

Quality of Sleep among Final MBBS and Final Year Engineering Students: A Comparative Study

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ABSTRACT

Background: The sleep-wake cycle of students varies significantly between the type of professional student and several factors including attitudes and academic overload have been identified as causative factors. The consequences of sleep problems can be serious and associated with deficits in attention, academic performance, drowsy driving, risk-taking behavior, and poor health.

Aim: To assess the quality of sleep among final MBBS and final-year engineering students.

Materials and methodology: The study is a descriptive cross-sectional study, conducted in Father Muller Medical College Hospital, Mangaluru, Karnataka. A total of 136 medical undergraduates and 135 engineering undergraduates were given self-rated Pittsburg sleep quality index (PSQI), Epworth sleepiness scale (ESS) along with sociodemographic pro forma. The results were analyzed by frequency, percentage, mean, and Chi-square.

Results: The study revealed that the PSQI Global Total Score (subjective sleep quality, daytime dysfunction, sleep latency) among MBBS and engineering students had a statistically significant difference. However, there was no association between PSQI global score categories among final-year engineering and MBBS students.

Conclusion: The present study concluded that the quality of sleep is poor among medical students as compared to non-medical (engineering) students. There is a need for the management of sleep quality among college students to improve their occupational, educational, and familial lives.

Clinical significance: There is a need for prompt detection and management of sleep quality in college students so that they might be able to cope with the social and psychological problems in their occupational, educational, and familial lives.

Keywords: Daytime sleepiness, Engineering students, Medical students, Sleep quality.

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INTRODUCTION

Sleep is a normal, recurring state of suspended awareness that allows the body to recuperate and rest, which is essential for the maintenance of health and homeostasis. The cognitive and reparative aspects of sleep are also important in this regard.¹ The prevalence of sleep disorders among the elderly ranges between 14–42%. The students are estimated to have a subjective quality of 29% excellent, 40% good, 24% satisfactory, and 6% poor. Sleep quality is relayed to progress in academics, living conditions, and leisure activities.² Poor sleep quality is linked to irritability, stress, feeling low, confusion, and less satisfaction in life.³ Sleep disturbances may result in serious consequences, including reduced attention and school performance, risky driving, risk-taking behavior, behavioral problems, impaired relationships as well as poor health which can be caused by insufficient sleep or untreated sleep disorders.⁴ The complaints regarding the quality of sleep are frequently seen in the general population and factors related to stress and anxiety are present concomitantly. Sleep quality is assessed in terms of duration of sleep, latency of sleep, depth of sleep, and arousal. But what constitutes quality of sleep and the significance of each element varies amongst the individuals.⁵ Medical students are amongst a subgroup of the population who are found to be at risk of poor quality of sleep attributable to their long hours of study, duties, and emotionally challenging jobs.⁶

Several studies have looked into the relationship between quality of sleep and academic achievement. A study reported more

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than 40% of the study subjects with sleep-related problems with 6% having insomnia, 3.7% with daytime sleepiness, and 2.3% with poor sleep quality. Regarding how frequently students experienced sleep problems, there was no difference between male and female students.⁷

A study done among college students demonstrated poorer academic performance 17% with symptoms of delayed sleep phase syndrome.⁸ In a study done amongst medical students and students in other profiles of studies, there was a significant difference associated with time spent for studying and anxiety about studying.⁹ The study was designed to determine and compare the quality of sleep between final MBBS students and final-year engineering students.

MATERIALS AND METHODOLOGY

Sample Collection and Design of the Study

The study was a descriptive cross-sectional study done through an online questionnaire. The sample included final-year MBBS and engineering students. The study took place at a tertiary medical center in Mangaluru, Karnataka. The data was obtained 2 months prior to their final year exams to avoid discrepancies in the collected data (between October 2020 and January 2021). Ethical approval was taken from the institutional ethics committee.

The survey questionnaire included the participant's demographic details, the Epworth sleepiness scale (ESS), and the Pittsburg sleep quality index (PSQI). The questionnaire was circulated using e-mail and WhatsApp to the students of both colleges. The online questionnaire had a provision for informed consent by the participants. No personal identification details were collected in the survey.

Pittsburg Sleep Quality Index

The PSQI is composed of five questions that are not used for scoring, rated by the partner or roommate, and 19 self-rated questions. The questionnaire's components are categorized into seven component scores, each of which is rated from 0 to 3. The PSQI scores' constituent parts result in a global score that ranges from 0 to 21. The components of PSQI consist of sleep latency, subjective quality, habitual efficiency, use of sleeping pills, sleep disruption, and dysfunction during the day. The questionnaire takes the subject about 5–10 minutes to complete and the scoring takes about 5 minutes.⁵

Epworth Sleepiness Scale

It is a questionnaire that consists of eight questions scored on a scale of 0–3 and is self-administered. It measures the general level of sleepiness during the day and the propensity to sleep. It takes about 5 minutes to administer. The total score can range between 0 and 24 which is the sum of eight item scores.¹⁰

The study included students who consented to take part in the study from the medical and engineering branches. We excluded students with a current or prior history of psychiatric illness and those who did not consent to the study. A random sample of 136 MBBS students and 135 engineering students in their final year of studies completed the survey. The participants were not provided any incentives for participation in the survey. The data was analyzed by percentage, frequency, percentage, *t*-test, mean, and Chi-square tests.

