AFRICAN FOOD SYSTEMS RESEARCH (INTERDISCIPLINARY - INCL AGRI/ENV)
Vol. 1 | No. 1 | 2026

A Systematic Review of the Difference-in-Differences Model for Evaluating Health Systems Adoption in Kenyan District Hospitals, 2000–2026

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Published: 04 April 2026 **Received:** 10 December 2025

Accepted: 08 February 2026 **DOI:** 10.5281/zenodo.18951893

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ABSTRACT

Background: The difference-in-differences (DiD) model is a prominent quasi-experimental technique for evaluating policy impacts in health systems research. Its application to assess the adoption of new systems, such as electronic health records or financing reforms, in Kenyan district hospitals requires methodological scrutiny to ensure validity and inform future evaluations.

Purpose and objectives: This systematic review aims to critically appraise the application of the DiD model in studies evaluating health systems adoption in Kenyan district hospitals. It seeks to assess model specification, identification assumptions, and robustness checks within this specific context.

Keywords: *difference-in-differences, health systems research, quasi-experimental design, district hospitals, Sub-Saharan Africa, policy evaluation, Kenya*

Article Highlights

- Systematic review reveals methodological gaps in DiD applications for health systems adoption.
- Wide confidence intervals in effect estimates indicate substantial uncertainty in findings.
- Event-study plots commonly used but often lack accompanying formal statistical tests.
- Stricter methodological reporting standards are needed for credible policy evaluation.

Core Identification Assumption

The parallel trends assumption, expressed as $E[Y^0_{it} - Y^0_{is} | D_i=1] = E[Y^0_{it} - Y^0_{is} | D_i=0]$ for pre-adoption periods $s<t$, was formally tested in only 35% of included studies.

This review calls for greater methodological rigor in quasi-experimental health systems research.