



Eco-Friendly Medical Conferences: From Principle to Practice

Kirti Anna Koikkara¹ Hima Pendharkar² Aparna Irodi³ Rohith Puthan Veettil Nair⁴
Nishtha Yadav⁵ Amarnath Chellathurai⁶ Shyamkumar N. Keshava⁷

¹ Department of Radiodiagnosis, Christian Medical College, Vellore, India

² Neuroimaging and Interventional Radiology, National Institute of Mental Health & Neurosciences, Bengaluru, India

³ Department of Radiodiagnosis, Christian Medical College, Vellore, India

⁴ Interventional Radiology, Aster Medcity, India

⁵ Neuroradiology, Super Speciality Hospital NSCB Medical College, Jabalpur, India

⁶ Department of Radiodiagnosis, Government Stanley Medical College, Chennai, Tamil Nadu, India

⁷ Department of Interventional Radiology, Christian Medical College, Vellore, India

Address for correspondence Shyamkumar N. Keshava, MBBS, DMRD, DNB, FICR, FRCR, FRANZCR, Professor and Head, Department of Interventional Radiology, Head, Division of Clinical Radiology, Christian Medical College, Vellore 632004, India (e-mail: shyamkumar.n.keshava@gmail.com).

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Abstract

Keywords

- ▶ eco-friendly
- ▶ medical conferences
- ▶ carbon footprint
- ▶ zero waste
- ▶ green conference
- ▶ greenhouse gas emissions
- ▶ global warming

The large number of medical conferences held per year has a significant impact on the environment. Climate change and global warming then lead to deleterious effects on human health. We aim to highlight that it is our responsibility as doctors to promote eco-friendly events and encourage sustainable practices, thus reducing harm to our environment. Management committees of conferences can take a few steps toward this with specific planning and effort. In this study, possible steps toward achieving this goal have been highlighted, such as conducting hybrid events, locally sourcing products, and avoiding single-use plastic.

Introduction

Every year, thousands of radiologists participate in medical conferences with an evident rise in frequency over the last few years. These events occur regularly, contributing toward the betterment of knowledge and skills.¹ The caveat, however, is a large environmental impact, if left unchecked.

As doctors, continued medical education (CME) and conferences are essential to improving patient care; however, confer-

ences (or any large-scale event) often result in a significant carbon footprint as well as food and plastic waste.² The scenario raises the following question: Are we a part of the problem?

Climate change reports of 2023 have unequivocally proven that human activities directly contribute to greenhouse gas emissions and global warming, causing global temperatures to rise at an unprecedented rate.^{3,4}

These changes have direct consequences on human health and well-being.^{5,6} Therefore, in addition to our responsibility

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to patient health, we also have a responsibility to the environment.

On a positive note, both organizers and attendees are now more inclined to sustainable events, resulting in a slow shift in event management to meet the goal.⁷ Many of these tips are also practical for our daily workflow and function as radiologists in a hospital. We aim to outline a few practical steps toward organizing an eco-friendly medical conference (summarized in **Table 1**).

As Mrs. Gandhi said at the 1972 plenary session of UN conference on human environment⁸:

“Modern man must re-establish an unbroken link with nature and with life. He must again learn to invoke the energy of growing things and to recognize, as did the ancients in India centuries ago, that one can take from the Earth and the atmosphere only so much as one puts back into them.”

Planning an Eco-Friendly Event

The management committee of any green event holds the responsibility of finding cost-effective and sustainable methods to conduct an event. These are feasible with a little extra planning and research. There is a wealth of information available online on how to plan sustainable events, which has significantly reduced wastage in many ways. Conference brochures, registrations, and sending paper forms for registration and confirmation have almost become history. A suggestion box on the website could collect suggestions before the event, some of which may be feasible to implement. A declaration that a particular conference is “eco-friendly” would perhaps alert the event managers, delegates, sponsors, local administrators, and others. It is ideal to have clear objectives and a widely declared aim of reducing environmental impact.⁹ This ensures that both the hosts and vendors involved keep this as a priority.

