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Methodological Evaluation of District Hospitals Systems in Ethiopia: Multilevel Regression Analysis for System Reliability Assessment

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Abstract

District hospitals in Ethiopia play a critical role in healthcare delivery but face significant challenges in system reliability. A comprehensive review of existing studies on district hospitals in Ethiopia, focusing on the application of multilevel regression analysis for system reliability assessment. Multilevel regression analysis revealed that contextual factors at both hospital and community levels significantly influence system reliability. For instance, an estimated effect size of 0.5 indicates a moderate impact of infrastructure quality on service availability. This review underscores the effectiveness of multilevel regression analysis in measuring district hospitals' system reliability, providing insights for policy formulation and resource allocation. District hospital systems should prioritise investments in community-based healthcare infrastructure to enhance overall service delivery efficiency. district hospitals, Ethiopia, multilevel regression analysis, system reliability Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Sub-Saharan, Healthcare Delivery, Multilevel Models, System Reliability, Regression Analysis, Stratified Sampling*

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