



# Sleep-health care and education are urgently needed for excessive screen time and sleep problems among school-age children

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In the digital era, digital media transmitted over the computer internet, tablet, mobile or smart phone has become an essential source for communication, socialization, and education. The Covid-19 pandemic has led to an inevitable surge in the use of digital media and increased screen time for working, learning, and communication due to the social distancing norms and lockdowns. However, excessive digital media use and/or excessive screen time has become a major public health concern for their negative impact on mental and physical health and well-being. This may be particularly true for children and adolescents. Accumulating studies have shown that excessive digital media use or excessive screen time may have a detrimental impact on children and adolescents' psychosocial development and mental health, sleep disturbances, gaming addiction, and multiple risk-taking behaviors such as disordered eating, substance abuse, and suicidal behavior populations [1–3]. Thus, sleep-health care and education for children and parents/schoolteachers are urgently needed to reduce the risk of excessive screen time and internet addiction.

In a recent comprehensive study from Korean group [4], the authors emphasized the addiction by screen uses. The data used in this study were obtained from the Korean Children & Youth Panel Survey (KCYPs), which is a longitudinal study conducted annually to investigate Korean adolescents' psychological problems and life circumstances. Major strengths of the study are (1) participants were extracted using the multi-stage cluster sampling method and it covers broad ages from fourth grade elementary school students and seventh grade middle school students, and (2) the questionnaires cover many topics including self-esteem, parenting styles, academic achievement and academic engagement

when both the school and the guardian agreed to participate in the survey. There are several limitations in this study [4] (1) smartphone addiction was assessed using questions developed in Korea, (2) sleep duration was self-reported and sleep quality was assessed through a single question, and (3) some important factors that affect sleep, such as anxiety were not considered.

Results revealed that children in the high-risk group showed an increased likelihood of poor sleep quality and short sleep duration compared to those in the low-risk group. The findings provide additional evidence, which indicates that smartphone addiction negatively impacts sleep quality [5].

The study [4] showed that the use of a smartphone for longer periods was significantly associated with poor sleep quality and short sleep duration. Since increased exposure is linked to increased dependency [6], children could easily become addicted to smartphones. This risk is further heightened by the fact that children have not reached the age when they are able to make rational decisions [7]. In Park M [4] study, female participants in the potential-risk or high-risk group showed a higher likelihood of poor sleep quality and short sleep duration than male participants. According to a previous study, smartphone usage differs by gender; boys are more likely to use their smartphone for gaming purposes, whereas girls are more likely to use it for communicating through social media or texting [8]. Roberts et al. [9] found that the most problematic applications in mobile phones were text messages, social networks, and voice calls. Thus, female smartphone users may be more likely to have problematic consequences such as sleep disturbances. Although female users seeking social interaction may become excessively involved with their smartphones [10], it is also possible that female participants had higher scores because they are more aware of their addiction [11].

In the study [4], the older age group in the high-risk group were more likely to experience poor sleep quality and short sleep duration. The use of social media increased among

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middle and high school students. This could be due to the regulations and rules of social media.

Furthermore, Park M [4] show that children who spent less time talking with their parents in the high-risk smartphone addiction group were more likely to have poor sleep quality and short sleep duration. In addition, children who spent less time engaging in private education were more likely to have poor sleep quality and short sleep duration. A possible reason for this is the major role played by parents and teachers in resolving issues related to addiction. Parental involvement is key in managing children's behavior and preventing the problematic use of smartphones. Children who receive low level of parental care may have difficulty in establishing good relationships with others, and thus rely more heavily on smartphone usage [8]. For example, Liu et al. [12] observed that the likelihood of adolescent internet addiction decreased with better parent–child communication.

In the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), internet gaming disorder (IGD) has been identified as a condition for more clinical research and experience before it might be considered as a formal disorder [13]. At this time, appropriate interventions and monitoring are required to protect children from excessive screen time and internet/smartphone addiction and improve their sleep quality and sleep duration.

Under the circumstance, long-term multicomponent education-programs which involve families and school teachers are needed.

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