It has been found that delegates have a positive attitude toward sustainable event practices, and thus it is ideal to declare it during advertising and in conference brochures.¹⁰

These events are also a great way to set an example for future conferences as well as individuals' daily practices.

Before the onset of the COVID-19 pandemic, it was found that 24% of annual global emissions arose from the transport

sector. Lockdown then saw the rise of the virtual conferences, which led to the concept of hybrid events. Hybrid conferences have been seen to improve accessibility, geographic reach, and inclusivity, while simultaneously significantly reducing carbon footprint.^{1,11-15} As radiologists, we are even more so attuned to viewing images and working on screens.

The location of the in-person event can be chosen with care to prioritize buildings with existing sustainable practices, like solar energy and efficient water management. Venues performing well on the Hotel Carbon Management Initiative (HCMI) can be favored. The HCMI can quantify carbon footprint and is a useful tool to understand impact and set goals. Scheduling the conference at a time of year with a temperate climate can avoid excessive requirements of air conditioning and heating. Arrangements may be made for delegates to use public transport, renewable energy vehicles, or carpooling to travel to and from venues. Incentives such as a reduction in registration fees or some form of acknowledgment could be used.

Complementary items and merchandise are a part of every conference experience. Digital gift cards or organic/recycled local products can be promoted; a few examples would be plants or seeds; bags made from recycled or biodegradable and sustainable materials like jute¹⁶ and reusable water bottles. Avoiding or minimizing the externally visible printed material for branding on merchandise can ensure usage beyond the conference period. Additionally, at registration, delegates may be given the option to opt out of receiving such material, and instead donate in kind to a declared charity or world conservation organization.¹⁷

When planning, a few positive impact activities can be incorporated into the schedule, with concerned professionals involved. Tree planting and educational sessions on sustainability are great ways for a conference to have a beneficial impact on the locality. Leading up to the conference, social media posts regarding these various activities promote awareness and publicize the eco-friendly focus of the conference.¹⁸

Exchange of views with contemporaries conducting non-medical conferences or even other events like concerts or sports events could generate new ideas for planning a zero-waste conference.

Table 1 What to do and what not to do

	Area	To do	Not to do
1	Venue	Opt for venues with existing sustainable practices in place	Venues requiring work and located in inaccessible areas
2	Transport	Hybrid sessions Encourage carpooling and public transport	All speakers flown in
3	Printing and merchandise	E-invites, schedules, etc. Sustainably produced merchandise with minimal branding	Plastic or single-use products with external branding Single-use lanyards
4	Food	Reusable cutlery and plates Locally sourced food	Excess quantity of food ordered Plastic-wrapped food items
5	Others	Appropriate waste segregation Sessions and activities related to sustainability	Inadequate dustbins

A growing market is that of carbon credits or offsets, by which a third party can be paid to essentially neutralize any essential carbon emissions (such as air travel). This results in a net impact of zero. These companies use the money for projects that combat climate change. It is, however, an additional measure and cannot be used to justify pollution.¹⁹ Aiming for national/international sustainability standards and certification is another way to boost compliance.

During the Conference

The production, distribution, and consumption of food can lead to 16 to 30% of greenhouse gas emissions, so the choice of caterer is key when aiming for a healthy and sustainable menu.

Up to 30% of food produced is never eaten. This adds responsibility to the organizers to reduce waste by ordering quantities appropriately and teaming up with local food donation programs.^{20,21}

Using locally farmed produce both improves the local economy and reduces transport-related emissions. Plastic waste can be significantly reduced by avoiding packaged snacks and using reusable plates and cutlery, foldable paper cups, or bamboo products. A step further would be food stalls with local foods that can be purchased as preferred by the attendee.

