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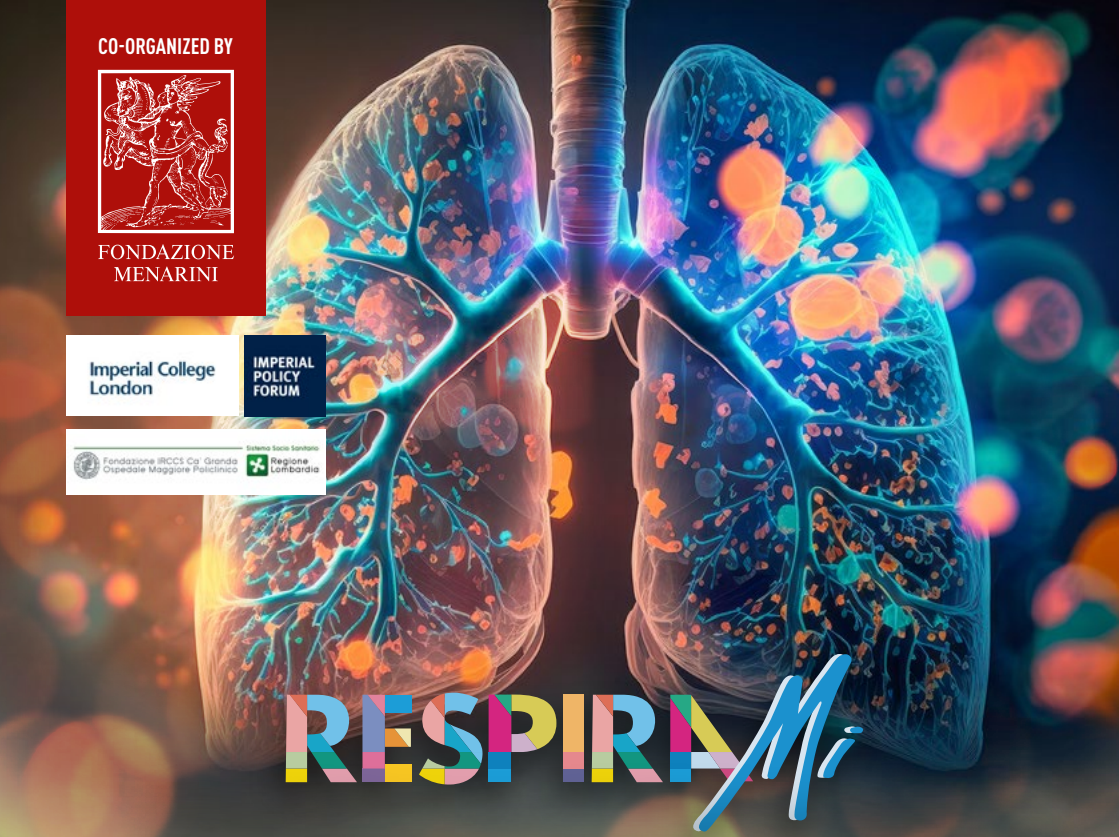

RESPIRA Mi

Recent Advances on Air Pollution and Health

29th February- 01st March 2024

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Recent Advances on Air Pollution and Health
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Air pollution in the Province of Bologna, Italy: A health impact assessment

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INTRODUCTION

The association between air pollution and several health outcomes is well-established in literature. The Province of Bologna lies within the Po Valley, one of the most polluted regions in Europe. Thus, local health impact assessments are needed to inform public health actions.

OBJECTIVES

To assess both short- and long-term health effects of air pollution in the Province of Bologna, Italy

METHODS

We estimated the number and the proportion of cases (AR%) of **hospitalizations** and **deaths** attributable to **PM_{10}**, **$PM_{2.5}$**, **O_3**, and **NO_2**, and **years of life lost** attributable to long-term exposure to **$PM_{2,5}$** in 2022.

Statistical analysis

The analyses were conducted using Stata and AirQ+ 2.2 software, using Relative Risks (RR) suggested by WHO and the ELAPSE study.

Sample population

Residents in the Province of Bologna.

Outcomes

- all-natural-cause mortality;
- cause-specific mortality: cardiovascular mortality, respiratory mortality, and mortality due to lung cancer;
- cardiovascular and respiratory hospitalizations.

Data sources

- Regional Environment Agency (ARPAE) for pollutant data;
- Mortality Registry of the Local Health Authorities of Bologna and Imola and regional hospital discharge records.

RESULTS

Short-term exposure

- **89** natural deaths and AR% of **0.73** (95%IC 0.50-0.97) attributable to **$PM_{2.5}$** [1]
- **55** natural deaths and AR% of **0.45** (95%IC 0.38-0.54) attributable to **PM_{10}** [2]
- **39** natural deaths and AR% of **0.32** (95%IC 0.26-0.39) attributable to **O_3** [3]
- **79** natural deaths and AR% of **0.65** (95%IC 0.39-0.92) attributable to **NO_2** [4]

Regarding **hospitalizations** due to respiratory diseases, the highest AR%s are attributable to $PM_{2,5}$ and NO_2.

Long-term exposure

Chronic exposure to **$PM_{2.5}$** >10 µg/m^3 caused an estimated decrease in **life expectancy** by 0.40 years (95%IC 0.30-0.44).

The estimates concerning long-term exposure to $PM_{2.5}$ and NO_2 were found to be higher when using RRs recommended by the ELAPSE study.

CONCLUSIONS

We estimated a local increase in mortality and hospitalization associated with air pollution. This highlights the need of strengthening air quality policies and mitigation interventions.

[1]threshold of mean levels of 5 µg/m^3; [2]threshold of mean levels of 15 µg/m^3; [3]threshold of 8-hour maximum mean levels of 100 µg/m^3; [4]threshold of mean levels of 10 µg/m^3