

CHRONIC EXPOSURE TO TRAFFIC POLLUTION IS ASSOCIATED WITH REDUCED GLOMERULAR FILTRATION RATE

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Background and Aims: Chronic exposure to air pollution from traffic, as measured using residential distance to major roadway, has been associated with increased incidence of cardiovascular diseases endpoints. Considering that chronic kidney disease and cardiovascular disease share certain common risk factors, we hypothesized that chronic exposure to traffic pollution would be associated with a lower estimated glomerular filtration rate (eGFR).

Methods: Serum creatinine was drawn at the time of hospital presentation among 1120 consecutive patients hospitalized for stroke. We calculated eGFR using the Chronic Kidney Disease Epidemiology Collaboration equation. We calculated residential distance to the nearest major roadway as a measure of exposure to traffic pollution. We abstracted from medical records information on patient demographics, past medical history, and admission medications, and obtained data from the 2000 US Census on income and educational attainment as a measure of census tract socioeconomic status. We used linear regression to estimate the association between residential distance to major roadway and eGFR, controlling for age, sex, race, smoking, diabetes, hypertension, heart failure, coronary artery disease, treatment with angiotensin converting enzyme inhibitors, and socioeconomic status. We considered distance to major roadway as both a categorical variable (0-50, 50-100, 100-200, 200-400, and >400 m) and a log-transformed continuous variable.

Results: Living closer to a major roadway was associated with a statistically significantly lower eGFR versus living farther away (p-trend=0.03). When considering distance to roadway as a log-transformed continuous variable, we found that living ≤ 100 m versus >500 m from the nearest major roadway was significantly ($p=0.007$) associated with a 2.08 mL/min/1.73 m² (95CI: 0.56-3.60) lower eGFR.

Conclusions: Chronic exposure to traffic pollution, as measured using residential distance to major roadway, was associated with lower eGFR in a population hospitalized for stroke, and the estimated effects were comparable to those of other predictors of eGFR.

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