African Animal Physiology (Agri/Animal Science)

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 in Kenya are crucial for monitoring diseases and implementing timely interventions to reduce morbidity and mortality. A randomized controlled trial was conducted in three districts of Kenya. Surveillance data were collected over one year using a mixed-method approach combining quantitative surveys with qualitative interviews to assess system performance and community engagement. The analysis revealed significant improvement in disease reporting accuracy (95% confidence interval: 0.85-0.97) compared to previous years, indicating enhanced public health surveillance efficiency. The randomized field trial demonstrated the potential of improved surveillance systems to significantly reduce risk factors associated with communicable diseases. Continued support for training and resource allocation to enhance system functionality is recommended to sustain these improvements. 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 epidemiology, Randomized controlled trial, Public health surveillance, Geographic information systems, Data quality assessment, Spatial analysis, Risk mapping*