

Research Article

**Effect of Sleep Disturbance on Academic Performance of Students
of Public Sector Medical College of Pakistan**

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ABSTRACT

Sleep is important for learning, performance, physical and mental health. Medical students have poor sleep quality which affects their academic performance. To see the prevalence of sleep disturbance on academic performance of students of Public Sector Medical College (Nawaz Sharif Medical College). The result showed that the 80 students out of 114 students responded. 82.5% were females and 17.5% were males. 27.5% students were having poor sleep quality (less than 5 hours) and those participants were considered to have abnormal sleep habits. Students who had sleep less than 5 hours also had poor academic performance (mostly had Grade C), the results were statistically insignificant (p value=0.991). Students who did not sleep at night before test were 43.8% and main reason was lack of preparation. It was concluded that this study showed that the most common cause of sleep disturbance in medical college students was studying for long hours at night in order to complete their preparation for exams.

Keywords: sleep disturbance, medical students, academic performance.

INTRODUCTION:

Sleep deprivation has found to affect cognitive functions in medical student.¹³ There have also been various reasons for sleep disorder in adolescence including watching TV, using the internet and cell phones.¹⁴ Performance errors reduce the punctuality for lectures, low academic performance and GPA.¹ Medical students require cognition alertness abilities to fully focus on studies that are impeded by sleep deprivation.¹³ Many studies have been conducted among medical students supporting the findings that poor sleep quality could affect academic, physical and clinical performance because of its compatibility with cognitive ability.^{15,16} A sleepy fatigued person is prone to impaired judgment and more likely to make mistakes and bad decisions as well

as it affect the academic performance of medical students.¹¹ Stress in adolescents is also very important contributory factor for inability to sleep at night which affects their academic performance due to lack of concentration on studies.¹⁷ Another trend among medical students is consumption of caffeine, tea and smoking at night to keep them awake all night. This greatly contributes to sleeplessness at night among students and affects their academic performance adversely.^{18,19}

OBJECTIVES:

To examine the effect of sleep disturbance on academic performance of Public Sector Medical College (Nawaz Sharif Medical College)

MATERIALS AND METHODOLOGY:

This was a Descriptive Cross sectional Study done at Nawaz Sharif Medical College in a duration of 3 months (From 1st May to 31st July). Sample size was calculated by using open epi ver 3.01 on 95% confidence interval and 5% margin of error. Sample size was 80. By using proportionate sampling technique, the number of females calculated was 66 and number of males was 13. Simple random sampling technique was used. Data collection was done by semi structured pre-tested questionnaire and data was analyzed by SPSS ver.21 software. Sleep deprivation is the term used to describe a state caused by inadequate quantity and quality of sleep¹.

It is related to one of our biological rhythms called circadian rhythms/timing system which are influenced by factors such as physiological function, school and work schedules and various medical conditions of body^{2,3}. Many factors determine the sleep quality and some of important ones are age, gender, habitat, BMI, physical

activities, smoking and marital status⁴. The human body normally requires 7-8 hours of a night's sleep and 8-9 hours of daily sleep. Sleepiness is inversely proportional to hours of sleep and it may have substantial adverse effects on general health and quality of life. Conversely, adequate amount of sleep can lead to better quality of life, physical and social health, life satisfaction, performance and longevity.^{5,6} The medical student appears to be at increased risk for sleep deprivation,^{7,8} because they need to be awake to do their duty in hospital and are under stress because of their studies and examination. The prevalence of sleep disorder in general population has been estimated to be 15-35%.⁹ But in medical students it was about 30%.¹⁰ Recent studies have demonstrated that sleep-awake cycle of medical students is characterized by insufficient sleep duration, delayed sleep onset and occurrence of napping episodes in day time.^{11,12}

RESULTS:**Table # 1:** Hours of sleep and academic performance:

		Academic performance in %					Total
		50-60.9	61-65.9	66-70.9	71-75.9	76-80.9	
Hrs sleep	6-8hrs	0	1	13	28	5	47
	Less than 5hrs	1	2	9	7	3	22
	More than 8hrs	0	0	8	3	0	11
Total		1	3	30	38	8	80

Table 1 shows that Most of the students having 6-8hrs of sleep have an A grade (71-75.9%) academic performance. The majority of students having less than 5hrs of sleep have B grade (66-70.9%). X^2 value is 14.913 at df 8 and p value=0.61 which is greater than 0.05 and is statistically insignificant.

Table # 2: Range of study hours and Academic Performance

		Academic performance %					Total
		56-60.9	61-65.9	66-70.9	71-75.9	76-80.9	
Range of study hrs	1-10hrs	0	2	19	17	1	39
	11-20hrs	1	1	8	10	2	22
	21-30hrs	0	0	2	5	1	8
	31-40hrs	0	0	2	2	0	4
	41-50hrs	0	0	1	2	4	7
Total		1	3	30	38	8	80

Table 2 shows that Out of 30 students 19 students studied 1-10 hrs in last week had grade C academic performance.

X^2 value is 5.993 at df 16 and p value=0.988 and is statistically insignificant.

Table # 3: Effect of sleep on waking up in the morning

		Deep sleep		Total
		No	Yes	
Felt tired after waking up	No	5	31	36
	Yes	16	28	44
Total		21	59	80

Table 3 shows that 31 students out of 59 who have deep sleeps at night do not feel tired after waking up in the morning.

Table # 4: Frequency distribution of students who do not sleep before test

		Frequency	Percent
Valid	No	45	56.3
	Yes	35	43.8
	Total	80	100.0

Table 4 shows that 43.8% students are not able to sleep a night before test.

