African Sleep Medicine

Bayesian Hierarchical Model Assessment of District Hospitals' Operational Efficiency in Ethiopia

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Abstract

District hospitals in Ethiopia have been a focus for improving healthcare delivery efficiency. However, existing studies often lack comprehensive methodological evaluations of their operational efficiency. The study employs rigorous methodology involving systematic searching of databases such as PubMed, Google Scholar, and Embase. Studies are critically appraised using predefined inclusion criteria focusing on the use of Bayesian hierarchical models and operational efficiency metrics. A key finding is that while some studies used Bayesian hierarchical models to assess gains in efficiency, there was significant variability in model specification and data handling practices across different hospitals. The review highlights the need for standardization in methodological approaches to ensure consistent evaluation of operational efficiencies among district hospitals in Ethiopia. Recommendations include harmonizing data collection protocols and encouraging the use of robust statistical models like Bayesian hierarchical models to enhance comparability and reliability across studies. Bayesian Hierarchical Model, District Hospitals, Operational Efficiency, Ethiopia, Systematic Literature Review Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *District Hospitals, Ethiopia, Bayesian Hierarchical Model, Efficiency Measurement, Methodology, Quantitative Analysis, Statistical Evaluation, Healthcare Delivery*

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