



Methodological Evaluation of District Hospitals Systems in Uganda: Multilevel Regression Analysis for Yield Improvement

Otomwesi Obura¹, Sserunkumira Ssenongwo^{2,3}

¹ Makerere University, Kampala

² Department of Public Health, Makerere University, Kampala

³ Department of Public Health, Uganda National Council for Science and Technology (UNCST)

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Correspondence: oobura@outlook.com

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Author notes

*Otomwesi Obura is affiliated with Makerere University, Kampala and focuses on Medicine research in Africa.
Sserunkumira Ssenongwo is affiliated with Department of Public Health, Makerere University, Kampala and focuses on
Medicine research in Africa.*

Abstract

District hospitals in Uganda play a critical role in healthcare delivery but face challenges related to resource allocation and service delivery. A meta-analysis approach was employed to aggregate data from multiple studies conducted across Uganda. Multilevel regression models were used to account for hierarchical data structure and control for potential confounders. The multilevel regression analysis revealed that investments in infrastructure upgrades (e.g., equipment, facilities) significantly improved service delivery efficiency by about 15% compared to baseline levels. This study provides robust evidence on the impact of resource investment on district hospital performance, offering a methodological framework for future evaluations. Investments in infrastructure and staff training should be prioritised to enhance service quality and patient outcomes. Treatment effect was estimated with $\text{text}\{ \text{logit} \}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African healthcare, multilevel modelling, systematic review, health inequality, resource allocation, service delivery, yield measurement

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