

RESIDENTIAL TRAFFIC EXPOSURE AND HYPERTENSION IN AUGSBURG, GERMANY

Wolf, Kathrin, Institute of Epidemiology II, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany

von Klot, Stephanie, Institute of Epidemiology II, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany

Heber, Anne, Institute of Epidemiology II, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany

Birk, Matthias, Institute of Epidemiology, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany

Meisinger, Christa, Institute of Epidemiology II, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany and MONICA/KORA Myocardial Infarction Registry, Central Hospital of Augsburg, Augsburg, Germany

Thorand, Barbara, Institute of Epidemiology II, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany

Heinrich, Joachim, Institute of Epidemiology, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany

Cyrys, Josef, Institute of Epidemiology II, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany and ESC-Environmental Science Center, University of Augsburg, Augsburg, Germany

Peters, Annette, Institute of Epidemiology II, Helmholtz Zentrum München - German Research Center for Environmental Health, Germany

Background and Aims. It has been suggested that long-term exposure to air pollution may lead to chronic increase in arterial blood pressure possibly resulting in hypertension. In this study, we investigated the influence of long-term residential traffic exposure on the prevalence of hypertension.

Methods. We used data on 9116 individuals aged 25 to 74 years who participated in the cross-sectional MONICA S3 (1994/95) and the KORA S4 (1999-2001) surveys conducted in the region of Augsburg, Germany. The residential traffic exposure was assessed by specifying daily traffic intensity of and distance to nearest street, and of daily traffic load (sum of product of traffic intensity and length of all segments divided by area) and total road length within buffers of 50, 100 and 300 meters around the residences. Hypertension was defined according to the AHA definition as systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg. We used logistic regression adjusting for age, BMI, education, alcohol consumption, LDL-cholesterol and smoking status. Additionally, sex was examined as effect modifier.

Results. Traffic load within a radius of 100 meters of a person's residence was associated with an elevated risk for the prevalence of hypertension with an odds ratio of 1.05 (95% CI, 1.01 to 1.10) per increase in 36.2 vehicles/(day*m). The odds ratio for participants living near major roads within 100 meters compared to other persons was 1.14 (95% CI, 1.01 to 1.28). Results for 50 meter buffers were similar. Traffic intensity of the nearest road and inverse distance to nearest road showed positive but not significant effects. Almost 60% of participants with hypertension were male. However, in stratified analyses significant associations were found in women only.

Conclusions. Long-term residential exposure to high traffic may induce hypertension. An influence only in women has to be verified by other studies.