

Smokeless Kitchens

Assessing the Willingness to Adopt Cleaner Cooking Fuels among Migrant Labor Families in the National Capital Region of India

Authored by: Bhavreen Kandhari, Co-Founder, Warrior Moms, India



Overview

Since 2019, ARNEC has been advocating for clean, safe and sustainable environments for early childhood. Through a joint scoping study, we have been building foundational work linking early childhood and climate change with University of Wollongong-Early Start Australia in partnership with Save the Children, UNICEF EAPRO and Bernard van Leer Foundation. Our pioneering scoping study highlighted that climate change and environmental degradation undermine all nurturing care areas affecting young children, families, and their abilities to survive and thrive. Young children who have emitted the least amount of greenhouse gases are paying the heaviest price.

ARNEC's ECD-Climate framework for action recognizes research and evidence generation as a key action pillar in elevating the needs of young children to inspire collective actions in addressing the impact of climate change and environmental degradation. Building on the joint scoping study with support from Early Opportunities, we have since supported micro research 4 countries in Bhutan, India, Pakistan, and the Philippines. These studies have provided empirical evidence to support the participation of young children in climate and environmental discourse and actions. This is one of a series of four micro research reports that summarize findings, lessons learned, and recommendations requiring urgent actions.

Micro Research Study Report

Assessing the Willingness to Adopt Cleaner Cooking Fuels among Migrant Labor Families in the National Capital Region of India

This report aims to present the findings and lessons learned from a research study conducted to assess the willingness of migrant labor families in the National Capital Region (NCR) of India to adopt cleaner cooking fuels. The study also aimed to generate evidence on the costs and benefits associated with different cooking fuels and highlight the issue of household air pollution caused by the use of solid fuel (firewood) for cooking. Indoor air pollution, particularly from residential solid fuel combustion, is a serious health concern, leading to premature death and disease. Indoor air pollution is most harmful to young children and pregnant mothers. The World Health Organization estimates that household air pollution was responsible for 3.2 million deaths per year in 2020. To mitigate this issue, it is essential to expand the use of clean fuels and technologies to protect health and improve the quality of life for vulnerable populations.

Background

The use of solid fuel for cooking and heating is prevalent among migrant labor families in the NCR of India. The micro research study aims to understand the willingness of these families to transition to cleaner cooking options and explore the costs and benefits associated with such a shift. The research study also examines the impacts of household air pollution, especially on women's health, as they are the primary cooks in these households. By identifying barriers and perceptions related to cleaner cooking fuels, this study aims to inform effective policy interventions and awareness campaigns for promoting clean cooking practices.

Methodology

The research study employed a mixed-methods approach, combining quantitative and qualitative data collection methods. Air quality monitoring using specialized monitors was conducted to measure ambient air pollution levels during cooking activities. Focus group discussions were conducted with women in urban settings to gather insights into their cooking practices and aspirations for the future. The research study began in January 2023, and field studies were conducted from the first week of January.

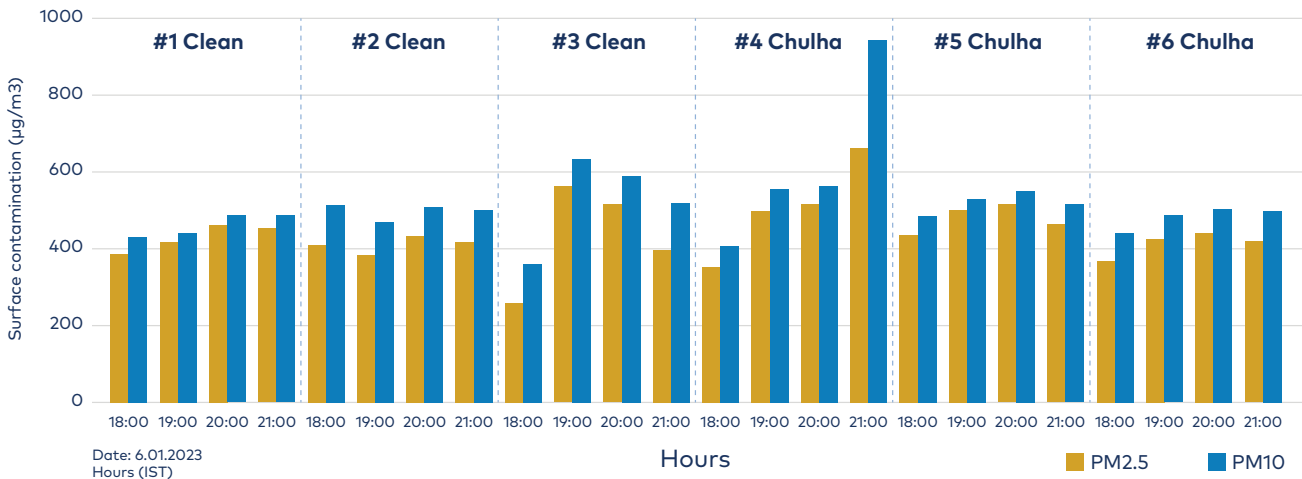
Limitations

Despite the valuable insights gained from this micro research study, several limitations were encountered. The research study's short duration might not fully capture long-term trends and changes in cooking behaviors. Additionally, the sample size was relatively small, which may limit the generalizability of the findings. To overcome these limitations, future studies should consider a more extended research duration and a larger, more diverse sample. Furthermore, applying econometric tools for analyzing cleaner cooking fuel adoption can provide a deeper understanding of the factors influencing household decisions. Furthermore, applying econometric tools for analyzing cleaner cooking fuel adoption can provide a deeper understanding of the factors influencing household decisions.

