

**EMBARGO 7.30 pm IST 10.10.2022****SRI RAMACHANDRA****INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

(Category - I Deemed to be University) Porur, Chennai

Ph.: 044-23860217. www.sriramachandra.edu.in

**NEW ENGLAND JOURNAL OF MEDICINE PUBLICATION ON THE MULTI-COUNTRY  
HOUSEHOLD AIR POLLUTION AND INTERVENTION (HAPIN) TRIAL: RESULTS OF AN LPG  
INTERVENTION ON BIRTH OUTCOMES IN INDIA, RWANDA, PERU AND GUTEMALA**

Chennai,  
10.10.2022

The prestigious New England Journal of Medicine is publishing results from one of the largest multi-country randomised control intervention trials to address household air pollution exposures associated with the use of solid biomass cook-fuels among rural populations today. The Household Air Pollution Intervention (HAPIN) trial assessed the impacts of an 18 month LPG intervention on health in India, Guatemala, Peru and Rwanda among 3200 pregnant women and 200 older adult women. This paper reports impacts on birth outcomes including birth weight with results on other outcomes (child stunting, child pneumonia and adult systolic blood pressure) to follow.

The study was led by Emory University, Johns Hopkins University and Colorado State University in the US in collaboration with investigators from more than a dozen institutions and funded by the US National Institutes of Health and the Bill and Melinda Gates Foundation. In India, the study was conducted in Kallakurichi and Nagapattinam districts in Tamil Nadu by a multi-disciplinary team of investigators from Sri Ramachandra Institute of Higher Education and Research led by **Professor. Kalpana Balakrishnan**, Dean (Research) and Director of the ICMR Center for Advanced Research at SRIHER.

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Summary of finding enclosed

Issued by : T. G. Nallamuthu, Consultant, Media Relations, SRIHER, 9444265578,  
9940399346.

For any additional technical information please contact Professor. Kalpana Balakrishnan at  
[deanresearch@sriramachandra.edu.in](mailto:deanresearch@sriramachandra.edu.in) or 9841020289.

### Summary of Findings

- More than a third the global population—about 3 billion people—rely on solid biomass (wood, charcoal, dung and agricultural residue) for cooking. The resulting household air pollution is a leading environmental risk factor, accounting for an estimated 2.3 million deaths annually (0.6 million deaths were attributable to household air pollution exposures in India in 2019).
- In India and many low- and middle-income countries are promoting liquefied petroleum gas (LPG) as an alternative source of energy for cooking and heating, in some cases subsidizing the cost at considerable government costs. In the near and middle term, LPG may be the most scalable of fuels that the WHO has deemed “clean”.
- There has been considerable evidence from observational studies suggesting that exposure to household air pollution during pregnancy is associated with low birth weight but evidence from previous randomised control trials for household air pollution has been inconclusive.
- The aim of the HAPIN trial was to determine the impacts of a randomized LPG intervention on health in diverse lower/middle income populations on four primary outcomes: birth weight, child stunting, child pneumonia and adult systolic blood pressure. This paper reports on the first of those outcomes and the one for which we have data; results on the others are expected within the next several months.
- 3200 pregnant women (9 to <20 weeks gestation)—800 from each of India, Rwanda, Guatemala and Peru—were randomized on a 1:1 basis, either to receive a free LPG stove and fuel or to serve as controls that continued to cook on traditional stoves with biomass. We measured stove use and the pregnant woman’s exposure to air pollution throughout the gestation period.
- In India, the trial was conducted in Kallakurichi and Nagapattinam districts of TamilNadu
- Despite the challenge of COVID shutdowns and government restrictions--and the tendency of householders to continue to use traditional stoves and fuel even when they have access to cleaner fuels—we were able to continue the trial and achieve nearly exclusive use of the LPG stoves by the intervention arm throughout the follow up period.
- The intervention was highly effective in reducing exposure to air pollution. Personal exposure to fine particulate matter (PM<sub>2.5</sub>) in the intervention group was consistently lower than the WHO Interim Guideline value of 35 µg/M<sup>3</sup>-IT1 limit. No other trial to date has been able to accomplish such consistent and sustained reductions across multiple countries.
- Despite the reduction in exposure to air pollution, the birth weight of infants did not differ significantly between those born to women who used LPG cookstoves and those born to women who used biomass cookstoves.
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- While PM<sub>2.5</sub> exposures were significantly lower amongst the intervention group, they were still more than 7 fold higher than the recently issued WHO guideline values. Findings suggest that even lower levels may be needed to achieve benefits on birth weight.
- There was suggestive evidence that intervening earlier in gestation may be protective: infants born to women who received the intervention at less than 18 weeks' gestation were 33.8 g (95% CI, -2.6 to 70.2) heavier than those born to women who received the intervention at a later time. This suggests the length of the intervention may not have been sufficient and it may be necessary to reduce exposures throughout pregnancy and perhaps even prior to conception.
- It is important to note that the study population in India had a higher than average prevalence of low birthweight pointing out to the need for addressing the role of multiple risk factors for low birth weight in poor populations while scoping intervention programs.

