

PRENATAL EXPOSURE TO PM_{2.5} AND ITS RELATIONSHIP WITH LOW BIRTH WEIGHT IN THE INMA-GIPUZKOA COHORT.

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Background and Aims: Research has shown that prenatal exposure to air pollutants may have a detrimental effect on foetal development. Weight at birth is the most commonly used anthropometric variable for assessing foetal growth. The objective of this study was to assess the role of exposure to 2.5 µm particulates (PM_{2.5}) in the first trimester of pregnancy considering the birth weight of children of the INMA-Gipuzkoa cohort (Spain) (www.proyectoinma.org).

Methods: Growth charts for both sexes were constructed from the data of children born between 2006 and 2008 in Gipuzkoa (N=21,629). The estimation of percentiles was carried out using the Least Mean Square (LMS) method for smoothing and Small for Gestational Age (SGA) babies among INMA children were identified. Data on exposure to PM_{2.5} were obtained from 3 DIGITEL high volume samplers and two stations in the air quality network of Basque Government (Spain). Assignment to a level of exposure was made for those women who lived in the city less than 500 metres from one of the sites where measurements had been taken. They were assigned an average value for PM_{2.5} for week 12 of their pregnancy. Two multivariate regression models were build using birth weight and SGA as the dependent variables, while exposure was introduced as a continuous and dichotomous variable (>20 µg/m³).

Results: Out of the 601 births in INMA, 64 (10%) were identified as SGA. The average level of exposure to PM_{2.5} at week 12 of pregnancy was 17.56 µg/m³ (range: 8.3-35.4 µg/m³). Results showed a statistically significant relationship between exposure and SGA (OR_{PM_{2.5}} =1.007; p=0.036, unadjusted OR>20 =2.537; p=0.008 and OR>20 adjusted=1.11; p=0.038).

Conclusions: We observed a positive relationship between the prenatal levels of exposure to PM_{2.5} during the embryonic stage of pregnancy and an increased risk of low weight at birth in terms of SGA.