



# Methodological Evaluation of Public Health Surveillance Systems in Nigeria: A Randomized Field Trial for Risk Reduction Assessment

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## Abstract

Public health surveillance systems are crucial for monitoring disease prevalence and guiding interventions in Nigeria. However, their effectiveness remains uncertain due to methodological limitations. The study employed a mixed-methods approach combining quantitative and qualitative data collection. A sample size of 500 participants was randomly selected to assess the system's performance across various indicators, including incidence rates and mortality ratios. Quantitative analysis utilised logistic regression models to predict disease outcomes based on surveillance data. The study found a significant reduction in mortality rates by 20% among those who received timely intervention through the surveillance system compared to controls (OR = 0.80, CI: 0.65-0.99). This research provides evidence supporting the efficacy of public health surveillance systems in Nigeria for risk reduction. Public health authorities should prioritise investment and continuous improvement of these systems to enhance their impact on disease management. public health, surveillance systems, randomized field trial, mortality rates, logistic regression

**Keywords:** *African geography, public health, surveillance systems, randomized trials, data quality, analytical methods, disease prevalence*

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