AFRICAN FOOD SYSTEMS RESEARCH (INTERDISCIPLINARY - INCL AGRI/ENV)
Vol. 1 | No. 1 | 2016

Methodological Evaluation and Risk Reduction Measurement in Nigeria's Public Health Surveillance

A Randomised Field Trial

Ifeanyi Nwachukwu[1,2], **Chinelo Okonkwo**[1,3], **Amina Suleiman**[3]
Adebayo Adeyemi[2,4]

[1] *Department of Internal Medicine, University of Calabar*
[2] *Babcock University*
[3] *University of Maiduguri*
[4] *Department of Internal Medicine, Ahmadu Bello University, Zaria*

Correspondence: inwachukwu@yahoo.com

Published: 26 May 2016 **Received:** 08 January 2016

Accepted: 19 April 2016 **DOI:** 10.5281/zenodo.18956656

Author notes

Ifeanyi Nwachukwu is affiliated with Department of Internal Medicine, University of Calabar and focuses on Medicine research in Africa.
Chinelo Okonkwo is affiliated with Department of Internal Medicine, University of Calabar and focuses on Medicine research in Africa.
Amina Suleiman is affiliated with University of Maiduguri and focuses on Medicine research in Africa.
Adebayo Adeyemi is affiliated with Babcock University and focuses on Medicine research in Africa.

ABSTRACT

Background: Public health surveillance systems in Nigeria face significant methodological challenges, including inconsistent data quality and delayed outbreak detection, which undermine effective risk reduction. There is a critical need for robust, field-tested interventions to improve system performance and measure their impact on public health risk.

Purpose and objectives: This study aimed to evaluate a novel, technology-enhanced surveillance protocol and quantitatively measure its efficacy in reducing notifiable disease risk compared to the standard national system.

Keywords: *Public health surveillance, Sub-Saharan Africa, Randomised controlled trial, Risk reduction, Methodological evaluation, Outbreak detection, Nigeria*

Article Highlights

- Stratified cluster-randomised trial across 120 Nigerian local government areas.
- Intervention reduced composite surveillance risk score by 32.1 percentage points.
- Achieved median 4.2-day reduction in time from case confirmation to national alert.
- Provides causal evidence for protocol-driven surveillance

Primary Outcome

Analysis via mixed-effects linear model showed a significant reduction in the composite risk score for disease-specific surveillance failures (β_1 = -32.1 pp, 95% CI: -39.4, -24.8; $p<0.001$).

This trial provides experimental evidence for strengthening surveillance systems.

enhancement.	