Sanitation is a global priority: 1 billion people lack access to any sanitation facility and practice open defecation, which contributes to child mortality, stunting, and decreased school attendance. Community-led total sanitation (CLTS) is a sanitation promotion approach implemented in over 50 countries, in which a facilitator visits a village, and “triggers” a collective desire to eliminate open defecation (OD). Implementing CLTS has challenges: it requires frequent follow-up visits by facilitators, depends on collective action by communities, and the costs are not well understood.

I conducted an operational research project collaboratively with Plan International to investigate where CLTS is applicable and how to optimize implementation. In Ghana, we evaluated training “natural leaders” (NLs – motivated community members) during a CLTS intervention, using a multi-site, randomized field trial. In Ethiopia, we evaluated teacher-facilitated CLTS, using a multi-site, quasi-experimental study design. In parallel, we conducted a bottom-up, activity-based cost analysis of the interventions in Ghana and Ethiopia.

Training NLs in Ghana caused a 19.9 percentage point decrease in households practicing OD. The impact was greatest in small, remote, socially cohesive villages. Teacher-facilitated CLTS in Ethiopia was associated with a 9.8 percentage point smaller decrease in OD than health worker-facilitated CLTS. Neither approach was effective in villages with low baseline OD. The implementation cost in Ghana and Ethiopia ranged from $14.52 to $81.57 per household targeted, and generated community activity and latrine construction. Latrines built during CLTS tended to be made of cheap, low-durability materials.

CLTS should be targeted to villages with high OD, where it has more potential for impact. Training NLs can improve outcomes, provided they are from cohesive villages. CLTS should be part of a broader sanitation strategy, as it is not applicable everywhere, and low durability-latrines may not last. The multi-site evaluations allowed analysis of variation of outcomes across settings. Bottom-up costing allowed for greater disaggregation than any prior sanitation study, which revealed the burden participatory approaches place on communities, and implementation activities with potential for improved cost-efficiency. These findings and tools are also applicable to other environmental health behavior interventions.

Committee:
Jamie Bartram, Ph.D. (advisor)
Pete Kolsky, Ph.D.
Greg Characklis, Ph.D.
Subhrendu Pattanayak, Ph.D. (Duke University)
David Gute, Ph.D. (Tufts University)