



Investigating the Association Between Household Air Pollution from Biomass Fuels and Low Birthweight in Rural Communities of Ghana's Ashanti Region: A Research Protocol

Kwame Asare¹

¹ University of Cape Coast

Published: 25 November 2013 | **Received:** 27 July 2013 | **Accepted:** 04 October 2013

Correspondence: kasare@yahoo.com

DOI: [10.5281/zenodo.18529939](https://doi.org/10.5281/zenodo.18529939)

Author notes

Kwame Asare is affiliated with University of Cape Coast and focuses on Medicine research in Africa.

Abstract

Household air pollution from biomass fuels is a significant public health concern in sub-Saharan Africa. In rural Ghana, reliance on wood and charcoal for cooking is prevalent, leading to chronic exposure for pregnant women. The association between this exposure and low birthweight in the Ashanti Region requires robust investigation to inform local policy. This protocol outlines a study to determine the correlation between household air pollution from biomass fuel use and the incidence of low birthweight in rural Ashanti Region, Ghana. Primary objectives are to: (1) measure personal exposure to fine particulate matter (PM_{2.5}) among pregnant women; (2) record newborn birthweight; and (3) analyse the association between exposure levels and birthweight outcomes. A community-based longitudinal design will be employed. Pregnant women (n=450) in their second trimester will be recruited from rural health facilities. Personal PM_{2.5} exposure will be monitored using portable sensors over a 72-hour period. Data on fuel type, cooking practices, and socio-demographic factors will be collected via questionnaires. Newborn birthweight will be measured within 24 hours of delivery. Multiple linear regression will be used to analyse the data, controlling for confounders. As this is a protocol for a future study, no empirical findings are available. The analysis will determine the direction and strength of the association, estimating the expected change in birthweight per unit increase in PM_{2.5} exposure. The study will provide local evidence on the relationship between household air pollution and foetal growth. It is expected to clarify the public health burden attributable to biomass fuel use in this context. Findings will be disseminated to regional health authorities to advocate for targeted interventions. Recommendations may include promoting cleaner cooking technologies and integrating air pollution awareness into antenatal care. household air pollution, biomass fuel, low birthweight, particulate matter, pregnancy, Ghana, rural health This protocol details a methodological approach to generate context-specific evidence, which is intended to support public health policy and intervention planning for maternal and child health in rural Ghana.

Keywords: *Household air pollution, Biomass fuels, Low birthweight, Sub-Saharan Africa, Birth outcomes, Observational study, Rural health*

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