

ASSOCIATION BETWEEN VEHICULAR DENSITY AND HOSPITALIZATION BY CARDIOVASCULAR DISEASES IN THE CITY OF SAO PAULO, BRAZIL

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Background and aims: A cross-sectional study using vehicular density (VD) as an indicator of exposure, calculated for micro-areas of the city of Sao Paulo, was conducted to assess the impact of air pollution on admissions for cardiovascular diseases.

Methods: Hospitalizations for cardiovascular diseases (ICD10: I20-I25.9 and ICD10: I60-I69.8) in adults aged 40 years or more from public and private hospitals of the city in the period 2004-2006 were geocoded by their residence addresses.

Vehicular density, according to the type of fuel, was calculated for micro-areas of 500m² of the city and used as the indicator of exposure to traffic-related air pollution. The number of resident people and the Human Development Index (HDI) were available for these micro-areas. Admission rates for cardiovascular diseases were calculated and the VD (total and according to type of fuel) and HDI were categorized into quartiles. Multiple logistic regression models with the admission rates as the dichotomous dependent variable (equal or greater than the median) and the VD and the HDI as independent variables were used.

Results: 30,843 admissions by cardiovascular diseases were analyzed in 1,927 micro-areas of the city. Having the first quartile of VD as baseline and allowing for the HDI, the adjusted OR for total VD were: 2.54 (95%CI: 1.93-3.42; 4.49 (95%CI: 3.35-6.01; 4.94 (95%CI: 3.60-6.79). For diesel vehicles the OR were: 2.55 (95%CI: 1.94-3.36); 4.96 (95%CI: 3.06-5.42); 4.09 (95%CI: 3.02-5.56), and for vehicles powered by gasoline and alcohol were: 2.60 (95%CI: 1.97-3.42); 4.70 (95%CI: 3.51-6.30); 4.96 (95%CI: 3.61-6.83). Significant linear trends were observed for cardiovascular diseases and all types of fuel.

Conclusions

A statistically significant association between VD and admissions for cardiovascular diseases was found. This association was not influenced by the type of fuel.