

Electronic device use and sleep in young children and adolescents

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Background

Insufficient sleep, delayed sleep-wake behaviour, and sleep disturbances are common among young people and adolescents. **(1)**

A 2006 survey showed that nearly all adolescents have at least one electronic device in their bedroom. Having electronic devices in the bedroom, along with increased screen time, does have a detrimental effect on sleep. A 2014 review found consistent evidence that screen time before bed was associated with shortened sleep duration and a delay in the timing of sleep. **(2)**

Sufficient sleep is very important for the development of young brains. A small short-term study of 13 UK children aged between 5 and 12 comparing a "normal" night's sleep to a restricted night's sleep showed that with restricted sleep there is an increase in deep sleep waves both in the frontal and occipital parts of the brain. The study's authors speculated that deep sleep waves could disrupt or slow down normal plasticity development in children, though this would require further study to establish. **(3)**

Sleep requirements for children and adolescents

The National Sleep Foundation (NSF) has provided guidance on how long children of different ages should be sleeping within 24 hours. They recommended that school-aged children (6–13 years) should have 9–11 hours of sleep in 24 hours, while teenagers (14–17 years) should have 8–10 hours. **(5)**

Several studies have suggested that young children and adolescents are not having adequate sleep.

Summary & Recommendations

The use of electronic devices before bed time can affect sleep in young children and adolescents. A literature review of 67 studies published between 1999 and 2014 found that 90% of those studies linked screen time with problematic sleep patterns. These mostly included shorter "bouts" of sleep and delayed bedtimes **(10)**. More recent studies continue to reflect this finding **(11)**.

It is important for clinicians to promote positive sleep hygiene for our young patients ensuring that both young people and parents are aware of the detrimental effects screen use at bedtime can have on sleep.

How clinicians can help:

- Make sleep a priority: Talk with families about the importance of sleep and healthy sleep expectations.**
- Encourage a bedtime routine that includes calming activities and avoids electronic media use.**
- Encourage families to remove all electronic media from their children or teenagers' bedrooms, including televisions, video games, computers, tablets, and cell phones.**
- Talk with families about the negative consequences of bright light on sleep when used in the evenings.**

Consequences of insufficient sleep for cognitive, psychological and physical wellbeing

Analysed NHS data has shown that hospital attendances in England for children under 14 with sleep disorders have tripled over that past 10 years. **(6)** Over the same period, ten times more prescriptions of melatonin have been issued for both children and adults under the age of 55. Research has shown that poor sleep in children has been linked to a greater risk of obesity, lower immunity and mental health issues. It has also been linked to poor emotional control and poorer school performance.

The Department of Sleep and Cognition at the Netherlands Institute for Neuroscience conducted a study which examined more than 35,000 children aged between 5 and 12. The study found that shorter episodes of sleep (short sleep duration) was associated with poorer academic performance. Insufficient sleep also seemed to influence cognitive performance and aggravated behavioural problems. **(7)**

Another large study looking at 32,662 toddlers found that short sleep duration (≤ 10 h/night by maternal report) and nocturnal awakenings (≥ 3 /night) were associated with the development of behavioural and emotional problems at age 5. **(8)**

A large study of adolescents (N=67,615) showed that when compared to those who slept on average 8 hours a night, those who slept less than 6 hours were more likely to use tobacco, alcohol, marijuana or other drugs. The strongest associations were found between sleep duration and mood and self-harm. Those who slept less than 6 hours were more than three times as likely to report feeling sad, hopeless, and suicidal. **(9)**

References

- [1] Gradisar M, Gardner G, Dohnt H. Recent worldwide sleep patterns and problems during adolescence: a review and meta-analysis of age, region, and sleep. *Sleep Medicine*. 2011;12(2):110–8.
- [2] Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: a systematic literature review: 2015 Jun;21:50-8
- [3] Can be found at: <https://www.nhs.uk/news/neurology/lack-of-sleep-may-disrupt-development-of-a-childs-brain/>
- [4] <https://www.statista.com/topics/1763/gaming-in-the-united-kingdom/>
- [5] <https://www.sleepfoundation.org/articles/children-and-sleep>
- [6] <https://healthbusinessuk.net/news/06032017/attendances-child-sleep-disorders-triple>
- [7] Astill, R, Kristiaan B. Van Der Heijden, Marinus H. Van IJzendoorn, and Eus JW Van Someren. Sleep, cognition, and behavioral problems in school-age children: A century of research meta-analyzed. *Psychological Bulletin* 138.6 (2012): 1109-138
- [8] Sivertsen B, Harvey AG, Reichborn-Kjennerud T, Torgersen L, Ystrom E, Hysing M. Later emotional and behavioural problems associated with sleep problems in toddlers: a longitudinal study: 2015 Jun;169(6):575-82
- [9] <https://psychnews.psychiatryonline.org/doi/10.1176/appi.pn.2018.11b24>
- [10] Iannotti RJ, Kogan MD, Janssen I, Boyce WF. Patterns of adolescent physical activity, screen-based media use, and positive and negative health indicators in the U.S. and Canada. *J Adolesc Health*. 2009 May;44(5):493–9.
- [11] Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: a systematic literature review: 2015 Jun;21:50-8 [PubMed]