

TOP PAPERS OF THE MONTH

# Does Access to Screen-based Media Devices Affect Sleep Quality in Teens?

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## Study Discussed:

**Carter B, Rees P, Hale L, Bhattacharjee D, Paradkar MS. Association between portable screen-based media device access or use and sleep outcomes: a systematic review and meta-analysis. *JAMA Pediatr.* 2016;170(12):1202-1208.**

In the United States, insufficient sleep is reported by 75% of individuals aged 17 to 18 years. This widespread problem has been shown to lead to adverse health outcomes in multiple areas, including poor diet, obesity, reduced immunity, and mental health. Factors such as electronic media device use, early school start times, and an increase in caffeine are believed to play a role in sleep disruption.

Electronic media device use is a particular area of concern regarding poor sleep habits. Children have unprecedented access to media devices—it is estimated that 72% of children and 89% of adolescents have at least 1 device in their sleep environment. Parents estimate that two-thirds of older teens leave an electronic device on while asleep.

It is thought that media devices influence sleep by delivering stimulating content and by interrupting or deferring bedtime. In addition, the light emanating from devices may affect sleep cycles and circadian rhythm. With this in mind, Carter and colleagues performed a meta-analysis that quantified the influence of media device use on sleep outcomes.

Searches of published literature involving children between 6 and 19 years of age were conducted over 12 databases. The literature search included randomized clinical trials, cohort studies, and cross-sectional study designs. There were 467 studies identified, and 20 studies were examined in further detail. Two independent reviewers examined each study. Studies that involved televisions and personal computers were excluded.

The studies included 125,198 children, and results indicated that there was a strong and consistent association between media device use and inadequate sleep quantity, poor sleep quality, and excessive daytime sleepiness. Children who had access to (even if they did not use) media devices at night were more likely to have inadequate sleep quantity, poor sleep quality, and excessive daytime sleepiness.

The researchers interpreted these findings as supporting evidence for an interaction between media device use and psychophysiological arousal as a potential cause for poor sleep quality, though further studies are needed. The studies examined are limited by self-reported data, the challenges of isolating individual exposures, and the rapid development of technology, which means that new technologies are often deployed before research is completed.

These results suggest that media devices at the bedside have a negative effect on sleep quality, and subsequently, that they could contribute to poor health outcomes. Screening for this concern, especially in older adolescents, could occur in schools and at routine physicals. As technology shifts from textbooks to media devices, ensuring that these school-based media devices are used properly prior to bedtime will be essential. Automatic time switches near bedtime could be encouraged by parents. Education for teachers, parents, children, and the health care community could lead to better and longer sleep for our children.

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