Thesis Abstract

A Mixed Methods Approach to Assessing Indoor Air Pollution Among Women in Addis Ababa, Ethiopia

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Background: Cooking using rudimentary stoves and biomass fuels results in high levels of indoor air pollution and over 1.6 million deaths per year worldwide. The women of Shero-Meda subcity in Addis Ababa, Ethiopia cook with firewood purchased from nearby Entoto Mountain and are exposed to high levels of indoor air pollution.

Objective: The research examines quantitative measures of particulate matter and carbon monoxide levels in the homes of women living in Shero-Meda subcity. In addition, qualitative interviews of the women explore their experiences with firewood as their primary fuel.

Methods: Eighty four households were monitored for particulate matter and carbon monoxide for a 24 hour period. In addition, women discussed fuel use, fuel preference, economics, and social empowerment in 5 in-depth interviews and 4 focus group discussions.

Results: The 24 hour particulate matter levels in the kitchens ranged from 135µg per m3 to 12,737µg per m3 with an average of 1580µg per m3. By comparison, the United States Environmental Protection Agency (USEPA) sets a standard of 35µg per m3 in 24 hour time period. The 8 hour carbon monoxide averages among households ranged between 0.66ppm and 69ppms with an average of 16.08 ppm (USEPA standard 8 hour average of 9ppm). In-depth interviews and focus group discussions revealed the economic hardship of using firewood for cooking, and women's desire to utilize a cleaner fuel for cooking.

Discussion: Research provides critical evidence that indoor air pollution is a major health concern in Addis Ababa. In addition, conversations with women revealed that they are unhappy using firewood for cooking, and would prefer to use kerosene or even electricity. Improved cook stoves would reduce indoor air pollution, reduce major deforestation problems in Ethiopia, allocate time for women to participate in the commercial market, and reduce the burden of disease among women and children.