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Original Research Article

A cross sectional study to determine the sleep pattern and impact of sleep deprivation on the health and academics of medical students of BMCRI, Bengaluru

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ABSTRACT

Background: Sleep is a state of body and mind which typically recurs for several hours every night, in which the nervous system is inactive, eyes closed, the postural muscles relaxed and consciousness practically suspended. Lack of sleep has been linked to emotional and physical health effects. Hence this study is proposed to know the sleep pattern and its effects on health and academics of medical students.
Methods: A cross sectional study was conducted from June to September 2015 on 200 medical students by convenient sampling using pre-tested, semi-structured, self-administered questionnaire was given to them. Data was entered in excel sheet and analyzed using descriptive statistics.
Results: Mean age of students was 20.65±0.56 SD, 68.5% of the students have normal sleep duration hours. 31.5% of them had abnormal sleep, of which 38.09% and 61.91% of them are affected in health and academics respectively. 35% of students watch television/late night movies and hinder their sleep which depicts the younger generation is much attracted towards browsing at night times which affect their sleep pattern. 34.86% of sleep deprived students went for depression followed by agitation which affected their daily routine at a significant level.
Conclusions: Sleep is essential for good physical and mental health. Deprivation of sleep can affect day-today activities. Knowledge about sleep hygiene should be taught from school level itself.

Keywords: Sleep pattern, Sleep deprivation, Sleep hygiene, Health, Academics

INTRODUCTION

Sleep is a state of body and mind which typically recurs for several hours every night, in which the nervous system is inactive, eyes closed, the postural muscles relaxed and consciousness practically suspended.[1] In the normal adult there are two main stages of sleep that alternate at about 90-minute intervals.[2] Rapid eye movement (REM) sleep can be roughly described as a period when the brain is active and the body is paralyzed (except for eye movements, middle ear ossicles, and respiration). In non-rapid eye movement (NREM) sleep, the brain is less active but the body can move. The body's sleep-wake cycle is usually under the control of circadian rhythms.[1,2]

Sleep affects physical growth, behaviour and emotional development besides determining cognitive functioning, learning and attention.[3] Apart from physiological, psychological and environmental factors, socio-cultural factors also play a major role in determining sleep pattern of a person. Lack of adequate sleep is a possible risk

factor for Alzehmeir's disease.[4] Sleep is increasingly recognized as important to public health, with sleep insufficiency linked to motor vehicle crashes, industrial disasters and medical and other occupational errors. Unintentionally falling asleep, nodding off while driving, and having difficulty performing daily tasks because of sleepiness all may contribute to these hazardous outcomes. Persons experiencing sleep insufficiency are also more likely to suffer from chronic diseases such as hypertension, diabetes, depression, and obesity, as well as from cancer, increased mortality, and reduced quality of life and productivity. Most of the studies regarding sleep habits in adolescents are from the West; however, a few Asian studies (1-3) are available. Sleep pattern is linked with the academic performance starting in adolescents.[5-7]

In recognition of the importance of sleep to the nation's health, CDC surveillance of sleep-related behaviours has increased in recent years. Additionally, the Institute of Medicine encouraged collaboration between CDC and the National Centre on Sleep Disorders Research to support development and expansion of adequate surveillance of the U.S. population's sleep patterns and associated outcomes. Two new reports on the prevalence of unhealthy sleep behaviours and self-reported sleep-related difficulties among U.S. adults provide further evidence that insufficient sleep is an important public health concern.[8]

Thus, this study is proposed to determine the sleep pattern and impact of sleep deprivation on the health and academics of medical students.

Objectives

1. To determine the sleep pattern among medical students.
2. To assess the effect of sleep deprivation on the health and academics of medical students.

Inclusion criteria

All the students who were present on the day of interview were taken for study.

Exclusion criteria

The students who did not give their consent and those who were absent on the day of interview are excluded from the study.

METHODS

A cross-sectional study was carried out at BMCRI among the medical students of 5th and 7th term from June 2015-September 2015. Ethical clearance was obtained from the Dean of the institution. 200 undergraduates of 5th and 7th term were taken for study by convienient sampling technique. All the students who were present on the day of interview were taken for study till the sample size is achieved. They were made to sit in class on a particular day of interview and were explained about the purpose of the study and the questions were explained to them and have been told to fill the same and can choose multiple choices if required. It was a self-administered, semi-structured questionnaire given to them.

After data collection, it was entered in Excel sheet and analyzed using SPSS software. Descriptive statistics was applied and results were represented in the form of percentages, figures, graphs, tables and charts wherever necessary.

RESULTS

It is observed from the study that the mean age group of the undergraduates who participated in the study was 20.65±0.65 SD. Among them 67% of them were boys and 33% were girls. Most of them (80%) stay in hostel (Table 1) and few are day scholars.

Table 1: Socio-demographic details.

