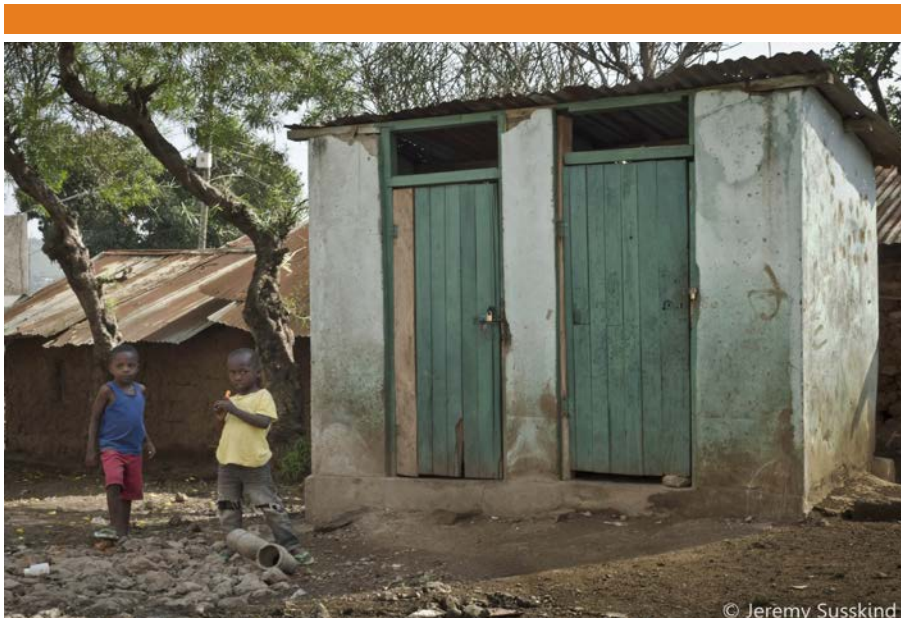


Phase II Research in Kenya

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BRIEFING NOTE

The effect of a novel early childhood hygiene intervention on enteric infections and growth faltering in low-income informal settlements of Kisumu, Kenya: a cluster randomized controlled trial.



Written by:
Jane Mumma
Joanna Esteves-Mills

Edited by:
Alexandra Chitty
Erin Flynn

Background

Undernutrition has significant adverse effects on health, cognitive and social development throughout the life-course (Black et al, 2013). Acute undernutrition can increase the severity and duration of infectious disease and increase the risk of mortality (ibid). It has been estimated that environmental factors, including poor access to WASH, may account for half of undernutrition.

Three broad biological mechanisms linking enteric pathogen exposure to childhood undernutrition have been identified: repeated bouts of diarrhoeal disease, parasitic worm infections, and a sub-clinical condition of the gut known as environmental enteric dysfunction (Dangour et al, 2013).

The role of safe water, sanitation and hygiene (WASH) as a means of preventing enteric disease transmission is well established (Snow, 1855). A recent study estimated that basic improvements in WASH could prevent almost 60% of diarrhoeal disease mortality globally and save approximately a million lives (Prüss-Ustün et al, 2014).

Although access to safe water and sanitation is generally higher in urban areas (Unicef & WHO, 2015), the risk of enteric infection may be greatest in poor urban areas due to the combination of high population density and limited infrastructure.

A recent SHARE-funded cross-sectional study - ‘WASH disparities’¹ - assessing environmental conditions and early childhood enteric infections in informal settlements of Kisumu reported high levels of faecal contamination, even in households with access to improved sanitation and water. Furthermore, there were equally high levels of contamination among wealthy and poor households, and a high prevalence of enteric infection was found among children (6-18 months). Finally, both the presence and intensity of enteric infection was positively correlated with odds of stunting² in young children. These findings suggest there is a clear need for a tailored hygiene and sanitation intervention that takes into account the peculiarities of informal settlements.

Aim and objectives

Aim: To address this challenge by designing and testing a novel child hygiene intervention in collaboration with community members, the health extension system and local government. The intervention will target children’s caregivers with the aim of changing key hygiene behaviours.

Objectives:

- Design and implement a novel child hygiene intervention targeting caregivers of children at three months of age, and delivered by Community Health Volunteers;
- Measure the effect of the intervention on observed and reported household behaviours;
- Measure the effect of the intervention on faecal contamination in the child environment (food, drinking water and fomites³) and on the presence of flies;
- Evaluate the effect of the intervention on specific enteric infections and growth faltering among children.

1 Led by the same consortium of organisations behind the present research

2 Stunting is defined as greater than two standard deviations from the height-for-age z-score for a reference population.

3 Fomites Objects, such as clothing, towels, and utensils that possibly harbor a disease agent and are capable of transmitting it



Project overview

Stage 1: Intervention Design

A participatory process will be used to design the intervention, including testing and modification. Findings from the earlier cross-sectional study will be fed back to the communities and local stakeholders involved. Drawing on inputs from these groups, the research team will design an intervention that addressing the environmental and behavioural determinants identified in that research. The intervention will target two exposure pathways related to domestic hygiene practices: food preparation, and

infant feeding practices. The Integrated Behavioural Model for WASH (Dreibelbis et al, 2013) will be used to guide selection of specific components to be integrated into the intervention.

Stage 2: Pilot and Evaluation

A cluster-randomised controlled trial will be used to evaluate the impact of the intervention in two informal neighbourhoods of the city of Kisumu. The primary outcome of interest is the prevalence of enteric infections among young children. The secondary outcome is height and weight adjusted for age. The tertiary outcome is infant mortality. In addition, data will be collected to assess 'fidelity' and 'compliance', and a number of intermediary environmental outcomes. Children will be enrolled at three months of age and followed until age 18 months, providing 15 months of follow-up.

Relevance and uptake

More than half of the world's population now reside in urban areas and over one third of this population live in informal settlements (WHO 2010). Risk of enteric infection may be greatest in poor urban areas due to the combination of high population density and limited infrastructure (Olack et al, 2011).

Kenya is facing rapid urbanization, with at least 40% of its population currently residing in informal settlements. Following recent country-wide devolution to the county-level, many citizens have moved to county headquarters seeking employment, resulting in these headquarters increasingly resembling urban settings. As such, this study's findings will offer salient solutions to problems that will likely soon be encountered by the majority of Kenyans.

Find out more

Listen to the reflections of Dr Jane Mumma of GLUK, Principal Investigator on this project: <https://youtu.be/zfdwtauPjpg>

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Contributors



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