



EFFECTS OF SLEEP DISORDERS ON STUDENTS' COGNITIVE ABILITIES

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Abstract

A statistical analysis was conducted to study the impact of sleep disorders on cognitive function among students. Sleep is undoubtedly one of the most important physiological activities for the proper and normal functioning of the human body. Insufficient sleep has a negative impact on cardiovascular diseases, neurocognitive function, psychological disorders, metabolic abnormalities, and academic performance. Cognitive function is memory, mental activity, and other cognitive functions. The article examined the impact of sleep deprivation on cognitive function among medical students. According to the results, it was found that sleep disorders have a negative impact on students' cognitive function.

Keywords: Cognitive function, sleep disorder, student, cognitive function, academic performance, mental activity, memory.

Introduction

Studying the impact of sleep disorders on cognitive activity in students is a relevant and important topic. The quality and quantity of sleep directly affects students' attention, memory, learning ability, and general cognitive functions. Sleep disturbances, in turn, can negatively affect academic activity, academic performance, and psychological state. By studying the topic, it is possible to develop effective strategies aimed at improving students' sleep patterns, increasing cognitive activity, and ensuring overall well-being. This contributes to improving the practical methods used by teachers and psychologists in educational institutions. Therefore, studying sleep disorders among students and their impact on cognitive activity, analyzing existing scientific research, and conducting new research is of great importance in the field of education. "The impact of sleep



disturbances on cognitive activity among students" is considered specifically among medical students, as admission to a medical university requires high academic and professional achievements, making it one of the most demanding professions. As a result, students often sacrifice their sleep time to satisfy this need. They are susceptible to various forms of sleep problems. The presence of high intellectual load among medical students and the widespread occurrence of sleep disturbances among medical students require a deep study of this problem and the development of effective methods.

Materials and methods of research

Prevalence of sleep disorders among medical students

According to a systematic review of 109 studies covering 59,427 participants, conducted to study the prevalence of sleep problems among medical students worldwide, according to meta-analysis, the average sleep duration for medical students is only 6.5 hours at night, and 40.91% of students experience drowsiness throughout the day.

The materials and methods presented for the article on the impact of sleep disorders on cognitive activity in medical students can be as follows:

1. Submitted materials (data):

- The impact of sleep on cognitive activity: Data obtained from scientific research on how sleep affects cognitive functions (attention, memory, problem-solving, decision-making).
- Sleep disorders and their prevalence among medical students: Statistics on the prevalence of sleep disorders among medical students
- Cognitive activity measurement: Tests used to measure cognitive activity in medical students (e.g., attention and memory measurement tests, neuropsychological tests).

2. Methods:

- Participant selection: Selection of samples from medical faculty students for research, justification of the importance of studying this group. Students can be selected from various courses (from the first to the last).



- Data collection methods:
- Questionnaires and surveys: Questionnaires for assessing sleep disorders and cognitive activity
- Psychological tests: Tests used to assess cognitive activity (for example, a questionnaire for assessing cognitive functions).
- Comparison of groups of students with sleep disorders and students with healthy sleep. Comparison of cognitive activity between these groups.
- Monitoring sleep improvement before and after measuring cognitive activity (e.g., sleep hygiene, sleep recovery methods).
- Statistical analysis: Statistical analysis of the obtained data (for example, determining the difference between groups using ANOVA or t-test).

The purpose of the study may be to determine the impact of sleep disorders on the cognitive activity of medical students and thereby to develop recommendations for possible sleep improvement measures in the university education process.

To study the impact of sleep disorders on cognitive activity among students, the "Assessment Questionnaire for Cognitive Functions" was used. The cognitive test is conducted to assess and identify cognitive disorders by assessing various aspects of mental activity. Cognitive activity is a system of knowledge that develops in the tongue as a result of character, upbringing, observation, and reflection of the surrounding world. The basis of the cognitive system is the interaction of thinking, consciousness, memory, and language, that is, the human brain. Cognitive assessment survey aims to gain a complete understanding of how a person thinks and works. It helps doctors, researchers, or teachers identify a person's cognitive strengths and weaknesses, look for signs of possible cognitive impairments, track changes over time, and choose intervention or treatment methods based on specific data. Detects early signs of cognitive decline Using the cognitive assessment test, healthcare workers can identify early signs of cognitive decline or impairment, which allows for timely intervention and management. The survey results offer valuable concepts that can be used to adapt treatment and intervention plans to address specific human problems. Helps track and control the process. Regularly conducting surveys allows healthcare professionals to monitor changes in cognitive activity, assess the impact of interventions, and make reasonable adjustments to treatment plans. Provides accessibility and ease of use. A free cognitive assessment



questionnaire makes them accessible to a wide range of individuals and healthcare professionals. This increases accessibility and ease of use.

This study was conducted among students of various courses of the Tashkent Medical Academy in the form of a Google questionnaire.

The study involved 71 students of the 1st-6th grades, including 37 women (52.1%) and 34 men (47.9). Participants were divided into two groups based on their daily sleep time. The first group consisted of 28 students who slept up to 6 hours per day, and the second group consisted of 43 students who slept 6 hours or more. Participants were divided into two groups based on their daily sleep time. The first group consisted of 28 students who slept up to 6 hours per day, and the second group consisted of 43 students who slept 6 hours or more.

First group	Second group
Employed in night work 21.4%	Employed in night work 20.9%
Employed in day labor 3.6%	Employed in day labor 7%
Working day and night 25 %	Working day and night 18.6%
Unemployed 50%	Unemployed 53.5%

The results were analyzed in two groups, divided into 4 periods depending on whether students were engaged in mental activity.

