



CORRIGENDUM

Effects of Wind Turbine Noise on Self-Reported and Objective Measures of Sleep

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In the Health Canada Community Noise and Health Study (CNHS) objective measures of sleep were based on activity counts collected using a wrist-worn sleep watch (Actiwatch2®), with results presented as nightly averages. In preparing for a follow-up analysis based on activity counts in 10-min intervals time-synchronized to wind turbine operational data, it came to our attention that the data file used to analyse the objective sleep endpoints included data processing errors. It was discovered that the default “rest interval” was incorrectly assigned when participants did not wear their device continuously over the 7-d data collection period. As the rest interval is used to determine objective sleep outcomes, this impacted the calculation of “total sleep time”, “sleep onset”, “sleep efficiency”, “wake after sleep onset” and “awakening bouts”. The entire sleep data file (6307 sleep night actograms) has been reviewed with rest intervals manually corrected where necessary. The corrections were made under blinded conditions, with 100% agreement between two analysts regarding which sleep nights needed to be corrected. Following the corrections, a random selection of 244 sleep nights revealed an 88% inter-rater reliability (within +/- 5 minutes) on the precise start and stop time for each manually inserted rest interval. Statistics Canada has made the revised data file available to the public through their Research Data Centres.

There is no impact on any of the self-reported outcomes and the overall conclusion of the original paper does not change,

which stated: “Study results do not support an association between exposure to outdoor wind turbine noise (WTN) up to 46 dB(A) and an increase in the prevalence of disturbed sleep.” Following the reanalysis the most notable secondary observations can be summarized as follows: 1) annoyance toward blinking lights on wind turbines (aircraft warning signals) was no longer found to be related to awakening bouts, however the association with reduced total sleep time remained; 2) annoyance toward vibrations/rattle perceived to be associated with wind turbine operations was found to be related to *higher* total sleep time in the reanalysis; 3) participants’ history of exposure to WTN, assessed as “years hearing WTN” was inversely related to awakening bouts; 4) WTN was marginally related to sleep efficiency ($p = 0.0519$), however there was no consistent pattern revealed in the pairwise tests; 5) caffeine consumption was no longer found to be associated with any of the actigraphy measures; and 6) the correlations between actigraphy outcomes and self-reported sleep measured using the Pittsburgh Sleep Quality Index (PSQI) were more widespread and stronger than previously reported.

The article and supplementary information have now been updated with the correct data.

The corresponding author on this publication accepts full responsibility for the data file processing miscalculations that led to the publication errors and sincerely regrets any inconvenience this may have caused.

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