A Data Descriptor on the Association between Improved Cookstove Adoption and Acute Respiratory Infection Incidence in Households in Oromia, Ethiopia

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Abstract

Household air pollution from traditional biomass cookstoves is a significant environmental health risk in sub-Saharan Africa, contributing to a high burden of acute respiratory infections (ARIs). The Oromia Region of Ethiopia has a widespread reliance on solid fuels for cooking, yet data on the health impacts of intervention strategies, such as improved cookstove adoption, are limited. This data descriptor presents a curated, analysable dataset documenting the association between improved cookstove adoption and ARI incidence in households in the Oromia Region. Its objective is to provide a resource for researchers and public health practitioners to examine this relationship and inform policy. A cross-sectional household survey was conducted across multiple zones in the region. Data were collected via structured questionnaires and observational checklists from a sample of households with and without improved cookstoves. Variables include household demographics, cooking practices, cookstove type and usage, and caregiver-reported ARI symptoms in children under five over a specified recall period. The data underwent validation, cleaning, and anonymisation. The dataset indicates an association between improved cookstove adoption and lower reported ARI incidence. Preliminary analysis suggests households using improved cookstoves reported approximately one-third fewer ARI episodes in children under five compared to households using traditional stoves. This structured dataset provides a foundation for robust epidemiological analysis of the potential health co-benefits of improved cookstove programmes in a high-burden setting. It highlights the value of primary health data for evidence-based public health action. Researchers are encouraged to use this dataset for further analysis, including multivariable modelling to control for confounders. Public health programmes should consider integrating similar monitoring metrics into improved cookstove initiatives to quantify health impacts. Improved cookstoves, household air pollution, acute respiratory infection, child health, environmental health, Ethiopia This data descriptor contributes a structured, primary dataset for investigating the link between clean cooking interventions and respiratory health outcomes in a representative Ethiopian region, supporting evidence-based household air pollution research.

Keywords: *Household air pollution, Acute respiratory infections, Improved cookstoves, Sub-Saharan Africa, Environmental health, Cross-sectional study*

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