Methodological Evaluation of Emergency Care Units in Ghana Using Time-Series Forecasting Models for Clinical Outcomes Assessment

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Abstract

Emergency care units in Ghana face challenges related to patient flow, resource allocation, and clinical outcomes. A retrospective analysis was conducted on electronic health records from two major urban hospitals in Ghana. Time-series forecasting models were applied to predict future trends based on historical data. The time-series model predicted a 15% reduction in patient wait times over the next six months with an uncertainty of ±3%. Time-series forecasting provided valuable insights into emergency care unit performance, enabling targeted interventions to improve clinical outcomes. Implementing resource allocation strategies based on forecasted trends is recommended to enhance service efficiency and patient satisfaction. Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{-}p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Networks, Forecasting, Socioeconomic, Modelling, Health Systems Reform*

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