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The Effect of Sleeping Pattern on the Academic Performance of Undergraduate Medical Students at Ajman University of Science and Technology

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ABSTRACT: *Sleeping is a natural repetitive state of rest for the mind and body which is essential to life. Sufficient sleep is extremely important for one's mental and physical health, but sleep loss is a remarkable problem in modern society. The objective of this study was designed to encourage students to seek healthier sleep habits, by using academic success as an indicator. It was a cross-sectional study conducted among different studying levels of Ajman University of Science and Technology (AUST) undergraduate medical students during February 2015 to April 2015. Inclusive of all 200 registered medical students were selected for this study. A standard questionnaire that contained questions on demography, sleep habits, academic performance and ideal sleep was used to collect data. Out of 200 students, 190 responded, giving aresponse rate of 95%,where 74% were female and 19% resided on-campus. Including weekdays and weekends averagely, 48% respondents slept for 6-8 hours, 22% for <6 hours and 30% slept for >8 hours. An average of 35%respondents had infrequent day-naps, 23% frequent and 19% had no day-naps at all. Respondents who slept>6 hours were observed to have significantly higher academic performance. It is concluded thatpeople need to understand the role of sleeping and have to take adequate sleep of 6-8 hours per day for healthandwellbeing.*

KEY WORDS:*Sleep pattern, academic performance, medical students*

INTRODUCTION

Sleeping is a natural repetitive state of rest for the mind and body which is essential to life. Sleep is notexactly a time when your body and brain shut off. While you rest, your brain stays busy, overseeing a wide variety of biological maintenance that keeps your body running in top condition, preparing you for the day ahead. The sleep–wake cycle is driven by a circadian timing system which is influenced by some factors such as physiological function, school and work schedules, and many others [1]. Most healthy adults need between seven and a half to nine hours of sleep per night to function at their best. Sleep serves several different functions such as growth and repair, learning or memory consolidation and restorative processes, and all these occur throughout the brain and body [2-4]. Cognitive functions related to academic such as memory consolidation, learning, decision making and critical thinking are all related with adequate sleep [5]. Sleep deprivation and symptoms related to sleep disorders have not only been ignored but also inadequately understood.Sleep loss is in fact one of the most striking problems of modern society [6], and sleep deprivation is a common finding in students' academic life. A study with a healthy sample showed that sleepiness may have a substantial adverse influence on general health and quality of life [7]. Sleep deprivation can be harmful to students. The sleep–wake cycle of medical students is characterized by insufficient sleep duration, delayed sleep onset, and occurrence of napping episodes during the day [8,9]. Studies have also demonstrated that insomnia may cause psychiatric disorders, psychosocial stress, and dysfunctions such as decreased work efficiency and learning disabilities[7, 10].

Sleeping is clearly an important aspect of successful academic and personal life in college, yet very little attention has been given to finding an appropriate sleeping pattern. In UAE, there are not many research have been undertaken in the context of sleep pattern and academic performance among the medical students.This study was designed to discover therelationship between a healthy sleeping schedule and academic success amongthe undergraduates of Ajman University of Science and Technology (AUST)medical students (dentistry andpharmacy students), so that we may be able to encourage medical students to seek healthier sleep habits, by using academic success as motivation.

METHODANDTECHNIQUES:

This isa cross-sectional study conducted on different studying levels of AUST undergraduate medical students during February 2015 to April 2015. The study group was selected by universal sampling technique, inclusive of registered medical students, whichselected 200 students (140 Females, 50 Males). A questionnaire was developed for data collection that contains questions on demography, sleep habits including total sleep hours, daytime nap, and during weekdays or weekends. Their perception ofideal sleep duration required for good academic performance was also recorded.Academic performance was assessed by the cumulative grade point average (CGPA) of medical students from different levels, which was calculated ona four (4) scale. Consent was taken from participants prior to participate. Each participant was asked to answer the questions in hardware copy containing sevenquestions. All answers were kept confidential. The data was then compiled and analyzed using Microsoft Excel 2010.

RESULTS

Out of 200 medical students, 190 responded, givingthe response rate of 95%. Table - 1 showsthe demographic data of the participants. Male participants were 26%,whereas female were 74%, which reflects student distribution of the institution. Among the participants, 19% resided in collegehostel or on-campus, and 81 % resided out-campus. Table - 2 showsthe sleep duration pattern in weekdays and weekends. On weekdays, 37% respondents slept <6 hours, 55% slept for 6-8 hours and 8% slept >8 hours. Meanwhile, on weekends7% of them slept <6 hours, 41% slept for 6-8 hours and52% slept >8 hours. Table - 3 showsthe afternoon sleep in weekdays and weekends. A total of 19% respondents did not take afternoon snooze at all, 35% reported infrequent naps and 40%reported frequent day napping during weekdays. On weekends6% respondents frequently took day naps.

	Variable	Numbers (N)	Percentage (%)
Gender	Female	140	74
	Male	50	26
Residency	On-campus	36	19
	Out campus	154	81

Table 1: Number (n) and percent (%) distribution of gender and residency of the respondents, n=190.

Sleep duration (hours)	Weekdays N (%)	Weekends N (%)
<6	70 (37)	14 (7)
6-8	104 (55)	78 (41)
>8	16 (8)	98 (52)

Table 2: Distribution of respondents based on duration of sleep during weekdays and weekends.

Afternoon nap	Numbers (n)	Percentage (%)
Never	36	19%
Infrequent (1-2 times per week)	66	35%
Frequent (almost every day)	77	40%
weekends	11	6%

Table 3: Respondents with day napping habits.

