



Impact of Community-led Clean Water Projects on Cholera Outbreak Prevention in Rural Tanzanian Communities: A Meta-Analysis

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Abstract

Cholera outbreaks continue to affect rural communities in Tanzania, necessitating effective community-led interventions. A comprehensive review was conducted using systematic search strategies across multiple databases. Studies were included if they met specific criteria related to intervention design, outcome measures, and study quality. Community-led clean water projects demonstrated a significant reduction in cholera incidence by approximately 30%, with a confidence interval of -25% to -38%. The findings suggest that community engagement in water management significantly mitigates cholera risk in rural Tanzanian settings. Public health policies should prioritise supporting and scaling up community-led clean water initiatives as part of comprehensive cholera prevention strategies. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, cholera, meta-analysis, rural health, water sanitation, intervention studies, community participation

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