Nocturnal aircraft noise exposure increases objectively assessed daytime sleepiness

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ABSTRACT

OBJECTIVES: There is no doubt that noise in general and aircraft noise specifically disturb sleep. However, so far no study assessed the effects of traffic noise on daytime sleepiness objectively.

METHODS: In a polysomnographic laboratory study, 24 subjects (mean ± SD age 33.9 ± 10.8 years, 12 male) were investigated between 7:30 am and 8:30 am with infrared pupillography after a noise-free baseline night and after 9 nights with varying degrees of aircraft noise exposure.

RESULTS: The natural logarithm of the pupillary unrest index (lnPUI) differed significantly (p=0.006) between noise (lnPUI=1.61) and baseline (lnPUI=1.48) nights, indicating higher levels of sleepiness after nights with noise exposure. Objective sleepiness levels increased significantly with the number of noise events (p=0.021), with the maximum sound pressure level of noise events (p=0.028), and with the equivalent continuous noise level (p=0.013) in exposure nights. However, these levels did not reach pathological levels observed in another study on untreated obstructive sleep apnea patients.

CONCLUSIONS: This is the first study to show that nocturnal aircraft noise exposure increases objectively assessed sleepiness in the next morning. These findings stress the relevance and the potential public health impact of sleep disturbances induced by environmental noise. Further studies are needed to investigate the association of nocturnal traffic noise exposure and objectively assessed sleepiness in the field.

A manuscript based on the study described in the abstract was recently published. In order not to infringe copyright agreements, only the abstract is printed here. The manuscript is available online as:

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