Methodological Assessment of Bayesian Hierarchical Models in Evaluating Clinical Outcomes within Urban Primary Care Networks in South Africa

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Abstract

Urban primary care networks in South Africa have been established to improve access to healthcare services for underserved populations. However, their effectiveness is often evaluated through clinical outcomes, which can be influenced by methodological choices such as Bayesian hierarchical models. The review employs a comprehensive search strategy across relevant databases, focusing on studies published between and . Studies are assessed using predefined criteria for methodological rigor, including the use of Bayesian hierarchical models to analyse clinical outcomes data from urban primary care networks in South Africa. A key finding is that while Bayesian hierarchical models have shown promise, their application varies widely across studies, with some demonstrating robust results and others encountering significant challenges related to model specification and data quality. The review concludes that the methodological assessment of Bayesian hierarchical models in evaluating clinical outcomes within urban primary care networks in South Africa is essential for improving future research design and interpretation. Future studies should prioritise rigorous methodological standards when applying Bayesian hierarchical models to ensure consistent and reliable results across urban primary care networks in South Africa. Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\to}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, primary care, Bayesian, hierarchical, models, evaluation, clinical outcomes*

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