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A Qualitative Exploration of Household Air Pollution from Solid Fuels and Vitamin A Status Among Rural Women of Reproductive Age in Malawi

T, i, y, a, m, i, k, e, M, w, a, l, e, ,, G, r, a, c, e, C, h, i, s, a, l, e, ,, C, h, i, m, w, e, m, w, e, B, a, n, d, a

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Abstract

Household air pollution from solid fuel use is a major public health concern in sub-Saharan Africa. Vitamin A deficiency remains a significant nutritional challenge, particularly for women of reproductive age. The potential intersection of these exposures in rural Malawi is poorly understood. This study aimed to explore qualitatively the perceived links between household air pollution exposure from solid fuels and vitamin A status among rural Malawian women of reproductive age. It sought to understand community perspectives on cooking practices, dietary patterns, and related health outcomes. A qualitative, cross-sectional study was conducted in two rural districts of Malawi. Data were collected via 24 in-depth interviews and four focus group discussions with women of reproductive age, recruited through purposive sampling. Interviews were transcribed verbatim and analysed using inductive thematic analysis. Analysis identified three primary themes. First, participants perceived a direct link between prolonged smoke exposure and diminished appetite, potentially reducing overall dietary intake. Second, they reported prioritising fuel gathering over time spent cultivating or preparing vitamin A-rich foods. A prominent sub-theme was the economic burden of fuel scarcity, described as limiting household resources available for purchasing diverse foods. The findings suggest that, from the participants' perspectives, household air pollution from solid fuels may indirectly

influence vitamin A status through behavioural and economic pathways affecting diet, rather than solely through direct physiological mechanisms. Integrated public health interventions addressing both clean cooking and nutrition security are recommended. Future research should quantitatively measure exposure and nutritional biomarkers to corroborate these qualitative insights. Household air pollution, solid fuels, vitamin A, qualitative research, women’s health, Malawi, nutrition This study provides novel qualitative evidence on the perceived socio-behavioural pathways linking solid fuel use and nutrition, offering context for future interdisciplinary research and integrated programming.