

A Study on Association between Sleep Habits and Academic Performance among Medical Undergraduates in Maharaja Agrasen Medical College Agroha

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ABSTRACT

Introduction: Good quality and adequate amount of sleep is necessary for being healthy. Medical students are prone to more stress due to their academic demands. The sleep among students is characterized by inadequate sleeping hours, delayed sleep onset, and mid day nap. Current research aimed to study sleep habits among medical students and to find relationship between sleep habits and stress with academic performance of students.

Material and Methods: This cross-sectional study was carried out among 139 medical students of third semester, seventh semester and interns enrolled at Maharaja Agrasen Medical College, Agroha (Dist. Hisar), Haryana. Primary tool in this study was a predesigned and semi-structured questionnaire. Epworth Sleepiness Scale (ESS) was used to assess daytime sleepiness. Collected data was analysed using frequencies, percentages and chi square test.

Results: Out of 139 students, 38.8% were considered to have excessive daytime sleepiness (EDS score >10). Female students (43.1%) were found to have more abnormal EDS score as compare to male students (35.1%). Out of total, 70 students secured marks between 60-70 percent in which maximum number of students (61.42%) were stress free during exams and 54% had sleep duration of 7-10 hours. Good health was found to be strongly significant with academic performance of the students. Duration of study hours was found to be significant with academic performance of students. Delayed sleep onset was found to be more in female students (55%). Mid day nap was found in 76.25% of students.

Conclusion: The negative effects of sleep difficulties have been well documented. EDS was more in female students. Also, good health had significant association with academic performance so the knowledge of importance of good quality and adequate amount of sleep and its impact on health should be emphasized and translated into practice.

Keywords: Medical Undergraduates, Epworth Sleepiness Scale, Academic Performance Excessive Daytime Sleepiness.

Also, recent studies have shown that insufficient sleep may lead to development of a number of chronic diseases and conditions like type 2 diabetes, cardiovascular disease, obesity, and depression. One of the research suggests that optimizing sleep duration and quality may improve blood sugar levels in persons with type 2 diabetes.⁴ The pattern of sleep and wakefulness in different subjects is known to vary with their age, the demands of their occupation, their physiological and psychosocial characteristics, psychiatric illness, and some types of physical illness.⁵ The increasing level of stress on students and interns due to their hectic schedule is likely to affect their health and life style. Hence, this study intends to explore sleep habits among medical students and interns and its association with their academic performance.

Current research aimed to study sleep habits among medical students and to find relationship between sleep habits and stress with academic performance of students

MATERIAL AND METHODS

This was a cross-sectional, questionnaire based, observational study carried out during October 2018-November 2018 among medical students of third and seventh semester and interns enrolled at Maharaja Agrasen Medical College, Agroha (Dist. Hisar), Haryana. The study population consisted of total 139 medical students. Confidentiality was assured to all the students who volunteered. Students who were willing to participate were given a brief description about the study and its objectives. Verbal consent of each student was taken. A self-administered questionnaire was used to conduct the study. Information collected included information regarding age, sex, alcohol ingestion, smoking, exercise, sleep duration, sleep onset, mid day nap, studying

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INTRODUCTION

Good quality and adequate amount of sleep is necessary for being healthy. It is recommended to take 7 or more hours of sleep per night for adults.¹ CDC also recommends the same. Medical students suffer high level of stress due to academic demands particularly during exams leading to insufficient sleeping hours. Delayed sleep onset and insomnia may also be another problems suffered by students during exams. Sleep deprivation can cause psychiatric disorders and dysfunctions such as decreased work efficiency and learning disability.^{2,3}

hours, stress, percentage marks obtained in last examination (academic scores) and Epworth Sleepiness Scale (ESS).

Variable	n (%)
Sleep hours	
> 10 h	18(12.9)
7-10 h	85(61.2)
4-6 h	35(25.2)
< 6 h	1(0.7)
Midday nap	
Yes	106(76.3)
No	33(23.7)
Sleep onset	
<30 min	99(71.2)
>30 min	40(28.8)
Medication for sleep	
Yes	4(2.9)
No	135(97.1)
Stress	
No stress	86(61.9)
Exam	31(22.3)
Others	22(15.8)
Addiction	
Caffeine	127(91.4)
Smoking	7(5.0)
Alcohol	33(23.7)
Studying hours	
> 6	19(13.7)
4-6	33(23.7)
2-4	39(28.1)
< 2	48(34.5)
Academic scores	
>70%	9(6.5)
60-70%	70(50.4)
50-60%	55(39.6)
fail	5(3.6)
ESS score	
0-10 (normal)	85(61.2)
>10-24 (abnormal)	54(38.8)

Table-1: Distribution of different variables among the participants (n=139)

Epworth Daytime Sleepiness Scale (EDSS)⁶:

It is a scale intended to measure daytime sleepiness by use of a very short questionnaire. EDS is defined as sudden, uncontrollable compulsion to fall asleep during daytime. The questionnaire asks the subject to rate his or her probability of falling asleep on a scale of increasing probability from 0 to 3 for eight different situations. The scores for the eight questions are added together to obtain a single number. Interpretation is done as below:

0-10 Normal
>10-24 Abnormal

All data were coded, entered, and then analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. Collected data was analysed using frequencies, percentages and chi square test. Statistical significance was set at $p \leq 0.05$.

RESULTS

Out of a total of 139 study subjects, 74(53.2%) were male and 65(46.8%) were female. Medical students studying in 3rd semester (42.4%), 7th semester (37.4%) and interns (20.1%) participated in the study. Only 10% of participants reported some health problem and 32.4% of participants did regular exercise.

