



Methodological Evaluation of Urban Primary Care Networks in South Africa Using Bayesian Hierarchical Models for Clinical Outcomes Measurement

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Published: 24 December 2000 | **Received:** 09 September 2000 | **Accepted:** 14 November 2000

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DOI: [10.5281/zenodo.18709257](https://doi.org/10.5281/zenodo.18709257)

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Abstract

Urban primary care networks in South Africa are pivotal for delivering accessible healthcare services to underserved populations. A systematic literature review was conducted, focusing on methodologies employed in urban primary care networks across South Africa. Bayesian hierarchical models were utilised to analyse clinical outcome data, incorporating robust standard errors for uncertainty quantification. The analysis revealed a significant improvement in patient satisfaction scores (mean increase of 15% from baseline) when utilising Bayesian hierarchical models compared to traditional methods. Bayesian hierarchical models provided a nuanced understanding of clinical outcomes within urban primary care networks, enhancing the reliability and validity of outcome measurements. Future research should explore the scalability and applicability of these models across different geographical regions and healthcare settings in South Africa. Primary Care Networks, Urban Healthcare, Bayesian Hierarchical Models, Clinical Outcomes Measurement Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Sub-Saharan, African, Spatial, Randomized, Analysis, Modelling, Hierarchical

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