African Mycology Research (Core Life Science)

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

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Abstract

Public health surveillance systems in Senegal are crucial for monitoring infectious diseases and managing public health crises efficiently. Multilevel regression analysis was employed to assess the performance and efficiency of public health surveillance systems at both national and regional levels. The model accounts for hierarchical data structures by incorporating random intercepts and slopes. The multilevel regression analysis revealed a significant positive effect (p-value < 0.05) on yield improvement in regions with more robust surveillance infrastructures, indicating that improved infrastructure leads to better monitoring outcomes. Our findings suggest that enhancing public health surveillance systems can significantly improve the efficiency and effectiveness of disease detection and response efforts in Senegal. Based on our results, we recommend investing in upgrading surveillance technology and training personnel in high-risk regions to further optimise yield improvement metrics. Public Health Surveillance, Multilevel Regression Analysis, Yield Improvement, Senegal Treatment effect was estimated with $text{logit}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Senegalese, surveillance, multilevel, regression, methodology, public health*

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