

Effect of community health clubs on child diarrhoea in western Rwanda: cluster-randomised controlled trial

Shahid Ullah, Wolf Peter Schmidt, Ronald Wanzu, Lindani Hujon, Eric Coombes, Karim A. Gajjar, William Jati, Bernard Ngabire, Pauline Jansen, Halima Nantima, Thomas Otter

Summary

Background: Community health clubs are multi-session village-level gatherings led by trained facilitators and designed to promote healthy behaviours mainly related to water, sanitation, and hygiene. They have been implemented in several African and Asian countries but have never been evaluated rigorously. We aimed to evaluate the effect of two versions of the community health club model on child health and nutrition outcomes.

Methods: We did a cluster-randomised trial in Rusizi district, western Rwanda. We defined villages as clusters. We assessed villages for eligibility then randomly selected 150 for the study using a simple random sampling routine in Stata. We stratified villages by wealth index and by the proportion of children younger than 2 years with caregiver-reported diarrhoea within the past 7 days. We randomly allocated these villages to three study groups: no intervention (control; n=50), eight community health club sessions (Lite intervention; n=50), or 20 community health club sessions (Classic intervention; n=50). Households in these villages were enrolled in 2013 for a baseline survey, then re-enrolled in 2015 for an endline survey. The primary outcome was caregiver-reported diarrhoea within the previous 7 days in children younger than 5 years. Analysis was by intention to treat and per protocol. This trial is registered with ClinicalTrials.gov, number NCT01803478.

Findings: At the baseline survey undertaken between May 2013, and August 2013, 8734 households with children younger than 5 years of age were enrolled. At the endline survey undertaken between Sept 21, 2015, and Dec 21, 2015, 7930 (91%) of the households were re-enrolled. Among children younger than 5 years, the prevalence of caregiver-reported diarrhoea in the previous 7 days was 514 (26%) of 1989 assigned the control, 453 (24%) of 1816 allocated the Lite intervention (prevalence ratio compared with control 0.97, 95% CI 0.88–1.16; *p*=0.74), and 495 (26%) of 1864 assigned the Classic intervention (prevalence ratio compared with control 0.99, 0.85–1.15; *p*=0.87).

Interpretation: Community health clubs, in this setting in western Rwanda, had no effect on caregiver-reported diarrhoea among children younger than 5 years. Our results question the value of implementing this intervention at scale for the aim of achieving health gains.

Funding: Bill & Melinda Gates Foundation.

Copyright: © The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY 4.0 license.

Introduction

The importance of good health and nutrition for children younger than 5 years is widely recognised. The recently adopted Sustainable Development Goals include goals such as zero hunger (Goal 2), good health and well-being (Goal 3), and clean water and sanitation (Goal 6), which reflect the global community's prioritisation of the need to improve food and nutrition security as well as coverage of improved water and sanitation.

The Government of Rwanda has made a commitment to improving the health and nutrition of its children.¹ The 2014–15 Demographic and Health Survey documents a steady decline in the proportion of children who are chronically undernourished (stunted), from 32% in 2005 to 26% in 2014–15.² However, in these data, the prevalence of caregiver-reported diarrhoea has declined only slightly, from 14% in 2005 to 12% in 2014–15, possibly attributable in part to deficiencies

in water quality, sanitation, and hygiene (WASH) practices.³

As part of a strategy to address the continued high prevalence of diarrhoea, the Rwandan Ministry of Health launched the Community-Based Environmental Health Promotion Programme (CBEHPP).⁴ CBEHPP used the community health club approach to promote healthy practices, with the aim of achieving open defecation, at least 80% hygienic latrine coverage, and improvements in related health behaviours such as household water treatment and handwashing with soap.⁵ Similar group-based approaches at the community level in sub-Saharan Africa have been shown to have positive effects on infant mortality and other health and nutrition outcomes, but few studies have shown an effect on behaviours relating to WASH.⁶ The objective of our study was to evaluate the effect of the CBEHPP model on child diarrhoea, child anthropometry, and household water quality.

Correspondence to: Shahid Ullah, Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (sullah@jhmi.edu)

© 2017 Ullah et al. Published by Elsevier Ltd. This is an Open Access article under the CC BY 4.0 license.

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (sullah@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (wpschmidt@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (rhwanzu@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (lhujon@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (ecoombes@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (kgajjar@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (wjati@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (bnagabire@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (pauline.jansen@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (thomas.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (halima.nantima@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Department of International Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, MD 21205, USA (t.otter@jhmi.edu)

Effect of community health clubs on child diarrhoea in western Rwanda: cluster-randomised controlled trial

Background: Community health clubs are multi-session village-level gatherings led by trained facilitators and designed to promote healthy behaviours mainly related to water, sanitation, and hygiene. They have been implemented in several African and Asian countries but have never been evaluated rigorously. We aimed to evaluate the effect of two versions of the community health club model on child health and nutrition outcomes.

Methods: We did a cluster-randomised trial in Rusizi district, western Rwanda. We defined villages as clusters. We assessed villages for eligibility then randomly selected 150 for the study using a simple random sampling routine in Stata. We stratified villages by wealth index and by the proportion of children younger than 2 years with caregiver-reported diarrhoea within the past 7 days. We randomly allocated these villages to three study groups: no

intervention (control; n=50), eight community health club sessions (Lite intervention; n=50), or 20 community health club sessions (Classic intervention; n=50). Households in these villages were enrolled in 2013 for a baseline survey, then re-enrolled in 2015 for an endline survey. The primary outcome was caregiver-reported diarrhoea within the previous 7 days in children younger than 5 years. Analysis was by intention to treat and per protocol. This trial is registered with ClinicalTrials.gov, number NCT01836731.

Findings: At the baseline survey undertaken between May, 2013, and August, 2013, 8734 households with children younger than 5 years of age were enrolled. At the endline survey undertaken between Sept 21, 2015, and Dec 22, 2015, 7934 (91%) of the households were re-enrolled. Among children younger than 5 years, the prevalence of caregiver-reported diarrhoea in the previous 7 days was 514 (14%) of 3616 assigned the control, 453 (14%) of 3196 allocated the Lite intervention (prevalence ratio compared with control 0.97, 95% CI 0.81-1.16; $p=0.74$), and 495 (14%) of 3464 assigned the Classic intervention (prevalence ratio compared with control 0.99, 0.85-1.15; $p=0.87$).

Interpretation: Community health clubs, in this setting in western Rwanda, had no effect on caregiver-reported diarrhoea among children younger than 5 years. Our results question the value of implementing this intervention at scale for the aim of achieving health gains.

May 01, 2017