African Botany Research (Core Life Science)

Methodological Evaluation of Public Health Surveillance Systems in Kenya: Panel Data Estimation for System Reliability Assessment

Christopher Kibet[1], **Oscar Mwai**[2]

[1] Kenya Medical Research Institute (KEMRI)

[2] Department of Surgery, Moi University

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Correspondence: ckibet@outlook.com

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Author notes

Christopher Kibet is affiliated with Kenya Medical Research Institute (KEMRI) and focuses on Medicine research in Africa.

Oscar Mwai is affiliated with Department of Surgery, Moi University and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Kenya are crucial for monitoring infectious diseases and ensuring timely interventions. However, their reliability and effectiveness vary significantly across different regions. A mixed-method approach was employed, combining quantitative panel-data estimation techniques with qualitative interviews. The study utilised a generalized linear mixed model (GLMM) for estimating system performance. Panel data revealed that the incidence rate of malaria in western Kenya was significantly higher than in eastern regions ($p < 0.05$). The findings suggest that current surveillance systems need targeted improvements to address regional disparities effectively. Enhancements should focus on increasing resource allocation and personnel training in high-incidence areas, along with strengthening collaboration between health authorities and local communities. Public Health Surveillance, Panel Data Analysis, Malaria Incidence Rate, System Reliability Treatment effect was estimated with $text{ logit } (\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Kenya, Geographic Information Systems (GIS), panel data, time series analysis, system reliability, infectious diseases surveillance, spatial-temporal modelling*

ABSTRACT-ONLY PUBLICATION

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