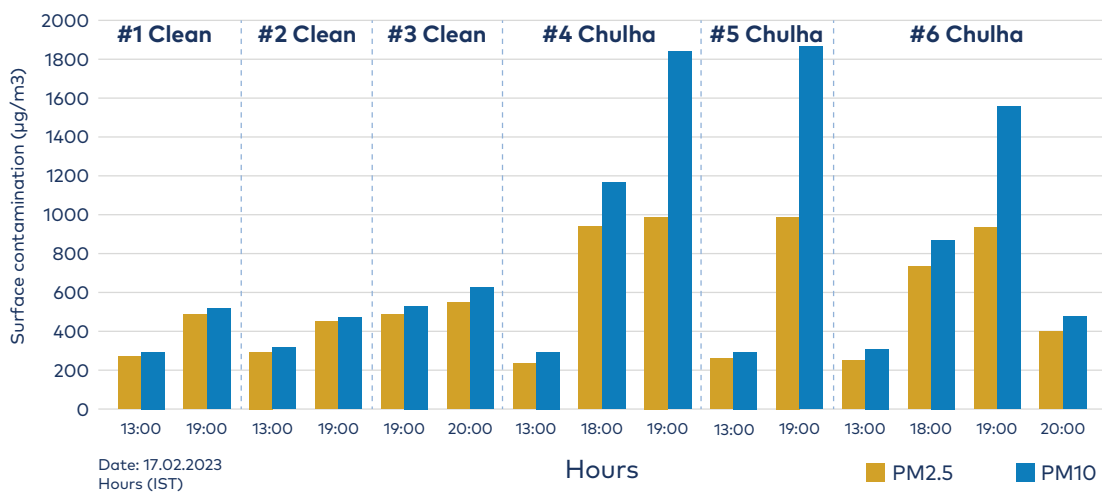
Results and Lessons Learned:

The findings of the study revealed significant differences in pollutant levels between different cooking fuels. Surface concentrations of PM2.5 and PM10 were notably higher during cooking with Chulhas (solid fuel stoves) compared to cleaner options like LPG (liquefied petroleum gas) or Induction/Gas (IG).

Graph 1: Variation of the surface concentration of PM2.5 and PM10 [Unit: $\mu\text{g}/\text{m}^3$] for the (a) clean cooking fuel (Induction/Gas) and (b) Chulha on 6th January 2023



Graph 2: Variation of the surface concentration of PM2.5 and PM10 [Unit: $\mu\text{g}/\text{m}^3$] for the (a) clean cooking fuel (Induction/Gas) and (b) Chulha on 17th January 2023



This highlights the urgent need to transition to cleaner fuels to reduce indoor air pollution and protect health. The study also identified variations in pollutant levels across different locations, indicating the need for location-specific interventions and awareness campaigns.

The research study further underscored the importance of understanding women's experiences and perceptions regarding household air pollution. Women, being the primary cooks, are most affected, and interventions should consider their needs and knowledge to be effective.



Houses using Chulhas were found to have higher PM2.5 and PM10 concentration with Air Quality Index (AQI) varied between 506 to 898 in household using clean fuels while for Chulha houses the average AQI ranged from 530.8 to 932.

Recommendations

Based on the findings and lessons learned, the following recommendations are provided to inform future decision-making and improvements:

- 1. Government Initiatives:** The government should continue and strengthen initiatives to address household indoor air pollution, promoting the use of clean cooking fuels and technologies.
 - 2. Awareness Campaigns:** Launch targeted awareness campaigns to educate migrant labor families about the health risks associated with solid fuel use and the benefits of transitioning to cleaner cooking fuels.
 - 3. Subsidy Programs:** Consider implementing targeted subsidy programs to make clean cooking fuels more affordable and accessible for vulnerable populations.
 - 4. Longitudinal Studies:** Conduct longitudinal studies with larger sample sizes to capture long-term trends in cooking fuel adoption and assess the sustained impacts of interventions.
 - 5. Women-Centric Interventions:** Design interventions that specifically target women, taking into account their unique experiences and preferences regarding cooking practices.
-

References

http://www.searo.who.int/topics/air_pollution/what-is-air-pollution.pdf?ua=1

<http://eschooltoday.com/pollution/air-pollution/what-is-indoor-air-pollution.html>

<https://www.niehs.nih.gov/health/topics/agents/air-pollution/index.cfm>

<https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>

<https://www.downtoearth.org.in/blog/air/addressing-indoor-pollution-and-climate-change-with-fuefficient-cook-stoves-64933>

<http://eschooltoday.com/pollution/air-pollution/what-is-indoor-air-pollution.html>

<https://timesofindia.indiatimes.com/india/chulhas-make-bharat-as-polluted-as-india/articleshow/50505567.cms>

<https://timesofindia.indiatimes.com/india/chulhas-linked-to-25-of-pollution-relateddeaths/articleshow/62465884.cms>

Norris, Christina, et al. "A panel study of the acute effects of personal exposure to household air pollution on ambulatory blood pressure in rural Indian women." *Environmental research* 147 (2016): 331-342.

Hart, Jaime E., et al. "Effect modification of long-term air pollution exposures and the risk of incident cardiovascular disease in US women." *Journal of the American Heart Association* 4.12 (2015): e002301.

Ali, Muhammad Ubaid, et al. "Health impacts of indoor air pollution from household solid fuel on children and women." *Journal of hazardous materials* 416 (2021): 126127.



ARNEC
Asia-Pacific Regional Network
for Early Childhood

The responsibility of all facts, opinions, and intellectual claims, either expressed or implied in the micro research report are that of the authors and do not necessarily reflect the views of ARNEC and its publication.

For more information, please visit www.arnec.net