Bayesian Hierarchical Model for Measuring System Reliability in Community Health Centres in Kenya

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Abstract

Bayesian hierarchical models are increasingly used in healthcare settings to assess system reliability across diverse populations. A systematic literature review was conducted using databases such as PubMed and Scopus. Studies were screened based on predefined inclusion criteria related to CHC operations and Bayesian hierarchical models. The analysis revealed that a specific Bayesian hierarchical model, incorporating uncertainty quantification through credible intervals, provided more reliable estimates of system reliability in CHCs compared to traditional methods. Bayesian hierarchical models offer a robust framework for assessing system reliability in healthcare settings, particularly when considering the variability and complexity inherent in community health systems. Further research should explore model application across different geographical regions and healthcare sectors to validate these findings and enhance their generalizability. Systematic Literature Review, Bayesian Hierarchical Model, Community Health Centers, System Reliability, Kenya Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\neg}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

ABSTRACT-ONLY PUBLICATION

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