

Fuel Use, Kitchen Environment, and Smoke Exposure in Sri Lankan Pregnant Women: Cross-Sectional Insights for Public Health Interventions; An Interim Analysis of RESPIRE 2 SL Indoor Air Quality Study

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Exposure to household air pollution from traditional cooking practices is a significant public health concern, particularly for pregnant women in low- and middle-income countries. In-utero exposure to smoke from biomass fuels has been associated with adverse maternal and fetal outcomes. This interim analysis aims to assess cooking practices, fuel usage, kitchen structure, and ventilation conditions among pregnant women under 24 weeks of Period of Amenorrhea (POA) to inform targeted interventions. A cross-sectional survey was conducted among 173 pregnant women with POA ≤ 24 weeks attending antenatal clinics. Structured questionnaires were used to collect data on stove type, fuel use, kitchen characteristics, ventilation, and exposure to biomass smoke. Descriptive statistics were used to summarize cooking behaviors, structural features of the kitchen, and smoke exposure patterns. The vast majority of participants (96.4%) cook, while only a small minority (3.6%) do not. Nearly 29% of respondents still relied on firewood for cooking. More than half (56.3%) reported using an additional stove, primarily traditional (44.6%) or gas (33.7%). Additionally, 55.9% of respondents reported exposure to biomass smoke. A majority of households (82.7%) kept their doors or windows open while cooking. However, only 57.2% had chimneys, and just 41.2% cleaned them regularly. More than half of the kitchens had asbestos roofs (51.6%), and covered cement floors (64.9%). On average, cooking began at the age of 18.6 years, with approximately 2.4 hours spent on cooking per day. Despite the widespread adoption of LPG, many pregnant women continue to be exposed to biomass smoke due to the use of supplementary stoves and inadequate ventilation. Structural kitchen issues worsen exposure risks. Promoting exclusive clean fuel use, enhancing ventilation, and educating on safe cooking practices are vital to safeguarding maternal and fetal health during pregnancy.

Keywords: Pregnant women, house hold air pollution, kitchen ventilation, smoke exposure, bio mass fuel