Essentials of Health

A new study reveals that prolonged reading of electronic devices prior to bedtime may significantly suppress or delay release of melatonin, affecting the quality of sleep and lengthening the time to alertness the next day.

Evening exposure to light-emitting electronics can reduce quality of sleep by suppressing the release of melatonin

A new study published online in the *Proceedings of the National Academy of Science* suggests that certain light-emitting electronic devices may have a suppressive effect on melatonin and affect sleep patterns.

Researchers at Brigham and Women's Hospital in Boston studied 12 healthy adults who were randomized to read either a light-emitting eBook or a printed book in dim room light. The participants in each group read for 4 hours prior to bedtime for 5 consecutive evenings. At the end of the 5 days, the subjects switched their assignments. Blood samples were taken during the study and evaluated for melatonin levels. The researchers also documented sleep latency, time and efficiency using polysomnography, a diagnostic tool used in sleep studies.

The reading of eBooks before sleep was associated with a longer time needed to fall asleep and less rapid eye movement (REM) in comparison to reading a printed book. Printed book reading resulted in no suppression of melatonin, but eBook readers experienced an average melatonin suppression of over 55%. In addition, compared to the reading of printed books, the onset of melatonin release in response to dim light occurred 1.5 hours later the day following reading of an eBook. Individuals reading the e-Books also reported being more tired and taking longer to become alert the next morning.

Unlike natural light, electronic devices emit a short-wavelength-enriched light that is more concentrated in blue light. These results demonstrate that evening exposure to light-emitting electronics such as eBooks may delay the circadian clock and suppress the release of melatonin, and this may have a negative impact on sleep, performance, health, and safety.

Chang AM 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 Jan 27;112(4):1232-7. doi: 10.1073/pnas.1418490112.