

IMPACT OF TRAFFIC AIR POLLUTION ON RESPIRATORY SYMPTOMS IN A CHILDREN COHORT IN FLORENCE, ITALY: A BAYESIAN ANALYSIS

Giulia Carreras, *Cancer Prevention and Research Institute ISPO, Florence, Italy*

Marta Blangiardo, *MRC-HPA Centre for Environment and Health, Department of Epidemiology and Biostatistics, Imperial College London, London, UK*

Elisabetta Chellini, *Cancer Prevention and Research Institute ISPO, Florence, Italy*

Background and Aims: The associations between traffic related air pollution and the development of long term respiratory health problems in children is an important issue that has been extensively studied. Recently methods that assess exposure combining spatial air pollution measurements and geographic information system based modeling, i.e. dispersion models, have been favoured.

In this work we study the effect of traffic air pollution on respiratory symptoms in a cohort of children in Florence, Italy.

Methods: Exposure to traffic related pollution for a cohort of children from different schools in Florence, part of the Italian Studies on Respiratory Disorders in Children and the Environment Phase 2, is assessed with a dispersion model in combination with four models to differently weight exposure by distance. A Bayesian hierarchical logistic regression model with school-level heterogeneity is used to study the effect of traffic related air pollution on cough or phlegm and asthma. Risk factors, as second-hand smoking, familiarity of asthma and rhinitis, and socio-economical status, are included in the analysis.

Results: No evidence of increasing risk of asthma with urban air pollution was found, while for cough or phlegm, borderline significant ORs were observed, providing evidence of an association in the cohort.

Conclusions: Familiarity of asthma, exposure to second-hand smoking, and deprivation showed the greatest effect on enhancing the probability of developing respiratory disease symptoms. However, by adjusting for these variables, also a remarkable effect of traffic related air pollution measured by carbon dioxide on cough or phlegm was observed, especially for emissions weighted by the negative exponential function of distance.