

Will daytime environmental noise exposures induce nighttime sleep disturbance?

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Objective: Nighttime environmental noise affects sleep quality. However, effects of daytime noise are still unclear.

Methods: A quasi-experiment was conducted to 48 participants who were employed at least for 6 months in two hospital cafeterias. The participants were randomly selected to be assessed on high- and low-noise workdays for 8 hours or low- and high-noise workdays, separated by a washout period of 14 days. Subsequently, their pure tone audiometry, autonomic nervous system (ANS) function tests, serum cortisol, and polysomnography (PSG)-documented were conducted.

Results: Forty participants completed the study, and on average were exposed to 8-hour time-weighted average 68.5 dBA (interquartile range: 12.1 dBA) noise. It showed that participants with higher noise exposure during the day was found with a shorter duration and percentage of slow wave sleep during the night and lower sleep efficiency. In addition, after work, daytime noise exposure was found related to serum cortisol level, and sympathetic activity as measured by log (low frequency/high frequency) and blood pressures by cold pressor test.

Conclusion: Daytime noise exposure had sustained effects on nighttime sleep quality. These disturbances could be partially explained by post-shift elevated cortisol and ANS activities. The psychosocial and metabolic consequences of worse sleep quality induced by daytime noise exposure warrant the needs for further investigation.

中文題目：白天環境噪音暴露是否會導致夜間睡眠障礙？

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