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Open windows and doors can improve sleep quality

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(Reuters Health) - Leaving a bedroom door or window open may help people sleep better, a study from the Netherlands suggests.

Open windows and doors helped reduce carbon dioxide levels and improve ventilation and air flow, which was related to better sleep quality for the healthy young adults in the study.

"We spend nearly a third of our life in the bedroom environment, but the air quality in our sleeping environment is often overlooked," said study author Dr. Asit Mishra of Eindhoven University of Technology.

"Imagine this - you are in a confined space and have limited ability to adjust the situation (since you are asleep) while you are possibly surrounded by pollutants," he told Reuters Health by phone. "This is how things are in bed, covered under duvets or a blanket."

For one night of the study, 17 volunteers slept with an open window or internal door. On another night, the windows and door to the room were kept closed. In the meantime, Mishra and colleagues monitored carbon dioxide levels, temperature, background noise and humidity. The study participants were asked not to drink alcoholic beverages or caffeinated drinks, which could influence sleep. They each slept alone, and the bedroom layout with furniture arrangement was kept consistent.

For measuring sleep quality, participants wore an armband that measures skin temperature, heat flux, bed temperature and skin moisture levels. They also wore a sensor that tracked their movements at night, including indications of restlessness.

Closed environments tended to have less background noise – but they also had significantly higher carbon dioxide levels, which indicated lower ventilation levels.

Open conditions were slightly cooler than closed, although humidity levels were similar across settings, according to the report in the journal Indoor Air.

Notably, carbon dioxide levels were lower when windows or doors were open.

Overall, skin temperature and the bed temperature were higher in closed conditions than open conditions. The number of awakenings and sleep efficiency improved as carbon dioxide levels decreased.

“Opening an internal door can be a reasonably good alternative if you don’t want to open windows, either for noise concerns or security concerns,” Mishra said.

A limitation of the study is that the motion sensor often slipped off the sleepers at night.

“Sleep quality is affected by many factors, such as health and emotional states, bedding conditions and different environmental conditions, including noise levels and temperature,” said Dr. Nuno Canha of the University of Lisbon in Portugal. Canha, who wasn’t involved with this study, researches indoor air quality and sleep during different ventilation patterns. He is also part of LIFE Index-Air, a European research group that focuses on human exposure to pollutants.

In a recent study, Canha and colleagues found that closed doors and windows led to higher levels of carbon dioxide, carbon monoxide and other substances such as formaldehyde.

"Sleep is essential to our life in several areas: health, well-being and productivity," Canha told Reuters Health by email. "The exposure we are under while asleep is continuous . . . and we should play it safe in order to breathe better air during sleep."

SOURCE: bit.ly/2BOsgOd Indoor Air, online November 21, 2017.

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