



Editorial

Air Pollution and Respiratory Health in Childhood[☆]

Contaminación del aire y salud respiratoria en niños

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In March 2014, the World Health Organization (WHO) reported that air pollution, including pollutants such as particulate matter (PM), ozone (O₃), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂), causes 3.7 million premature deaths worldwide every year.¹ Indeed, air pollution, specifically PM, is the leading environmental cause of mortality and morbidity, and the ninth absolute cause of death, before cholesterol or lack of physical exercise.² In recent years, several studies on the acute and chronic effects of air pollutants reported that the risk of cerebrovascular accident, heart disease, lung cancer, and chronic and acute respiratory diseases, including asthma, increases the greater the exposure to pollutants.¹ Furthermore, there does not seem to be a safe threshold, and even very low exposure levels can have repercussions on health.³

The mother–child cohort of the *Infancia y MedioAmbiente* (“Environment and Childhood”–INMA)⁴ project has contributed to scientific knowledge in this area with a close examination of the effects of exposure to air pollutants during the prenatal period and its role on the incidence of respiratory diseases and on lung development. In 2013, Aguilera et al. reported a study of more than 2000 participants from 4 Spanish cities which found that the risk of lower respiratory infection and otitis at the age of 12 months was greater in children whose mothers had been exposed to higher levels of pollutants from traffic (NO₂ and benzene) during pregnancy.⁵ These data were subsequently pooled with data from another 6 European birth cohorts. Once again, prenatal exposure to NO₂ and other air pollutants such as PM₁₀ increased the risk of pneumonia and/or otitis during the first 2 years of life.⁶ Another study of 74 000 newborns from 11 cohorts found a correlation between lower birth weight and the level of traffic pollution inside the home, with the resulting implications for lung development.⁷ A recent study that examined data from 2 INMA cohorts measuring early lung function found that FEV₁ in children

aged 4.5 years diminished the higher the exposure to NO₂ and benzene during pregnancy.⁸ Although the effects were individually small, these results confirm the role of air pollution and its early effects, and a relationship with the long-term development of chronic obstructive pulmonary disease (COPD) cannot be ruled out.⁹

These results are consistent in themselves and in line with the literature available to date. Their importance lies in the fact that acute respiratory infections worldwide account for 20% of annual deaths in children younger than 5 years of age, and this percentage is much higher in developing countries in which air pollution is much more severe than in Europe.¹ Although clean air is considered a basic requirement for human health and wellbeing, studies show that pollution is still a major threat to health throughout the world, and that improving air quality should be on the political agenda of all countries. Unfortunately, the new European Commission is considering a turnabout on the directive launched in 2013 with the aim of reducing pollution from medium-sized combustion facilities and reducing the emission levels of the member states,¹⁰ limits (25 µg/m³ for PM_{2.5}) that are currently higher than those established by the WHO (10 µg/m³).¹⁰ In view of the results that show the high impact of air pollution on respiratory health—14% of deaths caused by air pollution are due to respiratory problems—the community of pulmonologists should form a lobby group, in a similar manner as they did for tobacco in their day, in order to put pressure on the authorities of the European countries to reconsider their decision to increase permitted emission levels. Similarly, respiratory physicians can put pressure on their respective local authorities to implement appropriate measures for meeting air quality criteria that help to protect health. As healthcare professionals and as a society, it is our responsibility to ensure a better quality of life for all our fellow citizens, particularly for our children who are so sensitive to exposure to pollution in their environment.

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