ASSOCIATION OF TRAFFIC RELATED AIR POLLUTION AND SUBCLINICAL ATHEROSCLEROSIS IN MEDITERRANEAN TOWNS OF THE REGICOR STUDY

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Background and aims: Traffic-related air pollution causes cardiovascular disease and death. Most evidence relates to short-term exposure causing acute effects like myocardial infarction and stroke. However, it is still unknown whether the long-term exposure is associated to the development of atherosclerosis. We investigated the cross-sectional association between traffic-related air pollutants and the carotid intima media thickness (IMT), an established marker of subclinical atherosclerosis, in participants of the REGICOR study, a population based cohort in Girona (Spain).
Methods: We measured the IMT by ultrasound of the carotid artery in 2,215 participants of the REGICOR study during a re-examination in 2007-2009. We assigned exposure using outdoor NO2 levels, derived with a land use regression model, and traffic proximity metrics at the participant's home address at the time of the IMT measurement. Multiple linear regression was used to assess the association of air pollution with IMT.
Results: An 11µg/m3 increase in NO2 (interquartile range) was associated with a 1.1% (95% CI: -0.17% to 0.24%) increase in IMT in the crude analysis. After adjusting for age and sex, the change in IMT was -0.17% (CI: -1.22% to 0.87%). Further adjustment for education, occupational status, marital status, smoking, hypertension, diabetes, body mass index, and physical activity did not change the results. Associations were modified by educational level with stronger estimates in the highly educated population (1.77% change in IMT, CI: -0.50% to 4.04%). There was no evidence of interactions with sex, age, smoking, hypertension or lipid-lowering medication.
Conclusions: We found no association between long-term exposure to NO2 and IMT. The interaction with socio-economic status (i.e. educational level) needs further investigations. In subsequent analyses we will assign exposure based on the participant's 10-year address history and consider adherence to Mediterranean diet as a potential effect modifier.