

Association between Quality of Sleep and Academic Performance in Medical Students: A Preliminary Study

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Abstract

Background: Medical students are more prone to daytime sleepiness, sleep deprivation and irregular sleep schedules, as they have less free time, longer courses and working hours compared to other professional students.

Aim: To assess the quality of sleep and to find out the association between sleep quality and academic performance among medical students.

Methodology: This cross sectional study was conducted among 176 medical students. They were subjected to Pittsburgh Sleep Quality Index (PSQI) questionnaire to assess their sleep quality over a one-month period. A PSQI global score of 5 and greater than 5 was considered indicative of poor sleep. Academic performance was assessed from their internal assessment scores conducted during that period. The data was analyzed using the unpaired students 't' test and Pearson's correlation test

Results: Our study included 176 students from all the phases of MBBS curriculum. 24 percentage students had poor quality of sleep. In our study, there was no statistically significant difference in the performance of good sleepers (57.94 ± 18.06) and poor sleepers (58.80 ± 17.37) with a p value of 0.785. Our study results showed a negative correlation between global PSQI scores and assessment scores of the students ($r = 0.57$ and $P = 0.449$).

Conclusion: In our study association between sleep quality and academic performance was not statistically significant. Assessment of sleep quality helps to identify the students at risk and plan the specific programs to improve the quality of sleep.

Keywords: Sleep quality, academic performance, medical students.

Introduction

Medical students are exposed to multitude of changes when they enter into their professional life after

completing their school education. Owing to highly demanding professional and academic requirements medical students are considered to be a vulnerable population of poor quality of life.¹ Medical students have compromised quality of life as they have to undergo long and intensive academic years.

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Medical students are more prone to daytime sleepiness, sleep deprivation and irregular sleep schedules as they have less free time, longer courses and working hours compared to other professional students. Over the period of time, poor sleep quality will lead to chronic inability to recover from stressful conditions

which may lead to burnout.² Sleep plays an integral role in learning, consolidation of memory and performance. Sleep deprivation causes loss of concentration, memory impairment and compromised physical and academic performance³

Sleep disturbances are found to be more prevalent among medical students owing to their demanding academic activities and work culture. Research in this area will sensitize the medical students and professionals about their mental and physical well being. As limited number of studies is reported in India in this regard our study aimed to measure the quality of sleep and also to find out the association of sleep quality and academic performance among medical students.

Methodology

This cross sectional study was conducted among 176 medical students of age group 17-25 years studying in PSG Institute of Medical Sciences and Research belonging to all phases after obtaining their informed consent and institutional ethical committee clearance. They were subjected to Pittsburgh Sleep Quality Index (PSQI) questionnaire to assess their sleep quality. 176 students who are willing to be a part of study were included in the study. Students who have history of chronic cardiovascular and respiratory diseases, neuromuscular diseases, arthritis, diabetes mellitus, sleep disorders like insomnia and any other psychiatric illness were excluded from the study.

Students were provided with Pittsburgh Sleep Quality Index (PSQI), 19 item scale along with seven components, to measure their quality of sleep over a one-month period. The sum of the scores for the seven components such as subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction helps to yield global sleep score. A PSQI global score of 5 and greater than 5 was considered to be indicative of poor sleep⁴. Academic performance was assessed from their internal assessment scores conducted during that period.

Statistical Analysis: Statistical analysis was done using an IBM SPSS software 23.0 version. The data was analyzed using the unpaired students 't' test and Pearson's correlation test. Continuous variables were presented as mean \pm Standard Deviation (SD). Correlation of academic scores with the PSQI scores was performed using Pearson's correlation. To compare

the academic scores between good sleepers and poor sleepers independent student 't' test was used. For all statistical tests p value < 0.05 was considered statistically significant.

Results

Our study included 176 students from all the phases of MBBS curriculum., 65% were females and 35% were males .42 students had the sleep scores of 5 above 5 and they were classified as poor sleepers. In our study, academic scores and sleep scores were analysed and there was no statistically significant difference in the performance of good sleepers (57.94 \pm 18.06) and poor sleepers (58.80 \pm 17.37) with a p value of 0.785). (Table 1).

Table 1 Academic scores of good and poor sleepers

Variables	Academic Score Mean \pm SD	p value
Good sleepers	57.94 \pm 18.06	0.785
Poor sleepers	58.80 \pm 17.37	

Our study results showed a negative correlation between global PSQI scores and assessment scores of the students ($r = - 0.057$ and $p = 0.449$). This revealed that academic performance of students decreased when sleep scores increased. (Table 2).

Table 2 Correlation between Sleep score and academic performance

Variables	Correlation Coefficient (r)	p value
PSQI scores	- 0.057	0.449
Academic Score		

Discussion

In the present study 24% students were reported to have poor quality of sleep .Studies conducted among medical students in Brazil and Mexico showed 28.2% and 24 % of students were found to have insomnia.^{5,6} Extensive medical curricula,long duration and high intensity of study contribute to poor quality of sleep among medical students. Once they enter the medical profession students encounter increased academic pressures and stress levels. They are forced to change their sleep and work pattern in order to adjust and cope up with their daily academic schedule.^{7,8} In United States, sleep quality of medical students (measured by PSQI) was found to be poor compared to general

population.⁹ Magnitude of sleep problem on medical students affects students' cognitive ability and also leads to health-related problems such as anxiety, depression and burnout.^{10,11} Poor sleep quality among medical students was reported in several studies. Results of a study conducted by Anjum, Bajwa & Saeed among Pakistani medical students showed that the prevalence of disturbed sleep patterns was found to be higher than non-medical professionals.¹²

Sleep enhances cognition, medical students should have good quality of sleep as they are in position to comprehend and retain complex facts which they have to reason out and apply in their practice.¹³ Curcio et al. in his study suggested that student learning and academic performance are closely related to sleep quality and quantity.¹⁴ The consequences of sleep deprivation and daytime sleepiness result in increased risk of academic failure and compromised learning. In a study conducted among Hong Kong medical students poor sleep quality have negative impact on their academic performance.¹⁵ Similarly in our study, students with sleep score ≥ 5 showed average academic performance. In the present study a significant association was not observed between sleep quality assessed by PSQI and academic performance. Our result was in line with the study conducted among first year medical students in Kerala¹⁶ Moreover academic performance of students also depends upon their commitment, concentration, motivation towards academic activities. Along with sleep disturbances, incidence of burnout is found to be reported higher among business students, medical students and dental students.^{17, 18}

Limitations: Assessment of quality of sleep based on the self reported questionnaire made our data more subjective. Other factors which affect academic performance of students like nutrition, socioeconomic status & their mode of stay (hostler or day scholar) which also play role in their performance were not considered. Multicentric longitudinal studies with large sample size considering all the factors is warranted to study relationship between sleep quality and academic performance among medical students

Conclusion

In our study, association between sleep quality and academic performance was not statistically significant. Assessment of sleep quality helps to identify the students at risk and plan the specific programs to improve

the quality of sleep to ensure health, safety and academic performance of medical students.

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