RESULTS

Among the 271 students, 136 were MBBS students, and 135 were engineering students. The present study showed that 23% of engineering students and 35.1% of MBBS students belonged to the age-group of 19–21 years of age. The age range of 22–24 years included 77% of engineering students and 64.90% of MBBS students. Among engineering students, 59.30% were females and 40.70% were males. 69.40% of the students were females and 30.60% were males among MBBS students (Table 1). The majority of the study subjects were staying at home (Fig. 1).

Both groups had an intake of caffeinated drinks and tobacco more than alcohol. The study found a significant association between sleep latency and consumption of caffeinated drinks.

Table 1: Descriptive statistics for study variables

Variables	Categories	Frequency	Percentage
Sex	Male	96	35.68
	Engineering		40.70
	MBBS		30.60
	Female	173	64.3
Place of stay	Engineering		59.30
	MBBS		69.40
	Home	175	65.1
Intake of caffeinated drinks	Hostel	87	32.3
	Others	7	2.6
	Yes	142	52.8
Alcohol	No	127	47.2
	Yes	56	20.8
Tobacco	No	213	79.2
	Yes	83	30.8
	No	186	69.1

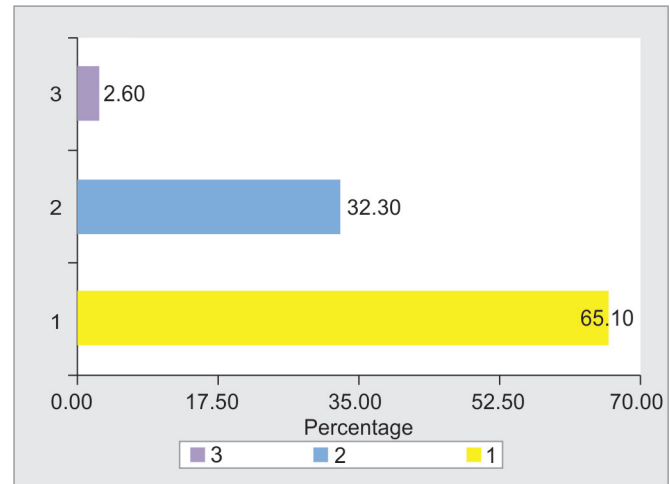


Fig. 1: Among the study participants, 65.10% resided at home, 32.30% in hostels, and 2.60% in other places

However, there was no significant association between the intake of caffeinated drinks and college type. (Tables 2 and 3)

The mean score of several sleep-related variables, including subjective sleep quality ($p = 0.020$), daytime dysfunction ($p = 0.021$), and latency (0.039) among final-year engineering and MBBS students showed a statistically significant difference. The sleep onset latency was higher for MBBS students (28.89 ± 41.63) as compared to engineering students (20.81 ± 17.611). Daytime dysfunction was worse for MBBS (1.07 ± 0.797) than engineering students (0.85 ± 0.718).

The global PSQI score was significant for MBBS students as compared to engineering students ($p = 0.035$) (Table 4). The study found no association between PSQI global score categories among final-year medical and engineering students (Table 5). There was no association between Epworth sleepiness score categories among final-year engineering and MBBS students.

DISCUSSION

In a student's life, the college phase is full of challenges and it is stressful. Future insecurities, competition, new responsibilities,

Table 2: Association between sleep components and caffeinated drinks among medical and engineering students

Sleep components	Grades	Caffeinated drinks		Chi-square value	p-value
		Yes (%)	No (%)		
Subjective sleep quality		31 (43.1)	41 (56.9)	7.13	0.066
		96 (59.3)	66 (40.7)		
		10 (40)	15 (60)		
		5 (50)	5 (50)		
Sleep disturbances		15 (38.5)	24 (61.5)	3.887	0.144
		105 (54.7)	87 (45.3)		
		22 (57.9)	16 (42.1)		
Sleep medication	0	138 (53.9)	118 (46.10)		
	1	4 (36.40)	7 (63.60)		
	3	0	2 (100)		
Daytime dysfunction		37 (50.70)	36 (49.30)	1.894	0.622
		76 (52.40)	69 (47.60)		
		21 (52.50)	19 (47.50)		
		8 (72.70)	3 (27.30)		
Sleep latency		25 (35.7)	45 (64.3)	15.393	0.001*
		70 (63.6)	40 (36.4)		
		28 (47.5)	31 (52.5)		
		19 (63.3)	11 (36.7)		
Sleep duration		58 (52.3)	53 (47.7)	0.176	0.983
		42 (52.5)	38 (47.5)		
		30 (52.6)	27 (47.4)		
		12 (57.1)	9 (42.9)		
Habitual sleep efficiency		113 (55.4)	91 (44.6)	3.609	0.305
		18 (40)	27 (60.0)		
		5 (55.6)	4 (44.4)		
		6 (54.5)	5 (45.5)		

