



Methodological Assessment and Risk Reduction in District Hospitals Systems Using Difference-in-Differences Models: Evidence from Tanzania

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Abstract

District hospitals in Tanzania face challenges in providing consistent quality care due to limited resources and infrastructure. A difference-in-differences approach was employed to analyse pre- and post-intervention data from selected districts. The DiD model incorporates treatment group and control groups to isolate the impact of policy changes on health outcomes. The DiD analysis revealed a statistically significant reduction in patient wait times by 20% (95% CI: -15%, -24%) post-intervention compared to pre-intervention levels, indicating improved service efficiency. This study demonstrates the utility of DiD models for evaluating healthcare system improvements and highlights their potential as a robust methodological tool in district hospital settings. The findings suggest that sustained investment in infrastructure and training programmes is essential to maintain these improvements and further enhance patient care experiences. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, District Hospitals, Health Systems, Methodology, Quantitative Methods, Difference-in-Differences, Geographic Information Systems*

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