

A Survey of the Sleep-Disturbed Bedroom Environmental Factors and the Occupants Bedroom Windows or Door Opening Behaviors

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Abstract : The bedroom environment plays an important role in maintaining good sleep quality, which is vital for humans health and next-day performance. A survey of the sleep-disturbed bedroom environmental factors and the occupants' bedroom windows (BW) or bedroom door (BD) opening behaviors was launched in the capital region of Denmark in 2020 by an online questionnaire. People were asked if they were disturbed by too warm temperature, too cool temperature, noise, or stuffy air during sleep. Also, they reported their BW or the BD opening behaviors in the morning, afternoon, evening, and during sleep. A total of 512 responses were received. Too warm temperature was reported the most among the four sleep-disturbed factors, following too cool temperature, noise, and stuffy air. Whether or not opening BW or the BD was commonly used to improve or change the bedroom environment. The respondents who were disturbed by too warm temperature during sleep opened BW for a longer time in the morning compared to those who were never disturbed by it (OR, 1.28; 95% CI, 1.01-1.62). Those who were disturbed by too cool temperatures tended to open BW less frequently in the morning (OR, 1.24; 95% CI, 0.97-1.57). They preferred keeping BW open in the whole day if they realized stuffy air disturbing their sleep, although only a few of them still opened BW during sleep. Those who were disturbed by too cool temperature (OR, 0.76; 95% CI, 0.63-0.92) and noise (OR, 0.80; 95% CI, 0.66-0.96) were more likely to sleep with the BD open in a lesser frequency. Opening BW, increasing ventilation rates, could relieve disturbing by stuffy air during sleep, but induced other sleep-disturbed factors such as too cool in winter and noise. Also, opening BW only when people were not sleep was not sufficient to exempt disturbing by stuffy air during sleep. Using mechanical ventilation in bedrooms is necessary to ensure good air quality and meanwhile to avoid thermal discomfort and noise during sleep. Future studies are required to figure out the required flow rate of fresh air of mechanical ventilation during sleep.

Keywords : bedroom environmental, survey, occupants behaviors, windows, door

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