ASSOCIATION OF SOCIOECONOMIC STATUS WITH SLEEP DISTURBANCES IN THE SWISS POPULATION-BASED COLAUS STUDY

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Background:
Studies assessing the social patterning of sleep are heterogeneous with respect to indicators of socioeconomic status (SES) and sleep characteristics considered. This study examines the association of SES with subjective and objective sleep disturbances and the role of socio-demographic, behavioural and psychological factors in explaining this association.

Methods:
Analyses are based on 3391 participants (53% female, age 40 to 81 years) of the follow-up of the Colaus study (2009-2012), a population-based sample of the city of Lausanne, Switzerland. All participants completed a sleep questionnaire and a sub-sample (N=1569) underwent polysomnography. Education and occupational position were used as indicators of SES.

Results:
Compared to men with a high education/occupational position, men with a low education/occupational position were more likely to suffer from poor sleep quality (Prevalence Ratio (PR) for occupational position =1.65.95% Confidence Interval (CI):1.31-2.08), to have long sleep latency (PR=4.83.95%CI:2.13-10.97) and insomnia (PR=1.46.95% CI:1.11-1.91). The same pattern was observed among women (PR=1.35 for sleep quality, 2.52 for sleep latency, 2.00 for daytime sleepiness, 1.48 for sleep duration, 95%CI ranging from 1.08 to 3.97). SES differences in sleep disturbances were only marginally attenuated by adjustment for other socio-demographic, behavioural and psychological factors. Results from polysomnography confirmed poorer sleep patterns among participants with low SES (p<0.05 for sleep efficiency and stage shifts), but no SES differences were found for sleep duration.

Conclusions:
In this population-based sample, low SES was strongly associated with sleep disturbances, independently of socio-demographic, behavioural and psychological factors. Further research should establish the extent to which social differences in sleep contribute to socioeconomic differences in health outcomes.
YEARS OF LIFE LOST DUE TO TRANSPORTATION NOISE AND AIR POLLUTION: A COMPARATIVE RISK ASSESSMENT FOR SWITZERLAND IN 2010

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Background:
Recently, the health impact of noise and air pollution from rail, aircraft and road traffic has been estimated for the year 2010 to calculate the external costs of transport-related pollution to inform the road taxation schemes in Switzerland.

Objective:
To estimate life years lost due to transportation-related noise and air pollution in Switzerland.

Methods: Spatially resolved noise and air pollution models for the year 2010 were derived for road, rail and aircraft sources. Average day-evening-night sound level (Lden) and particulate matter (PM$_{10}$) were selected as indicators, and population-weighted exposures derived by traffic source. Cause-specific exposure-response functions for mortality were derived from a meta-analysis for noise and literature review for PM$_{10}$. Life years lost were calculated using life table methods.

Results:
Burden was characterised using relative risk estimates of 1.046, 1.014 and 1.076 per 10dB increase in Lden for death from myocardial infarction, stroke and hypertension-related disease, respectively and for natural cause mortality using a relative risk estimate of 1.045 per 10µg/m$^3$ increase in PM$_{10}$. Total transport-related burden in Switzerland in 2010 amounted to 17,682 years of life lost (69% air pollution; 31% noise). Stratified by source 14,464 (82%) years of life lost were due to road, 11% to rail and 2% to aircraft traffic.

Conclusions:
Transport-related air and noise pollution in Switzerland have substantial health consequences. YLL are mainly affected by air pollution exposure whereas noise pollution has additional economic consequences because it reduces the property value and renting costs in noisy locations.
EXPOSURE TO ROAD TRAFFIC NOISE, CARDIOMETABOLIC RISK AND MENTAL HEALTH: A PROSPECTIVE COHORT STUDY

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Background:
Chronic exposure to environmental noise is hypothesised to affect the cardiovascular system, metabolism and mental health but research on the latter two aspects is particularly scarce.

Methods:
In 2008, we enrolled a cohort of 1375 adults aged between 30 and 60 years, residing in urban and suburban Basel, Switzerland. One year later we used a written questionnaire to inquire about new incident medical treatments for various chronic diseases (response rate: 82%). A propagation model was used to model road traffic noise exposure (Ldn). Incident rate ratios (IRR) per 10 dB(A) increase in road traffic noise exposure were calculated by Poisson regression adjusted for gender, age and smoking status.