*p-value < 0.05 is considered statistically significant

Table 3: Association between sleep latency and college type among students consuming caffeinated drinks

	College		Chi-square value	p-value
	Engineering	Medical		
Sleep latency				
0	15 (60.0)	10 (40.0)	4.877	0.190
1	25 (35.7)	45 (64.3)		
2	10 (35.7)	18 (64.3)		
3	8 (42.1)	11 (57.9)		

peer pressure, and increased workload are a few of the reasons suggested.¹¹ This study was a step to see the effect of choice of professional course on the quality of sleep among final year engineering and MBBS students. We found that MBBS students had poor quality of sleep as compared to engineering students.

In the present study, the majority of the study participants were females which was in contrast with a previous study by Behere et al. which showed an equal number of male and female study participants among medical students and predominantly males among the engineering students (70.8%).¹² In a study done by Nadeem et al., 327 (62.9%) were females and 193 (37.1%) males.¹³ Majority of the students were residing at home as opposed to a study by Singh R et al. where the majority of the

study sample was residing in hostels.¹⁴ Sleep quality was poor among MBBS students in components of subjective sleep quality ($p = 0.020$), daytime dysfunction ($p = 0.021$), and sleep latency ($p = 0.039$). The overall global PSQI score was also significant among the two groups ($p = 0.035$) which was in line with a study that showed the mean global PSQI score of 6.4 ± 2.9 indicating that the majority of the sleep was of poor quality.¹² The present study did not find any association between sleepiness category scores between medical and engineering students in contrast with a study that showed that sleep deprivation was maximum in medical students and medical students suffered from mild to severe sleepiness while only 12% of engineering students were found to have mild to moderate sleepiness.¹⁴ This could have been because of the ongoing pandemic where the burden was less on the students.

The strengths of our study are that there are a limited number of studies in India on the quality of sleep among MBBS and engineering students and also with the introduction of a new curriculum of studies, it would be useful to gauge the effect it will have on their performance and health. Our study has certain limitations. Subjects' voluntary participation could lead to biased non-random sampling. It is not possible to extrapolate our findings to the entire target population as the study was conducted during a pandemic, and the burden and workload was less which could have affected the results.

Table 4: Comparison of sleep components of PSQI scores between final year engineering and MBBS students

Sleep components	Statistical characters	Engineering students (n = 135)	Medical students (n = 136)	p-value
Subjective sleep quality	PSQI component score mean ± SD	0.80 ± 0.710	1.00 ± 0.694	0.020*
Sleep disturbances	PSQI component score mean ± SD	0.98 ± 0.553	1.01 ± 0.520	0.571
Sleep medication	PSQI component score mean ± SD	0.05 ± 0.307	0.07 ± 0.339	0.564
Daytime dysfunction	PSQI component score mean ± SD	0.85 ± 0.718	1.07 ± 0.797	0.021*
Sleep latency	Sleep latency (minutes) mean ± SD	20.81 ± 17.611	28.89 ± 41.63	0.039*
	Median (minutes)	15	20	
	Mode (minutes)	30	10	
Sleep duration	Sleep duration (hours) mean ± SD	7.29 ± 1.263	7.02 ± 1.374	0.099
	Median (hours)	7	7	
	Mode (hours)	8	8	
Habitual sleep efficiency	Mean habitual sleep efficiency (%)	91.80 ± 14.20	91.06 ± 14.32	0.491
	Median (%)	100	100	
	Mode (%)	100	100	
PSQI global total score	PSQI global score mean ± SD	5 ± 3.027	5.83 ± 3.380	0.035*
	Median	5	5	
	Mode	4	5	

* $p < 0.05$ is considered as statistically significant. PSQI, Pittsburgh sleep quality index; SD, standard deviation

Table 5: Association between PSQI global score categories among final year engineering and MBBS students

Score	Students		Chi-square	p-value
	Engineering, n (%)	MBBS, n (%)		
<5	89 (54.6)	74 (45.4)	3.226	0.072
>5	46 (43.4)	60 (56.6)		

$p < 0.05$ is considered as statistically significant

CONCLUSION

Compared to non-medical students, medical students had poorer quality of sleep. Sleep deprivation negatively impacts the parts of the brain linked to learning. In order to effectively target and address the reasons causing these sleep patterns, it is crucial to conduct additional research in this area.

Clinical Significance

The sleep quality of college students needs to be identified and managed in order for them to be able to deal with social and psychological issues in their professional, academic, and personal lives.

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