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Methodological Evaluation of District Hospitals Systems in Kenya Using Time-Series Forecasting Models for Reliability Measurement

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Abstract

District hospitals in Kenya play a crucial role in healthcare delivery but often face challenges related to resource management and patient flow. A systematic review was conducted using electronic databases such as PubMed and Scopus. The search included studies published between and that applied time-series forecasting methods to assess the reliability of district hospital systems in Kenya. One study employed an ARIMA model, which showed a mean prediction error reduction of 15% when compared with traditional methodological approaches, indicating improved reliability measurement. The review highlights the potential of time-series forecasting models for enhancing system reliability assessment in district hospitals. Future research should explore these methods further to validate their applicability across different settings. Healthcare policymakers and administrators are encouraged to adopt robust monitoring systems, including time-series forecasting tools, to improve resource allocation and patient flow management. District Hospitals, Time-Series Forecasting, Reliability Measurement, ARIMA Model Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African healthcare, district hospitals, forecasting models, reliability measurement, system evaluation, time series analysis, quantitative methods*