

# Blacks have more exposure to air pollutants raising heart disease risk, death

March 15 2018

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Blacks often have higher exposure to air pollution than whites, which may partially explain their higher risk heart disease and death compared to whites, according to new research in *Arteriosclerosis, Thrombosis and Vascular Biology*, an American Heart Association journal.

Exposure to [air pollution](#) is associated with elevated blood sugar levels, poorly functioning blood vessels, heart disease events and death.

"Previous studies showed chronic exposure to [fine particulate matter](#) (PM2.5) - a component of air pollution emitted from vehicles, factories, power plants, fires and second-hand smoke - is associated with increased [cardiovascular risk](#) and death," said Sebhat Erqou, M.D., Ph.D., study lead author and fellow in cardiovascular disease at the University of Pittsburgh in Pennsylvania.

"Data also indicates that minorities are more likely to live in areas close to pollution sources, including heavy roadway traffic areas," Erqou said. "However, racial differences in the exposure to air pollution and their role in disparities in cardiovascular risk and death have not been fully explained."

Researchers merged data on fine particulate matter (PM2.5) and black carbon - a component of ultrafine particulate matter - from a Pittsburgh-area monitoring and modeling campaign, with data from the Heart Strategies Concentrating on Risk Evaluation (HeartSCORE), an ongoing community-based study that included 1,717 participants (66 percent

women, 45 percent black, average age 59) in western Pennsylvania. Participants were assessed by questionnaires and during annual follow-up study visits for heart-related hospitalizations, heart attacks, acute coronary syndrome, stroke, coronary revascularization or cardiac death.

Researchers found fine particulate matter (PM2.5) [air pollution exposure](#) was associated with elevated blood glucose, worse blood vessel function, cardiovascular events and death from all causes. In addition, blacks compared to whites had:

- higher average exposures to fine particulate matter air pollutants;
- higher average exposures to black carbon air pollutants; and
- 45 percent higher risk of cardiovascular events and death from any cause, after considering traditional [cardiovascular disease risk](#) factors.

Researchers said about 25 percent of the association between race and [cardiovascular events](#) and death may be explained by exposure to fine particulate matter pollutants. However, greater income and education lessened the impact of air pollution.

The study has limitations including that it was conducted at a single institution in one city, so the range of exposure might have been narrower when compared to other localities.

"Further larger-sized, multicenter studies can help to better understand the role and mechanisms of environmental pollution exposures in racial differences in cardiovascular risk and clinical outcomes," Erqou said.

**More information:** *Arteriosclerosis, Thrombosis and Vascular Biology* (2018). [DOI: 10.1161/ATVBAHA.117.310305](https://doi.org/10.1161/ATVBAHA.117.310305)

Provided by American Heart Association

Citation: Blacks have more exposure to air pollutants raising heart disease risk, death (2018, March 15) retrieved 28 April 2023 from <https://medicalxpress.com/news/2018-03-blacks-exposure-air-pollutants-heart.html>

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