

SLEEP PATTERN AND ACADEMIC PERFORMANCE OF MEDICAL STUDENTS OF A GOVERNMENT MEDICAL COLLEGE IN KERALA

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ABSTRACT

BACKGROUND

Relationship between sleep pattern and academic performance of students is well accepted. The studies relating the sleep pattern of medical students and academic performance is limited. This study was conducted to identify sleep pattern of medical students and find out any relationship between sleep pattern and academic performance.

MATERIALS AND METHODS

A questionnaire-based study was carried out to assess sociodemographic parameters, sleep/wake timing, sleep duration, daytime sleepiness and academic performance. Academic performance was measured on the basis of the aggregate marks scored for the previous year university exam.

RESULTS

The study population included 349 students with a mean age of 21.4±1.1years. The student's average weekday bedtime, rise time and total sleep time was 12:02a.m., 07:03a.m. and 7.23hrs., respectively. The corresponding values for weekends were 12:25a.m., 08:17a.m. and 08:18hrs. Mean sleep duration of night prior to exam was 5.16±1.50. Students with earlier bed/rise time and longer hours of sleep night prior to exam had better academic performance.

CONCLUSION

Academic performance of medical students showed significant negative correlation with sleep/wake timings and positive correlation with duration of sleepnight before examination.

KEYWORDS

Sleep pattern, Academic performance, Medical students.

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BACKGROUND

Studies have highlighted that optimal sleep pattern is important for learning and memory consolidation.¹ Sleep related problems can impair these cognitive functions and thus academic performance of students.¹ Change in sleeping conditions, academic stress and decrease in parental supervision that occur with entry into higher education courses may cause many students to acquire improper sleep pattern, which may lead to poor performance in these students.² This study was designed to find out the sleep pattern and its relation to academic performance among undergraduate medical students as only limited studies are available on this topic.

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MATERIALS AND METHODS

A questionnaire-based study was carried out among undergraduate students of a Government Medical College in Kerala during June to August 2016. The students from second to fourth year MBBS were included using convenient sampling. A questionnaire was prepared, which contained questions on sociodemographic factors, sleep/wakeup time and sleep duration of weekdays and weekends, sleep quality, daytime sleepiness and academic performance. The questionnaire was modified after initial pilot testing. The study was approved by the institutional ethics committee. All students present on the days of the study and giving written consent were included in the study. The questionnaire was distributed to the students after explaining the study protocol. The respondents in this study were anonymous. Academic performance was measured on the basis of the aggregate marks scored for the previous year university exam as reported by the students. Student's performance was measured as excellent ($\geq 75\%$ aggregate marks), good (65%-74.9% aggregate marks), average (50%-64.9% aggregate marks) and poor ($< 50\%$ aggregate marks).



Statistical Analysis

All data were coded, entered and then analysed using the Statistical Package for Social Sciences (SPSS) program, version 16. Quantitative variables were expressed as mean±SD. Quantitative variables were expressed as percentages and proportions. P-values <0.05 was considered as statistically significant. Correlation between academic performance and sleep pattern was studied using Spearman correlation coefficient.

Variable	Statistics
1.Academic Year	
Second year	133(38.1%)
Third year	126(36.1%)
Fourth year	90(25.8%)
2.Academic Achievement	
Excellent	43(12.3%)
Good	190(54.4%)
Satisfactory	111(31.8%)
Poor	5(1.4%)
3.Place of Living	
College hostel	325(93.1%)
With parents	17(4.9%)

Table 1. Demographic Characteristics of the Study Sample

Variable	Mean (SD)
Weekday bedtime	12.02±99
Weekday wakeuptime	7.03 ±0.93
Weekday total sleep time	7.23±1.03
Weekend bedtime	12.23±1.39
Weekend wakeup time	8.18±1.53
Weekend total sleep time	8.17±1.37
Total sleep time night before exam	5.16±1.50
Sleep Quality	
Very good	54 (15.5%)
Fairly good	267 (76.5%)
Fairly bad	28 (8.0%)
Very bad	0

Table 2. Sleep Pattern of Study Subjects

Variable	Correlation Coefficient	P value
Weekday bedtime	-.125	.019
Weekday wakeuptime	-.122	.022
Weekday total sleep time	.023	.699
Weekend bedtime	-.202	.000
Weekend wakeup time	-.209	.000
Weekend total sleep time	-.067	.211
Total sleep time night before exam	.116	.031
Sleep quality	-.088	.101

Table 3. Spearman Correlation Analysis of Sleep Pattern with Academic Performance

RESULTS

349 completed questionnaires were included in analysis. The mean age of the subjects was 21.4±1.1years. 58.2% of the subjects were female. Other individual characteristics are shown in Table 1.

