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11 - HOW AIR POLLUTION AND EXTREME TEMPERATURES AFFECT EMERGENCY HOSPITAL ADMISSIONS DUE TO NEUROLOGICAL DISEASES: A STUDY IN 10 SPANISH PROVINCES

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Resumen

Background/Objectives: Neurological diseases are a major public health concern. While these diseases could be influenced by pollution, the relationship controlling for extreme temperatures remains unexplored.

Methods: We conducted a retrospective ecological time series study in Spain's 10 most heavily populated provinces, across the period 2013-2018. The dependent variables were daily emergency hospital admissions due to Parkinson's disease, dementia, Alzheimer's disease and multiple sclerosis; and the independent variables were mean daily PM10, PM2.5, NO2 and O3 concentrations, and maximum and minimum daily temperatures in heat and cold waves. We used GLMs with the logit link function (linear regression models of the binomial family) for each province, and based on the probability of admission for each variable, we then calculated hospital admissions attributable to each variable of environmental risk.

Results: Across the study period in all the provinces covered, 2077 emergency hospital admissions due to the neurological causes considered were attributed to the environmental variables analysed, and accounted for 13.5% of the total: the percentage breakdown showed 12.5% as being attributable to air pollution and 1.0% to extreme temperatures (0.6% to cold waves and 0.4% to heat waves). In terms of pollutants, 245 (95%CI: 31-466) admissions were attributable to the effect of PM concentrations, a number far lower than those attributable to NO2, 581 (95%CI: 148-1054), and to ozone, 1107 (95%CI: 366-1,861).

Conclusions/Recommendations: The high impact of air pollution on these types of hospital admissions, taken together with population ageing and the imminence of increasingly higher populations living in large cities, calls for the urgent adoption of measures designed to reduce the pollution levels to which the populations of large cities are exposed.

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