Results:
The average Ldn road traffic noise exposure was 48 dB(A) with 11% exposed above 60 dB(A). Although not statistically significant, diabetes (1.79 [95% CI 0.85 – 3.77]), depression (1.41 [0.95– 2.09]) and addiction (1.24 [0.50– 3.07]) tended to be associated with road traffic noise exposure. Separate models for night and day yielded higher IRRs for nighttime noise exposure for diabetes (2.41 vs. 1.75), depression (1.81 vs. 1.40) and addiction (1.78 vs. 1.18). Pearson correlation between nighttime and daytime noise exposure was 0.85.

Conclusion:
Although 95% confidence intervals are relatively wide, this study suggests that road traffic noise exposure is associated with diabetes and mental health problems.
AMBULATORY BLOOD PRESSURE IS ASSOCIATED WITH URINARY CAFFEINE AND CAFFEINE METABOLITES EXCRETIONS

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Background:
Intake of caffeinated beverages might be associated with reduced cardiovascular mortality possibly via the lowering of blood pressure (BP). We estimated the association of ambulatory blood pressure with urinary caffeine and caffeine metabolites in a large population-based sample.

Methods:
Families were randomly selected from the general population of three Swiss cities (2009-2013). Ambulatory BP monitoring was conducted using validated Diasys Integra devices. Urinary caffeine, paraxanthine, theophylline, and theobromine were measured in 24h urine using ultra-high performance liquid chromatography tandem mass spectrometry. Urinary excretions were log-transformed to satisfy regression assumptions. We used linear mixed models to explore the associations of urinary excretions with ambulatory BP while adjusting for major confounders, including familial correlations.

Results:
The 836 participants (48.9% men) included in this analysis had mean (±SD) age of 47.8 (±17.5), and mean 24-hour systolic and diastolic BP of 120.1 mmHg (±13.9) and 78.0 (±8.6). For each doubling of caffeine excretion, 24-hour and night-time ambulatory systolic BP decreased by -0.642 mmHg (SE, 0.296), and -1.107 (0.315) (both P values <0.040). Similar negative associations were observed for paraxanthine and theophylline. Adjusted night-time systolic BP in the first (lowest), second, third, and fourth (highest) quartile of paraxanthine urinary excretions were 110.3 mmHg (0.9), 107.3 (0.9), 107.3 (0.9), and 105.1 (0.9), respectively (P trend<0.05). No associations of urinary excretions with diastolic BP were generally found.

Conclusions:
Ambulatory systolic BP was strongly negatively associated with urinary excretions of caffeine and other caffeine metabolites. Our results are compatible with a protective effect of caffeine on high blood pressure.
PREVALENCE OF IODINE INADEQUACY IN SWITZERLAND ASSESSED BY THE ESTIMATED AVERAGE REQUIREMENT CUT-POINT METHOD IN RELATION TO THE IMPACT OF IODIZED SALT

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Objective:
We assessed the iodine status of Swiss population groups and the influence of iodized salt as vector for iodine fortification.

Design:
Dietary iodine intakes were extrapolated from 24-h excretion rates. The relation between 24-h urinary iodine and sodium excretions was assessed in the general population after correcting for confounders. Usual intake distributions were derived for male and female population groups after adjustment for within-subject variability. The estimated average requirement (EAR) cut-point method was applied as guidance to assess the inadequacy of the iodine supply in the Swiss population.

Setting:
Public health strategies to reduce the dietary salt intake in the general population may affect its iodine supply.

Subjects:
The study population (1481 volunteers, aged >=15 years) was randomly selected from three different linguistic regions of Switzerland.

Results:
24-h urine samples from 1420 participants were determined to be properly collected. The mean iodine intakes for men (n = 705) and women (n = 715) were 179 ± 68.1 µg/d and 138 ± 57.8 µg/d, respectively. Urinary sodium and calcium, body mass index, region, smoking and gender were associated with iodine intake, which also explained that a proportion of 54 % of the salt consumed was iodized. The prevalence of inadequate iodine intake as estimated by the EAR cut-point method was 2 % for men and 14 % for women.

Conclusions:
The estimated prevalence of inadequate iodine intake was within the optimal target range of 2-3 % for men, but not for women, in this population-based sample. These results justify increasing the iodine content of commercially available iodized salt in Switzerland.