African Rehabilitation Medicine (Psychology aspects)

Methodological Evaluation of Public Health Surveillance Systems in Tanzania: Panel Data Estimation for Cost-Effectiveness Analysis

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Abstract

Public health surveillance systems are crucial for monitoring disease prevalence and guiding resource allocation in healthcare settings. In Tanzania, these systems have been operational since but their effectiveness has not been rigorously evaluated. Panel data estimation techniques will be employed using a mixed-effects regression model to analyse trends over time within the surveillance systems in Tanzania. Robust standard errors will be used to account for potential heterogeneity among different regions and health districts. The analysis revealed significant variations in disease prevalence across different health districts, with urban areas showing higher rates of infectious diseases compared to rural settings ($p < 0.05$). This study provides insights into the cost-effectiveness of public health surveillance systems in Tanzania and highlights the need for targeted interventions in high-prevalence regions. Based on our findings, we recommend allocating additional resources to urban areas to address higher disease burdens and implementing community-based screening programmes to improve early detection rates. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta\urcorner\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Public Health, Surveillance Systems, Panel Data, Cost-Effectiveness, Epidemiology, Methodology*

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