Bayesian Hierarchical Model Evaluation of District Hospitals Systems in Tanzania: A Review

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Abstract

Recent studies have highlighted the need for improved system evaluations of district hospitals in Tanzania to enhance healthcare delivery. A comprehensive search strategy was employed, incorporating databases such as PubMed and Embase. Studies were screened based on inclusion criteria related to Bayesian hierarchical modelling applications in healthcare systems of Tanzania. Bayesian hierarchical models have shown potential for measuring yield improvement with moderate uncertainty, indicating variability across different datasets. The review underscores the effectiveness of Bayesian hierarchical models in providing nuanced insights into healthcare system performance and suggests their integration as a standard methodology in future studies. Future research should focus on validating these models using larger datasets to ensure robustness and applicability, with particular emphasis on rural areas where resources are scarce. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{-}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, District Hospitals, Bayesian Hierarchical Model, Methodology, Evaluation, Quantitative Methods, Systematic Review*

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