African Health Communication (Media/Health/Social)

Methodological Evaluation of Public Health Surveillance Systems in Tanzania Using a Bayesian Hierarchical Model

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Abstract

Public health surveillance systems are crucial for monitoring diseases in Tanzania, yet their effectiveness varies. A systematic literature review was conducted using studies published between and . Studies were assessed based on quality, with a focus on Bayesian hierarchical models used for measuring adoption rates. The analysis revealed that the majority of surveillance systems in Tanzania adopted a Bayesian hierarchical model to measure adoption rates, indicating its effectiveness in this context. A novel Bayesian hierarchical model was identified as a robust method for evaluating public health surveillance system adoption rates in Tanzania. This model provides more precise estimates than traditional methods. Future studies should validate the model using independent datasets and explore potential improvements to enhance its applicability across different settings. Bayesian Hierarchical Model, Public Health Surveillance System, Adoption Rates, Tanzania Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Bayesian hierarchical models, public health surveillance, systematic review, disease monitoring, spatial analysis, adoption rates*

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