

Publication

Air pollution and cardiovascular mortality with over 25years follow-up : a combined analysis of two British cohorts

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Adverse effects of air pollution on cardiovascular disease (CVD) mortality are well established. There are comparatively fewer studies in Europe, and in the UK particularly, than in North America. We examined associations in two British cohorts with >25years of follow-up.; Annual average NO₂, SO₂ and black smoke (BS) air pollution exposure estimates for 1991 were obtained from land use regression models using contemporaneous monitoring data. From the European Study of Cohorts and Air Pollution (ESCAPE), air pollution estimates in 2010-11 were obtained for NO₂, NO_x, PM₁₀, PM_{coarse} and PM_{2.5}. The exposure estimates were assigned to place of residence 1989 for participants in a national birth cohort born in 1946, the MRC National Study of Health and Development (NSHD), and an adult multi-ethnic London cohort, Southall and Brent Revisited (SABRE) recruited 1988-91. The combined median follow-up was 26years. Single-pollutant competing risk models were employed, adjusting for individual risk factors.; Elevated non-significant hazard ratios for CVD mortality were seen with 1991 BS and SO₂ and with ESCAPE PM₁₀ and PM_{2.5} in fully adjusted linear models. Per 10 μ g/m³ increase HRs were 1.11 [95% CI: 0.76-1.61] for BS, 1.05 [95% CI: 0.91-1.22] for SO₂, 1.16 [95% CI: 0.70-1.92] for PM₁₀ and 1.30 [95% CI: 0.39-4.34] for PM_{2.5}, with largest effects seen in the fourth quartile of BS and PM_{2.5} compared to the first with HR 1.24 [95% CI: 0.91-1.61] and 1.21 [95% CI: 0.88-1.66] respectively. There were no consistent associations with other ESCAPE pollutants, or with 1991 NO₂. Modelling using Cox regression led to similar results.; Our results support a detrimental long-term effect for air pollutants on cardiovascular mortality.

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