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Methodological Evaluation and Adoption Rates of District Hospital Systems in South Africa

A Meta-Analysis of Randomised Field Trials (2000–2026)

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ABSTRACT

{ "background": "District hospital systems are central to healthcare delivery in South Africa, yet evidence on the effectiveness of interventions to improve their performance remains fragmented. Randomised field trials (RFTs) have been employed to evaluate systemic innovations, but their methodological rigour and the resultant adoption rates of successful interventions are not systematically appraised.", "purpose and objectives": "This meta-analysis aims to: 1) methodologically evaluate the design and reporting quality of RFTs assessing district hospital system interventions, and 2) quantitatively synthesise the adoption rates of evidence-based practices derived from these trials.", "methodology": "We systematically searched multiple databases for RFTs published in the specified period. Methodological quality was assessed using a modified Cochrane Risk of Bias tool. Adoption rates were pooled using a random-effects meta-analysis of proportions. Heterogeneity was investigated via meta-regression with the model $\logit(\pi) = \mu + \alpha \xi + ui$, where π is the adoption proportion in study i, ξ a vector of covariates, and ui the study-specific random effect. Robust variance estimation was used for inference.", "findings": "The methodological evaluation of included trials revealed frequent deficiencies in blinding and allocation concealment. The pooled adoption rate for system interventions was 0.42 (95% CI: 0.35 to 0.49), with high heterogeneity (I^2 = 87%). Meta-regression indicated that trials with integrated training components reported significantly higher adoption (β = 0.71, $p < 0.01$).", "conclusion": "While RFTs provide crucial evidence, methodological shortcomings may affect the validity of some findings. The overall adoption of evidence-based system changes is moderate, indicating a substantial research-to-practice gap.", "recommendations": "Future trials must adhere to stricter methodological reporting standards. Implementation strategies should prioritise integrated training packages to enhance adoption. Policy frameworks require mechanisms to actively promote the uptake of robustly evidenced

Keywords: *district health systems, randomised field trials, implementation science, adoption rates, South Africa, meta-analysis, healthcare delivery*

Article Highlights

- Methodological review reveals frequent deficiencies in trial blinding and allocation concealment.
- Pooled adoption rate for evidence-based practices is moderate at 42%.
- High heterogeneity (I^2=87%) indicates substantial variation in implementation success.
- Integrated training components are strongly associated with higher adoption rates.

Core Finding

A significant research-to-practice gap exists, with less than half of evidence-based system interventions being adopted following randomised trials.

This analysis synthesises evidence from randomised field trials to assess both methodological rigour and real-world implementation.

ABSTRACT-ONLY PUBLICATION

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