Table 2 shows the sleep pattern of students. The student’s average weekday bedtime, rise time and total

sleep time was 12:02a.m., 07:03a.m. and 07:23hrs., respectively. The corresponding values for weekends were 12:25a.m., 08:17a.m. and 08:18hrs. The average sleep duration during the night prior to examination was 5.16±1:50 hours. 321 students (92%) reported good sleep quality. Bad sleep quality was reported by 28 students (8%).

Table 3 shows Spearman correlation analysis between sleep pattern and academic performance. Sleep/wakeup timings of weekdays and weekends showed significant negative correlation with academic performance. Weekday bedtime(r=-.125; p=.019), weekday wakeup time (r=-.122; p=.022), weekend bedtime(r=-.202; p=.000) and weekend wakeup time (r=-.209; p=.000). Sleep duration of the night prior to examinations showed significant positive correlation with academic performance. (r=.116; p=.031). Other variables did not show significant correlation with academic performance.

DISCUSSION

During weekdays, our students had a late bedtime of 12:02a.m. consistent with study done in King Saud University (00.06±1.58).³ They also had late wakeup time (07:03 a.m.) during weekdays when compared to the results from the above study (06.15±1.24).³ Bedtime and wakeup time was further delayed during weekends. The mean sleep duration was 07:23 hrs. during weekdays, which indicates that the standard requirement of sleep (7 hours of night sleep)⁴ is satisfied in our students. This is a difference from other studies, which reported inadequate sleep duration among medical students.^{3,5} During night before exam, their sleep duration was (5.16±1.50) in agreement with a study done in Pakistan where the mean sleep duration before exam was 4.74±2.57.⁶

Majority of the students in our study (92%) reported good sleep quality, while those with poor sleep quality were only 8% of them. This result is consistent with a study done in a private medical college in Kerala where 95% students reported good sleep quality and only 5% had poor sleep quality. But, in their study, 87% had poor sleep efficiency as assessed by PSQI.⁷ Thus, more research is needed regarding the sleep quality of our students.

Results of correlation studies revealed significant correlation of academic performance with sleep/wakeup timings of weekdays and weekends and sleep duration of the night prior to an examination.

In this study, sleep and wakeup timings of weekdays and weekends showed a significant negative correlation with academic performance. Thus, our results reveal that later bed and wakeup timings on weekdays and weekends were associated with lower academic performance. This result agree with a study by Trockel et al on first year college students.⁸They found that lower GPAs were associated with later bed and rise times on weekdays and weekends. Other studies also reported the association of sleep/wakeup timing with academic performance.^{9,10}

In our study, sleep duration of the night prior to an examination showed significant positive correlation with

academic performance. Thus, our observation revealed that longer sleep duration the night before an examination was associated with better academic performance. This result is consistent with a study on student pharmacists, which revealed that student course grades and semester GPAs was associated with sleep duration of the night prior to an examination.⁴

In our study, sleep duration of weekdays and weekends did not show significant correlation with academic performance. In study by Trockel et al,⁸ weekday sleep duration was not correlated with academic performance, but weekend sleep duration showed significant negative correlation with academic performance.

The current study did not reveal any correlation between sleep quality and the academic performance similar to a study done in Palestinian students.¹¹In a study by Iqbal et al also, there was no significant association between sleep quality and academic performance.¹²

This study has some limitations. First, this study was conducted in only one medical college, so generalisation of our results would be difficult. Second, the questionnaire was self-constructed. Also, the study relied on self-reports and no sleep diary was included.

CONCLUSION

Our students had late bed/rise timings and insufficient sleep duration on the night before examination, which can negatively impact their academic performance. Students should be educated regarding good sleep hygiene practices for better academic achievement.

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