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Methodological Evaluation of Public Health Surveillance Systems in Kenya: A Randomized Field Trial for Risk Reduction Measurement

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Abstract

Public health surveillance systems are crucial for monitoring disease outbreaks and guiding interventions in Kenya. However, their effectiveness can vary significantly across different regions due to varying local contexts. A randomized field trial was conducted in two Kenyan counties. Surveillance data were collected over six months using standard protocols and enhanced by additional monitoring tools. Statistical analysis employed a mixed-effects logistic regression model to assess the impact of interventions. The findings indicate an improvement of 25% in risk reduction measures when surveillance systems are augmented with real-time feedback mechanisms, as compared to traditional methods. This study demonstrates that integrating real-time feedback into public health surveillance can significantly enhance its effectiveness in reducing disease risks. Public health agencies should consider implementing these enhanced surveillance systems to improve their response and prevention strategies. public health, surveillance systems, risk reduction, randomized field trial, mixed-effects logistic regression 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, Outcome measurement, Epidemiology, Sampling methodology, Data quality assessment*

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