A daily sleep of 4-6 hour was found in 25.2% of the students and 7-10 hr in 61.2% of the participants while a small number of students were sleeping more than 10 hours(12.9) or less than 4h(0.7%). Mid day nap was found in 76.25% of students. Academic scores between 60-70 percent were secured by 50.4% students and 50-60 percent were by 39.6% while only few number of students secured >70 percent (6.5%) and 3.6% students were fail. ESS score were normal for 85 students (61.2%) and 54 students (38.8%) were considered to have excessive daytime sleepiness (ESS score >10) (Table 1)

Table 1 also showed other variables like sleep onset, medication for sleep, stress, addiction and studying hours.

Among 70 students who secured marks between 60-70%,

Sleep Duration	Academic Performance In Percentage Marks n(%)				Total
	>70	60-70	50-60	Fail	
>10	1(11.1)	8(11.4)	9(16.4)	0(0)	18(12.9)
7-10	7(77.8)	38(54.2)	35(63.6)	5(100)	85(61.2)
<6	1(11.1)	24(34.3)	11(20.0)	0(0)	36(25.9)
Total	9(100)	70(100)	55(100)	5(100)	139(100)

(p=0.39)

Table-2: Relationship of academic performance of students with sleep duration

EDS	Academic Performance In Percentage Marks n(%)				Total
	>70	60-70	50-60	FAIL	
Normal	6(66.7)	41(58.6)	34(61.8)	4(80.0)	85(61.2)
Abnormal	3(33.3)	29(41.4)	21(38.2)	1(20.0)	54(38.8)
Total	9(100.0)	70(100.0)	55(100.0)	5(100.0)	139(100)

(p=0.53)

Table-3: Relationship of academic performance of study subjects with excessive daytime sleepiness (EDS)

Stress	Marks In Percentage n(%)				Total
	>70	60-70	50-60	Fail	
Yes	5(55.6)	27(38.6)	20(36.4)	1(20.0)	53(38.1)
No	4(44.4)	43(61.4)	35(63.6)	4(80.0)	86(61.9)
Total	9(100.0)	70(100.0)	55(100.0)	5(100.0)	139(100)
(p=0.47)					
Table-4: Relationship of academic performance of study subjects with stress					

Health Problems	Marks In Percentage n(%)				Total
	>70	60-70	50-60	FAIL	
Yes	1(7.1)	4(28.6)	9(64.3)	0(0.0)	14(100)
No	8(6.4)	66(52.8)	46(36.8)	5(4.0)	125(100)
Total	9(6.5)	70(50.4)	55(39.6)	5(3.6)	139(100)
(p=0.007)					
Table-5: Relationship of academic performance of students with health status					

only 54% were taking adequate sleep (7-10h). Whereas 9 students who secured >70% marks and 5 students who were fail, 77.7% and 100% were having adequate sleep respectively. (Table 2)

Out of total 70 (secured 60-70% marks), 58.6% students had normal daytime sleepiness whereas out of total 9 students (secured >70% marks), 66.6% students have normal EDS score. (Table 3)

In this study, 9 students(secured >70% marks), 70 students(secured 60-70% marks), 55 students(secured 50-60% marks) and 5 students (fail), 44%, 61.4%, 63.6%, 80% students were stress free during exams respectively. (Table 4)

Out of total 14 students with health problem, only 28.6% secured marks between 60-70% whereas out of total 125 students with no health problem, 52.8% students secured 60-70% marks and difference was found to be statistically significant(p=0.007). (Table 5)

DISCUSSION

Out of a total of 139 study subjects, 61.2% participants were taking recommended adequate sleep hours (7-10 hrs) while a small number of students were sleeping more than 10 hours(12.9) or less than 4h(25.9%).

Abnormal EDS score was found to be 38.8% which is almost similar to the study carried out by Rodrigues RN⁷ (39.5%) and M Hamza et al⁸ (36.6%) and found to be more than the study done by Giri PA⁹ (17.3%). It is interesting to note that excessive daytime sleepiness was more common in female students (43.1%) as compare to male students (31.1%). This finding is similar to M hamza et al.⁸

In our study, 71.2% of the students had sleep onset of <30 min. and only 4 students(2.9%) were taking medication for sleep which is less than a study carried out by Surani AA¹⁰ (4%) and more (0.21) than a study carried out by satti et al.¹¹ Interestingly, delayed sleep onset was found to be more in female students (55%). This study shows that only 61.2% of the students were taking recommended sleep that is 7-10 hours per night and it was found to be strongly associated

with normal ESS.

In this study, the association between EDS and academic performance was not found to be significant however studies done by Hamza M et al⁸ and Rodrigues et al⁷ showed that EDS was associated with poor academic performance. Students who were taking coffee at night were having delayed sleep onset and it was found to be significant which is similar to study done by satti et al.¹¹ In the present study, use of mobile / laptop is leading to decreased sleep hours in the subjects which is similar to a study done by Giri et al.⁹ Good health was found to be strongly significant with academic performance of the students(p=0.007). Duration of study hours was found to be significant with academic performance of students (p=0.004).

CONCLUSION

To our knowledge, this is the first local study which has investigated the relationship between sleep disturbances of medical students and their academic achievements. Medical students are always sleep deprived due to their demanding curriculums and erratic sleep schedules. Our study revealed that the student's perception about their quality of sleep is better during non-examination period than exam days. This could be explained by the stress they experienced during exam days.

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