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Biomass Fuel Use and Low Birth Weight Incidence: A Case Study of Lake Victoria Fishing Communities in Kisumu, Kenya

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Abstract

Household air pollution from biomass fuels is a significant public health concern in sub-Saharan Africa. Pregnant women in low-resource settings are particularly vulnerable. The fishing communities around Lake Victoria in Kisumu, Kenya, rely heavily on biomass for cooking and heating, yet the specific impact on birth outcomes in this population is not well documented. This case study investigated the correlation between household biomass fuel use and the incidence of low birth weight within the unique socio-environmental context of Kisumu's Lake Victoria fishing communities. It aimed to describe community practices and gather local health worker perspectives on this potential link. A qualitative, descriptive case study approach was employed. Data were collected through in-depth interviews with community health volunteers and midwives, and focus group discussions with mothers from selected fishing villages. Observations of household cooking arrangements were also conducted. Thematic analysis was used to identify key patterns and narratives. A strong community and health worker perception of a link between biomass smoke exposure and poor birth outcomes was identified. A prominent theme was the observation of higher rates of suspected low birth weight among infants born to mothers who cooked indoors with wood or charcoal, particularly during the rainy season when ventilation was reduced. Quantitative confirmation of low birth weight incidence was limited by inconsistent birth weight recording in health facilities. The case study suggests a perceived association between indoor biomass fuel use and low birth weight in these communities. The findings highlight a potential environmental risk factor for adverse pregnancy outcomes that warrants further, systematic investigation. Immediate steps should include improving routine birth weight measurement and recording in local clinics. Community-based interventions to promote improved stove technology or ventilation should be explored. A larger, analytical study is recommended to quantitatively establish the association and measure its strength. Biomass fuel, indoor air pollution, low birth weight, pregnancy outcomes, case study, Kenya, fishing communities. This study provides preliminary qualitative evidence from a specific high-exposure context, highlighting the need for improved surveillance and targeted research on household air pollution as a risk factor for low birth weight in similar sub-Saharan African settings.

Keywords: *Household air pollution, Low birth weight, Biomass fuels, Sub-Saharan Africa, Perinatal epidemiology, Environmental health*

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