

IMPACT EVALUATION OF INYENYERI RWANDA

Household Air Pollution and Health (R3-2016)

HAP and health

Household air pollution (HAP) and ambient air pollution are among of the world's most important contributors to global disease burden. These two sources together accounted for approximately 6.7 million deaths and 7.6% of the loss of disability adjusted life years in 2010. In sub-Saharan Africa, HAP is the sixth highest contributor to the burden of disease. *In Rwanda HAP is the fourth highest risk factor for morbidity and mortality.*

Research Question

Does adoption and sustained use of the Inyenyeri household energy system reduce symptoms of acute and chronic respiratory disease, cardiopulmonary disease, burns and eye irritation?

Using a structured *Health, Poverty and Cooking Survey* we collected data on self-reported health status and prevalence of symptoms of health problems.

Primary cook health status at baseline

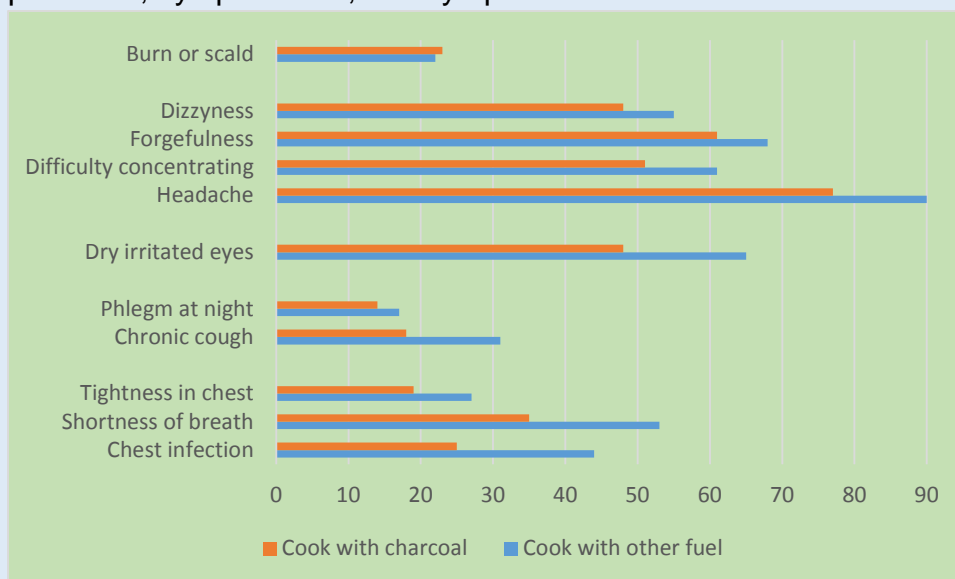
We collected data on the prevalence of symptoms associated with cardiopulmonary and respiratory illness, eye health, neurologic health, and burns. We have analyzed symptom prevalence and whether the cook uses charcoal as their primary fuel (Fig. 2a), and whether the cooking takes place primarily indoors or outdoors (Fig. 2b). Overall primary cooks reported high prevalence of neurologic problems, eye problems, and symptoms related to cardiovascular health. Burns or scalds during the

- Primary cooks
- Children under 5
- All household members

We also collected objective measures of health including blood pressure for the primary cook in the household, and weight and height to estimate body mass index.



Fig. 1. Improved cookstoves in Rwanda



past 12 months were reported by 23% of cooks with greater than 95% of burns or scalds related to a cooking accident. In general we find higher prevalence of cardiopulmonary, respiratory and neurologic symptoms for households that cook with fuels other than charcoal (e.g., fuelwood or LPG). Burns are the only category of illness/injury that we find a slightly higher prevalence

Figure 2a: Prevalence of HAP related illness/injury for cooks during past 12 months, by fuel type

