SLEEP QUALITY IN MEDICAL STUDENTS AND ITS DIFFERENT EFFECTS

Almoghrabi B., Nestrenko V.G.

Kharkiv National Medical University, Kharkiv, Ukraine

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ABSTRACT

Background. Sleep disorders is a distressing and disabling condition that affects many people, and can effect the quality of work and education of medical students. Sleep problems, which are accompanied by disruption of the circadian cycle in students, are partly solved by sports and psychological influences (sleep hygiene).

Purpose of the study was to assess the sleep quality during different years of study of medical university students.

Materials & Methods. First to final year students (114 male and 80 female) filled out questionnaires. Pittsburgh Sleep Quality Index (PSQI) questions were used in the form. Qualitative variables were represented as frequencies and percentages. Chi-square and was applied for statistical significance, and p-value <0.05 was considered. The students were divided according to their years of study into 3 groups. Group A for 1st- and 2nd-years, group B – for 3rd- and 4th-years, group C – for 5th- and 6th-years medical students.

Results. About half (47.42%) of the students rated their sleep as very bad, which, however, is less than in the literature (more than 60%). 57% of respondents had daytime dysfunction due to sleep disturbance. 60.31% of survey participants reported that they slept 5–7 hours every night. 20.1% regularly used sleeping pills at least once during the last month. Subjective sleep quality and sleep latency were directly related to the years of study, with p values 0.006 and 0.004.

Conclusion. Our findings show that sleep disruptions among medical students is significant. By calculating the mean score of PSQI we found that the score values increase respectively with the years of studies in the medical faculty explaining more sleep disturbances.

Keywords: *sleep disorders, Pittsburgh Sleep Quality Index, sleep hygiene.*

INTRODUCTION

Sleep problems are widespread and can have a negative impact on person's health and quality of life. While certain sleep problems are more difficult to cure than others, the majority are simply treatable with the right therapies [1]. The stress of the academic environment causes circadian cycle abnormalities in university students. Sports and extracurricular activities are linked to better sleep quality. The modern society is plagued with sleep disorders; almost one-third of individual's report experiencing some kind of sleeplessness [2].

Compared to non-medical students and the general community, medical students make up a demographic that is significantly more susceptible [3]. This is due to a variety of stress-inducing academic load, packed schedules, protracted study sessions, test stress, peer pressure, high parental expectations, and an intensely competitive atmosphere.

Based on previous studies we find that there is a higher prevalence of numerous somatic and/or psychiatric ailments, as well as social issues, is linked to sleep difficulties [4].

Some behavioral, physiological, and neurocognitive functions take place when we sleep; lack of sleep may disrupt these activities. Lack of sleep causes a number of negative effects, including drowsiness and diminished neurocognitive and psychomotor function [5].

The purpose of the current study was to assess and compare medical students' subjective sleep quality across the different periods of their training by utilizing the PSQI. This study was conducted trying to find a correlation between medical studies and the sleep quality. No contraindications were taken into consideration, trying to make the study more generalized and not limited.

Corresponding Author:
Almoghrabi Bachir – student
at Kharkiv National Medical University,
4, Nauky avenue, Kharkiv, 61022, Ukraine.
E-mail: balmohkhrabi.6f18@knmu.edu.ua

Material & Methods

The Pittsburgh Sleep Quality Index (PSQI) contains 19 items, which address sleep latency, usual bedtime and wake time, and sleep and nap quality [6].

This was a study involving medical undergraduates at Kharkiv National Medical University, located in the city of Kharkiv, Ukraine. First- to sixth-year students (n=194) participated. The data were collected from 30 January 2023 till 07 February 2023. All participants filled in an online Google form.

The PSQI is a legitimate and widely used analytic tool for determining sleep disorders, hence it is included in the study instrument. Each of its elements - subjective sleep quality, sleep latency, sleep length, habitual sleep efficiency, sleep disruptions, usage of sleeping pills, and daytime dysfunction- was examined independently. This instrument's range is 0 to 21 points, scores 5–9 signify poor sleep quality, and scores between > 9 of sleep disturbance. The sum of the seven component scores produces a global score.

