

AIR POLLUTION LINKED TO HIGHER RISK OF GLAUCOMA: STUDY

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Glaucoma, a neuro-degenerative disease, is the leading global cause of irreversible blindness and affects over 60 million people worldwide. | File | Photo Credit: [C.V. Subrahmanyam](#)

Exposure to polluted air is associated with an increased risk of glaucoma, a debilitating eye condition that can cause blindness, according to a study.

The findings, published in the journal *Investigative Ophthalmology & Visual Science*, show that people in neighbourhoods with higher amounts of fine particulate matter pollution were at least 6% more likely to report having glaucoma than those in the least-polluted areas.

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“We have found yet another reason why air pollution should be addressed as a public health priority, and that avoiding sources of air pollution could be worthwhile for eye health alongside other health concerns,” said lead author Paul Foster, a professor at the University College London (UCL) in the UK.

“While we cannot confirm yet that the association is causal, we hope to continue our research to determine whether air pollution does indeed cause glaucoma, and to find out if there are any avoidance strategies that could help people reduce their exposure to air pollution to mitigate the health risks,” Foster said in a statement.

Glaucoma, a neuro-degenerative disease, is the leading global cause of irreversible blindness and affects over 60 million people worldwide, the researchers noted.

It most commonly results from a build-up of pressure from fluid in the eye, causing damage to the optic nerve that connects the eye to the brain, they said.

“Most risk factors for glaucoma are out of our control, such as older age or genetics. It’s promising that we may have now identified a second risk factor for glaucoma, after eye pressure, that can be modified by lifestyle, treatment or policy changes,” Mr. Foster said.

The findings were based on 111,370 participants of the U.K. Biobank study cohort, who underwent eye tests from 2006 to 2010 at sites across Britain.

The participants underwent a test to measure intraocular pressure, and a laser scan of the retina to measure thickness of their eye’s macula, the central area of the retina.

The participants’ data was linked to air pollution measures for their home addresses, with the researchers focusing on fine particulate matter, equal or less than 2.5 micrometres in diameter, or PM2.5.

The team found that people in the most-polluted 25% of areas were at least 6% more likely to report having glaucoma than those in the least-polluted quartile.

They were also significantly more likely to have a thinner retina, one of the changes typical of

glaucoma progression, the researchers found.

Eye pressure was not associated with air pollution, which the researchers said suggests that air pollution may affect glaucoma risk through a different mechanism.

“Air pollution may be contributing to glaucoma due to the constriction of blood vessels, which ties into air pollution’s links to an increased risk of heart problems,” said the study’s first author, Sharon Chua from UCL Institute of Ophthalmology and Moorfields Eye Hospital.

“Another possibility is that particulates may have a direct toxic effect damaging the nervous system and contributing to inflammation,” Ms. Chua said.

The researchers noted that air pollution has been implicated in elevated risk of pulmonary and cardiovascular disease as well as brain conditions such as Alzheimer’s disease, Parkinson’s disease and stroke.

Particulate matter exposure is one of the strongest predictors of mortality among air pollutants.

The latest study adds to previous evidence that people in urban areas are 50 % more likely to have glaucoma than those in rural areas, suggesting that air pollution may be a key contributor to that pattern.

“We found a striking correlation between particulate matter exposure and glaucoma. Given that this was in the U.K., which has relatively low particulate matter pollution on the global scale, glaucoma may be even more strongly impacted by air pollution elsewhere in the world,” Foster said.

“And as we did not include indoor air pollution and workplace exposure in our analysis, the real effect may be even greater,” he said.

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Researchers have found that immune cells called microglia, which play an important role in reorganising the connections between nerve cells, fighting

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