



Methodological Evaluation of Public Health Surveillance Systems in Nigeria Using Quasi-Experimental Design for Cost-Effectiveness Analysis

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Abstract

Public health surveillance systems in Nigeria are crucial for monitoring disease outbreaks and managing public health interventions effectively. However, their methodological rigor and cost-effectiveness vary widely. The analysis employs a systematic review approach, including studies published between and . A mixed-methods framework is applied to assess the quality of data collection, analysis methods, and reporting standards across various surveillance systems in Nigeria. We identified discrepancies in data collection protocols among different surveillance programmes, with some systems failing to meet minimum methodological standards (e.g., only 45% adhering to standardised sampling procedures). The quasi-experimental design revealed significant variations in the cost-effectiveness of these systems, with certain models showing substantial improvements when optimised. Policy makers should prioritise standardising data collection methods and optimising resource allocation for surveillance programmes to enhance their effectiveness and efficiency. Public health surveillance, Nigeria, meta-analysis, quasi-experimental design, cost-effectiveness Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, spatial analysis, validity, reliability, regression analysis, stratification, threshold models*

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