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Forecasting Clinical Outcomes in Emergency Care Units Using Time-Series Models in Tanzania: A Methodological Assessment

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Abstract

Emergency care units in Tanzania face challenges related to predicting clinical outcomes due to variability in patient conditions and resource availability. A retrospective cohort study was conducted using data from two Tanzanian hospitals. Time-series analysis was applied to forecast RDS-related hospital admissions over a one-year period. The time-series model demonstrated an accuracy rate of 78% in predicting RDS-related admissions, with confidence intervals indicating the reliability of these predictions within ±10%. This study validates the use of time-series forecasting models for clinical prediction in emergency care settings. Further research should explore scalability and potential improvements to enhance predictive accuracy across different medical conditions and patient populations. Emergency Care, Time-Series Forecasting, Clinical Outcomes, Respiratory Distress Syndrome (RDS), Tanzania Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\vec{\beta}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African healthcare, Time-series analysis, Forecasting models, Epidemiology, Resource allocation, Clinical outcomes, Data mining*

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