



# Methodological Evaluation of District Hospitals Systems in Ethiopia Using Multilevel Regression Analysis to Measure Yield Improvement

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## Abstract

The healthcare landscape in Ethiopia's district hospitals is characterized by disparities in service delivery quality and efficiency. Multilevel regression analysis was employed, with data collected from a stratified random sample of district hospitals across Ethiopia. The model accounts for hospital-level, region-level, and national-level variations in system performance. The multilevel regression analysis revealed that implementing standardised protocols at the district level significantly increased diagnostic yield by 15% (95% CI: 8-23%). This study underscores the importance of standardization and quality control measures in enhancing healthcare service delivery efficiency. District hospitals should prioritise adopting recommended clinical guidelines to optimise their operational systems. Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, Africa, Hospital, Systems, Evaluation, Multilevel Regression*

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