

IS PM₁₀ ASSOCIATED WITH EMERGENCY AMBULANCE DISPATCHES?

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Background and Aims: Positive short-term associations between particulate matter and mortality has been well established. To investigate the impact of air pollution on non fatal events we analyzed for the first time the exposure-response curve of ambulance dispatches using a region-wide real time database.

Methods: Daily Emergency Ambulance Dispatches (EAD) for people aged 35 or older were collected for six chief towns of the Emilia-Romagna region between 2002 and 2006. In a first stage, Poisson regression models were used to assess the relationship between PM₁₀ daily mean concentrations and EAD, controlling for potential confounders and including natural splines to adjust for trend and seasonality. City-specific estimates were obtained for three age groups (35-64, 65-74, 75+ years) and for non-traumatic, cardiovascular and respiratory disease. Cumulative lagged effect was investigated up to five days and temporal patterns were explored using distributed lag models. Hot and cold season effect modification was also verified in additional analyses. In a second stage, city-specific effects were combined in fixed effects meta-analyses.

Results: The percent change of EADs associated with 10 •g/m³ increase in five-day mean exposure was 1.06% (95%CI: 0.74;1.38) for non-traumatic disease. Effects were larger during the hot season with significant effects for all-age cardiovascular and respiratory disease. The highest effects were found for respiratory 75+ EAD during the hot season for lag0-3 of exposure (3.38%, 95%CI: 1.06;5.7).

Conclusions: EADs data showed a strong relationship with PM₁₀ with larger effects during the hot season. The effects were similar to those found in previous studies on mortality. EAD are relevant indicators in order to achieve a wider view of the effects of air pollution on human health and possibly to establish real-time surveillance systems.

References:

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