Term	Boys	Girls	Total	Hostel	Localites
5th	22	05	27 (13.5%)	20	07
7th	112	61	173 (86.5%)	140	33
Total	134 (67%)	66 (33%)	200 (100%)	160 (80%)	40 (20%)

Mean age group: 20.65±0.56 SD.

Table 2: Sleep pattern distribution.

Term	* Normal sleep	Sleep deprivation
5th	20	07
7th	117	56
Total	137 (68.5%)	63 (31.5%)

*Normal sleep lasts for 6-8hrs/day

32% of them had abnormal sleep pattern (Table 2). Abnormal sleep pattern is the one where the circadian rhythm is disturbed and they sleep for less than 6hrs/day.

It is observed that among sleep deprived medical students, 61.9% of them were affected in their academics (Table 3) where they mentioned during exams, it will be

difficult to recollect answers and during classes they feel sleepy and not able to concentrate in the class and 38.09% of them are affected in their health like change in mental health behaviours.

Table 3: Effect on health and academics among Sleep deprived medical students.

Effect of sleep deprivation	*n=63	Percentage(%)
Health	24	38.09
Academics	39	61.90

* Sleep deprived medical students.

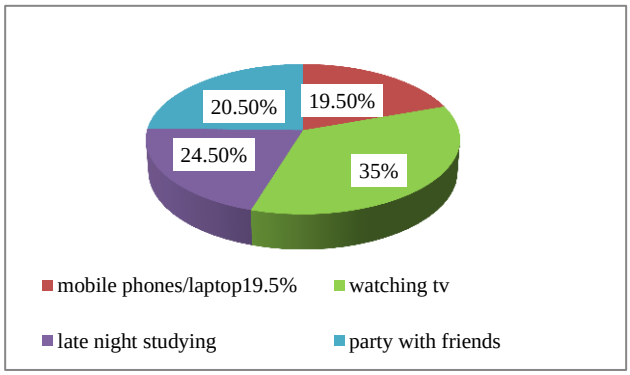

Figure 1: Factors hindering sleep at night.

35% of students watch TV/late night movies and hinder their sleep (Figure 1) which depicts the younger generation is much attracted towards browsing at night times which affect their sleep pattern.

34.86% of sleep deprived students went for depression followed by agitation (Figure 2) which affected their daily routine at a significant level.

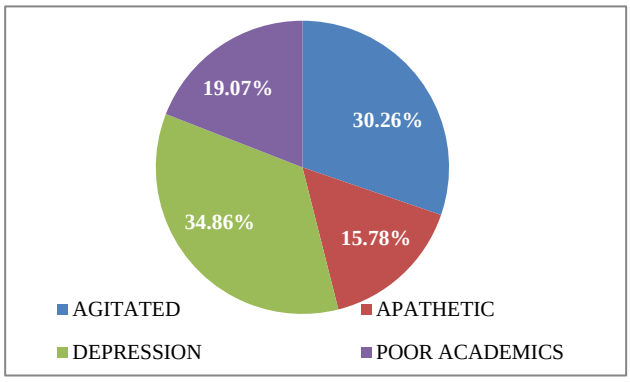

Figure 2: Results due to inadequate sleep.

DISCUSSION

From the present study, it is seen that normal sleep pattern among medical students is seen to a lesser extent and abnormal sleep pattern is rising in trend, which is alarmistic and has to gain special focus on the same. Many studies are done about the sleep pattern among medical residents and school children all have shown significant relation between sleep deprivation and its effect on health.[9]

A study done by Rosen et al on the prevalence of chronic sleep deprivation, depression burnout, and empathy increased from baseline to year end. Specifically, the prevalence of "high" scores changed for chronic sleep deprivation (9% to 43%, p=0.0001). The prevalence of moderate depression increased from 4.3% to 29.8% (p=0.0002).There was an association between becoming chronically sleep deprived and becoming depressed (OR = 7, p=0.014).[10]

In our study we found that 34.86% of sleep deprived students went for depression followed by agitation which affected their daily routine at a significant level.

A study done by Baviskar et al to describe sleep habits and sleep problems in a population of undergraduates, interns and postgraduate students of Pravara Institute of Medical Sciences (Deemed University), Loni, Maharashtra, India showed that out of 150 medical students, 26/150 (17.3%) students had abnormal levels of daytime sleepiness while 20/150 (13.3%) were border line. Sleep quality in females was better than the male.[11] It is observed from the study that out of 200 medical students, the mean age group who participated in the study was 20.65±0.65 SD.

