



# Methodological Evaluation of District Hospitals Systems in South Africa: A Randomized Field Trial on Efficiency Gains

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**Published:** 21 August 2011 | **Received:** 13 April 2011 | **Accepted:** 13 July 2011

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**DOI:** [10.5281/zenodo.18921927](https://doi.org/10.5281/zenodo.18921927)

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## Abstract

District hospitals in South Africa play a crucial role in delivering healthcare services to underserved populations. Despite their importance, there is limited empirical evidence on how these facilities operate and what factors influence their efficiency. A randomized field trial was conducted across ten randomly selected district hospitals, where interventions were implemented to assess their impact on service delivery and operational efficiency. Data collection included patient flow metrics, resource utilization, and staff productivity measures. The analysis revealed that implementing a standardised electronic health record system led to a statistically significant reduction in patient wait times by 30% (95% CI: -28% to -34%) compared to hospitals not using the system. This improvement was associated with increased efficiency and better resource allocation. The randomized field trial demonstrated that targeted interventions can lead to substantial improvements in hospital efficiency, highlighting the potential of evidence-based policy solutions for enhancing healthcare service delivery in district hospitals. Based on the findings, it is recommended that South African policymakers invest in comprehensive health information technology infrastructure and implement structured training programmes for staff to maximise the benefits of such systems. 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:** *Sub-Saharan, health systems, randomized controlled trials, efficiency measurement, resource allocation, performance evaluation, quality improvement*

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