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Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Randomized Field Trial for Yield Improvement Assessment

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Abstract

Public health surveillance systems in Senegal are crucial for monitoring disease outbreaks and ensuring timely interventions. However, their effectiveness varies, necessitating a methodological evaluation to enhance their efficiency. A randomized field trial was conducted across three regions of Senegal. Surveillance data were collected over six months, with participants randomly assigned to either an intervention group (enhanced reporting protocols) or a control group (standard procedures). Data on disease incidence and population health outcomes were analysed using logistic regression models. The randomized field trial demonstrated that the enhanced reporting protocol led to a statistically significant increase in disease detection rates by 20% compared to the standard procedures, with a 95% confidence interval of (13.8%, 26.2%). This study provides empirical evidence on the efficacy of improved surveillance protocols and highlights their potential role in enhancing public health outcomes. Policy makers should consider adopting enhanced reporting strategies to improve disease detection rates, thereby improving overall population health. Public Health Surveillance, Senegal, Randomized Field Trial, Logistic Regression, Disease Detection Treatment effect was estimated with $text{logit}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, public health surveillance, randomized controlled trial, yield assessment, sentinel site, evaluation methodology, impact evaluation*

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