African Human Geography

Methodological Evaluation of Regional Monitoring Networks for Clinical Outcomes in Nigeria: A Time-Series Forecasting Assessment

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Abstract

Clinical outcomes in Nigeria have been monitored through regional monitoring networks (RMONs), which are pivotal for evaluating healthcare delivery and policy effectiveness. A comprehensive search strategy was employed to identify relevant studies from peer-reviewed journals and gray literature. Studies were assessed based on predefined inclusion criteria regarding methodology, data quality, and model application. The analysis revealed that while most RMONs used linear regression for forecasting clinical outcomes, the majority lacked adequate time-series data or robust statistical validation methods. Despite some variability in methodological approaches, a notable trend was identified: few studies provided clear confidence intervals or addressed potential model bias. To enhance the reliability and validity of RMONs, future research should prioritise rigorous data collection, utilise more sophisticated time-series forecasting models, and incorporate uncertainty estimation methods. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan African, Nigeria, Monitoring Networks, Epidemiology, Time-Series Analysis, Regional Surveillance, Public Health Metrics, Statistical Models*

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