

Traffic pollution putting unborn babies' health at risk, warn experts

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Credit: Scott Meltzer/public domain

Air pollution from road traffic is having a detrimental impact upon babies' health in London, before they are born, finds a study published by *The BMJ* today.

The findings suggest that exposure to air [pollution](#) from [road traffic](#) in London during pregnancy is associated with an increased risk of low [birth](#) weight babies born at full term. But traffic related noise seems to have no effect.

The researchers say their findings are applicable to other UK and European cities and call for environmental health policies to improve [air quality](#) in urban areas.

Previous studies have shown associations between air pollution, pregnancy complications and childhood illness, but studies of [noise pollution](#) in pregnancy have provided conflicting results.

So a team of London-based researchers led by Imperial College London set out to investigate the relation between exposure to both air and noise pollution from road traffic during pregnancy and

two birth weight outcomes - low birth weight (less than 2500 g) and being born small for [gestational age](#).

Using national birth registers, they identified over 540,000 live, single, full-term births occurring in the Greater London area between 2006 and 2010.

Mother's home address at time of birth was recorded and average monthly concentrations of traffic related pollutants - nitrogen dioxide (NO₂), nitrogen oxides (NO_x), and fine particulate matter (PM_{2.5}) from traffic exhaust and non-exhaust sources, such as brakes or tyre wear - as well as larger particulate matter (PM₁₀) were estimated. Average day and night-time [road traffic noise](#) levels were also estimated.

Using statistical models to analyse the data, the researchers found that increases in traffic related air pollutants - especially PM_{2.5} - were associated with 2% to 6% increased odds of low birth weight and 1% to 3% increased odds of being small for gestational age, even after taking account of road traffic noise.

There was no evidence that increasing road traffic noise exposure was independently associated with birth weight but the authors say they "cannot rule out that an association might be observed in a study area with a wider range of noise exposures."

They also point to some study limitations, such as the potential for exposure misclassification. However, the findings held true after other potentially influential factors were taken into account, such as mother's age, ethnicity and deprivation.

"Our findings suggest that air pollution from road traffic in London is adversely affecting fetal growth," say the authors. The annual mean concentration of PM_{2.5} in London in 2013 was 15.3 µg m⁻³, and the authors estimate that reducing London's annual

average PM2.5 concentration by 10% would prevent approximately 90 babies (3%) being born at term with [low birth weight](#) each year in London.

"With the annual number of births projected to continue increasing in London, the absolute health burden will increase at the population level, unless air quality in London improves," they conclude.

Only policy makers have the power to protect women and unborn babies, argue researchers at the University of Edinburgh in a linked editorial. And they warn that, though these results from the UK are concerning, "a global perspective reveals something approaching a public health catastrophe."

They point to Beijing, where air quality levels were improved during the 2008 Olympics, as an example of what can be achieved with coordinated action - and say the challenge "is to maintain reductions in the longer term through combinations of national and local authority action, particularly around reducing congestion and implementing interventions to tackle diesel combustion emissions in urban areas."

Today's study "should increase awareness that prenatal exposure to small particle air pollution is detrimental to the unborn child," they write. However, they stress that increasing awareness without solutions for risk reduction "may serve only to increase maternal anxiety and guilt."

Broad, multi-sector action is urgently required to tackle the problem of [traffic](#) related [air pollution](#), and minimise risks to health of the next generation, they conclude.

More information: Impact of London's road traffic air and noise pollution on birth weight: retrospective population based cohort study, www.bmj.com/content/359/bmj.j5299

Traffic pollution is linked to poor pregnancy outcomes, www.bmj.com/content/359/bmj.j5511

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