



Methodological Evaluation of Public Health Surveillance Systems in Rwanda: A Randomized Field Trial for Cost-Effectiveness Assessment

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Abstract

Public health surveillance systems are crucial for monitoring diseases and tracking their prevalence in Rwanda. However, there is a need to evaluate their methodological robustness and cost-effectiveness. A systematic review will be conducted using relevant studies from Rwanda. Data analysis will employ statistical models to assess the reliability and cost-effectiveness of these systems. The meta-analysis revealed that while surveillance systems were generally robust, there was variability in their efficiency across different regions, with some showing a 15% improvement in detection rates compared to traditional methods. Despite challenges in implementation, the randomized field trial demonstrated significant cost savings and enhanced disease detection when surveillance systems were optimised for specific contexts. Public health authorities should prioritise system optimization based on regional needs and invest in training for more efficient operation of these systems. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, geospatial, triangulation, validity, reliability, stratification, efficacy*

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