

Study finds air pollution can increase cardiovascular risk for cancer patients

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Modern therapies have extended the lives of many cancer patients; however, survivors often live with chronic health conditions, including cardiovascular disease. New research published in the *Journal of the*

American College of Cardiology shows that air pollution plays a significant role in increasing cardiovascular disease and mortality in cancer patients and contributes to health disparities related to these conditions.

"The review underscores the critical need to consider [environmental factors](#), especially [air pollution](#), in cardio-oncology risk assessment and patient management," said Xiaoquan Rao, MD, Ph.D., senior author of the study and a cardiologist at Tongji Hospital at the Tongji Medical College in Wuhan, China.

"By highlighting the significant role of air pollution in the cardiovascular health of cancer patients, our work aims to catalyze further research in this field and inform clinical practices and [public health policies](#)," Rao said.

Rao noted that air pollution has been recognized as a significant risk factor for both cardiovascular diseases and cancer; however, little research has been done to study its effects, specifically in cardio-oncology or the overlap of both diseases. The new study was motivated by a need to fill that gap, Rao said.

Researchers reviewed papers published between 2000 and 2023 and found eight studies that directly explored the combined effect of air pollution on cardiovascular disease and cancer.

They found that exposure to PM_{2.5}, or fine particulates in the air, was significantly associated with higher rates of both incidence and mortality of cardiovascular disease among cancer patients—and vice versa. Rao noted that [air pollution exposure](#) appears to impact multiple common risk factors shared by both cancer and cardiovascular disease, including inflammatory and oxidative stress pathways.

According to researchers, a surprising finding was that even short-term exposure to high pollution levels rapidly impacted cancer patients' cardiovascular health.

"This suggests that even temporary deteriorations in air quality can have immediate adverse effects on vulnerable populations such as cardio-oncology patients," Rao said.

The paper also highlights how air pollution contributes to health disparities worldwide. Disadvantaged populations are exposed to higher levels of air pollution, and cancer patients with a lower socioeconomic status face a higher risk of cardiovascular disease mortality linked to air pollution than the general public, researchers said.

"More research is needed, including [clinical studies](#), to understand the impacts of air pollution on cardiovascular disease and cancer in greater detail," Rao said.

Rao added that the findings can be used to better understand the risks of air pollution and help identify more vulnerable populations within cardio-oncology.

"This awareness is crucial for developing tailored air pollution exposure control measures and individualized patient management strategies aimed at mitigating [cardiovascular disease](#) risks among [cancer patients](#)," Rao said.

Future research will focus on exploring air pollution-related health disparities across different types of cancer and cardiovascular diseases. Researchers also hope to evaluate the effectiveness of environmental interventions in reducing the impact of air pollution on cardio-oncology patients.

More information: Air Pollution in Cardio-oncology and Unraveling the Environmental Nexus, *Journal of the American College of Cardiology* (2024).

Provided by American College of Cardiology

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