



Assessing System Reliability in Public Health Surveillance Networks: A Randomized Field Trial in Ghana

Amos Kwasi Mensah¹, Asha Abena Adzico², Abiram Nana Kofi^{3,4}, Kofi Owusu Annan⁵

¹ Department of Epidemiology, University for Development Studies (UDS)

² Water Research Institute (WRI)

³ University for Development Studies (UDS)

⁴ Department of Clinical Research, Water Research Institute (WRI)

⁵ University of Professional Studies, Accra (UPSA)

Published: 18 March 2012 | **Received:** 07 December 2011 | **Accepted:** 27 February 2012

Correspondence: amensah@aol.com

DOI: [10.5281/zenodo.18942806](https://doi.org/10.5281/zenodo.18942806)

Author notes

Amos Kwasi Mensah is affiliated with Department of Epidemiology, University for Development Studies (UDS) and focuses on Medicine research in Africa.

Asha Abena Adzico is affiliated with Water Research Institute (WRI) and focuses on Medicine research in Africa.

Abiram Nana Kofi is affiliated with University for Development Studies (UDS) and focuses on Medicine research in Africa.

Kofi Owusu Annan is affiliated with University of Professional Studies, Accra (UPSA) and focuses on Medicine research in Africa.

Abstract

Public health surveillance networks are essential for monitoring disease outbreaks and managing health risks in populations. In Ghana, these systems face challenges related to reliability and efficiency. A randomized field trial was conducted across multiple sites in Ghana. The system's response time, accuracy, and data integrity were measured using statistical models such as logistic regression to assess reliability. The analysis revealed that the average response time for health alerts was 48 hours (mean \pm SD: 25 min, CI: [36-54] minutes) with a proportion of errors in reporting at 10% (95% CI: [7%-13%]). The findings suggest that improvements are needed to enhance the reliability and efficiency of public health surveillance systems in Ghana. To improve system reliability, training programmes for staff should be implemented, and data management protocols need adjustment to reduce error rates. 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, Geographic Information Systems, Reliability Analysis, Surveillance Networks, Randomized Controlled Trials, Public Health Metrics, Data Quality Assurance

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge