

Original Article



Sleep Quality among Undergraduate Public Medical and University Students: A Comparative Study

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Abstract

Background: Sleeping is the body's natural means of recharging, which aids in repair, healing, and learning from all interactions and activities during the day. To maintain their focus, concentration, and academic performance, students need to get enough sleep at night.

Objective: To determine and compare the sleep quality of 278 undergraduate medical and university students.

Materials and Methods: This online-based cross-sectional study was conducted by using a pre-tested semi-structured questionnaire with Pittsburgh Sleep Quality Index (PSQI) scale.

Results: The mean age of medical students were 22.6 ± 1.5 years and university students were 22.0 ± 1.2 years. The mean study hours in a day, spending time on digital media and BMI were almost similar in both settings students. The mean PSQI scores were 7.2 ± 3.3 in medical students and 6.4 ± 3.3 in university students respectively. Majorities of the students (71.2% and 58.3%) had poor sleep quality, but subjective sleep quality was good in both settings of students (60.4% and 51.8%). Educational backgrounds were significantly associated with level of sleep quality, level of subjective sleep quality and mean of PSQI scores ($p < 0.05$).

Conclusion: This study demonstrates that sleep quality is poor among public medical college students compared to university students.

Key words: Sleep quality, Medical students, University students, PSQI scale, Bangladesh.

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Introduction

Young adults' sleeping patterns appear to become erratic, and many of them suffer from sleep deprivation, which may have an adverse effect on daytime activities, particularly study.¹ Over the last 60 years, there has been a consistent decrease in sleep quality and an increase in sleep disorders.² Sleep disorders and lack of sleep have been found to be linked with a range of chronic conditions and can cause mortality in a limited percentage of cases.³

Majority of the students in Bangladesh had poor sleep efficiency and unhygienic sleeping practices. So, sleep related problems

are also highly prevalent among Bangladeshi university students.⁴ Concentration and performance deficiencies, along with low academic success, are related to sleep problems among students. Sleep hours acquired corresponding to the time of the exam have been described as an indicator of the student's scores. In addition, the psychomotor performance of medical students, especially judgment capability has been found to worsen with 24 hours of sleep loss.⁵

A variety of studies have clarified the relationship between sleeping habits and the risk of developing several diseases. Such studies have shown a number of potentially dangerous consequences of sleep loss typically associated with elevated stress,

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such as increased blood pressure, decreased blood glucose regulation, obesity, poor mental health and increased inflammation.⁶ The determinants and comparison findings of the sleep quality of undergraduate medical and university students may help the policy makers and researchers to find out the hidden ice-berg of the sleep related disorders.

Materials and Methods

Study design and settings

An online based cross-sectional study was conducted among 278 participants to determine and compare sleep quality among the undergraduate medical and university students. Participants were selected purposively from three public medical colleges named Dhaka Medical College, Sir Salimullah Medical College and Sylhet MAG Osmani Medical College; and three public universities named Dhaka University, Jahangirnagar University and Shahjalal University of Science and Technology.

Participant’s selection and analysis plan

During the study period of July to December 2021, 278 students- 139 from each setting, who were enrolled in their third and fourth academic years, were interviewed as convenient for them using email and Google forms. A pretested semi-structured questionnaire was used for interviewing, which was constructed with PSQI scale, along with lifestyle and sleep quality related information. The data were checked, cleaned and categorizing by SPSS v23. The analysis was carried out by using both descriptive and inferential statistics, and presented with tables and charts.

Measuring procedures

The Pittsburgh Sleep Quality Index (PSQI) was used in this online survey to differentiate between 'poor' and 'good' sleepers by measuring the following areas: sleep duration, sleep disturbance, sleep latency, daytime dysfunction, habitual sleep efficiency, subjective sleep quality, and use of sleeping medication in the previous month. Scoring was done on a 0-3 points Likert scale, with 0 representing very mild or no difficulty/disturbance and 3 representing the severe negative extreme. A global PSQI score of 0-5 indicate good sleep quality, while a score of more than 5 indicate poor sleep quality.

Ethical consideration

Informed consent was taken from each student, and explains them the objectives and probable outcomes of the study. All the procedures were conducted following the ethical guidelines of the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards were followed wherever applicable.

Results

Table 1 shows the socio-demographic characteristics of medical and university students. The mean age of medical students were 22.6±1.5 years and university students were 22.0±1.2 years in the age group of 20-25 years. Female students were predominant in the universities (74.8%). Marital state (7.9%), joint family (18.7%) as family type and residence in rural areas (31.7%) were higher among the medical students. The mean average monthly family income was slightly high among the university student’s families.

Table 2 describes the lifestyle and sleep quality related characteristics of the students. The mean study hours in a day (3.0±1.8 and 3.0±1.9 hours), spending time on digital media (5.2±2.0 and 5.1±2.3 hours) and BMI (23.4±3.4 and 23.0±3.6) were almost similar in both settings of students. University students were more regular in online classes (76.3%) and performed physical exercise regularly (46.0%). Consumption of tea or coffee was higher among university students, but the prevalence of consumption at night was low. The history of smoking was almost three times as high among the medical students (28.8%) and no history was found of the consumption of alcohol on both sides. The mean sleep duration and sleep latency were almost similar in both settings students (6.8±1.3 and 6.8±1.5 hours, and 60.4±72.1 and 64.3±74.2). Among the medical students, severe sleep latency (40.3%), high habitual sleep efficiency (40.3%), mild daytime dysfunction (46.8%), mild sleeping disturbance at night (64.7%) and took a sleeping pill (90.6%) were found; on the contrary, all the sleep related characteristics were found similar except normal daytime dysfunction (36.7%) in university students.

Figure 1 portrays the PSQI scores of the students. The mean PSQI scores were 7.2±3.3 and 6.4±3.3 respectively, where maximum scores were 6 in medical students and 4 in university students.

Figure 2 and 3 illustrates that majorities of the students (71.2% and 58.3%) had poor sleep quality, but subjective sleep quality was good in both settings of students (60.4% and 51.8%).

Table 3 exhibits educational backgrounds that were significantly associated with the level of sleep quality (p=0.033) and level of subjective sleep quality (p=0.000). Table 3 elucidates a statistically significant association between educational background and the mean of PSQI scores (p=0.045).

Table 1: Socio-demographic characteristics of the students

Traits		Medical	University
Age (years)	Mean±SD	22.6±1.5	22.0±1.2
Monthly family income (taka)	Mean±SD	44,762.6±25,778.2	52,428.1±44,710.2
		n(%)	n(%)
Gender	Male	77(55.4)	35(25.2)
	Female	62(44.6)	104(74.8)
Maritalcondition	Unmarried	128(92.1)	130(93.5)
	Married	11(7.9)	9(6.5)
Family type	Nuclear	113(81.3)	117(84.2)
	Joint	26(18.7)	22(15.8)
Present residence	Urban	95(68.3)	108(77.7)
	Rural	44(31.7)	31(22.3)

Table 2: Lifestyle and sleep quality related characteristics of the students

Lifestyle related characteristics		Medical	University
Mean of study hours in a day	Mean±SD	3.0±1.8	3.0±1.9
Mean of spending time on digital media (hours)	Mean±SD	5.2±2.0	5.1±2.3
Body mass index (BMI)	Mean±SD	23.4±3.4	23.0±3.6
		n(%)	n(%)
Attended online class	Regular	94(67.6)	106(76.3)
	Irregular	45(32.4)	33(23.7)
Performed physical exercises	Regular	58(41.7)	64(46.0)
	Irregular	81(58.3)	75(54.0)
Consumption of tea or coffee	Yes	100(71.9)	104(74.8)
	No	39(28.1)	35(25.2)
Consumption of tea or coffee at night (n=100, 104)	Yes	62(62.0)	57(54.8)
	No	38(38.0)	47(45.2)
History of smoking	Yes	40(28.8)	14(10.1)
	No	99(71.2)	125(89.9)
History of alcohol consumption	Yes	0(0.0)	0(0.0)
	No	139(100)	139(100)
Sleep quality related characteristics			
Mean of sleep duration (hours)	Mean±SD	6.8±1.3	6.8±1.5
Mean of sleep latency	Mean±SD	60.4±72.1	64.3±74.2
Mean of Global PSQI score	Mean±SD	7.2±3.3	6.4±3.3
		n(%)	n(%)
Sleep latency	Normal	15(10.8)	21(15.1)
	Mild	39(28.1)	36(25.9)
	Moderate	32(23.0)	21(15.1)
	Severe	53(38.1)	61(43.9)
Habitual sleep efficiency	High	56(40.3)	63(45.3)
	Medium	34(24.5)	34(24.5)
	Low	21(15.1)	17(12.2)
Daytime dysfunction	Normal	28(20.1)	25(18.0)
	Normal	37(26.6)	51(36.7)
	Mild	65(46.8)	46(33.1)
	Moderate	27(19.4)	28(20.1)
	Severe	10(7.2)	14(10.1)
Sleeping disturbance at night	Normal	33(23.7)	33(23.7)
	Mild	90(64.7)	88(63.3)
	Moderate	16(11.5)	18(12.9)
	Severe	0(0.0)	0(0.0)
Use of sleeping pills (in a week)	No tablet	126(90.6)	124(89.2)
	1 tablet	8(5.8)	10(7.2)
	2-3 tablets	4(2.9)	4(2.9)
	>3 tablets	1(0.7)	1(0.7)

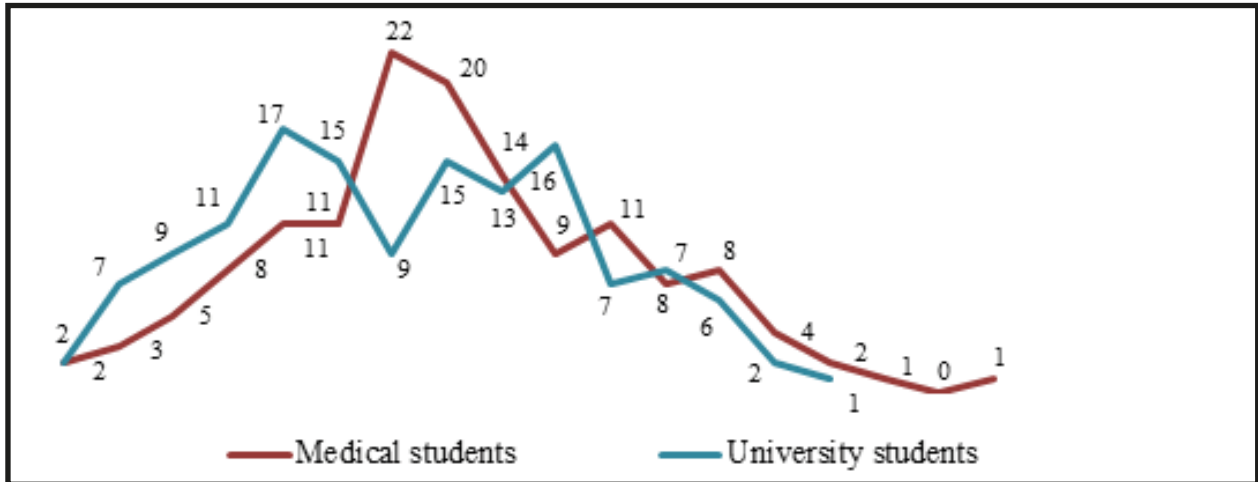


Figure 1: PSQI scores of the students

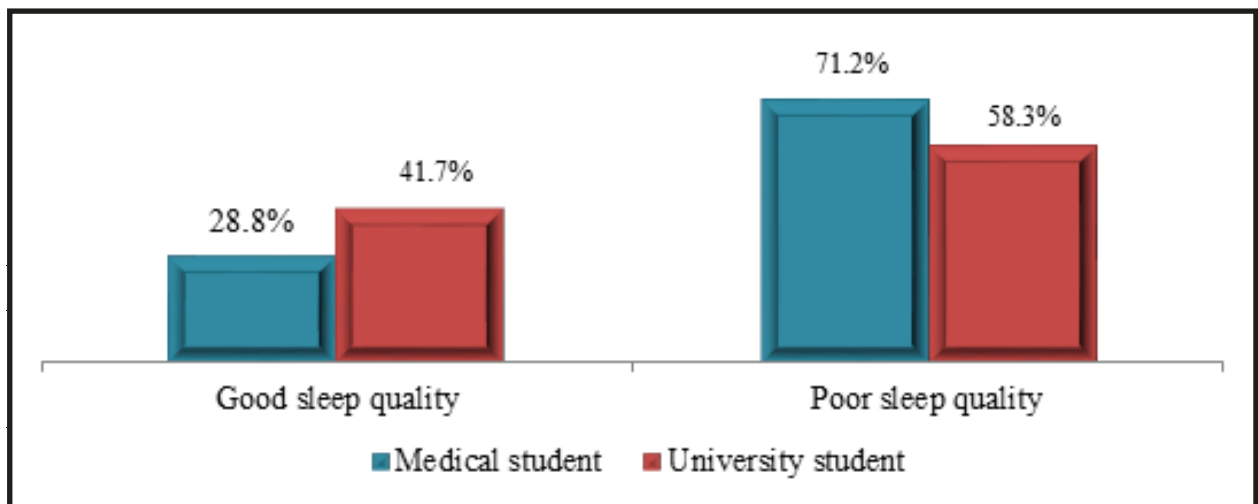


Figure 2: Level of sleep quality by PSQI score

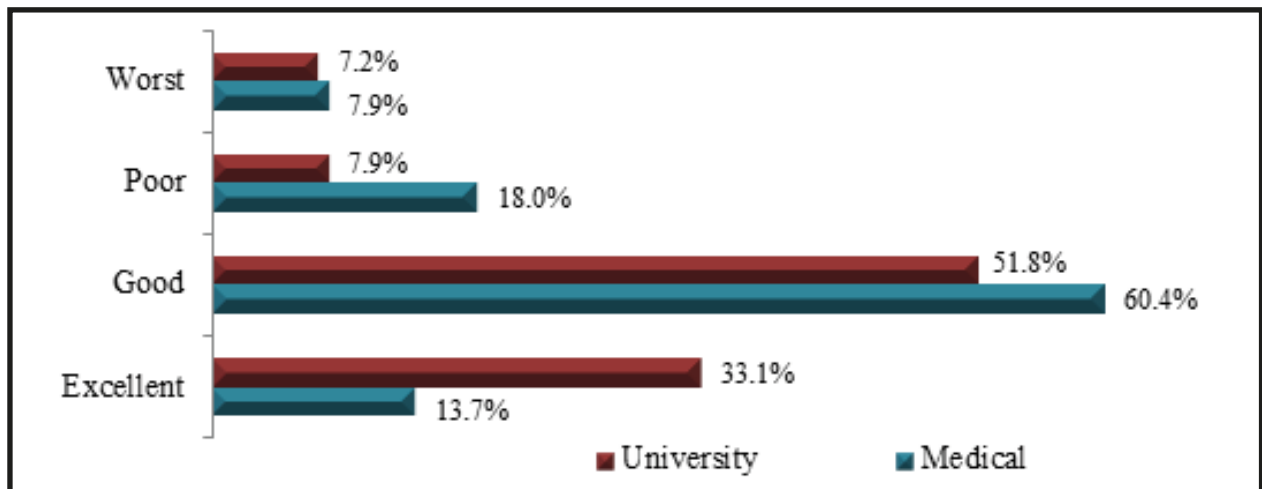


Figure 3: Level of subjective sleep quality

Table 3: Association of academic backgrounds with sleep quality

Traits		Medical	University	Total	χ^2 value	p - value
		n(%)	n(%)	n(%)		
Sleep latency	Normal	15(41.7)	21(58.3)	36(100)	3.964	0.263
	Mild	39(52.0)	36(48.0)	75(100)		
	Moderate	32(60.4)	21(39.6)	53(100)		
	Severe	53(46.5)	61(53.5)	114(100)		
Habitual sleep efficiency	High	56(47.1))	63(52.9)	119(100)	1.003	0.804
	Medium	34(50.0)	34(50.0)	68(100)		
	Low	21(55.3)	17(44.7)	38(100)		
	Normal	28(52.8)	25(47.2)	53(100)		
Daytime dysfunction	Normal	37(42.0)	51(58.0)	88(100)	6.164	0.104
	Mild	65(58.6)	46(41.4)	111 (100)		
	Moderate	27(49.1)	28(50.9)	55(100)		
	Severe	10(41.7)	14(58.3)	24(100)		
Sleeping disturbance at night	Normal	33(50.0)	33(50.0)	66(100)	0.140	0.952
	Mild	90(50.6)	88(49.4)	178(100)		
	Moderate	16(47.1)	18(52.9)	34(100)		
Use of sleeping pills (in a week)	No tablet	126(50.4)	124(49.6)	250(100)	0.559 †	0.973
	1 tablet	8(44.4)	10(55.6)	18(100)		
	2 -3 tablets	4(50.0)	4(50.0)	8(100)		
	>3 tablets	1(50.0)	1(50.0)	2(100)		
Level of sleep quality	Good	40(40.8)	58(59.2)	98(100)	5.016	*0.033
	Poor	99(55.0)	81(45.0)	180(100)		
Level of subjective sleep quality	Excellent	19(29.2)	46(70.8)	65(100)	17.631	*0.000
	Good	84(53.8)	72(46.2)	156(100)		
	Poor	25(69.4)	11(30.6)	36(100)		
	Worst	11(52.4)	10(47.6)	21(100)		

*Statistically significant value

†Fisher’s exact test value

Table 4: Association of academic backgrounds with sleep quality

