

DOES AIR POLLUTION TRIGGER INFANT MORTALITY IN WESTERN EUROPE? A CASE-CROSSOVER STUDY.

HansScheers, *Leuven University (KULeuven), Belgium*
Samuel Mwailili, *Leuven University (KULeuven), Belgium*
Christel Faes, *Hasselt University, Belgium*
Benoit Nemery, *Leuven University (KULeuven), Belgium*
Tim Nawrot, *Hasselt University, & Leuven University, Belgium*

Background and Aims: Numerous studies show associations between fine particulate air pollutants (PM10) and mortality in adults. We investigated short-term effects of elevated PM10 levels on infant mortality in Flanders, Belgium, and studied whether the European Union (EU) limit value protects infants from the air pollution trigger.

Methods: In a case-crossover analysis, we estimated the risk of dying from non-traumatic causes before the age of one year in relation with outdoor PM10 concentrations on the day of death. We matched control days on temperature in order to exclude confounding by variations in daily temperature.

Results: During the study period (1998-2006), PM10 concentration averaged 31.9 $\mu\text{g}/\text{m}^3$ (SD 13.8). In the entire study population (N=2382), the risk of death increased by 4% (95% CI: 0-8%, P=0.045) for a 10 $\mu\text{g}/\text{m}^3$ increase in daily mean PM10. However, this association was only significant for late neonates (2-4 weeks of age, N=372) in whom the risk of death increased by 11% (1-22%, P=0.028) per 10 $\mu\text{g}/\text{m}^3$ increase in PM10. In this age class, infants were 1.74 (1.18-2.58, P=0.006) times more likely to die on days with a mean PM10 above the EU limit value of 50 $\mu\text{g}/\text{m}^3$ than on days below this cut-off.

Conclusions: Even in an affluent region in Western Europe, where infant mortality is low, days with higher particulate air pollution are associated with an increased risk of infant mortality. Assuming causality, the current EU limit value for PM10, which may be exceeded on 35 days per year, does not prevent PM10 from triggering mortality in late neonates.