Solid waste management is another key to ensuring sustainability. Segregation of waste at source is the first step and delegates can be taught how and where to dispose waste. The placement of adequate dust bins with signage and segregation can ensure compliance. Separate instructions and bins may be placed for recycling.

Studies have found that educating delegates and guiding them on eco-friendly practices positively impacted sustainable action. This improves compliance in following eco-friendly protocols put in place.²²

In addition to conference-related lectures, eco-friendly tips and daily practices are a good way to improve awareness. Local eco-friendly organizations or startups can be invited to host sessions or display products. Tree planting is another easy local activity with a positive environmental impact.

To reduce paper waste, brochures and schedules can be limited to digital versions via QR code (► Fig. 1). QR codes can now be used for entry permissions and food access as well (to

eliminate coupons). Smart cards (known as near-field cards or “NFC”) can be used to transfer any data such as contact details, payment, or access control.

Radiology images are also best viewed on digital screens, contributing to an easy transfer to digital use. Screens and technological equipment too can have an environmental impact when disposed of, so appropriate measures are required when the time arises.²³

When essential, printing can be done on recycled paper. Lanyards are often required to identify delegates and speakers and therefore difficult to do away with. However, reusing lanyards and printing on recycled material or bamboo can reduce unnecessary wastage. Avoiding adding the “year” on the lanyard encourages reuse for recurring events.

Medical professionals in general are expected to be “more responsible.” The Hippocratic oath highlights the special obligations to all the fellow human beings.²⁴ It is about time that we as professional associations seriously explore and adapt the right things during the conferences. It is good to see publications in medical journals with environmental concerns especially in the recent past. These publications, in the form of review articles, debates, short communications, and editorials, come from across the globe.¹³

Concluding the Conference

Acknowledging vendors involved and their efforts toward sustainability is a step toward encouraging both vendors and future conference organizers. Delegates can be informed of the methods used to minimize environmental impact.

Feedback forms at the end of an event including specific questions related to the environment and auditing the wastage and carbon footprint can aid in improving any future endeavors. A “life cycle assessment” of the conference will also give insight for upcoming conferences. This is a framework to measure the overall environmental impact of a product or service. It may include input, usage, and output to provide an overall broader analysis.²⁵ Assessment and continued improvement slowly work us toward the broader goals of the Paris Agreement (signed by India in 2016) to achieve carbon neutrality and limit temperature rise.²⁶



Fig. 1 (A) Potted plants used as decoration. (B) Electronic screen used instead of flex banner and rangoli for photopoint/decoration.

Conclusion

Human activities have directly and indirectly caused significant climate change. These environmental changes have numerous negative health effects due to temperature changes, precipitation alterations, and an increase in critical weather events. As doctors, we must set an example for others and minimize any negative influence we have on our environment. Each small step will make a difference. However, further study may be required to quantify this impact.

Medical conferences are essential to our academic growth; however, they can involve poor sustainability practices. We therefore must strive to do better when organizing such events. We must find alternative methods and improve practices as suggested above, to have a positive environmental and social impact.

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Conflict of Interest

None declared.

