

Publication

Long-term exposure to air pollution and cardiovascular mortality : an analysis of 22 european cohorts

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Air pollution has been associated with cardiovascular mortality, but it remains unclear as to whether specific pollutants are related to specific cardiovascular causes of death. Within the multicenter European Study of Cohorts for Air Pollution Effects (ESCAPE), we investigated the associations of long-term exposure to several air pollutants with all cardiovascular disease (CVD) mortality, as well as with specific cardiovascular causes of death.; Data from 22 European cohort studies were used. Using a standardized protocol, study area-specific air pollution exposure at the residential address was characterized as annual average concentrations of the following: nitrogen oxides (NO₂ and NO_x); particles with diameters of less than 2.5 μ m (PM_{2.5}), less than 10 μ m (PM₁₀), and 10 μ m to 2.5 μ m (PM_{coarse}); PM_{2.5} absorbance estimated by land-use regression models; and traffic indicators. We applied cohort-specific Cox proportional hazards models using a standardized protocol. Random-effects meta-analysis was used to obtain pooled effect estimates.; The total study population consisted of 367,383 participants, with 9994 deaths from CVD (including 4,992 from ischemic heart disease, 2264 from myocardial in-

fraction, and 2484 from cerebrovascular disease). All hazard ratios were approximately 1.0, except for particle mass and cerebrovascular disease mortality; for PM_{2.5}, the hazard ratio was 1.21 (95% confidence interval = 0.87-1.69) per 5 $\mu\text{g}/\text{m}^3$ and for PM₁₀, 1.22 (0.91-1.63) per 10 $\mu\text{g}/\text{m}^3$.; In a joint analysis of data from 22 European cohorts, most hazard ratios for the association of air pollutants with mortality from overall CVD and with specific CVDs were approximately 1.0, with the exception of particulate mass and cerebrovascular disease mortality for which there was suggestive evidence for an association.

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