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Letter to the Editor

Educating Iranian physicians on strategies to minimize the environmental footprint of their clinical practices

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Dear Editor,

The growing epidemic of non-communicable diseases (NCDs) in Iran and other developing countries is increasing the demand for outpatient and hospital services. Numerous studies from developed countries have shown that healthcare systems generate a large environmental footprint through various mechanisms such as energy consumption, waste generation, pharmaceutical pollution, transportation emissions, and chemical use. For instance, if global healthcare sector were considered a nation, it would rank as the fifth largest emitter of greenhouse gases worldwide[1]. Iran faces several pressing environmental health challenges, including air pollution and water scarcity. Iranian physicians have the potential to contribute to nation's environmental health by reducing the environmental footprint of their clinical practice. To support this effort, the author has developed five principles of Environmental Friendly Clinical Practice. This letter discusses these five principles and how Iranian physicians should be trained about them.

Globally there is a harmful, costly and unhealthy vicious cycle between health care utilization and environmental footprint: increased health care utilization drives up the environmental footprint, which in turn, worsens public health and further increases health care demand. The growing burden of NCDs exacerbates this vicious cycle in Iran and other developing countries. Physicians can mitigate this vicious cycle by decreasing the environmental footprint of their clinical practice. Here the author explains in brief the five principles of Environmental Friendly Clinical Practice designed for physicians in developing countries:

1. *Avoiding unnecessary tests and treatments.* Alarmingly about 30 percent of tests and treatments are unnecessary worldwide[2] which produce a large amount of environmental footprint including carbon footprint. Physicians should be trained about evidence based medicine so they can determine unnecessary tests and treatments. In brief they should have the skills of determining pretest probability before ordering tests. When the pretest probability is very low or very high then ordering of a test is most of the times unnecessary. Also they should be familiar with using Fagan Nomogram and combining serial tests in outpatient setting. They should also have the skills of measuring the magnitude of unnecessary treatments based on clinical trials. They should also be familiar with measures like Unnecessary Overtreatment Index,[3] number needed to treat (NNT), NNT-1, (NNT-1/NNT) *100 [4] and number needed to harm (NNH) and they should have skills of applying these measures during Shared Decision Making with their patients.
2. *Considering non-medical treatments as alternatives for medical treatments where appropriate.* In recent decade physicians in the United States and England have developed "Lifestyle Medicine" as a new discipline for treating patients with NCDs. Lifestyle Medicine has a significantly lower environmental footprint than many conventional treatments. There are growing researches on the effectiveness of Lifestyle Medicine in managing of patients with NCD. Training in Lifestyle Medicine should be provided to Iranian physicians who manage NCDs. It is also suggested that Ministry of Health establish social prescribing services in community health centers enabling physicians to refer patients with NCDs to link workers to receive non-medical services.
3. *Ordering tests and treatments with minimal environmental footprint.* In developed countries,

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a growing number of studies are examining the environmental, and particularly carbon, footprint of medical tests and treatments. Iranian physicians should become familiar with the environmental footprint of various diagnostic and treatment modalities to enable informed decision making that prioritizes lower-impact options. Also digital medicine is introducing innovative, echo friendly approaches to diagnosis and treatment such as telemedicine, wearable devices, digital therapeutics, artificial intelligence, machine learning and remote patient monitoring. Given the rapid evolution of these technologies, it is essential that Iranian physicians receive continuous training to stay updated on emerging digital tools that can improve patient care while reducing environmental harm.

4. *Green preventive medicine.* To help mitigate the rising demand for outpatient and hospital services in Iran, physicians should recommend green preventive strategies to general population, patients and their families. These may include environmentally friendly and health-promoting activities such as walking, volunteering, and practicing mindfulness.
5. *Patients empowering.* Physicians should educate patients not only on the importance of environmental friendly clinical practice but also on how they can actively contribute to environmental protection. This includes participating in community activities often in the collaboration of non-governmental organizations for decreasing environmental footprint. Several researches show that social engagement can improve the prognosis of NCDs so patients' social activities for reducing environmental footprint can simultaneously promote their own health, the environmental health and support sustainability of health care system.

It is suggested to Iranian Ministry of Health to develop an Environmental Friendly Clinical Practice guideline to facilitate the adoption of environmentally responsible clinical practice by physicians. Also the author suggests the Iranian Universities of Medical Sciences to launch continuous medical education programs for physicians focused on environmental footprint of clinical practice. Teaching hospitals can also play a key role by integrating discussions on the environmental and carbon footprints of various tests and treatments into grand rounds, morning reports, and journal clubs—ideally led by interns and medical students to foster early engagement.

Competing Interests

None.

Ethical Approval

Not applicable.

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