Indoor Charcoal Cooking, Particulate Matter Exposure, and Acute Lower Respiratory Infections in Under-Fives: A Short Report from N'Djamena’s Informal Settlements, Chad

A, ï, c, h, a, N, o, u, r, ,, F, a, t, i, m, é, M, o, u, s, s, a, ,, M, a, h, a, m, a, t, A, b, d, e, l, k, e, r, i, m, ,, H, a, r, o, u, n, A, d, o, u, m

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Abstract

Acute lower respiratory infections (ALRIs) are a leading cause of mortality in children under five in Chad. In N'Djamena’s informal settlements, indoor air pollution from solid fuel use is widespread, but local evidence on its specific health effects is limited. This short report aimed to investigate the correlation between exposure to particulate matter (PM2.5) from indoor charcoal cooking and the incidence of ALRIs in children under five in these settlements. A cross-sectional study was conducted. Households with at least one child under five were recruited. Data were collected via caregiver interviews on recent ALRI symptoms and cooking practices. Real-time PM2.5 monitors measured 24-hour concentrations in a subset of kitchens. Preliminary analysis indicates a positive association. Mean 24-hour kitchen PM2.5 concentrations exceeded World Health Organisation guidelines by more than 15-fold. Children in households using charcoal indoors had a reported ALRI incidence approximately 1.8 times higher than those using alternative cooking methods. Indoor charcoal cooking is associated with extremely high particulate matter levels and an increased incidence of ALRIs in young children in this context, representing a significant modifiable risk factor. Urgent community-based interventions are needed to promote cleaner cooking technologies and improve ventilation. Further longitudinal studies are required to establish causality and quantify the disease burden. indoor air pollution, particulate matter, acute lower

respiratory infection, paediatric health, Chad, informal settlements, solid fuel This report provides preliminary local evidence linking indoor charcoal use directly to child ALRI incidence in a high-risk urban African setting, informing public health dialogue and action.