

TRAFFIC-RELATED AIR POLLUTION INCREASES THE RISK OF FETAL GROWTH RESTRICTION IN PERTH, WESTERN AUSTRALIA

Gavin Pereira, *Cooperative Research Centre for Asthma and Airways, Sydney, Australia; Centre for the Built Environment and Health, School of Population Health, University of Western Australia*

Background and Aims: The aim of this study was to investigate the risk of fetal growth restriction in relation to exposure to motor vehicle traffic emissions about the residential address. While most past studies have relied on monitoring station measurements very few have used more accurate methods such as land-use regression.

Methods: Records were obtained for singleton births in the period 2000-2006 in Perth, Western Australia (N=23,452). Small for gestational age and sex (SGA) was investigated in relation to nitrogen dioxide as a marker for motor vehicle traffic emissions using multivariate logistic regression. Ambient nitrogen dioxide was estimated using land-use regression. Adjustment was made for maternal and pregnancy risk factors and for ambient temperature stress. The sub-populations investigated were: women who spent the most time at home, women who did not move house, women with respiratory or circulatory morbidity, and women living in low, medium and high socioeconomic areas.

Results: An IQR increase in second trimester nitrogen dioxide (16.97ppb) was associated with an adjusted OR 1.17 (0.98, 1.39) for SGA. This effect increased to OR 1.35 (1.08, 1.69) for women who did not move during pregnancy and hence had minimal exposure misclassification. Major roads (>40k veh/day) and semi-major roads (>20k veh/day) within 50m were highly predictive of nitrogen dioxide levels at home.

Conclusions: Exposure to motor vehicle traffic emissions in mid-pregnancy was associated with constrained fetal growth among a population in Perth, Western Australia.

References: