



Methodological Evaluation of District Hospitals Systems in Ghana Through Multilevel Regression Analysis for Yield Improvement

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Abstract

District hospitals in Ghana play a crucial role in healthcare delivery but face challenges that affect service quality and patient outcomes. A multilevel regression model was employed to analyse data from multiple levels (districts and hospitals) nested within each other. The model includes fixed effects for hospital-specific characteristics and random intercepts for districts. The multilevel regression analysis revealed that investment in human resources had a positive, though moderate, effect on yield improvement across district-level variations. Investment in human capital is essential for enhancing the operational efficiency of district hospitals in Ghana, contributing to improved healthcare outcomes. District health authorities should prioritise targeted investments in staff training and retention programmes to support yield improvements. Treatment effect was estimated with $\text{text} \{ \text{logit} \} (\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Ghana, District Hospitals, Multilevel Regression, Health Services Research, Quality Improvement, Hierarchical Analysis, Outcome Evaluation

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