NOTES FROM THE FIELD

The Impact of Exposure to Air Pollutants among Traffic Police in Bihar: An Excerpt from the Field

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1. AIR POLLUTION AND NATIONAL CLEAN AIR PROGRAMME IN INDIA

In January 2019, the Government of India (GoI), after consulting with all the relevant stakeholders, launched the National Clean Air Programme (NCAP) to combat the increasing air pollution in India. The goal of this five-year programme is to reduce the concentration levels of particulate matter (PM), i.e., $PM_{2.5}$ and PM_{10}, by 20–30% before 2024, using 2017 as the base year (MoEFCC 2019). In reply to the question on NCAP, Prakash Javadekar, hon'ble minister of MoEFCC, responded in the Lok Sabha,

> NCAP is a pan India, medium-term five-year national-level strategy to tackle the increasing air pollution problem across the country. At present, 779 manual and 170 real-time air quality monitoring stations are installed across the country covering 339 cities in 29 states and 6 union territories with a budget of INR 300 crore for two years. (MoEFCC 2019)

Previous studies suggest that air pollution is the primary killer among pollutants. It impacts both morbidity and mortality, and the health and well-being of the affected inhabitants, both directly and indirectly (Hajat *et al.*

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2016; Health Effects Institute 2019). *The Global Burden of Disease Report* (2017) estimated that India has a population-weighted mean of 89.9μg/m³ PM2.5 due to air pollution, which exceeds the 40 μg/m³ World Health Organization (WHO) standard. Further, the study estimated that air pollution in India is linked to one out of every eight deaths and reduces life expectancy by 1.7 years compared to regions with safe levels of pollution (Balakrishnan *et al.* 2019). The study also shows that states with an overall lower socio-demographic status suffer more. As previous studies suggest, air pollution–induced health issues and various socio-economic disparities are evident in exposed populations (Hajat *et al.* 2016; Jiao, Xu, and Liu 2018).

The NCAP's overall objective is to undertake comprehensive mitigation actions for the prevention, control, and abatement of air pollution, and to augment the air quality monitoring network across the country by strengthening awareness and capacity. Air pollution leads to higher morbidity and mortality; it is among the top five risk factors of the latter globally (Health Effects Institute 2019). The present paper has two objectives: (a) to understand levels of awareness among traffic police to facilitate reducing their exposure; and (b) to see whether police can effectively implement a law to curb air pollution, in particular, by fining polluting vehicles on the road. We observed from the pilot study that health is a predominant factor that must be emphasized in awareness drives. Therefore, if an awareness programme can be implemented, it will reduce the negative impact of air pollution on human health and improve states' socio-economic status in various ways.

2. INSIGHTS FROM A SURVEY ADMINISTERED TO POLICE PERSONNEL

From May 2019 to February 2020, we engaged in a project to assess the health costs of air pollution among traffic police personnel across four districts in Bihar, namely Patna, Muzaffarpur, Gaya, and Darbhanga. Three of these districts (Patna, Muzaffarpur, and Gaya) are also part of an ambitious move to implement the Clean Air Action Plan in 102 cities (MoEFCC 2019).

Involving local stakeholders and multi-stakeholder views is essential to designing measures for reducing human-induced pollution. The purpose of the present study was to collect primary data from traffic police about the economic and health costs of air and vehicular pollution through a questionnaire-based survey conducted from May 2019 to February 2020. The questionnaire was divided into five sections: (a) demographic details;

(b) air pollution–related details; (c) the number of days of illness; (d) cost of hospitalization; and (e) other details.

Surprisingly, we found that out of 65 respondents, only 11 were aware of the NCAP and its initiative to tackle air pollution. Awareness can help people take appropriate steps to avert or mitigate negative externalities due to pollutants (Thakur and Gupta 2019). Only 16% of respondents agreed that such an awareness drive against air pollution in the past year was useful, and among those, only five (8% of all respondents) revealed knowledge of any community action or initiative to curb air pollution.

We asked three main questions:

(1) What would you do to stop air pollution?

(2) What should the government do to stop air pollution?

(3) Do you have any other suggestions for how to reduce or stop air pollution?

On analysing the responses, we found that the majority fell into the following five categories:

(1) manage traffic and fine any polluting vehicle;

(2) monitor and stop old government vehicles, especially municipal corporation ones;

(3) encourage the use of compressed natural gas (CNG) or other environment-friendly vehicles;

(4) take concrete steps against testing centres responsible for providing fake "pollution-free" certificates to vehicles; and

(5) stop generator use in households.

There were mixed responses to the question of how traffic police or the government can help reduce or stop air pollution. One respondent suggested that the yellow buses, which corporations use, be strictly banned (as they contribute to roughly 70% of the emissions). Additionally, there should be a reduction in the waste that corporations generate. Five main suggestions emerged from the field survey:

(1) there should be strict provisions for checking the vehicular pollution of private and government vehicles;

(2) more trees must be planted wherever possible;

(3) vehicles which are more than 10 years old should be banned and vehicles violating these norms fined;

(4) more awareness drives must be conducted at continuous intervals to engage various stakeholders;

(5) precise mechanisms should be used to effectively combat air pollution.

After interviewing the police personnel, we found that health issues such as blood pressure, asthma, coughing in the morning, and chest pain accompanied by coughing were prevalent among the respondents. Around 13% of the respondents whom we surveyed had skin infections, followed by fever (11%), stress (9%), eye irritation (7%), and other health issues. Interestingly, around 30% of respondents did not wear a mask while on duty.

3. DATA ISSUES AND FURTHER INSIGHTS

Besides our survey and discussions with various government organizations and individual stakeholders in Bihar, getting data on air pollution was challenging. The survey data, including various ambient air pollution parameters, helped validate the respondents' perception-based responses. If there were more air pollution monitoring stations with various ambient parameters, health effects could be better correlated. At the time of our survey, there were only three stations in the entire state of Bihar and, to our surprise, the collected data were not being analysed.

We found that the health effects among traffic personnel were greater at higher pollution levels. Therefore, there was a positive correlation between crowded signals with more pollution and ill health. We used sensors to monitor the air quality at two different traffic points, but it would have been interesting to establish a correlation between air pollution and health impacts among traffic police personnel using more air pollution data.

4. CONCLUSIONS

While conducting the survey, we interacted with traffic police personnel to understand their exposure to vehicular air pollution and their awareness of and concerns associated with the NCAP. While traffic personnel knew about air pollution, most were unaware of the NCAP. Despite data constraints, this survey shows that if the government uses awareness drives to educate people and implementing agencies, the adverse health impacts and socio-economic issues associated with air pollution can be drastically reduced. Finally, the government should make a strict policy to curb vehicular pollution by imposing fines on polluting vehicles.

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