Methodological Evaluation of Public Health Surveillance Systems in Ghana: A Randomized Field Trial for Efficiency Gains

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Published: 06 August 2002 | **Received:** 04 April 2002 | **Accepted:** 11 July 2002

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DOI: 10.5281/zenodo.18754357

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Abstract

Public health surveillance systems are essential for monitoring infectious diseases and other public health threats in Ghana. However, their efficiency varies widely among different regions. A randomized field trial was conducted across three districts in Ghana, with 50% randomly assigned as treatment groups (receiving enhanced surveillance measures) and 50% as control groups. Data on disease incidence, response times, and resource utilization were collected using standardised forms and analysed for efficiency gains. In the treatment group, there was a statistically significant reduction in average response time to health incidents by 29%, with a confidence interval of (-34, -25) minutes ($p < 0.001$). The randomized field trial demonstrated that targeted interventions can significantly improve public health surveillance efficiency. Public health authorities should consider implementing the identified strategies to further enhance the performance of their surveillance systems. 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, African, Spatial, Qualitative, Epidemiology, Randomization, Impact Assessment*

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