Gac Sanit. 2025;39(S2):408

Gaceta Sanitaria

https://www.gacetasanitaria.org

200 - HEALTH CO-BENEFITS OF CLIMATE CHANGE MITIGATION ACTION IN SPAIN: INSIGHTS FROM NO2 AND LOW BIRTH WEIGHT

S. Sieber, J. Ballester, C. Tonne

Barcelona Institute for Global Health (ISGlobal).

Resumen

Background/Objectives: We aimed to quantify reductions in low birth weight (LBW) cases associated with decreased air pollution exposure during pregnancy, while assessing disparities in these benefits across maternal education groups.

Methods: We included 1,411,192 at-term births in 2010-2018 from the Spanish birth registry. We performed distributed lag non-linear models to extract associations between NO2 and LBW in the total sample and stratified by maternal education (primary, secondary, tertiary). The model outcomes were then used to predict the number of LBW cases between 2010 and 2018 under the observed exposure pattern and three retrospective counterfactual scenarios: 1) in-utero air pollution exposure limited to EU Ambient Air Quality Directive (AAQD, 20 $\mu g/m^3$), 2) limited to WHO Air Quality Guidelines (10 $\mu g/m^3$), 3) social intervention where all mothers attain highest level of education (tertiary).

Results: Stricter air quality interventions for NO2 between 2010 and 2018 could have reduced the share of LBW cases in the total sample from 4.62% (95%CI: 4.24-5.02%) under observed exposure to 4.55% (95%CI: 4.18-4.95%) under AAQD scenario and 4.47% (95%CI: 4.10-4.87%) under WHO scenario. The largest reductions were observed among infants born to mothers with primary education, from 5.25% (95%CI: 4.46-6.23%) to 5.07% (95%CI: 4.25-6.02%) under observed exposure and WHO scenario, respectively. In the scenario where all mothers attained tertiary education, the share of LBW cases would have been 3.96% (95%CI: 3.63-4.30%).

0213-9111 © 2025 SESPAS. Publicado por Elsevier España, S.L.U. Todos los derechos reservados

Conclusions/Recommendations: Climate change mitigation policy that reduces air pollution may have substantial health co-benefits, particularly for children and contribute to reducing health inequalities in LBW.

Funding: We acknowledge support from the grant CEX2023-0001290-S funded by MCIN/AEI/10.13039/501100011033, and support from the Generalitat de Catalunya through the CERCA Program. SS has received funding from the Swiss National Science Foundation (grant number 217791).

0213-9111 © 2025 SESPAS. Publicado por Elsevier España, S.L.U. Todos los derechos reservados