didn’t show any more knowledge of handwashing or any behavior change when compared with those who weren’t supposed to receive anything.

The evaluation offers a cautionary note to researchers and governments alike.

It’s difficult to test the impact of informational campaigns, whether run together with other initiatives or not, because of the ease with which media campaigns and information in general travels. At the same time, the presence of household media and information technology may matter in how information is transmitted or what other information people come across.
As the results of this impact evaluation indicate, radio and television can be a successful route for transmitting messages and having an impact on children’s development. Yet the poorest households, who often have the greatest need, are also less likely to have access to technology. Indeed, getting information across to people—and then getting them to act on that information—continues to be a key challenge faced by policymakers across the globe. Identifying more channels to deliver information and key hygiene messages to the poorest is important to improve the effectiveness of programs to induce behavior change. The results of this evaluation can help guide development experts as they continue to examine ways to provide sanitation and hygiene for people who need it most.

Future research may want to look at the cost effectiveness of mass media campaigns versus more intensive, personalized approaches, particularly for the poorest families, who may not have radio, television or computers. Another thing to consider is how to structure impact evaluations of such programs to ensure that different groups aren’t able to share information, which makes it difficult to measure impact.

Conclusion

As the results of this impact evaluation indicate, radio and television can be a successful route for transmitting messages and having an impact on children’s development. Yet the poorest households, who often have the greatest need, are also less likely to have access to technology. Indeed, getting information across to people—and then getting them to act on that information—continues to be a key challenge faced by policymakers across the globe. Identifying more channels to deliver information and key hygiene messages to the poorest is important to improve the effectiveness of programs to induce behavior change. The results of this evaluation can help guide development experts as they continue to examine ways to provide sanitation and hygiene for people who need it most.

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