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Response

Response to comment on "A narrative review of interventions for improving sleep and reducing circadian disruption in medical inpatients"

To the Editor:

We thank our colleagues for their interest in our recently published review article [1]. In our narrative review, we discussed how patient characteristics, hospital routines, and hospital environment may all contribute to sleep and circadian disruption in hospitalized patients. In their letter, Mortazavi et al., discussed the use of electronic devices, such as smartphones and e-tablets, as an additional factor that may disrupt inpatients' sleep and circadian rhythm [2]. Smartphones and e-tablets emit light in the blue range, and experimental studies have linked the use of blue light emitting devices during evening hours to delayed melatonin secretion and reduced evening sleepiness [3]. The use of smart applications that reduce screens' emission of light at relatively longer wavelengths during evening hours (eg, amber glasses) could help mitigate the adverse effects of blue light on melatonin phase and sleepiness [4]. Exposure to strong light during daytime could represent an additional approach to reduce sensitivity to evening blue light exposure [5,6]. When evaluating the possible impact of electronic devices on patients' sleep, it is, however, necessary to keep in mind that electronic devices are often used by inpatients to connect, by either call, text, email, chat, or social media, with their relatives, spouse, or friends. As pointed out in our review, various factors, including an unfamiliar environment, lack of control, uncertainty, and worries about disease progression can trigger stress and anxiety during hospital stay [1]. Hence, banning electronic devices brought by patients may lead to feelings of loneliness as a result of reduced interaction with loved ones. This may further increase stress and anxiety, thereby aggravating patients' sleep.

As pointed out by Mortazavi et al., there is evidence to suggest that the radiofrequency electromagnetic fields (EMFs) generated by smartphones, tablets or laptops can also be associated with disrupted circadian rhythm and sleep problems among inpatients. While we agree that more research is needed to elucidate the influence of EMFs generated by electronic devices on melatonin and sleep in hospitalized patients (also including electronic medical devices in the patient room), it is notable that the current evidence regarding the effects of EMFs on melatonin is not as conclusive as suggested by our colleagues [7,8].

Conflict of interest

The ICMJE Uniform Disclosure Form for Potential Conflicts of Interest associated with this article can be viewed by clicking on the following link: https://doi.org/10.1016/j.sleep.2018.10.002.

References

[1] Tan X, van Egmond L, Partinen M, et al. A narrative review of interventions for improving sleep and reducing circadian disruption in medical inpatients. Sleep Med 2018. https://doi.org/10.1016/j.sleep.2018.08.007.
[2] Mortazavi SAR, Kadivar F, Mortazavi SMJ. Comments on "A narrative review of interventions for improving sleep and reducing circadian disruption in medical inpatients". Sleep Med 2018. https://doi.org/10.1016/j.sleep.2018.10.003. [Epub ahead of print].
[3] Chang AM, Aeschbach D, Duffy JF, et al. Evening use of light-emitting eReaders negatively affects sleep, circadian timing, and next-morning alertness. Proc Natl Acad Sci U S A 2015;112(4):1232–7.
[4] Burkhart K, Phelps JR. Amber lenses to block blue light and improve sleep: a randomized trial. Chronobiol Int 2009;26(8):1602–12.
[5] Rångtell FH, Ekstrand E, Rapp L, et al. Two hours of evening reading on a self-luminous tablet vs. reading a physical book does not alter sleep after daytime bright light exposure. Sleep Med 2016;23:111–8.
[6] Smith KA, Schoen MW, Czeisler CA. Adaptation of human pineal melatonin suppression by recent photic history. J Clin Endocrinol Metab 2004;89(7):3610–4.
[7] Graham C, Cook MR, Riffle DW, et al. Nocturnal melatonin levels in human volunteers exposed to intermittent 60 Hz magnetic fields. Bioelectromagnetics 1996;17(4):263–73.
[8] Halgamuge MN. Pineal melatonin level disruption in humans due to electromagnetic fields and ICNIRP limits. Radiat Protect Dosim 2013;154(4):405–16.

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