



SMARTPHONE USE AS A RISK FACTOR FOR SLEEP DISORDERS IN STUDENTS

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Annotation *This paper examines in detail the impact of active smartphone use on the quality and duration of sleep in college students. Modern mobile devices have become an integral part of the daily lives of young people, but regular smartphone use, especially in the evening and at night, negatively impacts the physiological and psychological processes that support healthy sleep. Prolonged screen time before bedtime leads to difficulty falling asleep, decreased sleep depth, shallow rest, and increased daytime sleepiness. The paper analyzes the main mechanisms of sleep disruption, including exposure to blue light from screens, information overload, and evening emotional activity. Recommendations for reducing the negative impact of smartphones and developing healthy digital habits are also presented.*

Keywords: *Smartphones, sleep disorders, students, screen time, blue light, digital hygiene, sleep quality, daytime sleepiness, cognitive function, psychophysiological health.*

Relevance In modern society, smartphones have become an integral part of students' educational, social, and entertainment lives. They are used to access information, communicate via messaging apps and social media, as well as for gaming and watching videos. Despite the obvious benefits, excessive smartphone use in the evening and at night disrupts the body's natural biological rhythms. Exposure to blue light from

screens suppresses the production of melatonin, the hormone responsible for regulating sleep. Sleep disturbances negatively impact cognitive functions: attention is impaired, memory is impaired, and reaction time is slowed. Students who experience chronic sleep deprivation exhibit decreased academic performance, increased irritability, and anxiety. Therefore, studying the impact of smartphones on student sleep is highly relevant in the context of hygiene and psychophysiology, as well as practical youth healthcare.

Target To study the impact of smartphone use on the quality and duration of sleep in students, identify the underlying mechanisms of sleep disturbances, and develop recommendations for their prevention.

Tasks

1. To analyze the scientific literature on the impact of smartphones on sleep physiology.
2. To determine the frequency of evening use of mobile devices among students.
3. To identify the main forms of sleep disorders associated with digital activity.
4. To investigate the relationship between screen time duration and sleep quality.
5. To develop practical recommendations to reduce the negative impact of smartphones on nighttime rest.

Introduction Sleep is one of the most important physiological processes, ensuring the body's recovery, maintaining metabolism, normal functioning of the nervous system, and preserving cognitive abilities. During college, adequate sleep is especially important, as the academic period is accompanied by high intellectual workload, emotional stress, and

the need for constant concentration. Insufficient sleep or poor sleep quality negatively impacts memory, learning ability, emotional stability, and overall performance.

In recent years, the lives of young people have seen significant changes associated with the active adoption of digital technologies. Smartphones have become a universal tool for communication, information, learning, and leisure. Students use mobile devices almost continuously, including in the evenings and at night. This digital activity gradually develops new behavioral habits that can impact the body's biological rhythms.

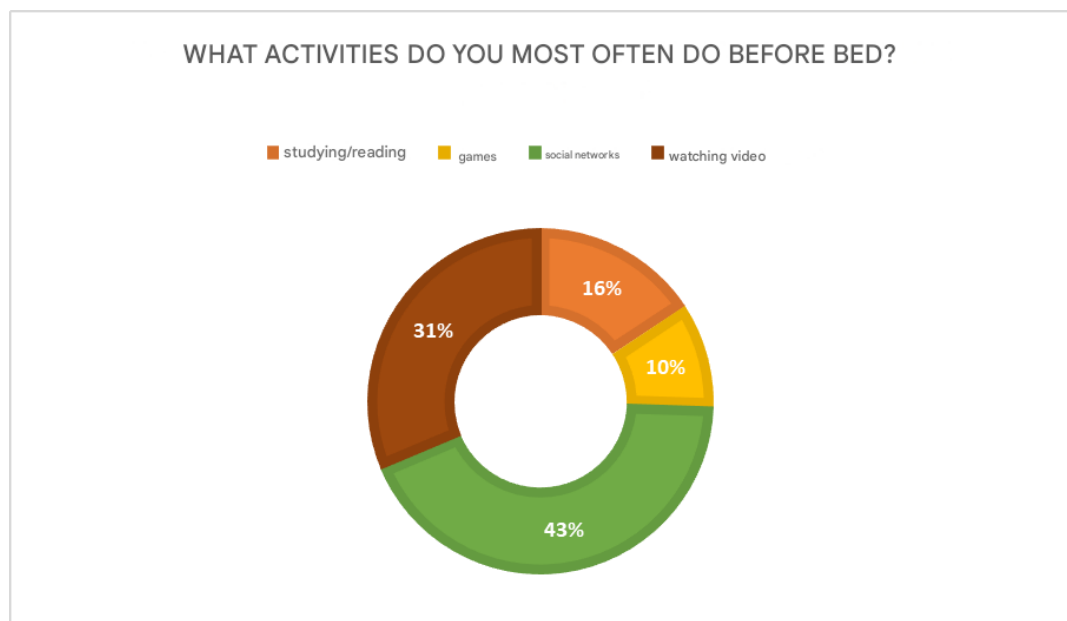
One of the key mechanisms of sleep disruption is exposure to blue light emitted by smartphone screens. It suppresses the synthesis of melatonin, a hormone that regulates circadian rhythms and sleep onset. Furthermore, active engagement with digital content causes cognitive and emotional arousal, which interferes with the body's natural transition to rest. Constant notifications, information overload, and engagement in online communication maintain a state of psychophysiological activity even late into the night.

