African Botany Research (Core Life Science)

Bayesian Hierarchical Model for Assessing Clinical Outcomes in Ethiopian Community Health Centres Systems

Fikru Berhanu[1,2], **Tewodros Alemayehu**[3], **Mekuria Gebreab**[4], **Zerihun Asgedom**[5,6]

[1] Ethiopian Institute of Agricultural Research (EIAR)

[2] Addis Ababa University

[3] Department of Epidemiology, Addis Ababa Science and Technology University (AASTU)

[4] Department of Public Health, Adama Science and Technology University (ASTU)

[5] Department of Pediatrics, Addis Ababa Science and Technology University (AASTU)

[6] Adama Science and Technology University (ASTU)

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Correspondence: fberhanu@yahoo.com

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Author notes

Fikru Berhanu is affiliated with Ethiopian Institute of Agricultural Research (EIAR) and focuses on Medicine research in Africa.

Tewodros Alemayehu is affiliated with Department of Epidemiology, Addis Ababa Science and Technology University (AASTU) and focuses on Medicine research in Africa.

Mekuria Gebreab is affiliated with Department of Public Health, Adama Science and Technology University (ASTU) and focuses on Medicine research in Africa.

Zerihun Asgedom is affiliated with Department of Pediatrics, Addis Ababa Science and Technology University (AASTU) and focuses on Medicine research in Africa.

Abstract

Clinical outcomes in Ethiopian community health centres are often suboptimal, necessitating a robust method for assessing their performance and identifying areas for improvement. A Bayesian hierarchical model was developed to estimate clinical outcomes, accounting for variability across different health centres. Data from multiple sources were integrated into the model to ensure comprehensive coverage of performance metrics. The model indicated that intervention effectiveness varied significantly by health centre type, with some showing substantial improvements in patient recovery rates compared to baseline levels (e.g., a 15% increase in recovery for certain conditions). This study underscores the importance of tailored interventions and targeted support within Ethiopian community health systems. Health authorities should prioritise resource allocation towards high-impact areas identified by the model, aiming to improve clinical outcomes across all centres. Bayesian Hierarchical Model, Community Health Centres, Clinical Outcomes, Ethiopia Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Bayesian statistics, Hierarchical models, Intervention studies, Quantitative methods, Regression analysis, Sampling techniques*

ABSTRACT-ONLY PUBLICATION

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