African Veterinary Parasitology

Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Quasi-Experimental Design

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Abstract

Public health surveillance systems in Senegal are critical for monitoring vector-borne diseases such as malaria and lymphatic filariasis. A mixed-methods approach including quantitative data analysis and qualitative interviews was employed to assess system performance and identify areas for enhancement. The implementation of new surveillance tools reduced malaria incidence by 15% in endemic regions ($p < 0.05$) with an estimated uncertainty of ±3% Enhanced surveillance systems have the potential to significantly improve public health outcomes in Senegal, particularly in reducing malaria prevalence. Immediate integration of recommended tools and training for surveillance staff is essential to achieve optimal system performance. Treatment effect was estimated with $text{ logit }(pi)=beta 0+vec{beta} p X_{i}$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Geographic Information Systems, Quantitative Methods, Qualitative Research, Spatial Analysis, Surveillance Efficiency, Cluster Randomized Trials*

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