Methodological Evaluation of Public Health Surveillance Systems in Uganda: A Randomized Field Trial for Clinical Outcome Measurement

Sserunkuwa Mukasa[1,2]**, Okello Onyango**[3,4]**, Kabaka Lutwami**[5]**, Maggie Bonya**[1,5]

[1] Uganda National Council for Science and Technology (UNCST)

[2] Kyambogo University, Kampala

[3] Department of Pediatrics, Uganda National Council for Science and Technology (UNCST)

[4] Makerere University, Kampala

[5] Gulu University

Author notes

Sserunkuwa Mukasa is affiliated with Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.
Okello Onyango is affiliated with Department of Pediatrics, Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.
Kabaka Lutwami is affiliated with Gulu University and focuses on Medicine research in Africa.
Maggie Bonya is affiliated with Uganda National Council for Science and Technology (UNCST) and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Uganda are critical for monitoring disease prevalence and guiding policy interventions. However, their effectiveness varies and requires rigorous evaluation. A randomized controlled trial was conducted among 500 healthcare facilities, with outcomes measured using a validated Likert scale. Data were analysed using linear regression models to assess correlation between surveillance system outputs and actual patient clinical outcomes. There was a significant positive correlation ($p < 0.01$) between the prevalence data reported by the public health surveillance systems and the subsequent clinical outcomes observed in patients, indicating that these systems are capable of accurately reflecting disease burden. The study's findings suggest that public health surveillance systems are valuable tools for clinical decision-making in Uganda, provided they are regularly validated against actual patient outcomes. Regular validation exercises should be implemented to ensure the accuracy and reliability of public health surveillance data. This will enhance the utility of these systems in guiding healthcare interventions. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Geographic Information Systems, Sampling, Cluster Randomization, Outcome Measurement, Data Quality, Surveillance System Evaluation*

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