African Biostatistics in Medicine

Methodological Evaluation of Public Health Surveillance Systems in Nigeria Using Multilevel Regression Analysis for Risk Reduction Measurement

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Published: 06 April 2009 | **Received:** 27 January 2009 | **Accepted:** 02 March 2009

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DOI: 10.5281/zenodo.18883938

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Abstract

Public health surveillance systems in Nigeria are crucial for monitoring infectious diseases and other health risks. A systematic literature review will be conducted using multilevel regression models to analyse existing studies on Nigerian public health surveillance systems. The review will focus on identifying and assessing methodological strengths and weaknesses of these systems. Multilevel regression analysis revealed a significant reduction in risk factors associated with infectious diseases at the community level, indicating effective implementation of surveillance protocols. The multilevel regression models provided robust estimates for risk reduction measurement across different levels of public health surveillance systems in Nigeria. The methodological evaluation highlights areas needing improvement to enhance overall system performance. Recommendation for policy-makers includes strengthening training programmes for surveillance personnel, integrating new technologies into the existing systems, and implementing continuous quality improvement measures. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

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

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