



Evaluating Public Health Surveillance System Efficiency in Tanzania Using Quasi-Experimental Design: A Methodological Approach

Kamili Mwalimu¹

¹ Department of Pediatrics, National Institute for Medical Research (NIMR)

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Correspondence: kmwalimu@hotmail.com

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Author notes

Kamili Mwalimu is affiliated with Department of Pediatrics, National Institute for Medical Research (NIMR) and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems are critical for monitoring diseases and outbreaks in Tanzania. However, their efficiency and effectiveness remain under scrutiny. A quasi-experimental design was employed to assess system performance, including pre- and post-intervention data collection from across four regions. Data on disease incidence rates, response times, and resource allocation were analysed for efficiency gains. The analysis revealed a significant improvement in the detection of diseases ($p < 0.05$) with an average response time reduction of 30% compared to baseline conditions. The quasi-experimental design provided robust evidence supporting the need for system enhancements and resource allocation strategies. Public health authorities should prioritise investment in surveillance infrastructure and training programmes to further improve efficiency. public health, surveillance systems, quasi-experimental design, efficiency gains, response times Treatment effect was estimated with $\text{text} \{ \logit \} (\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Tanzania, Geographic Information Systems (GIS), Quasi-experimental design, Outcome evaluation, Public health metrics, Spatial analysis, Surveillance effectiveness

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