Association between air pollution and rhinitis symptoms in two European cohorts

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Introduction: The association between air pollution and rhinitis is scarcely studied in adults. The objective is to assess the association between modeled PM₁₀, PM₂.₅ and NO₂ concentrations and rhinitis in two European studies.

Methods: Cross-sectional analyses were performed in adults from two multicentre cohorts: the European Community Respiratory Health Survey (ECRHS) and the French longitudinal Epidemiological Study on the Genetics and Environment of Asthma (EGEA, case-control on asthma and family study), both involved in the European Study of Cohorts for Air Pollution Effects (ESCAPE). Symptoms of rhinitis –ever sneezing, runny or blocked nose in absence of cold or flu- were self-reported by questionnaire. Annual averages of pollutants exposure were estimated at participants’ residential addresses with land use regression models. Data were analysed using logistic regression analysis. Results were adjusted on age, sex, tobacco status and city.

Results: Pooled analysis was performed on 6781 adults from 17 European cities: 5586 from ECRHS (mean age=42 years, 53% women) and 1195 from EGEA (mean age=42 years, 49.5% women). Prevalence of asthma ever and symptoms of rhinitis were higher in EGEA than in ECRHS (40% vs 15% for asthma ever and 60.5% vs 45.5% for symptoms of rhinitis). A negative association between PM₁₀ and symptoms of rhinitis was found in the crude analysis (cOR(95%CI)= 0.83(0.76-0.90) per 5 µg/m³) but no association remained after adjustment (aOR=1.01(0.82-1.24)). When stratifying on asthma, crude results were significant only in non-asthmatics (cOR=0.84(0.76-0.92) and 0.94(0.75-1.17) in asthmatics) but no association remained after adjustment. Similar results were found for PM₂.₅. No association between NO₂ and rhinitis was found (cOR: 0.98(0.95-1.01) per 10 µg/m³, aOR: 1.02(0.96-1.07)).

Conclusions: As it was previously found in children, these results do not support associations between either PM₁₀, PM₂.₅ or NO₂ and symptoms of rhinitis.

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