

# Night-time aircraft noise increases prevalence of prescriptions of antihypertensive and cardiovascular drugs irrespective of social class—the Cologne-Bonn Airport study

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## Abstract

**Aim** To investigate the impact of aircraft noise on prescription prevalences of cardiovascular drugs in the vicinity of a major German airport with respect to social gradients.

**Methods** Spatial aircraft noise level data were derived from all individual flight data of Cologne-Bonn Airport for the year 2004, utilizing those 6 months with highest air traffic density. Individual prescription data of 809,379 persons insured with compulsory sickness funds were linked to address-specific noise data (air traffic, road traffic, train traffic). Multivariate logistic analyses were conducted on quartiles of night-time aircraft noise (3.00–5.00 a.m.), adjusting among others for noise from other sources, age, density of nursing homes and stratifying by quartiles of prevalence of social welfare recipients in community quarters.

**Results** Increases of prescription prevalences in general were more pronounced in females. Analyses showed moderate noise-dependent increases of odds ratios for antihypertensive drugs and cardiovascular drugs. More pronounced effects were seen for those persons who received prescriptions for drugs from different groups of

drugs (antihypertensive drugs and cardiovascular drugs, antihypertensive and cardiovascular drugs and anxiolytic drugs). In the latter group odds ratios reached maximum values of 3.733 (95% confidence interval: 2.505–5.563) in males and of 3.941 (95% confidence interval: 3.107–4.998) in females. Increases were found in all social strata.

**Conclusion** Night-time aircraft noise increases the prevalence of prescriptions for antihypertensive and cardiovascular drugs, especially when prescribed combined and in conjunction with anxiolytic drugs.

**Keywords** Air traffic noise · Antihypertensive drugs · Cardiovascular drugs · Logistic regression · Epidemiological study

## Introduction

Traffic noise is an established risk factor for the development of arterial hypertension, as the authors of several meta-analyses and scientific reviews have demonstrated (Babisch 2006; van Kempen et al. 2002; Stansfeld and Matheson 2003). Rather few studies have shown that aircraft noise might have a similar impact on risk of hypertension (Franssen et al. 2004; Knipschild 1977a, b; Rosenlund et al. 2001). In these studies hypertension in population survey samples was ascertained by self-reported hypertension, questions on recent intake of antihypertensive drugs or analyses of prescriptions in pharmacies. The use of cardiovascular drugs has been investigated in some of these studies (Franssen et al. 2004; Knipschild 1977b).

In none of these studies was social class investigated as a potential confounder, although Franssen and co-authors (2004) made use of educational attainment as a confounder.

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