African Veterinary Public Health

Methodological Evaluation of Public Health Surveillance Systems in Ethiopia Using Multilevel Regression Analysis

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Abstract

Public health surveillance systems are crucial for monitoring diseases and threats to public health in Ethiopia. A systematic literature review was conducted using multilevel regression analysis to assess the effectiveness and reliability of surveillance data reported by various actors. The multilevel regression analysis indicated an adoption rate of 75% for routine reporting systems, with significant variance explained by stakeholder type ($p < 0.05$). Multilevel regression analysis revealed that stakeholders in rural areas were less likely to adopt surveillance systems compared to urban settings. Strengthening communication and training programmes could improve adoption rates among underserved populations. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, public health, surveillance systems, multilevel models, regression analysis, geographic information systems, spatial-temporal patterns*

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