

Eva-Maria Elmenhorst, Uwe Müller, Franco Mendolia, Julia Quehl, Daniel Aeschbach

Association of residents' attitude towards air traffic and objective sleep quality.

Objectives:

Nocturnal aircraft noise induces sleep disturbances and is associated with impaired quality of life. The magnitude of physiological and psychological responses to noise varies among individuals. Stable individual vulnerabilities have been reported for aircraft noise induced awakenings. To date it is unknown, whether the subjective attitude towards air traffic and residents' sleep quality impact on each other.

Methods:

Seventy-four out of 81 investigated residents around Frankfurt Airport (Germany) rated their attitude towards air traffic (from 1 = negative to 5 = positive; negative attitude: score  $\leq 2$ , N=28, mean age  $44 \pm 16$  years; moderate to positive attitude: score  $> 3$ , N=46, mean age  $44 \pm 15$  years) and evaluated its necessity (from 1 = not necessary to 5 = highly necessary; no to moderate necessity: score  $\leq 3$ , N=22, mean age  $45 \pm 10$  years; high necessity: score  $> 3$ , N=52, mean age  $43 \pm 17$  years). In addition, polysomnographical recordings were obtained in residents' home environment. These investigations were part of the NORAH sleep study in 2012.

Results:

Significant impairments in sleep quality (prolonged sleep onset latency, increased wake after sleep onset, reduced sleep efficiency, and less deep sleep) were found for participants with a negative attitude towards air traffic. The judgement of no or moderate necessity of air traffic was associated with a significantly reduced deep sleep duration.

Conclusions:

Residents' subjective attitude towards air traffic and their objective sleep quality are related. Cause and effect in this relationship remain to be identified.