

SAHARAN DUST AND CAUSE-SPECIFIC MORTALITY IN EMILIA-ROMAGNA (ITALY)

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Background and Aims: There is a growing concern about the health effects of Saharan dust outbreaks but evidence is limited. We investigated the association between Saharan dust outbreaks and natural, cardiovascular and respiratory mortality.

Methods: A case-crossover design was adopted to assess the effects of Saharan dust days (SDD) on mortality in the Emilia-Romagna region of Italy. The population under study consisted of residents in the six main towns of the central-western part of the region who died between 2002 and 2006. Saharan events have been identified by using observations carried out at the Italian Climate Observatory at Mt. Cimone (2165 m a.s.l.). Based on previous analysis on particulate size distribution of Saharan air masses we decided to use PM_{10} data for particulate exposure instead of $PM_{2.5}$ and $PM_{2.5-10}$ separately. The association of Saharan dust outbreaks and PM_{10} concentration with mortality was estimated using conditional logistic regression, adjusted for apparent temperature, holidays, summer population decrease, flu epidemic weeks and heat wave days. The role of the interaction term between PM_{10} and SDD was analysed to test for effect modification induced by SDD on the PM_{10} -mortality concentration-response function. Separate estimates were undertaken for hot and cold seasons.

Results: We found some evidence of increased respiratory mortality for people aged 75 or older on SDD. Respiratory mortality increased by 22.0% (95% CI 4.0% to 43.1%) on the SDD in the whole year model and by 33.9% (8.4% to 65.4%) in the hot season model. Effects substantially attenuated for natural and cardiovascular mortality with ORs of 1.042 (95% CI 0.992 to 1.095) and 1.043 (95% CI 0.969 to 1.122), respectively.

Conclusions: Our findings suggest an association between respiratory mortality in the elderly and Saharan dust outbreaks. We found no evidence of an effect modification of dust events on the concentration response relationship between PM_{10} and daily deaths.

References:

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