

Does air pollution raise autism risk?

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Traffic-related air pollution may play a role in development of autism, new research suggests.

A Canadian study found that exposure to a common air pollutant during pregnancy was tied to higher odds of a child being diagnosed with autism by age 5.

That pollutant, nitric oxide, is associated with traffic [pollution](#), the researchers noted.

"There is no cure for [autism spectrum disorder](#), so prevention has an important role to play," said lead researcher Lief Pagalan.

"Avoiding air pollution is not easy because it's all around us, and we should see this as a broader public health issue," said Pagalan, of the faculty of health sciences at Simon Fraser University in Vancouver. "In the long term, it's about bringing down air pollution levels for everyone."

About one in 59 American children has some form of autism, according to the U.S. Centers for Disease Control and Prevention. Symptoms can range from mild to severe, and include difficulties with socialization and communication.

Scientists have begun to believe [environmental factors](#) play a role in its development, and research studies are zeroing in on air pollution.

This Canadian study looked at children born in Vancouver from 2004 through 2009. The researchers evaluated exposure to three common air pollutants: nitrogen dioxide; PM2.5 (tiny particles of combustion); and nitric oxide. They also took into account other factors such as child's sex, the month and year of birth, the mother's age and birthplace, city living, and income.

Only prenatal exposure to higher levels of nitric oxide appeared to increase odds for autism, Pagalan said.

Of more than 132,000 children whose records were examined, 1 percent were diagnosed with an autism spectrum disorder by their 5th birthday.

The effect was modest—just a 7 percent higher risk for every 11 parts per billion increase in nitric oxide, the study found.

Pagalan cautioned that this study cannot prove air pollution causes autism, only that they are associated. "Our research did not focus on causal mechanisms, but instead on identifying environmental risk factors, which helps identify opportunities for prevention," he said.

Vancouver is a city known for low levels of air pollution, the researchers pointed out.

These findings do not mean that other types of air pollutants or combinations of pollution aren't potential triggers of autism. This is an area for further study, the study authors noted.

What causes autism isn't entirely clear. Research into possible environmental culprits is relatively recent, so scientists don't fully understand the links, Pagalan added.

But the new study findings are consistent with those from studies done in the United States, Israel and Taiwan, he and his colleagues said.

"Researchers have hypothesized that environmental exposures affect the immune or endocrine systems, or cause oxidative stress and inflammation," he said. "This, in turn, may affect neurodevelopment."

In any case, the effects of air pollution on the risk for autism spectrum disorder, while apparent, are small, said Thomas Frazier, chief science officer at Autism Speaks, an autism advocacy organization in the United States.

"Even for nitric oxide, the effects are very small," Frazier said. "This may be due to the still relatively crude measurement of exposure, since we don't have actual biological exposure data for each child."

Whether reducing exposure to [nitric oxide](#) will decrease the likelihood of [autism](#) spectrum disorder needs to be studied, Frazier said.

The report was published online Nov. 19 in *JAMA Pediatrics*.

More information: Lief Pagalan, M.Sc., faculty of health sciences, Simon Fraser University, Vancouver, British Columbia, Canada; Thomas Frazier, Ph.D., chief science officer, Autism Speaks; Nov. 19, 2018, *JAMA Pediatrics*, online, jamanetwork.com/journals/jamap...pediatrics.2018.3101

For more on autism spectrum disorders, visit the [U.S. Department of Health and Human Services](#).

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