Methodological Assessment and Clinical Validation of Public Health Surveillance Systems in Senegal: A Randomized Field Trial

Sabrina Guindo[1], Mamadou Diop[2], Ibrahima Sow[3,4], Fatoumata Ndoye[5,6]

[1] Department of Surgery, Université Alioune Diop de Bambey (UADB)

[2] Université Alioune Diop de Bambey (UADB)

[3] Department of Pediatrics, Université Gaston Berger (UGB), Saint-Louis

[4] Department of Epidemiology, African Institute for Mathematical Sciences (AIMS) Senegal

[5] Cheikh Anta Diop University (UCAD), Dakar

[6] African Institute for Mathematical Sciences (AIMS) Senegal

Author notes

Sabrina Guindo is affiliated with Department of Surgery, Université Alioune Diop de Bambey (UADB) and focuses on Medicine research in Africa.

Mamadou Diop is affiliated with Université Alioune Diop de Bambey (UADB) and focuses on Medicine research in Africa.

Ibrahima Sow is affiliated with Department of Pediatrics, Université Gaston Berger (UGB), Saint-Louis and focuses on Medicine research in Africa.

Fatoumata Ndoye is affiliated with Cheikh Anta Diop University (UCAD), Dakar and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Senegal have been established to monitor disease outbreaks and implement timely interventions. However, their effectiveness and reliability require rigorous methodological assessment. A randomized field trial was conducted among 1000 healthcare facilities across Senegal. Surveillance data were collected on influenza-like illnesses, and outcomes were measured by comparing reported cases with actual laboratory-confirmed cases. The analysis revealed that the surveillance systems had a sensitivity of 85% in detecting influenza outbreaks, indicating a moderate level of reliability. While the systems showed promise, further improvements are needed to enhance their detection accuracy and timeliness. Continuous monitoring, regular calibration exercises, and technological upgrades should be implemented to improve system performance. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African, Geographic, Spatial, Epidemiology, Surveillance, Randomization, Outcome*

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