By time spent engaging in mental activity	Group 1	Group 2
Busy early in the morning	17.9%	14%
In the first half of the day, engaged	10.7%	20.9%
In the second half of the day, engaged	21.4%	30.2%
Night classes	50%	34.9%

These results show that in both groups, a larger percentage of the total number of participants engaged in mental activity at night. That is, if in the first group it is 50 percent, then in the second group this indicator is 34.9 percent.

Factors leading to a decrease in sleep time, cited by the students, were also divided into 4 main groups. The results were described between the two groups as follows:



Causal factors	Group 1	Group 2
Additional employment	8 people	13 people
Preparation for exams and lessons	10 people	17 people
Spending time on social media	5 people	10 people
Other reasons	3 people	5 people

When students were asked to pay attention to changes in their cognitive activity, that is, mental activity, on the days they slept little, it was found that 22 out of 28 participants of the first group and 34 out of 43 participants of the second group noticed various changes in their mental activity.

Discussion of the results. Relationship between sleep and cognitive activity: Research results show that sleep disturbances in medical students negatively affect cognitive activity. These changes mainly affect attention and memory. Good sleep is necessary for full cognitive activity, as sleep is a process of renewal and recovery for the brain.

1. Problems with attention and concentration: Lack of sleep leads to problems with concentration and focus. This can reduce the effectiveness of teaching medical students in classes and practice.

2. Memory and learning processes: Lack of sleep negatively affects the processes of short-term and long-term memory retention. Medical students' ability to assimilate and memorize new information during the learning process may decrease.

3. Effects of illness and fatigue on cognitive activity: Sleep disturbances lead to fatigue, anxiety, and mental deterioration among students. This, in turn, reduces cognitive abilities and reduces the effectiveness of their learning.

To assess cognitive impairments, total scores are calculated, with each answer having a rating from 0 to 4. Using the provided rating scale, each answer is evaluated based on a person's behavior over the past 6 months. All ratings are summed up to calculate the total score. For example, the total score = $2 + 3 + 1 + 4 + 2 + 3 + 0 + 2 + 4 + 1 = 22$. If the total score is higher than 28, it indicates a cognitive impairment.

If we analyze the results in both groups, we can see "Cognitive impairment" as a result of the influence of sleep disturbances on cognitive activity in 24 out of 28



participants of the 1st group, i.e., 85.7%. According to the results of the 2nd group, we can see "Cognitive impairment" as a result of the influence of sleep disturbances on cognitive activity in 32 out of 43 participants, i.e., 74.4%. These results show that both groups of participants had a high influence of sleep disturbances on cognitive activity disorders.

Conclusion

Based on the results of the conducted "Assessment of Cognitive Functions Questionnaire," it can be said that 85.7% of students in the 1st group with less than 6 hours of sleep have cognitive impairments, although students in the 2nd group sleep 6 hours or more per day, it was found that 74.4% of them have cognitive impairments. We can see that the daily amount of sleep in the studied groups decreased for various reasons, among which the most significant are students' extracurricular activities, especially working in the night shift and staying awake for a long time at night to prepare for classes and exams.

The topic of studying the impact of sleep disorders on cognitive activity among medical students helps to understand the importance of sleep in the educational process and its impact on students' learning ability, memory, and general mental skills. Studies show that insomnia or decreased sleep quality reduces the ability to perform cognitive tasks in intellectually and psychologically overloaded individuals, such as medical students, leading to difficulties in focusing attention, memorizing information, and making decisions.

Additionally, sleep disturbances can negatively affect students' mental state, reducing their motivation for learning and practical activities. Thus, improving sleep and maintaining a good sleep schedule for students contributes to increased learning effectiveness and overall cognitive potential.

At the same time, research in this area requires broader research related to sleep disorders, as a good sleep system contributes to the improvement of students' mental and physical health and enhances their readiness for future professional activities.

Providing students with advice on managing normal sleep habits

- Proper planning of time for mental activity, especially for medical needs, recommends engaging in mental activity in the afternoon and establishing early sleep and early wake-up in the evening.



- Do not consume any types of coffee and tea products before bed, these products affect the sleep center in the central nervous system, which leads to sleep dysfunction.
- Determining sleep and wake-up times consistently, that is, advising developing the habit of sleeping and waking up at the same time every day. Explain how this improves the body's natural sleep cycle.
- Don't use devices like phones and laptops before bed and keep them away from sleeping spots. It is recommended to rest for at least 30 minutes and stay away from your phone or computer before going to bed.

References

1. Walker, M. P. (2017). *Why We Sleep: The New Science of Sleep and Dreams*. Scribner.
2. Killgore, W. D. S. (2010). Effects of Sleep Deprivation on Cognition. *Progress in Brain Research*, 185, 105-129.
3. Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews*, 10(5), 323-337.
4. Hirshkowitz, M., Whiton, K., Albert, S. M., et al. (2015). National Sleep Foundation's sleep time duration recommendations: methodology and results summary. *Sleep Health*, 1(1), 40-43.
5. Trockel, M. T., Barnes, M. D., & Egget, D. L. (2000). Health-related variables and academic performance among first-year college students: Implications for sleep and stress management. *Journal of American College Health*, 49(3), 125-133.
6. Alhola, P., & Polo-Kantola, P. (2007). Sleep deprivation and cognitive performance. *Sleep Reviews*, 11(4), 289-298.
7. Sadeh, A., Gruber, R., & Raviv, A. (2002). Sleep and academic performance in children and adolescents. *Sleep Medicine Reviews*, 6(1), 1-17.