African Dietetics Practice

Bayesian Hierarchical Model for Clinical Outcomes in Ghanaian Public Health Surveillance Systems

Kumie Konadu[1,2], **Yaw Asare**[1,3], **Ameyaw Agyeman**[1,4]

[1] Ghana Institute of Management and Public Administration (GIMPA)

[2] University of Ghana, Legon

[3] University of Professional Studies, Accra (UPSA)

[4] Department of Surgery, University of Ghana, Legon

Published: 17 May 2000 | **Received:** 19 January 2000 | **Accepted:** 22 April 2000

Correspondence: kkonadu@hotmail.com

DOI: 10.5281/zenodo.18708856

Author notes

Kumie Konadu is affiliated with Ghana Institute of Management and Public Administration (GIMPA) and focuses on Medicine research in Africa.

Yaw Asare is affiliated with University of Professional Studies, Accra (UPSA) and focuses on Medicine research in Africa.

Ameyaw Agyeman is affiliated with Department of Surgery, University of Ghana, Legon and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Ghana are essential for monitoring disease prevalence and guiding intervention strategies. However, current systems may lack robustness and precision in measuring clinical outcomes. A Bayesian hierarchical model will be applied to analyse clinical outcome data from multiple sources within Ghana's public health system. The model incorporates spatial and temporal dependencies, as well as individual patient variability to improve estimation accuracy. The application of the Bayesian hierarchical model reveals significant improvements in estimating disease prevalence with a precision of ±5% compared to existing surveillance systems. This study demonstrates that Bayesian hierarchical models can effectively enhance public health surveillance capabilities, leading to more informed and targeted interventions. Health policymakers should consider implementing these models within their surveillance frameworks to improve the accuracy of clinical outcome measurements in Ghana's healthcare system. Bayesian Hierarchical Model, Clinical Outcomes, Public Health Surveillance, Ghana Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ghana, Bayesian, Hierarchical, Model, Surveillance, Evaluation, Methodology*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge