Methodological Assessment of Public Health Surveillance Systems in Tanzania: Quasi-Experimental Approach to Cost-Efficiency Evaluation

Kamasi Mwesigwa[1]

[1] Department of Internal Medicine, Tanzania Wildlife Research Institute (TAWIRI)

Author notes

Kamasi Mwesigwa is affiliated with Department of Internal Medicine, Tanzania Wildlife Research Institute (TAWIRI) and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Tanzania are critical for monitoring disease outbreaks and controlling epidemics. However, their effectiveness varies among different regions and can be influenced by various factors such as funding, infrastructure, and personnel availability. A meta-analysis was conducted, incorporating data from multiple studies published since . Studies were selected based on predefined inclusion criteria related to methodology quality and surveillance system performance indicators. A mixed-effects regression model with robust standard errors was employed to estimate the cost-effectiveness of public health surveillance systems. The analysis revealed that while some regions achieved a reduction in disease incidence, others showed no significant improvement or even an increase in disease prevalence, suggesting variability in system impact across different settings. This study highlights the need for standardised methodologies and continuous evaluation of public health surveillance systems to ensure their effectiveness in controlling diseases and reducing morbidity. Public health authorities should prioritise investment in robust data collection mechanisms and training programmes for personnel involved in surveillance activities. Additionally, regular audits and performance assessments are essential for maintaining system integrity and efficiency. Meta-analysis, public health surveillance systems, cost-effectiveness, Tanzania Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\neg}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, surveillance, methodology, cost-effectiveness, evaluation, intervention, randomization*

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