

## Sleep Health is Associated with Next-Day Mindful Attention in Healthcare Workers

### **BACKGROUND**

Nurses make up the largest group of healthcare professionals and spend a significant portion of their time providing direct care to patients. Due to long hours, unconventional work shifts, and high-stress environments, nurses often report suboptimal sleep quantity and quality. Previous research suggests that insufficient sleep may be associated with diminished mindfulness in healthy adults. Mindfulness describes one's attention and awareness within a present moment, with higher mindfulness allowing one to maintain focus without being distracted by external stressors and unpleasant thoughts. It is vital for nurses to be mindfully attentive to promote their well-being, to ensure patient safety, and to work effectively. Few studies have examined state mindfulness (i.e., mindfulness that varies moment-to-moment) and its temporal relationship with daily sleep. Thus, the goal of the present study was to investigate the bidirectional relationship between nurses' sleep health and state mindfulness.

### **STUDY METHOD**

*Measures.* Data was collected from 61 full-time nurses working at a cancer hospital. Using smartphone-based surveys and actigraphy sleep devices, subjective and objective assessments of sleep were measured over 14 days. Participants were asked to respond to pre-scheduled prompts four times per day (i.e., upon-waking, before lunch, afternoon, and before bedtime).

Daily mindfulness was assessed using the 5-item Mindful Attention Awareness Scale. To comprehensively assess sleep health, the SATED Model was utilized, which captured Satisfaction, Alertness, Timing, Efficiency, and Duration of sleep. Satisfaction of sleep was assessed using items from the Pittsburgh Sleep Quality Index (i.e., sleep quality, sleep sufficiency, insomnia symptoms). Alertness, or daytime sleepiness, was examined by asking participants, "How likely are you to doze off or fall asleep right now, in contrast to feeling just tired?"

Timing (i.e., bedtime, wake time), efficiency (i.e., ratio of time spent asleep to time spent in bed), and duration (i.e., total time spent in bed minus the time spent being awake after sleep onset) were measured using actigraphy sleep devices. Sociodemographic (e.g., age, gender, race, education, marital status, presence of children) and work characteristics (e.g., work shifts, workday) were also collected and used as covariates.

*Analytic method.* The bidirectional relationship between sleep health and state mindfulness was examined using multilevel modeling. All models were adjusted for covariates.

### **FINDINGS**

On average, nurses who reported better sleep health (e.g., better sleep quality, higher sleep sufficiency, and less nighttime awakenings) reported higher mindfulness. Furthermore, nights with better sleep quality, higher sleep sufficiency,

lower sleep efficiency, and longer sleep duration were associated with higher next-day mindful attention. Overall, these findings revealed that better sleep led to higher next-day mindfulness. However, an unexpected finding was the association between lower sleep efficiency and higher next-day mindfulness. Upon further examination, this may have occurred because lower sleep efficiency was related to longer sleep duration in this study sample.

In the other direction, there was no evidence that daily mindfulness predicted sleep the following night. However, daily mindfulness was significantly associated with sleepiness during the day.

### **POLICY IMPLICATIONS**

Akin to previous studies, the findings show that nurses with better sleep health report higher mindful attention on average. The current findings further contribute new knowledge regarding the directionality between sleep and mindfulness, such that better sleep precedes higher mindfulness the following day, but there is limited evidence for the inverse of this relationship.

Policy makers should consider funding research on how improvements in sleep can alter next-day and long-term mindful attention. A better understanding of sleep and mindfulness can improve daily well-being. Encouraging healthcare employers to educate nurses on the importance of sleep hygiene would also be beneficial for the patients they treat by promoting mindful care.

### **Original Article**

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