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A Systematic Review of Methodological Frameworks for Assessing the Reliability of Community Health Centre Systems in Ethiopia: A Multilevel Regression Analysis (2000–2026)

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ABSTRACT

Background: Community health centres are a cornerstone of primary healthcare delivery in Ethiopia, yet systematic evaluations of the methodological rigour used to assess their operational reliability are lacking. Understanding the analytical frameworks employed is crucial for strengthening evidence-based health systems policy.

Purpose and objectives: This systematic review aims to critically appraise and synthesise methodological frameworks from published studies that assess the reliability of community health centre systems in Ethiopia, with a specific focus on the application and reporting of multilevel regression analysis.

Methodology: A systematic search of multiple electronic databases was conducted following PRISMA guidelines. Peer-reviewed studies employing quantitative methods to evaluate system reliability were included. Studies were screened, and data on methodological design, model specification, and statistical reporting were extracted. Quality assessment was performed using a modified tool for observational health systems research.

Keywords: *methodological frameworks, system reliability, community health centres, Sub-Saharan Africa, multilevel regression analysis, primary healthcare, Ethiopia*

Article Highlights

- Systematic review identifies inconsistent handling of clustered data in reliability studies.
- Frequent underuse of multilevel models potentially underestimates standard errors.
- Two-level random intercept logistic regression was the most common specified model.
- Reporting of variance partition coefficients was frequently omitted from analyses.

Core Analytical Gap

The predominant use of single-level regression for hierarchically structured data may compromise the validity of inferences about health centre system performance.

This review calls for stricter methodological standards in health systems research.