



Effects of air pollution on children's health

Paula González Pannia^a

Environmental pollutants are a risk factor for the development of noncommunicable diseases and cause millions of premature deaths. The burden of disease attributable to air pollution is now estimated to be on a par with unhealthy diets and tobacco smoking. In the pediatric population, exposure to environmental pollutants increases the risk for respiratory diseases, such as asthma, recurrent wheezing or bronchiolitis, upper airway diseases or allergies.¹

According to the World Health Organization (WHO), people in low- and middle-income countries are the most exposed to environmental pollutants. Contrary to what has been believed for many years, the evidence indicates that even low levels of pollutants are harmful. Activities such as industrial production, road traffic, and transportation are the main factors contributing to air pollution. So much so that, during the lockdown imposed due to the pandemic, as industrial activities and the movement of people reduced, air quality improved significantly.²

To reduce the risk to the population, the WHO established air quality reference standards for the various parameters that are considered harmful.³ Measurement of air pollutant concentrations at fixed-location monitoring sites has been the strategy implemented by many countries for

air quality management. However, with the growth of large urban centers, monitoring is often insufficient to accurately estimate the exposure to which we are subjected.

In Argentina, Law no. 20284 (approved in 1973) regulates all sources capable of producing atmospheric pollution, permitted concentrations, warnings, and emergency response in the event of high-level emissions. Currently measured pollutants include particulate matter (PM), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and carbon monoxide (CO). As per the reports by the Ministry of Environment,⁴ Argentina has monitoring stations in the following locations: the City of Buenos Aires, the Matanza-Riachuelo River Basin, Zárate-Campana, Bahía Blanca, the City of Córdoba, San Carlos de Bariloche, the City of Mendoza and Ushuaia.

Measuring pollutants is not enough; it is necessary to know their real impact on the health of the population, especially on the health of children. In this regard, the study by Buffone and Romano –published in this issue–⁵ provides evidence on the association between consultations for respiratory diseases in children younger than 15 years and PM levels in the air in the city of Bahía Blanca. These results are consistent with those reported in other

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^a Hospital General de Niños Pedro de Elizalde, City of Buenos Aires, Argentina.

Correspondence to Paula González Pannia: pau.gp@hotmail.com



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Argentine cities^{6,7} and in other countries.⁸ It is worth highlighting that the study mentioned above found an association between some diseases and PM of 2.5 nanometers (PM_{2.5}). This pollutant, included by the WHO in Group 1 as carcinogenic to humans since 2013, would be responsible for the highest percentage of projected annual premature deaths due to air quality. However, in Argentina, only a few monitoring stations can measure it.

It is worth taking into account that total daily exposure of an individual to air pollutants is cumulative: it is the sum of the separate contacts experienced during the day. For this reason, it is essential to remember the risk of indoor pollution caused by pollutants derived from daily activities: smoking, cooking, heating systems, accumulation of printed material, some cleaning products, etc. It is possible to work with families to detect sources of indoor pollution and take actions to reduce them.

Finally, we must remember the relationship between social conditions, poverty, unemployment, and human health. People living in socially vulnerable situations tend to be the most exposed to environmental pollutants. It is critical for pediatricians to make patients aware of the risks of environmental pollution so that they can take actions to reduce their exposure. Even if small, any intervention has a direct impact on the health of our population. ■

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