



# Health Problems With Using Smartphones Late at Night

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One of the major changes experienced by mankind in the last 15 years is the emergence of smartphones. Smartphones are deep in our lives. Smartphones have not only brought about tremendous changes in the social, cultural, political, and economic aspects of humanity, but also cause health problems. This is the first time in human history that people have looked directly at a shining light source for long periods. The smartphone light is not a problem during daytime, but its intensity is bright enough to affect body function at night. However, we remain ignorant of the long-term problems it will cause for health. In terms of sleep, looking at smartphones for lengthy periods in bed delays the body's circadian rhythm and hinders the quality and amount of sleep. When bright light is transmitted through the eyes to the brain at night, melatonin hormone secretion is suppressed in the pineal gland, making it difficult to fall asleep; the circadian rhythm is delayed, making it difficult to wake up in the morning and to get enough sleep. This effect of light becomes serious when its intensity is strong and it has a blue wavelength.

Recent studies have reported that the effects of circadian rhythms being delayed by nighttime light and disturbing sleep are much more severe during childhood and adolescence than for adults [1]. As the problem of light from smartphones has been pointed out, apps for reducing blue wavelength light after sunset have been developed and can be used [2]. Recently, smartphone manufacturers have also recognized this problem and included the capacity to block blue light in smartphones. Nevertheless,

when viewing a smartphone in a dark room at night, excessive light is transmitted through the eyes because of pupil dilation. Therefore, even weak light reset the biological clock and cause insomnia; therefore, not using a smartphone in bed at night helps prevent insomnia. Recently, concerns about the use of virtual reality (VR) headsets have emerged. Excessive use of VR at night is likely to cause bigger problems than smartphones in that it emits light much closer in distance to the eyes. Future studies are needed on the effects of artificial light on human health.

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## Conflicts of Interest

The author has no potential conflicts of interest to disclose.

## Availability of Data and Material

Data sharing not applicable to this article as no datasets were generated or analyzed during the study.

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