Air pollution associated with more severe COVID-19

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Some common air pollutants, such as ground-level ozone, are associated with more severe outcomes after SARS-CoV-2 infection, including admission to the intensive care unit (ICU), according to new research in *CMAJ (Canadian Medical Association Journal)* .

To determine whether there was an association between long-term exposure to air pollution and COVID-19 severity, researchers analyzed data on all 151 105 people aged 20 years and older with confirmed SARS-CoV-2 infection in 2020 in Ontario, Canada, not living in a long-term care facility. They modelled historical exposure to three common air pollutants before the pandemic—fine particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2) and ground-level ozone (O_3). The authors adjusted for date of diagnosis, sex and age, being part of an outbreak, essential worker status, neighborhood socioeconomic status, health care access including previous influenza vaccination history, previous outpatient visits and other factors.

"We observed that people with SARS-CoV-2 infection who lived in areas of Ontario with higher levels of common air pollutants ($PM_{2.5}$, NO_2 and O_3) were at elevated risk of being admitted to the ICU after we adjusted for individual and contextual confounding factors, even when the air pollution level was relatively low," writes Dr. Hong Chen, Health Canada and ICES, with coauthors.

They also found an elevated risk of hospitalization with chronic exposure to $PM_{2.5}$ and O_3, and an increased risk of death from COVID-19 with chronic exposure to O_3.

These results add to the growing reports linking air pollution to COVID-19 severity from other countries, including Spain and Mexico.

"Given the ongoing pandemic, our findings that underscore the link between chronic exposure to air pollution and more severe COVID-19 could have important implications for public health and health systems," write the authors.

As to the mechanisms of how long-term exposure to air pollution may be influencing severity of COVID-19, the researchers call for more research.

More information: Association between long-term exposure to ambient air pollution and COVID-19 severity: a prospective cohort study, *Canadian Medical Association Journal* (2022). DOI: 10.1503/cmaj.220068

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