

LETTER TO EDITOR

A Plea for Amplified Focus on Air Pollution, Climate Change, and One Health Collaborative Research

Sayantika Barman¹, Sujith Surendran²

^{1,2}Junior Resident, All India Institute of Hygiene and Public Health, Kolkata – 700073

This is to express deep concern regarding the critical issue of air pollution and its profound implications on human, environmental, and animal health. In the context of the One Health approach, emphasizing the interconnectedness of these vital components, it is firmly believed that this issue demands urgent attention.

Recent data on air pollution in India reveals a troubling increase driven by residential and industrial activities, vehicular emissions, and various anthropogenic sources.[1] Beyond its direct impact on human health, air pollution is the primary contributor to climate change, posing threats to global health. The shifting trends in air pollution, temperature, and precipitation patterns alter the prevalence and distribution of vector, water, and food-borne diseases. The repercussions of climate change elevate the risk of emerging diseases, affecting both human and animal populations. Human activities like mining and deforestation are causing habitat loss, pushing wildlife into new areas and bringing them closer to humans and livestock. Such disruptions allow diseases to pass to animals and humans, increasing disease transmission. The movement of people, animals, and animal products has also increased multi-fold from international travel and trade. As a result, diseases can spread at a rapid pace across borders and around the globe, like what we have seen during the COVID-19 pandemic.[2]

Globally, various strategies are being implemented to tackle this challenge, the World Health Organization, the Food and Agriculture Organization, and the World Organization for Animal Health are working collaboratively through initiatives like the Global Early Warning

System to enhance early detection and response to health threats at the human-animal-environment interface. Meanwhile in India, the 'National Institute of One Health' was established by the Indian Council of Medical Research and the Indian Council of Agricultural Research (ICAR) to be a think-tank devoted to 'One Health'. [3] The programmes addressing rabies, leptospirosis, snakebites, one health, and zoonoses are now integrated within 'Centre for One Health' wing under the National Centre for Disease Control, Ministry of Health, and Family Welfare. [4] There are plenty of instances where multi-disciplinary collaboration resulted in better outcomes. For example, scientists from Tamil Nadu Veterinary and Animal Sciences teamed up with those from the Council of Scientific and Industrial Research Centre for Cellular and Molecular Biology to study the SARS-CoV2 virus genomics. In disease outbreaks like Nipah, various groups like ICAR, animal husbandry, the state health department, and district administration collaborated to handle it. These partnerships show that when people from different fields work together, we can achieve more and tackle these interconnected challenges effectively. [3] There is a need for further integration with environmental counterparts, the Central Pollution Control Board, the Department of Drinking Water and Sanitation, and the Ministry of Environment, Forest and Climate Change, which is notably in the preliminary stages now.

While steps have been initiated towards One Health integration, achieving this comprehensive approach remains a significant challenge. The general public lack awareness regarding air

CORRESPONDING AUTHOR: Dr. Sayantika Barman, Junior Resident, All India Institute of Hygiene and Public Health, Kolkata – 700073

E Mail ID: sayanirbm37@gmail.com

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pollution as the primary driver of climate change. Other notable obstacles such as limited awareness of zoonotic diseases among animal handlers, the absence of proper medical records, and the unpopularity of veterinary services, which hinder effective disease management also exist. In addition, inadequate diagnosis and treatment, coupled with the rise of antibiotic resistance among humans and animals pose significant difficulties.[5]

At an individual level, there needs to be more emphasis on strengthening one health education and improving one health practices. Embracing 'one health' involves educating oneself on the interconnectedness of animals, humans, and the environment. Advocating for multisectoral health governance, reporting unusual animal events, following prescribed antibiotic treatments, practicing responsible pet ownership, and minimizing one's carbon footprint can contribute significantly to this effort. At a population level, the collaboration between human and animal healthcare along with the environmental systems can help during the outbreak and their continued surveillance can also prevent further outbreaks in the future. Finally, and most importantly at a research level, it is important, that institutes of humans, animals, and environment come together to form new scientific insight into disease-causing factors.

There are research and evidence gaps - very few studies have been completely dedicated to multi-disciplinary One Health research in India. It

should also be highlighted that there is no universal approach to developing One Health collaboration, and with a nonexistent one-type-fits-all solution it is evident that before embarking on any collaborative initiatives, a thorough comprehension of local needs and opportunities for collaboration is essential. This understanding can only be derived through meticulous research conducted at the local level. Thus, it is necessary to tailor One Health strategies to specific environments, promoting more informed, adaptable, and successful collaborative endeavors.

With these considerations, the letter seeks the esteemed journal's support in publishing and inviting papers to foster a more comprehensive understanding of One Health collaboration and promote impactful research in this crucial area.

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