Using Microsoft Excel, the information from the completed questionnaires was put into tables. One of the tables displayed the findings for the en tire sample and the others the results for each undergraduate class year. The participants were split into three groups: group A, which consisted of 1st- and 2nd-year students; group B, which consisted of 3rd- and 4th-year students; and group C, which consisted of fifth- and sixth-year students. Comparisons within and between groups as well as descriptions of the results for the entire sample were done.

The study was anonymous, with a total of 194 students who participated in the study; they were divided as follow. 83 first and second year, 47 third and fourth year, and 64 were in their last years of study. As for gender distribution, there was a remarkable proportion of males 114, and 80 females (*Table 1*).

Table 1. Sample distribution of the students that participated by group and gender

Sample characteristics		Students
Group	A	83
	B	47
	C	64
Gender	Male	114
	Female	80

The proportions of various answers as a function of each component were used for analysis. In the inductive analysis, the seven PSQI components were compared between groups using the chi-square test, and the global score was compared between groups. P values lower than 0.05 were regarded as significant.

The results for the three groups as well as the entire sample were evaluated for the seven PSQI components. In the entire sample, 47% of the participants rated their sleep as very or fairly bad, and 43.3% said they frequently took longer than 30 minutes to fall asleep. The average amount of sleep each night is 6 hours' 10 minutes. Inductive statistical results showed no significant differences among the three groups regarding subjective sleep quality or sleep latency (*Table 2*).

Table 2. Results of KNMU students answers on the form with PSQI questions represented by Group, and correlated P value for each question

	Group A n=83	Group B n=47	Group C n=64	Total. students	P*
Subjective sleep quality					
During the last month, how would you rate your sleep quality overall?					0.006
Very bad	8	5	16	29	
Fairly bad	22	23	18	63	
Fairly good	46	16	22	84	
Very good	7	3	8	18	

Table 2 continued on next page

	Group A n=83	Group B n=47	Group C n=64	Total. students	P*
Sleep latency					
During the last month, how long (in minutes) did it usually take you to fall asleep each night?					0.004
≤15 min	27	18	8	53	
16 to 30 min	30	8	19	57	
31 to 60 min	14	9	15	38	
>60 min	12	12	22	46	
Sleep duration					
During the last month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed)					0.3
<5 h	8	6	14	28	
5 to 6 h	18	11	18	47	
6 to 7 h	35	18	17	70	
>7 h	22	12	15	49	
Habitual sleep efficiency					
How often do you make a day time nap? (per week)					0.19
Rarely	67	41	47	155	
Usually	16	6	17	39	
Sleep disorders					
During the last month, how often did you have trouble sleeping because you wake up in the middle of the night or early morning?					0.22
Not during last month	21	20	19	60	
Less than once a month	23	7	10	40	
Once or twice a week	19	12	20	51	
Three or more times a week	20	8	15	43	
Use of sleeping medication					
During the last month, how often did you take medicine to help you sleep (prescription or "over the counter")?					0.49
Less than once a month	4	6	9	19	
Not during last month	70	38	47	155	
Once or twice a week	5	2	5	12	
Three or more times a week	4	1	3	8	
Daytime dysfunction					
During the last month, how much trouble was it for you to keep up enough enthusiasm to get things done?					0.14
No problem at all	6	11	10	27	
Only slight problem	30	9	17	56	
Somewhat of a problem	31	16	25	72	
A very big problem	16	11	12	39	

Table 2 presents the students' answers to the different 7 questions of their sleep quality, organized by groups and a total for each answer from all three groups, as well a calculated P value is present beside each question using the chi-square table. *Table 3* shows the calculated PSQI scores of each question and a total for each group.

The analysis by undergraduate class year revealed scores < 5 in 30.12% of first- second-years, 27.66% of third- fourth-years, 20.31% of fifth-sixth-years. Logistic regression, revealed no significant intergroup influence (p=0.64) (*Table 4*).

Nearly 47.42% of the students in our sample rated their sleep as fairly or very bad, which is a lower percentage than that seen in the literature, which found that medical students in particular had poor sleep in the proportions of 61.5% [10], specifically among medical students. 57% of the participants in the current research showed daytime dysfunction, reporting that they have problem to keep up enough enthusiasm to pass their day. Such indicators of daytime sleepiness among medical students are consistent with literature data: 31%; 42.1% and 63%.

