



Methodological Evaluation of Public Health Surveillance Systems in Nigeria: Quasi-Experimental Design for Yield Improvement Assessment

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Abstract

Public health surveillance systems in Nigeria are critical for monitoring disease prevalence and guiding resource allocation. However, their effectiveness remains unexplored. A mixed-methods approach was employed, including quantitative analysis and qualitative interviews. The study utilised a difference-in-differences (DID) model to assess changes in surveillance data over time. The DID model indicated an average yield increase of 15% in disease reporting across regions post-intervention, with significant variance observed between urban and rural areas. Quasi-experimental designs offer a robust framework for evaluating public health surveillance systems. The findings suggest substantial potential for improving data quality and resource allocation based on timely feedback loops. Enhanced training programmes should be implemented to improve data accuracy, while regional disparities in intervention effects highlight the need for tailored strategies. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Nigerian, Quasi-experimental, Evaluation, Public health, Surveillance, Methodology, Monitoring, Resource allocation*

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