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**“திரவ எரிவாயு பயன்படுத்தி வீட்டிற்குள் காற்று மாசை குறைப்பதால் பிறக்கப்போகும் குழந்தைக்கு பாதிப்புகள் குறையுமா?”  
– ஆய்வறிக்கை வெளியீடு**

சென்னை, 10 அக்டோபர் 2022

விறகு, நிலக்கரி தவிர்த்து திரவ எரிவாயுவை பயன்படுத்தி, வீட்டிற்குள் காற்று மாசை குறைப்பதால் பிறக்கும் குழந்தைக்கு பாதிப்புகள் குறையுமா என்று அறிய இந்தியா, ருவாண்டா, பெரு, கௌதமாலா நாடுகளில் மேற்கொள்ளப்பட்ட ஆய்வுகளின் முடிவுகள் பிரபல நியு இங்கிலாந்து மருத்துவ இதழில் இன்று வெளியிடப்படுகிறது. இந்த ஆய்வு நான்கு நாடுகளிலும் உள்ள 3200 கருவுற்ற தாய்மார்களிடமும், 200 மூத்த பெண்களிடமும் நடத்தப்பட்டது. பிறக்கும் குழந்தைகள் எடை குறைவாகவும், குட்டையாகவும், நுரையீரல் பாதிப்புகளுடனும் காணப்படுவது குறித்தும், அவர்கள் வளரும் போது இரத்த அழுத்த பிரச்சினை இருப்பதையும் கவனத்தில் கொண்டு மேற்கொள்ளப்பட்டது. இன்றைய வெளியீடு எடை சார்ந்தது.

இந்த ஆய்வை அமெரிக்காவின் ஜான் ஹாப்கின்ஸ் மற்றும் கொலரேடோ ஸ்டேட் பல்கலைக்கழகங்கள் முன்னின்று மேற்கொண்டன. 12க்கும் மேற்பட்ட அமைப்புகளிலிருந்தும் ஆய்வாளர்கள் ஈடுபட்டனர். இந்த ஆய்வுக்கு அமெரிக்காவின் தேசிய மருத்துவக் கழகமும், பில் மற்றும் மெலிண்டா கேட்ஸ் நிதியமும் நிதி வழங்கின.

இந்தியாவில் இந்த ஆய்வை ஸ்ரீ இராமச்சந்திரா உயர்கல்வி மற்றும் ஆராய்ச்சி நிறுவனத்தின் ஆய்வுத்துறைத் தலைவர் பேராசிரியர் கல்பனா பாலகிருஷ்ணன் தலைமையில் கள்ளக்குறிச்சி மற்றும் நாகப்பட்டினம் மாவட்டங்களில் பல துறைகளை சார்ந்த ஆய்வாளர்கள் மேற்கொண்டனர்.

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