

LOW-LEVEL NITROGEN DIOXIDE EXPOSURE AND SMALL FOR GESTATIONAL AGE NEWBORNS IN A KAUNAS COHORT STUDY

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Background/Aims: Evidence for an association between exposure during pregnancy to traffic-related air pollution and impaired fetal growth is still inconsistent and inconclusive. We examined the relationship of individual exposures to nitrogen dioxide (NO₂) during pregnancy on small for gestational age (SGA) risk in singleton births.

Methods: We conducted a prospective cohort study of 4,161 pregnant women in Kaunas (Lithuania). We gathered individual information on social and demographic characteristics, residence history, health behaviour, pregnancy history, and pregnancy outcomes. Infants were considered SGA if they were in the lowest 10th centile of BW for each gestational week stratified by infant gender and maternal ethnic group. Gender-specific and ethnic group-specific deciles were determined from the 2004 data set of all births in Lithuania. We estimated maternal exposure during pregnancy to NO₂ by AIRVIRE dispersion model for 3,341 singleton births at the geocoded residential address. Associations between NO₂ concentrations and SGA were analyzed by logistic regression models with and without adjustment for estimated potential confounding variables, such as maternal age, education, family status, ethnic group, body mass index, smoking, parity, previous preterm birth, and infant gender.

Results: The mean levels of NO₂ to which the women were exposed throughout their pregnancies ranged from 5.3 to 53.2 µg/m³. We found positive, statistically non-significant associations between exposure to NO₂ during entire pregnancy and SGA. Adjusted odds ratio for SGA of exposed to second tertile NO₂ was 1.00; 95% CI 0.70-1.40 and exposed to third tertile NO₂ was 1.17; 95% CI 0.83-1.65 to compare to the first tertile exposure.

Conclusion: The present study suggests that there was a tendency towards an increased risk of SGA with increasing air pollution exposure, but statistical power was low.