

THE MODIFYING EFFECT OF SOCIOECONOMIC POSITION IN THE AIR POLLUTION - MORTALITY ASSOCIATION: THE ESCALA PROJECT

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Background and aims: Socioeconomic position (SEP) has been identified as a factor that can modify the effects of air pollution on health, although few studies have examined this in detail. We examined this hypothesis in 4 Latin American Cities (São Paulo, Rio, Santiago and Mexico City) which were part of the ESCALA project.

Methods: We developed a common area-based SEP index using variables related to education, income and housing conditions. Each area was ranked according to the SEP index using principal component analysis. The final scores were grouped into tertiles. Deaths were assigned to their respective areas according to the residential address. For Mexico City we assigned the level of air pollution registered in the monitoring station of each area, while for the other cities we averaged air pollution levels across all monitoring stations. Generalized Linear Models in Poisson regression was used to fit the time-series data for PM₁₀ and O₃.

Results: In Mexico, a gradient was observed for respiratory mortality with RR% = 1.46 (95%CI 0.76 to 2.16) in the low, RR% = 0.81 (0.20 to 1.43) medium and RR% = -0.8 (-1.46 to -0.22) in the high SEP, while cardiovascular and cerebrovascular mortality were higher in the medium and high SEP. In Brazilian cities we observed an opposite trend for respiratory mortality with higher effects in the high SEP and no trends for cardiovascular and cerebrovascular mortality. In Santiago, COPD and cardiovascular mortality were significantly increased in the low SEP but no clear gradient could be observed. Results were more consistent for PM₁₀ than for O₃ in all cities.

Conclusion: Our data suggest that SEP may play a role in the susceptibility to air pollution, especially for respiratory mortality. However results are inconsistent with regards to the more susceptible subgroups to respiratory mortality and other causes of mortality.