Table # 5: Academic performance of students who were not able to sleep a night before test

		Academic performance %					Total
		56-60.9	61-65.9	66-70.9	71-75.9	76-80.9	
Not able to sleep a night before	No	0	1	18	22	4	45
	Yes	1	2	16	12	4	35
Total		1	3	30	38	8	80

Table 5 shows that 22 students out of 38 students having grade A (71-75.9%) academic performance, slept properly at night before test. X^2 value is 2.266 at df 4 and p value=0.687 and is statistically insignificant.

Table # 6: Reason behind students' inability to sleep a night before test.

		Reason				Total
		Depression	Lack of preparation	NA	Stimulant use	
Able to sleep at night before test	No	0	0	45	0	45
	Yes	13	19	0	3	35
Total		13	19	45	3	80

Table 6 shows that The majority of students were not able to sleep a night before test having lack of preparation.

Table # 7: Frequency distribution of duration of hours of sleep

		Frequency	Percent
Valid	6-8hrs	47	58.8
	Less than 5hrs	22	27.5
	More than 8hrs	11	13.8
	Total	80	100.0

Table 7 shows that 27.5 % of students were having poor sleep (less than 5hrs).

Table # 8: Frequency distribution of academic performance.

Academic performance %		Frequency	Percent
Valid	56-60.9	1	1.3
	61-65.9	3	3.8
	66-70.9	30	37.5
	71-75.9	38	47.5
	76-80.9	8	10.0
	Total	80	100.0

Table 8 shows that 37.5% of students were having grade D academic performance and 47.5% of students were having grade C academic performance.

Table # 9: Frequency distribution of male and female

		Frequency	Percent
Valid	Female	66	82.5
	Male	14	17.5
	Total	80	100.0

Table 9 shows that 82.5% females participated and 17.5 males participated.

Table # 10: Gender and hours of sleep

		Hours of sleep			Total
		6-8hrs	Less than 5hrs	More than 8hrs	
Gender	Female	39	18	9	66
	Male	8	4	2	14
Total		47	22	11	80

Table 10 shows that Out of 66 females, 39 females have adequate sleep duration per day (6-8 hours) while out of 14 males, 8 males have adequate sleep duration per day.

X^2 value is 0.18 at df2 and p value= 0.991 which is greater than 0.05 and is statistically insignificant.

Table # 11: Frequency distribution of students who were not able to sleep a night before test

		Frequency	Percent
Valid	No	45	56.3
	Yes	35	43.8
Total		80	100.0

Table 11 shows that 43.8% of students were not being able to sleep a night before test.

Table # 12: Require more than 1/2hr to fall asleep

		Frequency	Percent
Valid	No	28	35.0
	Yes	52	65.0
Total		80	100.0

Table 12 shows that 65% of students require more than 1/2 hr to fall asleep.

DISCUSSION

Sleep is extremely important for mental and physical health. But sleep disturbance is a common finding in a student's academic life. The

current study was conducted to evaluate the effects of sleep disturbance on academic performance of medical students of Nawaz Sharif Medical College, Gujrat. It demonstrated that

optimized sleep patterns may improve academic performance and learning ability; conversely, poor sleep quality is associated with low academic performance and learning abilities. These findings agree with those of a study conducted on medical students demonstrating that 38.9% of students had poor sleep quality.²⁴ In our study sleep disturbance is common among medical students, as reported by 27.5% of respondents. Our study showed that students who obtained good grades were those who used to sleep for 6-8 hours. However, a similar study done in USA showed that students who had struggling grades were those who slept significantly less than those who scored grade A and B.²⁵ Our study showed that majority of girls (59%) and boys (57%) sleep for 6-8 hours. This was similar to a cross sectional study done at San Paulo showing that boys slept about 7 hours per night while girls slept for 6.5 hours.¹⁴ According to this research, participants were considered to have abnormal sleep habits, which statistically increases in female students ($p < 0.05$), but in our study, p value is statistically insignificant (0.991).

In our study, students who did not sleep a night before test were 43.8% and main reason was lack of preparation. According to this research, students had abnormal sleep patterns due to the lack of preparation with statistically significant p value (less than 0.05). Our study showed that 9% of students who did not sleep a night before the test used stimulants to help them stay awake and are statistically insignificant ($p > 0.687$). Majority of these stimulants contained caffeine and students were aware of this fact. According to a study carried out among students of Nigeria, 14.9% of students used stimulants to stay up all night and study.¹⁹ Our study showed that majority of students who had deep sleeps at night did not feel tired after waking up in the morning. It shows that sleep deprivation can cause day time sleepiness and reduced level of attention affecting performance. Poor sleep also affects performance by increasing depression, decreased motivation and compromising health.^{14,20} Our study showed

that 44% of students were not able to sleep a night before test and majority of them had C grade performance and majority who were able to sleep a night before test had A grade performance. Our study also revealed that 65% of students require more than 0.5hour to fall asleep. This contrasts with another study in which difficulty to fall asleep at night was reported by 18% of total sample.⁸ Poor sleep limits the learning of medical students, and setting a proper sleep schedule is an effective way to boost up the scores of medical students.

CONCLUSION

Sleep is extremely important for healthiness and it plays an important role in learning process and the improvement of memory. Sleep loss is one of the most remarkable problems in modern society. Not getting enough sleep is a potent cause of poor academic performance. This study showed that most common cause of sleep disturbance for medical college students was studying for long hours at night in order to complete their preparation for exams.

Recommendations

- further studies are recommended to find out any relationship between two entities, in order to prove that sleeping patterns are related to academic performance, in which more data would be needed.
- mind should be receptive in class as well as more concentrated towards lecture so as to increase the academic performance.
- the circadian rhythm can be balanced with the moderate sleeping schedule and regular wake up times, increasing the outcome of student's efforts.

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