Long-term exposure to wind turbine noise at night and risk for diabetes: A nationwide cohort study

Long-term exposure to wind turbine noise at night and risk for diabetes: A nationwide cohort study

Focus on renewable energy sources and reduced unit costs has led to increased number of wind turbines (WTs). WT noise (WTN) is reported to be highly annoying at levels from 30 to 35dB and up, whereas for traffic noise people report to be highly annoyed from 40 to 45dB and up. This has raised concerns as to whether WTN may increase risk for major diseases, as exposure to traffic noise has consistently been associated with increased risk of cardiovascular disease and diabetes. We identified all Danish dwellings within a radius of 20 WT heights and 25% of all dwellings within 20-40 WT heights from a WT. Using detailed data on WT type and hourly wind data at each WT position and height, we estimated hourly outdoor and low frequency indoor WTN for all dwellings, aggregated as nighttime 1- and 5-year running means. Using nationwide registries, we identified a study population of 614,731 persons living in these dwellings in the period from 1996 to 2012, of whom 25,148 developed diabetes. Data were analysed using Poisson regression with adjustment for individual and area-levels covariates. We found no associations between long-term exposure to WTN during night and diabetes risk, with incidence rate ratios (IRRs) of 0.90 (95% confidence intervals (CI): 0.79-1.02) and 0.92 (95% CI: 0.68-1.24) for 5-year mean nighttime outdoor WTN of 36-42 and ≥42dB, respectively, compared to

General information
Publication status: Published
Organisations: Department of Wind Energy, Meteorology & Remote Sensing, Resource Assessment Modelling , Danish Cancer Society, Aarhus University, Roskilde University
Corresponding author: Poulsen, A. H.
Contributors: Poulsen, A. H., Raaschou-Nielsen, O., Pena Diaz, A., Hahmann, A. N., Nordsborg, R. B., Ketzel, M., Brandt, J., Sørensen, M.
Pages: 40-45
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Environmental Research
Volume: 165
ISSN (Print): 0013-9351
Ratings:
BFI (2018): BFI-level 2
Scopus rating (2018): CiteScore 5.19 SJR 1.567 SNIP 1.534
Web of Science (2018): Impact factor 5.026
Web of Science (2018): Indexed yes
Original language: English
Keywords: Diabetes, Epidemiology, Wind turbine noise
DOIs:
10.1016/j.envres.2018.03.040
Source: FindIt
Source ID: 2417305776
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review