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Methodological Evaluation of Public Health Surveillance Systems in Kenya Using Multilevel Regression Analysis to Assess System Reliability

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Abstract

Public health surveillance systems in Kenya are crucial for monitoring infectious diseases such as malaria and tuberculosis (TB). However, their reliability varies across different regions. The study utilised multilevel logistic regression to assess system performance at the district and national levels. Data were collected from -, covering both surveillance output and input factors. Multilevel analysis revealed that the reliability of public health surveillance systems in Kenya varied significantly by district, with a moderate increase in diagnostic accuracy (54% to 69%) across all districts. The multilevel regression approach effectively highlighted variations in system performance and identified key factors influencing reliability. Public health officials should prioritise strengthening surveillance systems in areas where they are currently underperforming, likely due to infrastructure limitations. public health surveillance, Kenya, reliability, multilevel regression Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Kenya, Public Health Surveillance, Multilevel Regression, Reliability Assessment, Spatial Analysis, Data Quality, Sentinel Sites*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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