African Wilderness Medicine

Methodological Evaluation of District Hospitals Systems in Senegal Using Bayesian Hierarchical Models to Measure Reliability

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Abstract

District hospitals in Senegal face significant challenges in providing reliable healthcare services. A systematic literature review was conducted to analyse existing studies on district hospitals in Senegal. Bayesian hierarchical models were employed to measure system reliability, with robust standard errors accounting for uncertainty in model parameters. The analysis revealed a moderate level of variability in the effectiveness of district hospital systems across different regions of Senegal, with some areas showing higher reliability than others. Bayesian hierarchical models provided valuable insights into system performance and identified key factors affecting reliability within the healthcare sector. Further research should be conducted to implement targeted interventions in low-reliability areas, focusing on infrastructure development and training for healthcare workers. District hospitals, Senegal, Bayesian hierarchical models, system reliability, robust standard errors Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Bayesian, Hierarchical, Evaluation, Reliability, Methodology, Quantitative*

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