Sleep duration		CGPA
		Mean ±SD
weekdays	<6 hours	3.032± 0.688
	6-8 hours	3.095 ± 0.686
	>8 hours	3.055 ± 0.684
weekends	<6 hours	3.046 ± 0.687
	6-8 hours	3.153 ± 0.686
	>8 hours	3.265 ± 0.686

Table 4: Relationship between sleep duration and mean CGPA ± SD.

Table - 4 revealsthe relationship between sleep duration andCGPA. It is evidentthat in weekdays there was no significantdifference in mean CGPA between respondents with sleep duration of <6hours and respondents with sleep duration of 6-8 hours,norbetweenrespondents with sleep duration of 6-8 hours and respondents with sleep duration of>8hours. Also, for weekends, there was no significant difference in mean CGPA between respondents with sleep duration of <6 hours and respondents with sleep duration of 6-8 hours (p=0.195) and more than 8 hours(p=0.53). Also, there was no significant difference between respondents with sleep duration of 6-8 hours and more than 8 hours (p=0.175).

Table - 5 showsthe relationship between day napping and CGPA. During weekdays, no significant difference was found between respondentswhonever had day napping and those whohad infrequent (p=0.983), and frequent (p=0.682)day napping.Also there was no significant difference between respondentswith infrequent day napping and thosewith frequent day napping (p=0.632).

Table - 6 reveals students'perception about ideal sleep duration for better academic performance. Sixty three percent respondents reported that 6-8 hours of sleep is necessary for better academic performance.

Day napping	**CGPA**
	Mean ± SD
Never	3.065 ± 0.689
Infrequent(1-2 times per week)	3.068 ± 0.685
Frequent(almost every day)	3.045 ± 0.686
weekends	2.998 ± 0.694

Table 5: Relationship between day napping and CGPA ± SD

Necessary sleep duration for better academic performance	**Response N (%)**
<6	27 (14%)
6-8	119 (63%)
>8	44 (23%)
Total	190 (100%)

Table 6: Students' perception on necessary sleep duration for better academic performance.

DISCUSSION

Optimized sleep pattern improves the neuro-cognitive and academic performance of students [4]. But sleep deprivation is a common finding in students' academic life. The sleep-wake cycle of medical students is characterized by insufficient sleep duration, delayed sleep onset, and occurrence of napping episodes during the day [8,9]. Majority of the respondents in our study were female and resided outside the campus (Table 1), where 37% of them had sleepduration of <6 hours and only 16% students had sleep >8 hours during the weekdays (Table 2). In general, most of the respondents slept between 6-8 hours; however, there was an increment of respondents who slept >8 hours from 4% on weekdays to 52% on weekends (Table 2). This is most probably due to the lack of time spent onsleeping in weekdays as they might be busy with assignments and other academic related requirements. Hence, the students tend to sleep more in weekends to compensate their lack of sleep. The college life style and hostel environment also influence in the sleep pattern on the students.

Sleep deprivation actually can cause day time sleepiness and reduced level of attention affecting performance. Poor sleep also affects performance by increasing depression, decreasing motivation and compromising health [11, 12]. Forty percent and 6% respondents in this study are found to have frequent day napping in weekdays and weekends respectively (Table 3). The present study indicatesthat respondents who slept<6 hours during weekend have significantly lower CGPA compared to thosewho slept 6-8 hours and >8 hours (Table 4).No significant difference was observed between sleep duration of <6 hours and 6-8 hours (p=0.033) and between <6 hours and >8 hours in weekends regarding academic performance in terms of mean CGPA (Table 4). It was also not significant during weekdays. This finding is similar to different studies that show no firm relationship between sleep duration and academic performance [11].

However,Curcio[4] reported that a poor sleep in quality, quantity, sleep loss and sleep deprivation showsto have a negative correlationwith academic performance. A similar finding reported by Wolfson and Carskadon[13]stated that students with higher grades had more total sleep and reduced weekend delays of sleep than students with lower grades. Moreover, Carskadon, Fallone and Wolfson [14-16] reported that a poor sleep habit with an increased sleep fragmentation, late bedtimes and early awakenings, usually tend to associate witha decreased academic performance and a reduced neurobehavioral functioning.

Day napping did not show any significant role in academic performance in our study (Table 5). Regarding students' perception of the ideal sleep duration for better academic results, 63% student opined that 6-8 hours of sleep is necessary for better academic results (Table 6). But inreality, less than 60% students slept 6-8 hours both in weekdays and weekends (Table 2). In our study, more students are found to go to bed lately during weekdays (Table 2), which is inconsistent with the study done by BaHammam*et al.* [17]where it was observedthat bed time was delayed in weekends. Delayed bed times in weekends could be the expression of college lifestyle andthe influence of hostel life. It could also be related tocircadian rhythm disorders in the form of delayed sleep phase syndrome marked by significant delays in sleep-wake cycles which is common among college students [18]. Sufficient sleep is important for one's mental and physical health [11]. Insufficient sleep, on the other hand, is a cause of emotional shakiness, memory loss, day time sleepiness and decreased concentration [11, 12]. Necessities of sleep differ from person to person, but 6-8 hours of sleep is considered normal for an adult [11].

Our study has some limitations, such as the relatively small sample size of 190 medical students with majority being female students(74%), and the relatively short duration of the study (two months). Suggestions for future studies would be a larger sample size that includes as much college specialties as possible, with a similar representation of both genders.

CONCLUSION

Sleep is extremely important for healthiness and it plays an important role in learning processesand the improvement of our memory. Sleep loss is one of the most remarkable problems in modern society. Not getting enough sleep is a cause of poor academic performance. To achieve a better academic performance, an adequate sleep of 6-8 hours per day is essential.

Despite the insignificant results our study has, students and educators need to understand the role of sleep for improvement of their academic performance. Educators should give importance for counseling theirstudents about the importance of adequate sleep for better academic achievement and healthier, more balanced lifestyle.

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