

## Health in a changing climate: empowering health professionals

The Divecha Centre for Climate Change at the Indian Institute of Science organized a two-day training programme and Workshop on 'Health in a Changing Climate: Empowering Health Professionals' during 3–4 February 2023. This, first-of-its-kind training programme for health professionals was organized to highlight the impact of climate change on human health and emphasize the crucial role that health professionals play in educating the public about this critical issue. Inspiration for this training programme and workshop came from the realization by the World Health Organization (WHO), George Mason University, and other international organizations, that health professionals lack adequate knowledge of the impacts of climate change on human health and also are not a part of the medical science education curriculum. The results of a multi-national survey of views of health professionals on climate change and health revealed that time constraints were the biggest factor affecting the willingness of health professionals to communicate about the impacts of climate change on health. Other factors that affected the willingness to communicate included lack of knowledge and belief, that communication would not make a difference, lack of support from peers, perception of controversy, and perceived personal or professional risk (Kotcher *et al.*, 2021, 5(5), e316–e323).

The participants in the programme included medical and dental students and professors from various medical and dental colleges in Bengaluru City. They represented a diverse group of healthcare professionals who were eager to learn about the intersection of climate change and health. During the programme, discussions were held between scientists of the Indian Institute of Science (IISc) and medical professionals.

The first day of the programme consisted of lectures on four critical themes related to the impact of climate change on health, namely, air quality, water contaminants, soil and plastic contaminants, and the impact of natural disasters. These lectures provided the participants with a solid understanding of the scientific background and reasoning behind each theme.

The inaugural lecture by J. Srinivasan provided an introduction to the IPCC report and highlighted the impacts of climate

change on various earth systems such as the atmosphere, hydrosphere and biosphere, including human health, and how the IPCC assesses the scientific evidence and develops assessments and guidance. He set the tone for the programme by stressing the significance of taking action to mitigate the impacts of climate change on health. This address was followed by lectures on the four themes. H. Paramesh delivered the first lecture and discussed the link between air and water pollution and human health, such as respiratory, heart, stroke, cancer, kidney and liver diseases, central nervous system disorders and behavioural changes. He highlighted the potential of improving air and water quality to prevent deaths and illnesses caused by pollution. The second lecture by R. Srinivasan focused on the anthropogenic and geogenic groundwater contamination and diseases that arise from them such as dental and skeletal fluorosis, arsenicosis and skin diseases, radionuclide and certain heavy metal-induced cancer, etc. Pramod Kumar followed with a lecture on the dangers of chemical pollutants in water, which can cause various health issues, such as cancer and neurological disorders. Sumanta Bagchi highlighted his work in terms of One Health. Vinod Ratageri spoke about the harmful impacts of soil and plastic pollution on human health and presented examples of a few case studies. He mentioned increased risks of respiratory diseases, cancer and other illnesses due to soil and plastic pollution. Ashim Sattar addressed the potential health impacts of natural disasters such as landslides, floods and flooding including glacial lake outburst floods. He emphasized the possibility of injuries, displacement and the spread of diseases due to natural disasters in the Himalayas. Ramesh Bajania highlighted the health risks associated with natural disasters and adaptation strategies to reduce such risks.

On the second day, medical doctors delivered ten-minute talks on various topics related to climate change and health. Jagdish Chinnappa and Somashekar discussed innovative solutions to indoor and outdoor air pollution, while Suresh Babu talked about solid waste management and its impact on climate. Subramania highlighted the importance of hospitals going green, and Kalappanavar spoke about the climate impacts on rural and indigenous communities.

Sushi Kadanakuppe addressed the issue of oral health in a changing climate, and B. S. Arjun introduced the Epishot technology for Anaphylaxis. Joshitha Sankam presented a note on Planetary Health which is a new scientific lens. Sowmithri Ranganathan and Paramesh emphasized the significance of effective communication in the medical field.

Following the lecture series, the workshop focused on the four themes covered on day one. Participants were divided into groups based on their areas of interest, and each group was asked to take up a hypothetical case-based activity creating their own case study on the impact of climate change on health in their respective communities, diagnosing and mitigating the impact of climate change on human health from both the health professional and community perspectives. The participants presented their findings at the end of the programme, which were judged by a panel of scientists and doctors.

### Workshop outcomes

#### *Air pollution and human health*

The group discussed the causes and health impacts of air pollution in urban areas, including the release of pollutants from waste, vehicles and unventilated kitchens. They noted that air pollution can cause asthma, heart disease, allergic diseases, impaired growth in newborn babies and respiratory infections. To screen, diagnose and treat patients with air pollution-related illnesses, the group recommended looking for symptoms like sneezing, coughing and mucus, as well as conducting chest X-rays, blood tests and CT scans. They also discussed how to integrate air pollution education into practice, including advising affected populations to use green power and EV vehicles, improving ventilation and promoting eco-friendly clinics. Finally, they recommended advocating for patient health and air quality in communities through planting trees, eco-friendly construction and mass media campaigns.

#### *Water pollution and human health*

In this hypothetical case study, the participating group identified patients living near

a lake who were experiencing symptoms of water pollution caused by the discharge of untreated sewage, industrial waste, open defecation and solid waste into the lake. The health implications included gastrointestinal disorders, neurological disturbances, allergies and reproductive health issues. To address the issue, the group suggested testing drinking water samples, organizing vaccination drives and education programmes, and collaborating with NGOs. To cleanse the lakes, they emphasized the crucial involvement of Asha and Anganwadi workers and recommended the use of social media to spread awareness.

### *Soil/plastic pollution and human health*

The team discussed the causes and health impacts of soil pollution and plastic pollution on the respiratory, connective and digestive systems, as well as the impact on animals, micro-biota and antibiotic resistance. The team also discussed ways to educate patients and advocate for strict regulations in plastic production and waste management, including health education modules, seminars, workshops, role plays, posters, podcasts and regular school health check-ups. Additionally, they suggested starting with young students by including

the impact of climate change due to soil and plastic pollution in the school curriculum.

### *Disasters and human health*

This group was asked to choose a hypothetical disaster scenario and come up with suggestions for health professionals during disaster response. They recommended that health professionals should prioritize treating life-threatening injuries first. They also suggested that health professionals should have access to proper equipment and resources to ensure that they can provide effective care. Additionally, the group recommended that health professionals should be trained in disaster response and have a clear understanding of their roles and responsibilities during an emergency.

The programme concluded with a communication activity during which the participants were encouraged to develop innovative ways to share their knowledge with others and were given practical tips on effective communication strategies. The communication activity provided participants with the skills and confidence to share their knowledge with a variety of audiences, including urban and rural communities and indigenous populations. This outcome is

critical in raising awareness of the impact of climate change on human health and mobilizing communities to take action.

The outcome of the training and workshop programme was that the participants gained a solid understanding of climate-related health risks and were equipped with practical methods to mitigate the risks and impact of climate change on health. The case-based activity allowed participants to apply their knowledge and skills to real-world scenarios and provided them with practical tools to make a positive impact on the communities.

The programme was successful in improving awareness about the impact of climate change on human health, empowering medical field participants to address the issues effectively, fostering interdisciplinary collaboration and creating case studies that can be used to educate communities. The programme set a benchmark for future training programmes that aim to tackle complex challenges posed by climate change on human health.

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