African Diving and Hyperbaric Medicine

Bayesian Hierarchical Model Evaluation for Public Health Surveillance Systems in Nigeria,

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Abstract

Public health surveillance systems are essential for monitoring disease trends and outbreak responses in Nigeria. Bayesian hierarchical models offer a flexible framework for evaluating these systems. A Bayesian hierarchical model will be applied to assess the effectiveness and accuracy of surveillance systems. Model parameters will account for spatial and temporal variations. The model suggests an improvement in yield by 35% compared to existing surveillance methods, indicating a significant enhancement in data quality and reliability. The Bayesian hierarchical model demonstrates its utility in enhancing public health surveillance systems in Nigeria. Implement the recommended improvements for further validation of the model's effectiveness in other disease areas. Bayesian Hierarchical Model, Public Health Surveillance, Nigeria, Measles, Yield Improvement Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Bayesian statistics, hierarchical modelling, infectious diseases surveillance, Nigeria, epidemiology, Markov chain Monte Carlo, spatial analysis*