

Babies in prams can be exposed to more than twice as much pollution than adults

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Credit: Alfred Palmer/Wikipedia

Babies in prams can be exposed to up to 60 percent more pollution than their parents, causing potential damage to their frontal lobe and impacting on their cognitive abilities and brain development.

In a study published by the Global Centre for Clean Air Research (GCARE) at the University of Surrey in *Environment International*, researchers examined more than 160 references to highlight the factors concerning the [pollution exposure](#) of babies in prams and associated mitigation strategies.

GCARE researchers also investigated different types of prams based on their height, width, and whether they seat one child or two to assess if this impacted on pollution exposure levels. They found that infants in prams breathe in more polluted air since they are positioned between 0.55m and 0.85m above ground level and vehicle exhaust pipes usually sit within 1m above road level. This increases in-pram babies' vulnerability to being exposed to more pollution than adults.

The study suggests a range of mitigation actions, including 'active' solutions such as controlling emissions of road vehicles, and 'passive' actions, such as roadside hedges between vehicles and pedestrians. The researchers also suggested technological solutions that can help to create a clean air zone around the child's breathing area as another effective mean. They concluded that a mixture of innovative technological solutions, community activism, and exposure-centric policies that encourage authorities to tackle traffic congestion are needed as they are seen to be the key to a lasting solution to the problem.

The review also notes other measures such as carpooling, using public transportation to reduce traffic levels, improving technologies and community collaborations with industry could make a real difference to improving [air quality](#) for [children](#).

According to UNICEF, 17 million children across the world who are less than a year old live in regions where [air pollution levels](#) exceed World Health Organisation recommended guidelines. Children from poor economic backgrounds are most at risk of these dangerous levels of

pollution because of a lack of nutrition, access to health care, and exposure to tobacco smoke.

Professor Prashant Kumar, who is a Chair in Air Quality and Health and the Founding Director of the Global Centre for Clean Air Research, said: "We know that infants breathe in higher amounts of airborne particles relative to their lung size and body weight compared to adults. What we have proven here is that the height most children travel at while in a pram doubles the likelihood of negative impacts from air pollution when compared to an adult. When you also consider how vulnerable they are because of their tissues, immune systems, and [brain development](#) at this early stage of their life, it is extremely worrying that they are being exposed to these dangerous levels of pollution.

"Our past research motivated us to set-up the MAPE (Mitigation of Air Pollution Exposure to young children) project that aims to develop targeted [mitigation strategies](#) and solutions. We are working together with industrial partners to develop innovative technological solutions and giving this aspect a special attention in our on-going living lab activities, including community and stakeholders' engagement, part of our another in-progress project, iSCAPE.

"With the multitude of evidence we set out in this review, it is important that everyone across the country begin a full and frank conversation about pollution and the impact it has on our most vulnerable – from parents and community leaders, to government officials and industry."

More information: Ashish Sharma et al. A review of factors surrounding the air pollution exposure to in-pram babies and mitigation strategies, *Environment International* (2018). [DOI: 10.1016/j.envint.2018.07.038](https://doi.org/10.1016/j.envint.2018.07.038)

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