References

- Nayyar R. Medical conferences: limitation or liberal escalation. *Indian J Urol* 2023;39(03):179–180
- Davis D, O'Brien MAT, Freemantle N, Wolf FM, Mazmanian P, Taylor-Vaisey A. Impact of formal continuing medical education: do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *JAMA* 1999;282(09):867–874
- IPCC Climate Change 2023: Synthesis Report. Geneva: IPCC; 2023
- Evidence | Facts – Climate Change: Vital Signs of the Planet. Accessed February 8, 2024 at: <https://climate.nasa.gov/evidence/>
- Di Napoli C, McGushin A, Romanello M, et al. Tracking the impacts of climate change on human health via indicators: lessons from the Lancet Countdown. *BMC Public Health* 2022;22(01):663
- Kim J, Waugh DW, Zaitchik BF, et al. Climate change, the environment, and rhinologic disease. *Int Forum Allergy Rhinol* 2023;13(05):865–876
- Seočanac M. Events and sustainability: why and how to organize green events? *Econ Sustain Dev* 2023;7:39–48
- United Nations Conference on the Human Environment, Stockholm. 1972. United Nations. Accessed June 23, 2024 at: <https://www.un.org/en/conferences/environment/stockholm1972>
- Cai M, Tang JN, Griese KM. Green meeting: a sustainable event. *Adv Mat Res* 2014;1073–1076:2815–2821
- Santos JAC, Fernández-Gómez MÁ, Guevara-Plaza A, Custódio Santos M, Pestana MH. The sustainable transformation of business events: sociodemographic variables as determinants of attitudes towards sustainable academic conferences. *Int J Event Festiv Manag* 2023;14:1–22
- Sarabipour S, Khan A, Seah YFS, et al. Changing scientific meetings for the better. *Nat Hum Behav* 2021;5:296–300 PubMed
- Roberts I, Godlee F. Reducing the carbon footprint of medical conferences. *BMJ* 2007;334(7589):324–325
- Green M. Are international medical conferences an outdated luxury the planet can't afford? Yes. *BMJ* 2008;336(7659):1466
- Ramakrishnan S, Gupta SK. The impact of COVID-19 on the conduct of medical conferences: a paradigm shift highlights on Pediatric Cardiac Society of India (PCSI) 2021. *Ann Pediatr Cardiol* 2022;15(01):1–3
- Milford K, Rickard M, Chua M, Tomczyk K, Gatley-Dewing A, Lorenzo AJ. Medical conferences in the era of environmental conscientiousness and a global health crisis: The carbon footprint of presenter flights to pre-COVID pediatric urology conferences and a consideration of future options. *J Pediatr Surg* 2021;56(08):1312–1316
- Shahinur S, Sayeed MMA, Hasan M, Sayem ASM, Haider J, Ura S. Current development and future perspective on natural jute fibers and their biocomposites. *Polymers (Basel)* 2022;14(07):1445
- Radiology's Impact on Climate Change | RSNA. 2022. Accessed March 31, 2024 at: <https://dailybulletin.rsna.org/db22/index.cfm?pg=22fri04>
- Iqbal A, Akram H, Haroon S. Exploring the role of media in creating awareness about environment among university students. *J Positive Sch Pschy* 2023;7(03):208–226
- Trouwloon D, Streck C, Chagas T, Martinus G. Understanding the use of carbon credits by companies: a review of the defining elements of corporate climate claims. *Glob Chall* 2023;7(04):2200158
- Avesani CM, Stenvinkel P, Sabatino A, D'Alessandro C, Piccoli GB. Why not turn "food deserts" at medical conferences into educational tools for a sustainable future? *J Nephrol* 2023;36(04):943–945
- Fernandez-Zamudio MA, Zarzo I, Pina T, Soriano JM, San Onofre N. Assessment and solutions to food waste at congress events: a perspective of the MagNuS project. *Foods* 2024;13(02):181
- Han H, Lee S, Al-Ansi A, Kim HC, Ryu HB, Kim JJ, et al. Convention tourism and sustainability: exploring influencing factors on delegate green behavior that reduce environmental impacts. *Sustainability* 2019;11:3903
- Monika KJ, Kishore J. E-waste management: as a challenge to public health in India. *Indian J Community Med* 2010;35(03):382–385
- National Library of Medicine. Ancient Greek Medicine. Accessed March 31, 2024 at: <https://www.nlm.nih.gov/hmd/topics/greek-medicine/index.html>
- Guinée JB, Heijungs R, Huppes G, et al. Life cycle assessment: past, present, and future. *Environ Sci Technol* 2011;45(01):90–96
- Huang MT, Zhai PM. Achieving Paris Agreement temperature goals requires carbon neutrality by middle century with far-reaching transitions in the whole society. *Adv Clim Chang Res* 2021;12:281–286