

LONG-TERM EXPOSURE TO ROAD TRAFFIC AND MORTALITY IN A PROSPECTIVE COHORT OF WOMEN IN GERMANY

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Objective and aim: We assess whether long-term exposure to traffic-related air pollution is associated with all-cause, cause-specific and lung cancer mortality during a period of declining concentration of particulate matter.

Methods: A cohort of approximately 4800 women (age 55 years) from the Rhine-Ruhr area, Germany, was followed for up to 18 years. Exposure to traffic-related air pollution was defined by distance of residential address to nearest major roads calculated from GIS. Furthermore, one year average PM₁₀ and NO₂ concentrations were available (calculated from air-monitoring station data in close vicinity to residents of the subjects). Ninety-two per cent of all subjects lived in the same community during follow up.

Results: Sixteen per cent of the women died during the follow-up period.

(1) Distance to roads: Living closer than 50 m (vs. more than 50 m) from a busy road showed an elevated total mortality adjusted for smoking and educational level: RR=1.47 (1.16 – 1.85). For cardiopulmonary mortality the elevation was even higher: RR=1.68 (1.17- 2.41).

(2) PM10: An increment of 7 µg/m³ PM10 (interquartile range) increased all-cause mortality after adjustment for smoking and educational level (HR 1.19, 95% CI (1.07-1.31)), cardiopulmonary mortality (HR 1.47, 95% CI (1.25-1.73)), and lung cancer mortality (HR 1.59, 95% CI (1.06-2.39))

(3) NO₂: An increase in exposure to NO₂ by 16 µg/m³ (interquartile range) was associated with an increased hazard ratio for total (HR 1.18, 95% CI (1.07-1.30)), cardiopulmonary (HR 1.91, 95% CI (1.60-2.28)), and respiratory mortality (HR 2.03, 95% CI (1.26 – 3.27)) after adjustment for smoking and educational level,

(4) Trend: Cardiopulmonary mortality related to PM was reduced for the extended follow-up with lower PM10 concentration, but not with NO₂ for which the concentrations were reduced only minor.

Conclusions: Long-term exposure to traffic-related air pollution increases all-cause, cardiopulmonary and lung cancer mortality in region with high traffic load in Germany.