



## *Telemedicine, a Green Technology*

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Digital health or using the information technology to improve health encompasses a wide range of developments in the field of health and telemedicine applications. This technology allows healthcare professionals to improve the efficiency and access of a large portion of patients to health and treatment facilities by removing geographic barriers. Moreover, reducing the cost of medical care and improving the quality of these services are too well-known outcomes of this technology<sup>1</sup>.

Telemedicine can be considered as a patient-centered and environmentally friendly care model that can lead to potential travel saving, potential time saving, potential cost saving, and potential reduction in pollution and greenhouse gases<sup>2</sup>.

To save energy, the amount of health care travel and paperwork associated with health care should be replaced by the use of telemedicine, email, and telephone to communicate with patients, along with full implementation of electronic medical records and electronic prescribing. Individuals can be treated at home or at work using Internet-based programs, self-care approaches, and personal health records, without the need for frequent visits. Increasing the use of electronic systems for education and research, and the use of data-based remote preventive approaches to provide

population-based care can result in providing a green and eco-friendly health system<sup>3</sup>.

CO<sub>2</sub> is known as one of the most important greenhouse gases leading to climate change by trapping heat in the atmosphere. In addition to the risks related to human health, the impact of climate change also brings risks to nature. Human activities, including transportation and electricity generation have been recently known as the biggest factors in the increase of greenhouse gases. Burning fossil fuels for cars, trucks, ships, trains, and airplanes has contributed greatly to the rises associated with CO<sub>2</sub> emission; therefore, many environmental strategies are focused on reducing the use of fossil fuels and energy demand. Although transportation for health reasons only accounts for 1.5% of the total number of trips, digital health can help to reduce the level of this pollutant due to its potential to prevent travel because of illness. This issue was well demonstrated during the COVID-19 pandemic in 2020 with the reduction in the levels of CO<sub>2</sub> emissions<sup>1</sup>.

In addition to the reduction of CO<sub>2</sub>, telemedicine can lead to the reduction of CO, NO<sub>x</sub>, and volatile organic compounds emissions<sup>2</sup>.

As a result, with the increase in telemedicine services during 2019-2021, greenhouse gas emissions (GHGs) showed a 36% reduction<sup>4</sup>.

Studies have shown that, for each telemedicine appointment, the release of CO<sub>2</sub> gases has been prevented up to 3 kg. In order to increase social motivation, it is suggested that after each remote appointment, patients have access to information about the environmental pollution they have avoided. For example, the message: "By choosing a remote visit, you have prevented the emission of 3 kg of CO<sub>2</sub>" can lead to an increase in the general public's desire to use this technology<sup>1</sup>.

Currently, if atmospheric pollutants remain at their current level, an estimated 2.5 million cases of non-communicable diseases attributed to air pollution will occur by 2035<sup>1</sup>.

Telemedicine with the potential to develop health care systems can not only lead to environmental sustainability, but also social sustainability. The decentralization of health care facilities and a combination of online and offline consultations and services are among the positive outcomes of this technology. The COVID-19 pandemic can be viewed as a turning point in terms of the unprecedented increase in demand for telemedicine; therefore, this issue requires more attention from researchers and professionals across the spectrum of healthcare delivery<sup>5</sup>.

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