



Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Randomized Field Trial

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Abstract

Public health surveillance systems in Senegal are crucial for monitoring infectious diseases such as malaria and tuberculosis. However, their effectiveness can be improved through methodological enhancements. A randomized field trial was conducted to assess the performance of surveillance data collection methods across different regions. The study employed statistical analysis with robust standard errors and confidence intervals for inference. The findings suggest that incorporating mobile health technology improved data collection accuracy by 20% compared to traditional paper-based reporting systems in rural areas. Enhancing surveillance systems through technological integration can significantly improve public health outcomes in Senegal. Public health authorities should invest in upgrading surveillance technologies and continue monitoring system performance for future improvements. Public Health Surveillance, Randomized Field Trial, Mobile Technology, Efficiency Gains
Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, surveillance, epidemiology, data quality, randomization, outcome assessment, intervention effectiveness*

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