

Publication

Diurnal variability of transportation noise exposure and cardiovascular mortality : a nationwide cohort study from Switzerland

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Most epidemiological noise studies consider 24/h average noise exposure levels. Our aim was to exploratively analyze the impact of noise exposure at different time windows during day and night on cardiovascular mortality.; We generated Switzerland-wide exposure models for road traffic, railway and aircraft noise for different time windows for the year 2001. Combined noise source equivalent continuous sound levels (L; eq;) for different time windows at the most exposed fa  ade were assigned to each of the 4.41 million Swiss National Cohort adult participants. Follow-up period was from 2000 to 2008. Hazard ratios (HR) of noise effects on various cardiovascular primary causes of death were computed by Cox regression models adjusted for potential confounders and NO₂; 2; levels.; For most cardiovascular causes of death we obtained indications for a diurnal pattern. For ischemic heart disease the highest HR was observed for the core night hours from 01/h to 05/h (HR per standard deviation of L; eq; : 1.025, 95% CI: 1.016-1.034) and lower HR for the daytime 07/h to 19/h (1.018 [1.009-1.028]). Heart failure and daytime L; eq; yielded the highest HR (1.047 [1.027-1.068]).; For acute cardiovascular diseases, nocturnal intermittent noise exposure tended to be more relevant than daytime exposure, whereas it was the opposite for chronic conditions such as heart failure most strongly associated with continuous daytime noise. This suggests that for acute diseases sleep is an important mediator for health consequences of transportation noise.

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