Bayesian Hierarchical Model Evaluation of Public Health Surveillance Systems in Senegal,

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases in Senegal. However, their effectiveness can be improved through methodological evaluations. A comprehensive search was performed using databases such as PubMed, Embase, and Scopus. Studies were assessed for methodological rigor and relevance to the review's objectives. Bayesian hierarchical models were applied to analyse surveillance data. Bayesian hierarchical models indicated that integrating cost-benefit analyses improved model accuracy by reducing uncertainty in predicting disease prevalence trends. The application of Bayesian hierarchical models provided a robust framework for evaluating public health surveillance systems, enhancing their efficiency and effectiveness. Public health officials should consider using these models to guide resource allocation and policy decisions aimed at improving surveillance outcomes. Treatment effect was estimated with $text\{logit\}(\pi) = beta\, 0 + \beta^{\neg}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Bayesian, Hierarchical, Model, Evaluation, Surveillance, PublicHealth*

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