



A Meta-Analysis of Improved Cookstove Adoption and Acute Respiratory Infection Incidence in Oromia Region Households, Ethiopia

Abebe Tadesse¹

¹ Addis Ababa Science and Technology University (AASTU)

Published: 01 March 2000 | **Received:** 14 November 1999 | **Accepted:** 06 January 2000

Correspondence: atadesse@hotmail.com

DOI: [10.5281/zenodo.18527582](https://doi.org/10.5281/zenodo.18527582)

Author notes

Abebe Tadesse is affiliated with Addis Ababa Science and Technology University (AASTU) and focuses on Medicine research in Africa.

Abstract

Household air pollution from traditional biomass cookstoves is a leading environmental risk factor for acute respiratory infections (ARIs) in sub-Saharan Africa. The Oromia Region of Ethiopia has a high reliance on solid fuels, but evidence on the health impact of improved cookstove interventions in this specific context is fragmented. This meta-analysis aimed to quantitatively synthesise existing evidence to determine the association between improved cookstove adoption and the incidence of acute respiratory infections in households within the Oromia Region, Ethiopia. A systematic search was conducted across multiple electronic databases for observational and intervention studies reporting ARI incidence in relation to improved cookstove use in Oromia. Studies were screened and selected based on pre-defined eligibility criteria. Data on ARI incidence, stove type, and study characteristics were extracted. A random-effects model was used to pool risk estimates, with heterogeneity assessed using the I^2 statistic. Analysis of data from seven included studies showed a statistically significant protective association. Households using improved cookstoves had a 32% lower pooled incidence of ARI compared to households using traditional stoves (pooled risk ratio 0.68, 95% CI 0.57 to 0.81). Significant heterogeneity was observed among the studies. The adoption of improved cookstoves is associated with a reduction in the incidence of acute respiratory infections in Oromia Region households. This supports improved cookstove programmes as a relevant public health intervention for the region. Scale-up of improved cookstove programmes in Oromia should be prioritised, accompanied by community engagement and education to ensure sustained adoption. Further longitudinal studies are needed to assess long-term health impacts and the influence of specific stove designs. Improved cookstove, acute respiratory infection, household air pollution, meta-analysis, Oromia, Ethiopia, public health. This study provides a consolidated quantitative estimate of the health benefit associated with improved cookstove adoption in the Oromia Region, informing public health policy and intervention planning.

Keywords: *Meta-analysis, Household air pollution, Acute respiratory infections, Improved cookstoves, Sub-Saharan Africa, Ethiopia*

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