

Publication

Transportation noise exposure, noise annoyance and respiratory health in adults : a repeated-measures study

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4487291

Author(s) Eze, Ikenna C.; Foraster, Maria; Schaffner, Emmanuel; Vienneau, Danielle; Héritier, Harris; Pieren, Reto; Thiesse, Laurie; Rudzik, Franziska; Rothe, Thomas; Pons, Marco; Bettschart, Robert; Schindler, Christian; Cajochen, Christian; Wunderli, Jean-Marc; Brink, Mark; Rössli, Martin; Probst-Hensch, Nicole

Author(s) at UniBasel [Eze, Ikenna](#) ; [Foraster Pulido, Maria](#) ; [Schaffner, Emmanuel](#) ; [Vienneau, Danielle](#) ; [Héritier, Harris](#) ; [Schindler, Christian](#) ; [Rössli, Martin](#) ; [Probst Hensch, Nicole](#) ;

Year 2018

Title Transportation noise exposure, noise annoyance and respiratory health in adults : a repeated-measures study

Journal Environment International

Volume 121

Number Pt 1

Pages / Article-Number 741-750

Transportation noise leads to sleep disturbance and to psychological and physiological sustained stress reactions, which could impact respiratory health. However, epidemiologic evidence on associations of objective transportation noise exposure and also perceived noise annoyance with respiratory morbidity is limited. We investigated independent associations of transportation noise exposure and noise annoyance with prevalent respiratory symptoms and incident asthma in adults. Using 17,138 observations (from 7049 participants) from three SAPALDIA (Swiss Cohort Study on Lung and Heart Diseases in Adults) surveys, we assessed associations of transportation noise exposure and noise annoyance with prevalent respiratory symptoms, and with incident asthma (in 10,657 nested observations from 6377 participants). Annual day-evening-night transportation noise comprising road, railway and aircraft Lden (Transportation Lden) was calculated for the most exposed façade of participants' residence using Swiss noise models. Transportation noise annoyance was assessed using an 11-point scale, and participants reported respiratory symptoms and doctor-diagnosed asthma at each survey. We estimated associations with transportation Lden (as well as source-specific Lden) and noise annoyance, independent of air pollution and other potential confounders, using mutually-adjusted mixed logistic and Poisson models and applying random intercepts at the level of the participants. Prevalent respiratory symptoms ranged from 5% (nocturnal dyspnoea) to 23% (regular cough/phlegm). Transportation noise annoyance, but not Lden, was independently associated with respiratory symptoms and current asthma in all participants, with odds ratios (OR) and 95% confidence intervals (CI) ranging between 1.03 (95%CI: 1.01, 1.06) and 1.07 (95% CI: 1.04, 1.11) per 1-point difference in noise annoyance. Both noise annoyance and Lden showed independent associations with asthma symptoms among asthmatics, especially in those reporting adult-onset asthma [OR; Lden; : 1.90 (95% CI: 1.25, 2.89) per 10/dB; p-value of interaction (adult-onset vs. childhood-onset): 0.03; OR; noise annoyance; : 1.06 (95%CI: 0.97, 1.16) per 1-point difference; p-value of interaction: 0.06]. No associations were found with incident asthma. Transportation noise level and annoyance contributed to symptom exacerbation in adult asthma. This suggests both psychological and physiological noise reactions on the respiratory system, and could be relevant for asthma care. More studies are needed to better understand the effects of objective and perceived noise in asthma aetiology and overall respiratory health.

Publisher Elsevier
ISSN/ISBN 0160-4120 ; 1873-6750
edoc-URL <https://edoc.unibas.ch/66687/>
Full Text on edoc Available;
Digital Object Identifier DOI 10.1016/j.envint.2018.10.006
PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/30321849>
ISI-Number MEDLINE:30321849
Document type (ISI) Journal Article