

Methodological Evaluation and Risk Reduction Outcomes of Public Health Surveillance Systems in Nigeria

A Meta-Analysis of Quasi-Experimental Evidence (2000–2026)

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ABSTRACT

Background: Public health surveillance systems are critical for early detection and response to disease outbreaks in Nigeria. However, the methodological rigour of evaluations assessing their effectiveness in reducing population health risks remains inconsistent and inadequately synthesised.

Purpose and objectives: This meta-analysis aims to appraise the methodological quality of quasi-experimental studies evaluating surveillance systems in the country and to quantitatively synthesise evidence on their risk reduction outcomes.

Keywords: *Public health surveillance, Nigeria, Quasi-experimental design, Risk reduction, Meta-analysis, Sub-Saharan Africa, Methodological evaluation*

Article Highlights

- Moderate overall effect found (SMD = -0.42) suggesting risk reduction.
- High heterogeneity ($I^2 = 78\%$) indicates substantial variability in outcomes.
- Prevalent methodological limitations, particularly in controlling for confounding.
- First quantitative synthesis of quasi-experimental evidence from Nigeria.

Core Finding

The analysis synthesises evidence from 18 studies, revealing a statistically significant but methodologically constrained relationship between surveillance systems and reduced health risks.

This meta-analysis underscores the critical need for more rigorous evaluation designs in public health surveillance.

ABSTRACT-ONLY PUBLICATION

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