African Disability Studies (Interdisciplinary - Social/Health/Policy)

Methodological Assessment and Risk Reduction Evaluation of Public Health Surveillance Systems in Uganda Using Bayesian Hierarchical Models

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Abstract

Public health surveillance systems in Uganda are essential for monitoring diseases and implementing effective interventions. A comprehensive review of existing literature on public health surveillance systems, focusing on methodologies used in Uganda. The study employed Bayesian hierarchical models for analysis. Bayesian hierarchical models showed a significant reduction ($p < 0.05$) in the risk of disease outbreak when implemented correctly across multiple regions. The effectiveness of Bayesian hierarchical models was robust and adaptable to various surveillance needs, providing a reliable framework for future interventions. Public health officials should prioritise methodological training and resource allocation to ensure optimal performance of surveillance systems. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African, Surveillance, Bayesian, Hierarchical, Methodology, Evaluation, Risk Reduction*

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