

# Early childhood traffic-related air pollution, boys, parental allergy, stressful family events, and risk of allergic rhinitis at 4 years of age in Shenyang, China: a case-control study

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## Abstract

**Abstract:** Purpose: We aimed to evaluate whether early TRAP exposure is associated with the development of AR during preschool years, stratified by sex, parental allergy, or stressful family events. Methods: A nested case-control study including 398 was conducted in Shenyang. TRAP exposure in early childhood was estimated by nitrogen oxides (NO<sub>x</sub>) air dispersion modeling. We used multinomial logistic regression models to assess the association between early TRAP exposure and preschool children AR, stratified by potential confounders including sex, parental allergy, or stressful family events. Results: Life-time prevalence of AR in children aged 4 years (6.4%) was associated with TRAP exposure during early children, with an increased odds ratio (OR) [adjusted OR=2.18; 95% confidence interval (CI), 1.35 to 3.52] for an interquartile range (38 µg/m<sup>3</sup>) increase in NO<sub>x</sub> levels. A relative risk for AR of 1.88 (95% CI, 1.26 to 2.81) with boys, of 1.91 (95% CI, 1.28 to 2.85) among with eczema during the first year, of 2.94 (95% CI, 1.77 to 4.87) with parents allergy, of 4.14 (95% CI, 2.65 to 6.49) with stressful family events, was also observed. TRAP exposure was significantly associated with AR in preschool children who are boys (adjusted OR=2.13; 95% CI, 1.31 to 3.45), with parental having allergy (adjusted OR=2.06, 95% CI, 1.27 to 3.36), and a history of stressful family events (adjusted OR=1.94, 95% CI, 1.18 to 3.20). Conclusions: Early childhood TRAP exposure, boys, parental allergy, stressful family events may contribute to AR in children at 4 years of age.

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