Thus, in the context of digitalization, the issue of the impact of smartphones on students' sleep is particularly relevant and requires a comprehensive study from the perspective of hygiene, psychophysiology, and preventive medicine.

Materials and methods of research The study involved 138 first- to third-year students aged 16–25 studying at the Faculty of Preventive Medicine at Tver State Medical University. Seventy-eight percent of the participants were female and 22% were male.

Question	Yes (%)	Sometimes (%)	Rarely (%)	No (%)
Do you find it difficult to fall asleep after using your smartphone?	10	44	23	23
Do you feel tired in the morning because you used your smartphone late at night?	15	36	26	23
Do you notice a decline in concentration or mood after using your smartphone at night?	17	40	20	23

- 43% of students browse social media most often;
- 37% watch videos;
- 10% are engaged in studying or reading;
- 10% play games.



Research results

The data obtained made it possible to determine the prevalence of evening and nighttime smartphone use, as well as to identify the impact of screen time on the quality and duration of sleep.

An analysis of students' activity before bedtime showed that most respondents use their smartphones to view social media and videos.

These data confirm that evening activities with high levels of cognitive and emotional engagement, such as social media and video viewing, are directly associated with difficulty falling asleep and poor sleep quality. Comparing these data with the table results (questions about difficulty falling asleep, morning fatigue, and decreased concentration) allows us to draw the following conclusions:

- 36–44% of students experience occasional difficulty falling asleep;
- 36–40% report morning fatigue and decreased concentration;
- 23% of students do not feel that smartphone use affects their sleep quality.

Thus, it can be concluded that evening smartphone use, particularly for social media and video viewing, negatively impacts students' sleep quality and morning well-being. These findings highlight the need to develop healthy digital habits and implement preventative measures aimed at improving students' sleep and cognitive performance.

Conclusions A survey confirmed that evening and nighttime smartphone use negatively impacts students' sleep. Activity before bed, especially browsing social media and videos, makes it difficult to fall asleep, reduces the quality of rest, and increases morning sleepiness. These findings highlight the need to develop healthy digital habits and implement digital hygiene measures to improve students' sleep, psychophysiological well-being, and academic performance.

Smartphone use is a significant part of student life, but evening and nighttime use significantly impairs sleep quality and impacts psychophysiological well-being. Developing healthy digital habits,

limiting screen time, maintaining a sleep schedule, and using relaxation techniques can improve students' sleep, cognitive function, and overall well-being. Preventing sleep disorders requires both individual responsibility and systemic support from educational institutions to foster a culture of healthy interaction with digital technology.

Practical preventive measures RecommendedLimit smartphone use 1–2 hours before bedtime to reduce blue light exposure and facilitate sleep. It's also helpful to set devices to "night mode" with a warm light and turn off notifications, sounds, and vibrations, creating a calming atmosphere before bed. Creating a "screen-free zone" in the bedroom helps create a strong association between sleep and rest. In the evening, incorporating relaxation practices—light physical activity, breathing exercises, meditation, or reading under soft lighting—can reduce emotional arousal and prepare the body for a good night's rest. Furthermore, educating students about the impact of digital technology on sleep helps develop a culture of digital hygiene. Keeping a sleep diary or using apps to track the duration and quality of sleep allows students to track the relationship between smartphone use and sleep quality and adjust their habits as needed.

Thus, the implementation of these measures helps to normalize biorhythms, improve nighttime rest, reduce morning sleepiness and increase students' cognitive performance.

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