



Updated Health Impact assessment (HIA) of urban air pollution in several Spanish cities

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BACKGROUND

- Great efforts have been invested worldwide to better understand and mitigate the impact of air pollution on human health. However, the debate about safe standards is still open.
- This study aims to describe the health benefits that would be achieved by meeting the World Health Organization air quality guidelines (WHO-AQG) for PM₁₀ and PM_{2.5} in the Spanish cities of Barcelona, Bilbao, Granada, Malaga, Seville and Valencia, in the framework of the Aphekom project.

DATA AND METHODS

- Traditional standard procedure for HIA of urban air pollution updated under the EU-sponsored APHEKOM project was applied in each city.
- Short-term impacts of PM₁₀ on mortality and morbidity, as well as the long-term of PM_{2.5} on mortality, life expectancy (LE) and monetary health benefits were quantified based in published concentration-response functions and economic values.
- Pollutants and health outcome data were recorded for the period 2004-2006. Results were referred to population 30 years of age and older.

RESULTS

Figure 1: Average Annual PM₁₀ concentrations (µg/m³) (2004-2006)

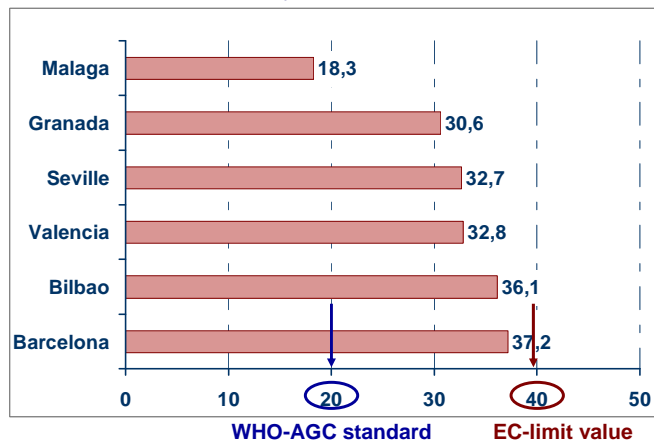


Figure 3: Average Annual PM_{2.5} concentrations (µg/m³) (2004-2006)

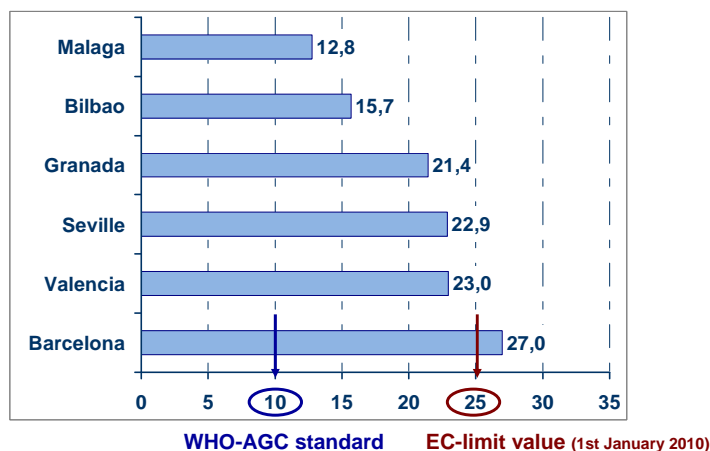


Figure 2: Preventable annual number of deaths (mortality excluding external causes; NEM), and hospital admissions for cardiovascular (HACv) and respiratory (HAR) diseases, if annual PM₁₀ levels in each city would be reduced to WHO-AGC standard of 20 µg/m³.

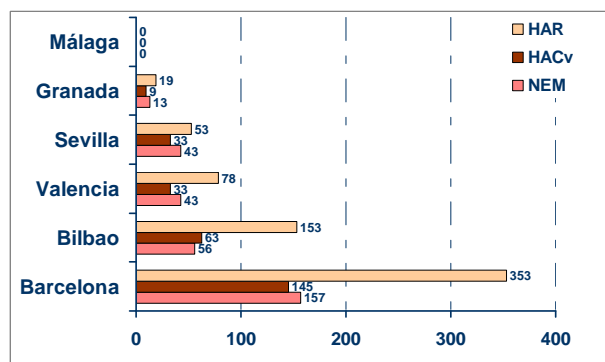
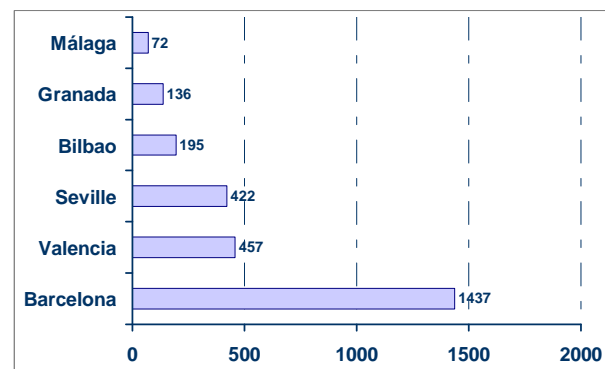


Figure 4: Annual number of attributable deaths avoidable if annual PM_{2.5} levels in each city would be reduced to WHO-AGC standard of 10 µg/m³.



Annual mean of PM₁₀ for the study period did not exceed the legislative limit value in Europe (40 µg/m³) in any of the cities. However, compliance with WHO-AQG of 20 µg/m³ would prevent each year more than 313 deaths, and between 284 and 658 hospital admissions for cardiovascular and respiratory diseases, respectively, in the six cities

The compliance with WHO-AQG in annual PM_{2.5} mean would avoid more than 2732 deaths for the six cities each year, accounting for a monetary health benefit of more than 4,500 millions Euros. This decrease would result in a LE gain that would range between 13.8 and 2.3 months.

CONCLUSIONS: Ours findings support the need to revise current air quality legislative limit values, especially in the case of fine particles PM_{2.5}

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