Table 3. Mean global PSQI scores for each group

PSQI	1st	2nd	3rd	4th	5th	6th	7th	Total
A	1.37	1.13	1.15	1.15	1.46	0.31	1.02	7.59
B	1.64	1.32	1.23	1.23	1.17	0.28	0.79	7.66
C	1.66	1.8	1.48	1.48	1.48	0.44	0.86	9.2

Table 4. Chi-square table for the PSQI scores of different groups

SCORE PSQI	A	B	C	Grand Total	p
<5	30.12%	27.66%	20.31%	26.29%	0.64
5–9	34.94%	36.17%	34.38%	35.05%	
>9	34.94%	36.17%	45.31%	38.66%	

Discussion

Since it has an impact on their academic schedule and personal lives, medical students' sleep quality is a topic that has received much research on a global scale. Thus, evaluating the quality of your sleep using a tool that has been approved for usage and allows quantification, such as the PSQI [7] is crucial for tracking these students sleep health. By using this method, we discovered that several components of sleep quality were changed in our sample, with 26.29% of scores below 5, which denote considerable sleep quality degradation.

Adherence in this study was nearly 60%, which is in line with researches results of such a form of questionnaire (70%) [8]. In terms of participation by gender, we found a male predominance in effective participation in the study, which is also consistent for other studies that used this method with medical students, in which there was a predominance of males 54.7% [9].

As a result, group C students had more negative impacts on subjective sleep quality and daytime dysfunction than did students in the other groups, with group A and B students' daytime dysfunction indicating a tendency toward a significant difference (A vs C p = 0.03 and B vs C p=0.004). This can be explained by the fact that students go through during their last years of studies, which is characterized by an excessive number of academic activities and irregular daily routines. It should be underlined that studying medical program calls for a high level of commitment and selflessness, which indicates unhealthy lifestyle modifications, such as sleep deprivation and poor sleep hygiene practices.

The results for the sleep latency revealed that 43% of the participants' sleep latency was slightly altered, whereas the results for the sleep duration component showed that 60.31% of the participants reported sleeping 5–7 hours every night, which is comparable to the average of 5.8 hours of

participants [11], but different from the average of 6.48 hours reported by students at the Universidad Adventista del Plata [12].

Remarkably, 20.1% of the participants in the current study reported regularly using sleeping pills at least once during last month, but this number is convenient with the study of Saudi Arabian medical students, which found that 17% of medical students regularly used sleep aids. This finding highlights the need for early intervention programs that focus on bad lifestyle choices [13].

We found that 73.71% of the people in our sample had global PSQI values more than 5, which is higher than the 20.7% [14] reported in the literature.

We discovered that the mean global PSQI scores ranged from 7.59 to 9.2 in the various groups, which is also compatible with the values mentioned in another study (8.1) [15].

In summary, we investigated sleep quality among medical students at this medical school in the city of Kharkiv, Ukraine, and discovered impairments in some PSQI components. This suggests that further research should be conducted in other parts of the nation and the world to monitor the profile of such students and to promote the translation of findings into health promotion practices. Our findings are consistent with the research that shows a high frequency of sleep quality changes that is not considered a problem or condition but may have negative impacts.

We did not employ additional instruments, such as the Epworth Sleepiness Scale, which may have provided information on daytime sleep dysfunction, which was a limitation of the current study because the most significant findings were obtained for the sleep quality and daily dysfunction components. Additionally, given that students in group C reported more issues with subjective sleep quality and daytime functioning than did students in groups A and B.

Among the population of higher education students, there is a need for health promotion measures, such as suggestions of modifications to established health habits especially connected to excellent sleep hygiene. Such recommendations may be found in the literature and are aimed at the general public.

We conclude that students in all academic years of the undergraduate medical program had a significant prevalence of poor subjective sleep quality. First- and second-year students (group A) reported better sleep quality and less daytime dysfunction than students in other class years, according to comparisons throughout the course's various phases (groups B and C).

Conclusions

Our study shows that sleep disorder among medical students is significant. Subjective sleep quality and sleep latency were directly related to the years of study, with p values 0.006 and 0.004. By calculating the mean score of PSQI we found that the score values increase respectively with the years of studies in the medical faculty explaining more sleep disturbances.

DECLARATIONS:

Statement of Ethics

The authors have no ethical conflicts to disclosure.

Consent for publication

All authors give their consent to publication.

Disclosure statement

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