# Long-term exposure to air pollution puts teenagers at risk of heart disease

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Long-term exposure to air pollution can increase the risk of high blood pressure in teenagers, a new study has found.

The review, published recently in *Current Problems in Cardiology*, by researchers from King's College London, looked at eight studies with 15,000 adolescents—children aged twelve and over. Five of these studies were conducted in Europe, whereas previous reviews have included many China-based studies where pollution levels are higher.

High blood pressure during childhood and adolescence is a risk factor for hypertension and heart disease in adulthood. When blood pressure gets too high, it becomes hypertension which causes heart attacks and strokes.

The review found twelve-year-olds and older adolescents have higher diastolic blood pressure when they experience long-term exposure, such as living in a highly polluted area, to fine particulate air pollution, known as PM2.5 and PM10. Particulate matter is often expelled by car exhausts, wood smoke or combustion in the construction and manufacturing industries. Pollution is a structural determinant of health. Children who live in deprived areas are more exposed to high pollution levels. Reducing pollution is key to overcome health inequalities.

The effect of air pollution on heart disease and strokes in adults is well documented, but studies in children shown inconsistent results. While the quality of these studies was low, this review shows a considerable association between air pollution and a rise in blood pressure among adolescents. It supports previous evidence of a disproportionate impact of pollution on BP of adolescents who are overweight or obese. The review also investigated short-term exposure to pollution and its impact, but no association was found.

Lead author Professor Seeromanie Harding from King's College London said: "We observed significant associations in adolescents aged twelve for diastolic blood pressure, the part of blood pressure which rises most often in children or adolescents, and long-term exposures to pollution.

Reducing environmental pollution is an urgent public health priority to protect our children's futures. It is critical to have high quality studies which include assessments by gender, socio-economic circumstances and weight status, to track children's exposure to pollution and prevent an adverse impact on their health."

**More information:** Saniya Tandon et al, Association of Ambient Air Pollution with Blood Pressure in Adolescence: A Systematic-review and Meta-analysis, *Current Problems in Cardiology* (2022). DOI: 10.1016/j.cpcardiol.2022.101460

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