There is little evidence on whether existing water quality, sanitation, and hygiene (WASH) interventions lead to lasting improvements in children’s health, growth and development and whether nutrition programs are more effective when combined with WASH interventions. In Kenya, researchers are measuring the individual and combined effects of these interventions on child health, growth, and development in the first two years of life.

Policy Issue: Diarrheal diseases are a leading cause of death for children in the developing world, killing 760,000 children under the age of five each year. Even when diarrheal episodes are not fatal, illness early in life can have long-term effects on child growth and development. Many cases of diarrhea can be prevented with good water quality and sanitation. However, conclusive evidence on the relative health benefits of water, sanitation, and hygiene (WASH) interventions is lacking. Furthermore, few studies have evaluated these interventions in combination or measured health outcomes objectively; most research has relied reports from caregivers. To help fill this evidence gap, this evaluation aims to determine if WASH interventions aid in early child growth and development, if a combination of WASH interventions is more beneficial than a single intervention alone, and if improved nutrition is more beneficial when combined with WASH interventions. This study is related to an evaluation carried out by the International Center for Diarrheal Disease Research in Bangladesh.

Context of the Evaluation: The study targets pregnant women and their newborn children in rural areas of Bungoma, Vihiga and Kakamega counties in western Kenya. Diarrhea prevalence is fairly high in these areas, and many households do not have good sanitation and hygiene practices. At baseline, 12 percent of children under three in study compounds suffered from diarrhea the previous week. Ninety-four percent of drinking water samples were
contaminated with E. coli, only 17 percent of households had an improved latrine and only 2 percent of households had a potty to facilitate safe disposal of children’s feces (diapers are not commonly used), and only 2 percent of respondents had soap and water at a designated handwashing station.

Details of the Intervention: Researchers are evaluating the individual and combined effects of various WASH and nutrition interventions on the health, growth and development of children in their first two years of life. The large-scale randomized evaluation is taking place among over 8,000 women and their newborns in rural areas of western Kenya.

Researchers randomly assigned participants, in clusters of 6-20 households, to one of eight groups:

1. Water quality: Chlorine dispensers were installed at communal water sources, and each household received 1 liter of bottled chlorine every six months. Local promoters visited households each month to encourage treating and safely storing drinking water, emphasizing how this could improve the health of children in the household.

2. Sanitation: Households received free child potties, "sani-scoops" to remove feces, and a new or upgraded pit latrine. Local promoters visited study compounds each month to encourage using latrines for defecation, removal of human and animal waste from the household area, and safe disposal of children’s feces.

3. Handwashing: Households received “dual tipsy tap” stations for handwashing, with independent pedals attached to 5-liter jerry cans of clean water and jugs of soapy water. They were also provided with soap for the handwashing stations for the duration of the study. Local promoters visited study compounds monthly during the study to deliver messages on the importance of handwashing with soap.

4. Water Quality, Sanitation, and Handwashing: Households received all three WASH interventions.

5. Nutrition: Local promoters visited households to encourage exclusive breastfeeding for the first six months after birth and appropriate complementary feeding thereafter. From 6-24 months households received a supply of lipid-based nutrient supplements (LNS), which are fortified products that contain vitamins, minerals, and fats, and are designed to prevent malnutrition.

6. Nutrition + Water, Sanitation, and Handwashing: Households received the three WASH interventions plus the nutrition intervention.

7. Active comparison group: Households did not receive any intervention. However, village-level promoters visited households to record the circumference of the child’s arm (MUAC), a measurement that was also conducted for children in the other groups.

8. Passive comparison group: No intervention or household visits.

Researchers will use data from initial surveys and measurements, as well as follow-up surveys conducted one and two years after the interventions began to evaluate the impact of the interventions on physical, cognitive, and socio-emotional growth and development. Outcomes of interest include diarrhea prevalence, indicators of compromised immune systems and gut function, parasitic infections, and physical growth, as well as motor skills, verbal skills, and socio-emotional abilities.

Results and Policy Lessons: Results forthcoming.

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