Multilevel Regression Analysis to Evaluate System Efficiency in Ethiopian District Hospitals: A Methodological Assessment

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Abstract

This study evaluates the efficiency of district hospitals in Ethiopia's healthcare system. A multilevel regression model was employed to analyse data collected from Ethiopian district hospital records. The model accounts for both within-hospital variation (level 1) and hospital variation (level 2), ensuring comprehensive evaluation of system efficiency across different hospitals. The analysis revealed a significant positive effect of investment in infrastructure on patient throughput, indicating that increased funding leads to improved hospital capacity and service delivery outcomes. This study provides robust evidence supporting the importance of resource allocation for enhancing healthcare system performance in Ethiopia's district hospitals. Policy recommendations include prioritising investments in hospital infrastructure and training staff, particularly at lower levels of care where efficiency gains are most pronounced. district hospitals, multilevel regression analysis, Ethiopian healthcare, service delivery effectiveness Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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