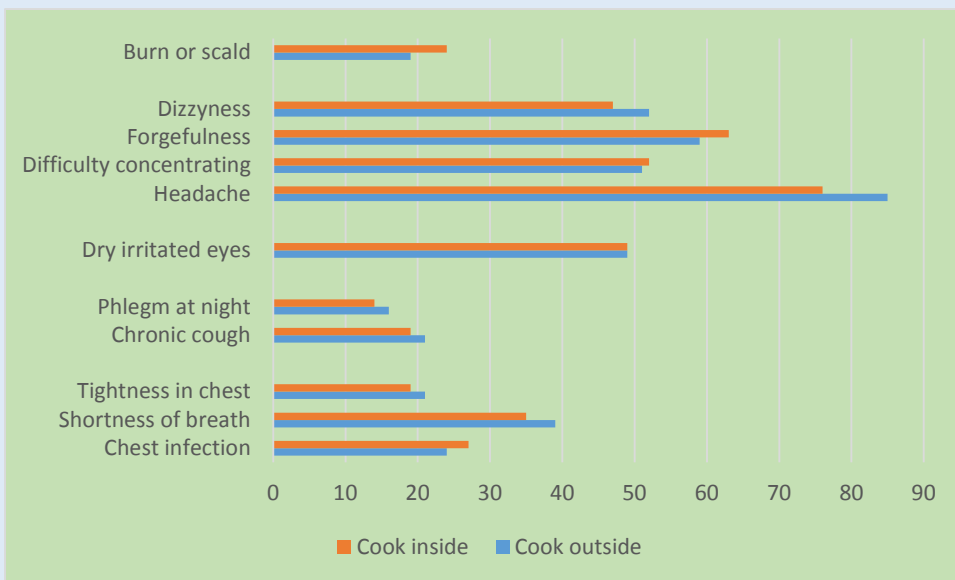


Figure 2b: Prevalence of HAP related illness/injury for cooks during past 12 months, by cooking location

Children under 6 years

We collected data on prevalence of health symptoms for children under the age of 6 during the past 12 months (Fig. 3). Among our study households there are a total of 818 children under 6. The primary cook is the main caregiver for 67% of children.

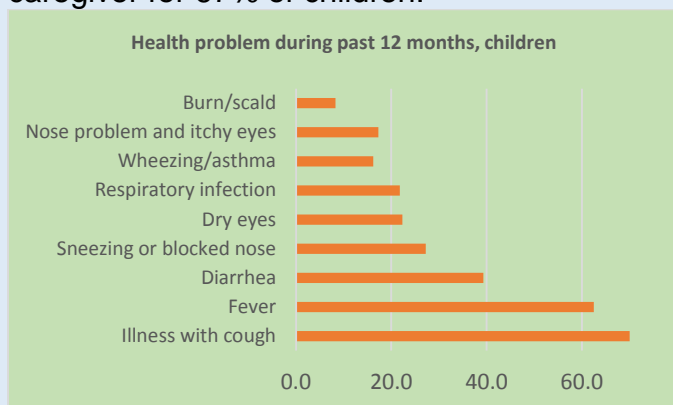


Figure 3: Prevalence of illness/injury for children under 6 during past 12 months

As with cooks, we observe relatively high prevalence of HAP related illness/injury for children under 6. Symptoms related to respiratory illness were very common, as were eye problems.

All household members

Twenty-four percent of individuals (N=7,702) reported suffering a health problem during the 4 weeks prior to being interviewed. Acute

when cooking with charcoal. Cooking inside is associated with a higher prevalence of chest infection and some neurologic symptoms (e.g. forgetfulness). Burns are also more common in households where most cooking takes place inside. We did not find statistically significant differences in the cook's blood pressure in households that cook with charcoal vs. other fuels, or households that cook indoors vs. outdoors.

respiratory infection was the most commonly reported

health problem (34.2%). Other health problems commonly associated with HAP exposure include respiratory illness (7.1%) and eye problems (3.8%). Of those that reported health problems (N=1,856), 48.4% were unable to carry out their normal activities, and 70.2% consulted a health professional regarding their health problem.

Other environmental exposures

A number of households have other exposures that may be impacting their health.

- The most important energy related exposure for households is burning a paraffin candle or lamp. Forty-one percent of households use paraffin for lighting five or more times per month.
- 15.5% of households burn trash on a regular basis. Trash burning is often done in close proximity to the main dwelling, often by the cook.

Next steps

Our next steps are to undertake exploratory analysis to link objectively measured HAP exposures with prevalence of symptoms for cooks to better understand the correlation between exposures and health.



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

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For more information contact Pam Jagger
pjagger@unc.edu <http://fuel.web.unc.edu>