

EFFECT OF CHANGED SLEEP PATTERN ON ACADEMIC PERFORMANCE OF MEDICAL STUDENTS AT QUAID-E-AZAM MEDICAL COLLEGE, BAHAWALPUR

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ABSTRACT

Background: Sleep circadian rhythm is influenced by physiological control and any change in this cycle effects individual cognitive functions. **Objectives:** To study sleep-wake pattern and academic performance of medical students at Quaid-e-Azam Medical College, Bahawalpur. **Participants and Method:** This retrospective study was carried out on 258 students, selected by convenient sampling technique, of which 108 were males and 150 were females. They were asked to fill a specially designed questionnaire regarding their sleep pattern after admission in the medical college and academic performance in the medical college. This was compared with their pre-medical performance. **Results:** Majority (52.3%) of participants reported a decreased sleep duration in the medical college and they scored 60-70% marks in their last professional examination. About one-fourth (24%) of students reported an increased sleep duration after admission into medical college and they scored less than 60% marks in their last professional examination. Another one-fourth (23.7 %) claimed that they had no change in their sleep duration after admission into medical college, and they scored more than 70 % marks in their last professional examination. All the participants scored more than 85% in their pre-medical examination. **Conclusion:** Any change in sleep duration, increase or decrease affects the students' performance adversely. Increased sleep duration in the medical college seems more harmful than decreased sleep duration.

Key words: sleep-wake pattern, academic performance, medical college

INTRODUCTION

Human beings, like other species, organize their activities according to a 24-hour cycle, and this organization depends upon the endogenous and environmental factors. Sleep circadian timing is influenced by physiological functions, like the light-dark cycle, school and work schedule, leisure and other activities.¹

College years tend to be a time when students experience a significant increase in responsibilities, as well as autonomy, and hence students often rate it as one of the most stressful era in their lives.² Family support and structure present in earlier life is replaced with a more disorganized life style. This disorganization, along with unruly hostel environment, burden of homework assignments and busy schedule, all result in disturbed sleep-wake pattern.³

As sleep is important for cognitive restitution, it influences information processing, learning and memory consolidation.⁴ That is why disturbed sleep-wake pattern particularly seems to impair cognitive functions related to prefrontal cortex, such as flexible and divergent thinking, dealing with novelty and verbal fluency, novel responses

and suppression of routine answers.⁴

Sleep-wake cycle is a circadian rhythm which is spontaneously generated by the organism with a periodicity and we tend to maintain relatively stable schedules.² The sleep-wake cycle is in harmony with other inner circadian rhythms e.g. deep body temperature and cellular mitosis. Therefore, abrupt shifts of sleep-wake schedule leads to internal dissociation among circadian rhythms, which may result in undesirable effects such as somnolence, attention deficits, concentration difficulties and performance decrements.⁴

Students with irregular sleep-wake schedule had excessive day time somnolence compared with those who had regular sleep-wake cycle.⁴ Some of the students indicated that irregularities of 2-4 hours in the sleep-wake schedule is associated with higher fatigue, deterioration of mood and deterioration of performance.⁵ Prior research has demonstrated a strong relation between poor sleep quality with cognitive difficulties and academic performance.^{6,7} A specific disorder associated with poor academic performance is Delayed Sleep Phase Syndrome (DSPS)², a circadian disorder. It is characterized by delayed onset of sleep, partial sleep deprivation and poor sleep quality.² So far as medical students are concerned they are subjected to a lot of pressure due to their academic demands. The aim of present study was to compare sleep-wake pattern of students at Quaid-e-Azam Medical College, Bahawalpur before and after their admission to medical college, and to see its effect on their academic performance in the medical college.

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PARTICIPANTS AND METHODS

This retrospective, questionnaire based, comparative cross sectional study was conducted in the department of Physiology, Quaid- e-Azam Medical College, Bahawalpur, during March-July 2009. Out of a total number of 1200 students in the college, 258 students consented to participate and they were included in the study. The study group was selected by convenient sampling technique.

