

Publication

Association of transportation noise with sleep during the first year of life: a longitudinal study

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4646519**Author(s)** Blume, Christine; Schoch, Sarah F.; Vienneau, Danielle; Röösl, Martin; Kohler, Malcolm; Moeller, Alexander; Kurth, Salome; Usemann, Jakob**Author(s) at UniBasel** [Vienneau, Danielle](#) ; [Röösl, Martin](#) ; [Blume, Christine](#) ;**Year** 2021**Title** Association of transportation noise with sleep during the first year of life: a longitudinal study**Journal** Environmental Research**Volume** 203**Pages / Article-Number** 111776**Keywords** Actigraphy; Actimetry; Babies; Infants; Noise; Sleep**Mesh terms** Adult; Aircraft; Child; Environmental Exposure; Female; Humans; Infant; Longitudinal Studies; Noise, Transportation, adverse effects; Sleep; Sleep Wake Disorders

STUDY OBJECTIVES: During infancy, adequate sleep is crucial for physical and neurocognitive development. In adults and children, night-time noise exposure is associated with sleep disturbances. However, whether and to what extent infants' sleep is affected, is unknown. Thus, this study investigated the relationship between nocturnal transportation noise and actimetry-derived habitual sleep behavior across the first year of life. **METHODS:** In 144 healthy infants (63 girls), nocturnal (23:00-7:00) transportation noise (i.e., road, railway, and aircraft) was modelled at the infants' individual places of residence. Using actimetry, we recorded movement patterns for 11 days in a longitudinal design at 3, 6, and 12 months of age and derived the recently proposed core sleep composites of night-time sleep duration, activity, and variability. Using linear mixed-effects models, we determined associations between noise exposure and sleep composites. Sex, gestational age, parents' highest educational level, infants' age, and the existence of siblings served as control variables. **RESULTS:** In models without interactions, night-time transportation noise was unrelated to sleep composites across the first year of life ($p > .16$). Exploratory analyses of an interaction between noise and the existence of siblings yielded an association between night-time transportation noise and sleep duration in infants without siblings only ($p = .004$). **CONCLUSION:** In our study, sleep in infants during the first year of life was relatively robust against external perturbation by night-time transportation noise. However, particularly in children without siblings increasing night-time transportation noise reduced sleep duration. This suggests that the habitual noise environment may modulate individual susceptibility to adverse effects of noise on sleep.

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