Traits	Medical	University	t - value	p - value
	Mean±SD	Mean±SD		
Mean of study hours in a day	3.0±1.8	3.0±1.9	- 0.032	0.373
Mean of sleep duration	6.8±1.3	6.8±1.5	2.61 0	0.107
Mean of Global PSQI score	7.2 ± 3.3	6.4 ± 3.3	2.014	*0.045

*Statistically significant value

Discussion

The mean age of medical students was 22.6±1.5 years and university students were 22.0±1.2 years in the age group of 20-25 years. Female students were predominant in the universities (74.8%). Marital state (7.9%), joint family (18.7%) as family type and residence in rural areas (31.7%) were higher among the medical students. The mean average monthly family

income was slightly high among the university student’s families (52,428.1±44,710.2 and 44,762.6±25,778.2 taka), which represents the middle-income family status. A study among nursing students in Spain showed that the mean age was 20.6±4.6 years.⁶ Most of the participants were female.⁷ Another study in Lahore reported that two-thirds of their respondents were of urban background.⁸

One-tenth of respondents used medication for sleeping thrice or more times in a week last month. The use of sleeping pills was reported by only 3.3% of respondents.¹ Four-fifth of the participants (80.6%) reported no use of sleep medications in the past month.⁴ Majority of the participants had the problem to keep up enough enthusiasm to get social activities and faced daytime dysfunction which is similar to this study.¹ Two third of the participants had poor sleep quality.⁶ More than half (56.2%) had scores of >5, indicative of poor sleep quality.⁹ 69.5% of students had poor sleep quality among the participants in Bangladesh.¹⁰ Another study exhibited that three-fifth of medical students had poor sleep quality which is quite similar to this study.¹¹ The mean PSQI scores were 7.2 ± 3.3 and 6.4 ± 3.3 respectively, where maximum scores were 6 in medical students and 4 in university students. Majorities of the students (71.2% and 58.3%) had poor sleep quality, but subjective sleep quality was good in both settings of students (60.4% and 51.8%). The educational background of public medical and university students was significantly associated with the level of sleep quality, level of subjective sleep quality and mean PSQI scores ($p < 0.05$). The prevalence of level of sleep quality (55.0%) and level of subjective sleep quality (69.4%) was poor among the public medical students in contrast to public university students. A study in India showed that the PSQI score was high in medical students compared to university students like this study. Sleep latency, habitual sleep efficiency, daytime dysfunction, and using sleeping medication were associated with educational background.¹²

Conclusion

The present study reveals that the majority of undergraduate students had inadequate sleep patterns and poor sleep quality, which is more prevalent among medical students. To improve the sleep quality of public and university students, more support should be given to make students aware of the benefits of sleep hygiene, and frequent lectures and workshops on this topic should be held to enable students to arrange their schedules in such a way that their academic commitments and lifestyle do not compromise their sleep quality.

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