Indoor air: Is it as safe as we assume it to be?

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With many of us being forced to spend more time indoors due to work-from-home policies and digital classrooms, it is important to take the quality of air inside our homes more seriously than before. According to the World Health Organisation (WHO) fact sheet, indoor air pollution is one of the main reasons for respiratory diseases and premature deaths in developing countries, contributing to nearly 40 lakh deaths annually. In most cases, the culprit is particulate matter 2.5 (PM2.5)—tiny invisible pollutants that hang in the air for a long period and are many times

smaller than the diameter of the human hair. PM2.5 can settle deep in the lungs, causing respiratory illnesses and even cancer.

Globally, WHO estimates that around 300 crore people use solid fuels such as firewood, crop waste, charcoal, coal, and dung cakes for cooking and heating. Women, infants, and senior citizens are particularly affected by indoor emissions and the exposure to pollutants, including PM2.5 and carbon monoxide (a toxic gas that can permanently damage the brain and heart). Getting exposed to pollutants in an indoor setting is even more harmful as enclosed areas keep these particles trapped, leading to higher densities. According to the State of Global Air 2020 report by the Health Effects Institute, 61% of the Indian population is exposed to household air pollution from solid fuels.

Policy thrust and challenges

The National Human Activity Pattern Survey suggests that people spend almost 90% of their time indoors. Therefore, measures to tackle indoor air pollution are critical. The Government of India (GOI) has initiated several schemes such as the Unnat Chulha Abhiyan, the Pradhan Mantri Ujjwala Yojana (PMUY), and the Direct Benefit Transfer of LPG (DBTL) or Pratyaksh Hanstantrit Labh (PAHAL) scheme for promoting clean cooking fuels.

As per the estimates of the Ministry of Petroleum & Natural Gas, central government schemes have enabled LPG access to 97.4% of Indian households. However, the International Energy Agency's (IEA's) India Energy Outlook 2021 asserts that almost half of India's population is still reliant on biomass fuels. A performance audit conducted by the Comptroller and Auditor General (CAG) of India too reveals that around one-fourth of the PMUY beneficiaries use both LPG and unclean fuels. Several factors, including the easy availability of solid fuels, unavailability of LPG refilling centres in rural areas among others affect people's decision-making, with the steep pricing of cylinders topping the list.

The way forward

Popularising LPG cylinders and electric stoves should form the core of the strategy

to reduce indoor air pollution stemming from cooking. Subsidising LPG cylinders further for vulnerable communities, while putting a cap on the number of cylinders distributed per year could be an option. Although this would add substantially to the Government's financial burden, the potential health benefits from reduced air pollution might be worth the effort.

Currently, induction cookers form just 1% of the cooking energy demand as per IEA's India Energy Outlook 2021. This could be because of factors such as intermittent power outages, the need for investing in induction-friendly kitchen utensils, and the ease and familiarity of traditional cooking devices.

The Government should also examine and adopt alternate models that focus on fuel-efficient and smokeless stoves. An analysis published in Energy for Sustainable Development in 2018 indicates that China and Ethiopia have effectively adopted low-emission compressed biomass stoves and ethanol clean cook-stoves, respectively. Improving the ventilation of existing stoves is another aspect that should be encouraged. According to an article published in the Journal of the National Cancer Institute in 2002, a simple design tweak that combined hooded stoves with chimneys reduced the incidence of cancer by a whopping 40% in Xuanwei, China. This underlines the importance of ventilation to keep indoor air pollutants at bay.

Thus, effective interventions need to be made at behavioural, technical, and policy levels to reduce indoor air pollution in India. This could well start with increased awareness about the quality of the air we breathe and its effect on our well-being.

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