

Screen use at bedtime can impact on the duration and quality of sleep among youths

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Review & Commentary for a cohort study assessing the duration and quality of sleep following screen use

Category: Nursing

Study type: Cross sectional repeat measure cohort study

Declarative title: Screen use at bedtime can impact on the duration and quality of sleep among youths

Commentary on: Brosnan B, Haszard JJ, Meredith-Jones KA, Wickham SR, Galland BC, Taylor RW. Screen Use at Bedtime and Sleep Duration and Quality Among Youths. *JAMA Pediatr.* 2024;178(11):1147-1154.

Commentary

Implications for practice and research

- The type of screen activity during the period up to going to sleep can influence sleep duration or quality.
- On-line activities that were passive for example watching television, which might be relevant in hospital settings, rather than interactive activities for example gaming could be relaxing but did delay sleep onset.

Context

Smartphone screen time has risen sharply in recent years, with a suggested correlation between sleep duration and quality. Bronson et al's¹ cross sectional questionnaire based study explored the impact of evening screen time on the duration and quality of sleep in young people, aged 11-15 years.

Methods

Screen time and sleep duration and quality were objectively measured in 79 young people aged 11 to 15 years of age for 4 non consecutive nights over a one week period. Sleep was measured using waterproof Axivity accelerometers on the non-dominant wrist 24 hours a day for 8 days following parental demographic data gathering. Screen time was captured though a wearable camera, attached to a chest harness (camera facing outward), and recorded from 2 hours before and up to bedtime. The stationary camera (tripod mounted in the bedroom) captured any screen use after the participant had gone to bed until waking the next morning.

Data analysis included coding the content of the video recordings, when and for how long participants spent time on different devices (smartphone, tablet, laptop computer, desktop computer, handheld gaming console, gaming console, television, and other), and screen activities (watching, listening, reading, educational or creative, browsing the internet, communication, social media, video gaming, multitasking within a device, and multitasking across multiple devices). Screen activities were also collapsed into passive (watching, listening, reading, browsing, and other unknown passive) and interactive (gaming, communication including messaging, device-based multitasking, educational or creative tasks, and other unknown interactive) groups. Social media (scrolling feeds, viewing stories, and interacting with posts, not including messaging) were excluded from these broader categories, being a blend of both passive and interactive activities.

The association between the data collected on screen use and sleep measures were analysed primarily using regression models, which accounted for differences between repeat measure variability include different nights of the week such as consecutive nights or day of the week.

Findings

Screen time in the 2 hours before bed had no overall association with sleep outcomes. On nights when screens were used in the period up to ‘shut eye’, the mean difference in sleep onset varied from 5 minutes (95% CI, –11 to 20 minutes) for social media to 32 minutes (95% CI, 11-53 minutes) for passive screen time. However, these differences were offset by comparable mean differences in sleep time from 6 minutes (95% CI, –9 to 21 minutes) for social media to 27 minutes (95% CI, 7-47 minutes) for passive screen time, such that no difference in total sleep time were observed. By contrast, using screens once in bed and prior to attempting sleep were associated with poor sleep health in several ways. All types of screen behaviors were associated with delayed sleep onset but particularly interactive screen use, which was associated with delayed onset of 10 minutes. The main finding was that sleep duration and quality are not affected unless the screen time is physically in bed and interactive.

Commentary

Significant increase in smartphone and digital platform use has resulted in concerns about the impact of screen time use on children and young people’s development, health and well-being. An updated review of the effects of screen time on child development found screen time could enhance education and learning, and connecting with others, but could lead to obesity, sleep problems, and anxiety.² Bronson et al’s¹ findings challenge a common belief that screen use

before bed is detrimental to sleep. However, interactive screen activities and multitasking while in bed are associated with greater delays in sleep onset and reduced sleep duration compared with screen use in the hours before bedtime.

Poor sleep has been associated with poor educational performance and behavioural problems in children and young people. A recent meta-review found individual and environmental factors including screen use, day of the week, gender, substance use, family environment and sleep boundaries impact on sleep in young people.³ However, while a correlation between these factors exist it is difficult to establish a causal relationship.

Currently there is no guidance from the National Institute Health and Care Excellence specifically relating to sleep for children and young people. However, The National Health Service information on sleep in children emphasises the importance of consistent sleep schedules, a relaxing bedtime routine including limiting screen time before bed, and a suitable sleep environment for children and young people. While there is a lack of definitive sleep guidelines, findings from Bronson et al's¹ study might reasonably suggest reducing or limiting interactive screen time before bed but passive activity for relaxation might enhance sleep duration and quality.

Future research exploring association between smart phone use and sleep duration and quality might consider smartphone related patterns of behaviour, wider age ranges and broader socio-economic backgrounds with subsequent academic and social attainment.

References

¹Brosnan B, Haszard JJ, Meredith-Jones KA, Wickham SR, Galland BC, Taylor RW. Screen Use at Bedtime and Sleep Duration and Quality Among Youths. *JAMA Pediatr.* 2024; 178 (11): 1147-1154.

²Muppalla SK, Vuppapapati S, Reddy Pulliahgaru A, Sreenivasulu H. Effects of Excessive Screen Time on Child Development: An Updated Review and Strategies for Management. *Cureus.* 2023; 18: 15(6) e40608. doi:10.7759/cureus.40608

³Olaith M, Richardson C, Ree M, Hartung K, Wylde T, & Bucks R. Sleep in young people: What works now and where to? A meta-review of behavioural and cognitive interventions and lifestyle factors. *Behavioral Sleep Medicine.* 2023; 22 (1) 58-75.
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Competing interests - None