

EDITORIALS

Traffic pollution is linked to poor pregnancy outcomes

Only policy makers have the power to protect women and unborn babies

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The conditions that a developing baby is exposed to in the womb can affect its growth and development, with lifelong implications for health.¹ Exposure to environmental chemicals and stress in utero can lead to functional changes in tissues, and predispose the child to diseases that manifest later in life. Being born small is the most well studied marker of such future ill health, with birthweight inversely correlated with cardiovascular and metabolic diseases.¹

In this issue, Smith and colleagues (doi:10.1136/bmj.j5299) report that air pollution from road traffic, but not traffic noise, is associated with low birth weight at term.² The inference is that reducing exposure to air pollution from road traffic will not only improve the health of current adult populations, but has the potential to reduce the burden of non-communicable diseases in future generations too.

The association between air pollution, pregnancy complications, and childhood illness is not new. Small particle pollution exposure in pregnancy has previously been linked to fetal growth,³ as well as preterm birth,⁴ stillbirth,⁵ and respiratory morbidity in children.⁶ However, while these associations are biologically plausible, underlying causal mechanisms are not yet established. In their retrospective cohort study of pregnant women and their babies in London, Smith and colleagues distinguish between particulate matter from primary exhaust pollution and from other particle pollution sources, which is a helpful step towards isolating sources and composition of particle pollution that are most harmful.²

In addition, Smith and colleagues attempt to distinguish between traffic air pollution and traffic noise pollution.² Previous studies of noise pollution in pregnancy have provided conflicting results,⁷ so it is reassuring to see that there is no evidence of an independent detrimental effect of traffic noise on birthweight.

With compelling evidence of harm from environmental air pollution, pregnant women should consider how to reduce their risk. Air filtering facemasks might reduce acute exposure to particulate pollution,⁸ but there is no evidence that they reduce chronic exposures. Other strategies include changes to walking routes away from major roads and avoiding outdoor activity

when air quality is at its poorest. However, the ubiquity of poor air quality in urban areas like London mean that personal behaviour changes are unlikely to result in substantially different long term exposures. Such lifestyle changes are not realistic for many pregnant women, owing to constraints from employment patterns, residential location, and transport options. These constraints are highest in those who are socioeconomically disadvantaged, contributing to health inequalities.

Women are therefore reliant on policy change to reduce the risk to their unborn baby from air pollution. In the context of a less than encouraging UK government response to air quality, the BMJ has previously noted the need to tackle the issue of highly polluting vehicles in urban areas.⁹ The example from Beijing, where air quality levels were improved during the 2008 Olympics after aggressive government interventions to cut vehicle emissions and industrial production, shows what can be achieved with coordinated action. The immediate positive effects of such interventions were pronounced enough for improvements in population birthweight to be detected.¹⁰ 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.

Though the results reported by Smith and colleagues from the UK are concerning, a global perspective reveals something approaching a public health catastrophe. A recent Lancet commission on pollution and health estimated that 16% of all premature deaths worldwide are owing to pollution with 92% of pollution related deaths occurring in low and middle income countries.¹¹ In recent weeks, the city of Delhi, India has seen air quality reach levels that exceed established scales of measurement with annual averages of fine particulate matter (PM_{2.5}) 50 times those of London.¹² The pregnancy effects of extreme exposure environments like Delhi are unmeasured, and there is an urgent need to turn attention to such environments where large numbers are at considerable risk of harm.

Publication of Smith and colleagues' study should increase awareness that prenatal exposure to small particle air pollution is detrimental to the unborn child.² However, increasing

awareness without solutions for risk reduction may serve only to increase maternal anxiety and guilt. Apart from avoiding tobacco smoke, there is little evidence based advice that clinicians can give to women to reduce their risk. Broad, multisector action is urgently required to tackle the problem of air pollution related to traffic, and minimise risks to the health of the next generation.

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