

## 5.E. Oral presentations: Environmental factors on health

### Ambient particulate matter exposure interacts with abdominal obesity to increase blood triglycerides

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#### Background:

Blood lipids levels dysregulation represent potential mechanism intermediating the adverse cardiovascular effects of ambient particulate matter (PM) exposure. The present study aims to estimate the effect of particulate matter (PM<sub>10</sub>) exposure on blood lipid levels (TC, Total Cholesterol; HDL-C, High-Density Lipoprotein Cholesterol; LDL-C, Low-Density Lipoprotein Cholesterol; TG, Triglycerides) in the adult Portuguese mainland population and to assess the potential mediation and/or modification action of abdominal obesity on this effect.

#### Methods:

We used data from 2390 participants of the 1st Portuguese Health Examination Survey (INSEF, 2015) with available data on blood lipids parameters and living within a 30km radius of an air quality monitoring station with available PM<sub>10</sub> measurements. PM<sub>10</sub> concentrations were acquired from the air quality monitoring network of the Portuguese Environment Agency. Generalized linear models were used to assess the effect of 1-year PM<sub>10</sub> exposure on blood lipids values. An interaction term was introduced in the models to test the modification action of abdominal obesity.

#### Results:

We found an association between long-term exposure to PM<sub>10</sub> and non-fasting blood TG levels after adjustment for age, sex, education, occupation, lifestyles related variables and temperature but only in participants with abdominal obesity (1.84% TG increase per each 1 µg/m<sup>3</sup> PM<sub>10</sub> increment, 95% CI: 0.02%; 3.69%) which is well supported by the sensitivity analysis.

#### Conclusions:

Our study demonstrate that even at low levels of exposure, long-term PM<sub>10</sub> exposure interacts with abdominal obesity to increase blood TG levels. To the best of our knowledge, this is the first study showing the modification action of abdominal obesity regarding the PM<sub>10</sub> effect on a blood lipid parameter. Our findings suggest that reducing both abdominal obesity prevalence and PM<sub>10</sub> below current standards would result in additional health benefits for the population.

#### Key messages:

- Long-term PM<sub>10</sub> exposure interacts with abdominal obesity to increase non-fasting blood triglycerides levels by about 2% per each 1 µg/m<sup>3</sup> PM<sub>10</sub> increase.
- Reducing both abdominal obesity prevalence and PM<sub>10</sub> below current standards would result in additional health benefits for the population.