A specially designed questionnaire was used for data collection. The questionnaire contained questions regarding sleep-wake pattern of students before and after their admission to medical college, total sleep duration, change in sleep habits after admission into medical college, and their academic performance before and after admission into medical college. All consenting participants were asked to fill up the questionnaire. The experimental protocol was approved by the Institutional Review Committee of Quaid- e-Azam Medical College, Bahawalpur. The data was analyzed with the help of SPSS 13.

RESULTS

A total of 258 students participated in the study. (Table I). Among them 108 were males, 150 were females; 50 were hostellites and 208 were day scholars.

Table I: Baseline characteristics of participants (N=258)

| Characteristics | No (%) |
|--|---------------|
| Males | 108 (42%) |
| Females | 150 (58%) |
| Age (mean) | 20.2 |
| Hostellites | 50 (19%) |
| Day scholars | 208 (81%) |
| Marks obtained in Pre-medical Examination | More than 85% |
| Sleep Duration before entry into medical college | 7-8 hours/day |

Table II: Change in sleep duration and Academic Performance (N=258)

| No of Participants | Percentage of Participants | Change in sleep hours | Marks in last Professional |
|--------------------|----------------------------|-----------------------|----------------------------|
| 135 | 52.3 % | Decreased | 60 - 70 % |
| 62 | 24 % | Increased | Less than 60 % |
| 61 | 23.7 % | No change | More than 70 % |

Their mean age was 20.2 ± 2 years. Table II shows the change in sleep duration and the academic performance in the last professional examination. Out of 258 participants, 135 (52.3%) had

decreased sleep duration (<7-8 hours) after admission in the medical college and they scored 60-70 % marks in their last professional examination. Sixty-two (24%) students reported increased sleep duration (>7-8 hours) after admission and they scored less than 60% marks in their last professional examination. Another group of sixty-one (23.7%) students claimed that they had no change in their sleep duration before and after admission into the medical college. These students scored more than 70% marks in their last professional examination.

DISCUSSION

In the present study, almost half of the respondents (52.3 %) reported decreased sleep duration as compared with the sleep duration before admission to medical college. This is because of the college life style, hostel environment, busy schedule and burden of home work assignments³. Their performance (60-70 % score) was comparatively better than those with increased sleep duration (<60 % score), but less than those with a stable sleep pattern (>70 %) before and after their admission to medical college. Students who reported increased sleep duration scored less (<60 %) than those who reported decreased or no change in sleep duration. Interestingly, the students who reported no change in sleep duration (23.7 %) before and after their admission to medical college, scored highest (>70 %) among all the participants. This shows that any change in sleep duration, increased or decreased, affects the student performance adversely. In this respect, our findings are similar to the findings of Franklin C. Brown² et al who showed a strong relation between poor sleep quality with cognitive difficulties and academic performance. Majority of the students reported a change in their sleep habits, among them 52.3% reported decreased and 24% increased sleep duration. This finding is also noticed by Taras et al (2005)³, who reported a high prevalence of sleep disturbances among medical students. The effect of sleep deprivation on altering cognitive skills is well known and has been tested in various studies. Brown BJ⁸ and colleagues tested the effect of overnight calls and sleep deprivation on medical students and surgery residents. They too noticed a marked decline in the performance of the participants from their pre-call status.

The effect of transition from home environment to college environment was studied by Carskadon⁹ and his colleagues. A marked decline in performance can

be seen in their study as well. They attribute this decline to unruliness in college life and the lack of parental overview. These maybe contributing factors in our study as well. Furthermore, the factor of snoring while sleeping has also been shown to contribute to poor performance by medical students.¹⁰ However, we did not review this factor in our study.

CONCLUSION

Alteration in sleep habits, decrease as well as increase in duration, negatively effect a students performance. Students should chalk out a sleep “plan”, tapered to each individual, and then follow it religiously. This will ensure optimum performance from every student, and will help them in later life as well.

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