The cross-sectional study done by Aesha et al in King Khalid Medical College, Saudi Arabia, enrolled 318 medical students during October–November, 2015 by Convienient sampling showed that the overall mean sleep quality score was 6.79 with a standard deviation of 3.06. Poor sleep quality was reported by 74.2% students. Poor sleep was predicted by sleep behaviors such as going to sleep after midnight (AOR = 2.18, 95% CI: 1.20, 3.94) and sleep duration of less than seven hours (AOR=7.49, 95% CI: 4.24, 13.22).[12]

Sleep quality and its psychological correlates among university students in Ethiopia: a cross-sectional study by Lemma et al on the prevalence of poor sleep quality (total PSQI score>5) was 55.8% (1,424). Female students (adjusted odds ratio (AOR) 1.23; 95% CI: 1.00, 1.57), second year (AOR 2.91; 95% CI: 2.1, 4.02) and third year students (AOR 2.25; 95% CI 1.62, 3.12) had statistically significant higher odds of poor sleep quality. Perceived stress level and symptoms of depression and anxiety were strongly associated with sleep quality.[13]

The interaction between sleep quality and academic performance by Ahrberg at al showed that academic performance correlated with stress and sleep quality pre-exam (r=0.276, p<0.001 and r=0.158, p<0.03, 59% of all participants exhibited clinically relevant sleep disturbances (PSQI>5) during exam preparation compared to 29% during the semester and 8% post-exam.[14] It is observed from our study that among sleep

deprived medical students, 61.9% of them were affected in their academics and 38.09% of them are affected in their health like change in mental health behaviours. Similar study done on sleep quality among dental students and its association with academic performance-a cross-sectional study by Elagra et al among 1160 students from clinical and non-clinical levels to measure the sleep-related variables and academic performance The response rate was 62%. Sixty five percent of the students described their sleep as good or very good, whereas 35% described their sleep as bad or very bad. The mean number of hours of sleep per night for all students was 5.85±1.853 hours.[15]

Sleep is one of the components of adolescent health. Adherence to electronic gadgets/late night browsing should be avoided. Sleep deprivation had a significant impact on health and academics. Sleep deprivation use to hinder their concentrating ability, failure to recollect answers and day time sleepiness in class. Sleep deprivation also affects mental condition and alter their behaviour like depression, agitation, lethargy. Health education about sleep hygiene should be given among adolescents. It has to gain importance in the minds of students at a very early stage so as to prevent problems due to sleep deprivation.

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REFERENCES

1. CDC. Youth Risk Behavior Surveillance—United States, 2009. MMWR. 2010;59:SS-5.
2. Institute of Medicine. Sleep Disorders and Sleep Deprivation: An Unmet Public Health Problem. Washington, DC: The National Academies Press; 2006.
3. Giri P, Baviskar M, Phalke D. Study of Sleep Habits and Sleep Problems Among Medical Students of Pravara Institute of Medical Sciences Loni, Western Maharashtra, India. Annals Med Health Sci Res. 2013;3(1):51.
4. Sadeh A, Raviv A, Gruber R. Sleep patterns and sleep disruptions in school-age children. Developmental Psychology. 2000;36(3):291-301.
5. Philibert I. Sleep Loss and Performance in Residents and Nonphysicians: A Meta-Analytic Examination. Sleep. 2005;28(11):1392-402.
6. Wolfson A, Carskadon M. Sleep Schedules and Daytime Functioning in Adolescents. Child Development. 1998;69(4):875-87.
7. US Department of Transportation, National Highway Traffic Safety Administration, National Center on Sleep Disorders Research, National Heart Lung and Blood Institute. Drowsy driving and automobile crashes [National Highway Traffic Safety Administration Web Site]. Available at: http://www.nhtsa.gov/people/injury/drowsy_driving 1/Drowsy.html#NCSDR/NHTSA Accessed on 7 July 2017.
8. Pilcher JJ, Ott ES. The relationships between sleep and measures of health and well-being in college students: A repeated measures approach. Behav Med. 1998;23:170–7.
9. Schoenborn CA, Adams PF. Health behaviors of adults: United States, 2005–2007. National Center for Health Statistics. Vital Health Stat 2007;10(245):1-132.
10. Evolution of Sleep Quantity, Sleep Deprivation, Mood Disturbances, Empathy, and Burnout among Interns. Academic Medicine. 2017;81(1):82-5.
11. Giri P, Baviskar M, Phalke D. Study of Sleep Habits and Sleep Problems Among Medical Students of Pravara Institute of Medical Sciences Loni, Western Maharashtra, India. Annals Med Health Sci Res. 2013;3(1):51.
12. Siddiqui A, Al-Musa H, Al-Amri H, Al-Qahtani A, Al-Shahrani M, Al-Qahtani M. Sleep Patterns and Predictors of Poor Sleep Quality among Medical Students in King Khalid University, Saudi Arabia. Malaysian J Med Sci. 2016;23(6):94-102.
13. Lemma S, Gelaye B, Berhane Y, Worku A, Williams M. Sleep quality and its psychological correlates among university students in Ethiopia: a cross-sectional study. BMC Psychiatry. 2012;12(1):237.
14. Ahrberg K, Dresler M, Niedermaier S, Steiger A, Genzel L. The interaction between sleep quality and academic performance. J Psychiatric Res. 2012;46(12):1618-22
15. Elagra M, Rayyan M, Alnemer O, Alshehri M, Alsaffar N, Al-Habib R, et al. Sleep quality among dental students and its association with academic performance. J Int Society Prevent Community Dentist. 2016;6(4):296.

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