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RESEARCH ARTICLE

Sleep duration among undergraduate medical and science degree college students: A comparative study

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ABSTRACT

Background: There is an increasing incidence of sleep deprivation in all ages, with college students being specially affected. Medical students are even more susceptible to it, which may affect health-care system. **Aims and Objectives:** To study the sleep duration in medical (MBBS) students and its comparison with that of in science degree (BSc) college students. **Materials and Methods:** This is a cross-sectional study with 215 medical and 140 BSc participants aged between 18 and 25 years. They self-reported sleep duration. Accordingly, they were categorized into <7 h per night (h) with subcategories, namely 6–7 h, 5–6 h, <5 h, and ≥7 h groups. Statistical analysis was done using ANOVA and unpaired *t*-test using GraphPad. $P \leq 0.05$ was considered statistically significant. **Results:** Average sleep duration in medical students was 6.49 h, whereas in BSc students, it was 7.38 h. Difference in sleep duration in them was highly significant ($P < 0.0001$). About 52.09% of MBBS students are sleeping <7 h against 17.86% of BSc students. Sleep duration of <5 h was seen in 1.86% and 0.71% of MBBS and BSc students, respectively. **Conclusion:** Duration of sleep per night in medical students is significantly less than that of BSc students; more than half of the medical students are sleeping <7 h in contrast to less than one-fifth of BSc students. Approximately one-fifth of the medicos are sleeping <6 h, which is not recommended for younger adults.

KEY WORDS: Sleep Duration; Medical Students; College Students; Younger Adults; Recommended Sleep Duration

INTRODUCTION

"I love sleep. You forget about pain, problems, stress, everything for a while." Sleep duration is the most frequently investigated sleep measure in association to health. The increasing incidence of sleep deprivation in all ages is a well-known fact. Only 35% of American adults were obtaining 8 h of sleep in 1998; that number had further fallen to 26% by 2005;[1] and on an average, adults sleep less than the recommended 8 h per night presently.[2,3] More than one-third of the U.S. respondents of 2014 Behavioral Risk Factor Surveillance System reported typically sleeping <7 h in a 24-h period.[4] Moreover, with decrease in sleep duration (sleep deprivation), there is an increasing day-time sedation and impairments in neurocognitive and psychomotor performance.[5-7] This can reflect as deterioration of academic performance in college students, particularly in medical students where both individual's health and overall performance of the health-care system can be adversely affected.[5,7]

Sleep deprivation developing in younger adults (18–25 years) can persist through adult life as well. The duration

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of sleep <7 h per night (h) is more likely to cause obesity in adults,[8-10] and the same predicts increased future weight gain independent of baseline weight in middle-aged women.[11] National Health and Nutrition Examination Survey found that short sleep duration (≤5 h) is associated with a 60% higher risk of incident hypertension in middle-aged women.[12]

Sleep requirements for an average younger adult (18–25 years) is 7–9 h.[13] But, all over the world, the prevalence of sleep deprivation is increasing,[14-16] including in India.[17] This is an increasingly common phenomenon in all the ages, through childhood, adulthood, to middle age.[18] College students are specially affected,[19] due to their erratic lifestyle and demanding academics.[20-22] Medical students are especially susceptible to sleep deprivation, which can be a consequence of long duration and high intensity of study, work that can be emotionally challenging, clinical duties that include overnight on-call duties, and lifestyle choices.[23] However, the comparison studies between medical and other undergraduate students regarding sleep duration are limited.[5,24,25] It appears, though, that medical students are more sleep deprived than other college students.[5]

Keeping these facts in mind, and also lack of data on the same from this part of our country, this work was undertaken to study the sleep duration in medical students from a college in South India and its comparison with that in science degree college students.

MATERIALS AND METHODS

In this cross-sectional study conducted in South India at Mamata Medical College, Khammam, Telangana, the data were collected between April 2017 and June 2017. The sample consisted of 220 undergraduate medical (MBBS) and 148 science degree (BSc) students to start with. Five medical and eight BSc students over 25 years of age were excluded, yielding a final sample size of 215 medical and 140 BSc participants between 18 and 25 years of age. They reported their sleep duration in average hours per night (h) in non-examination days (NEDs).

As per the new recommendations by the National Sleep Foundation (February 2015) for younger adults (18–25 years), the sleep duration is 7–9 h per night.[13] The same was considered here.

The students were categorized into groups <7 h and ≥7 h. The first category was further subdivided into 6–7 h, 5–6 h, and <5 h sleep.

Statistical analysis was done using ANOVA and unpaired *t*-test using Graphpad. $P \leq 0.05$ was considered statistically significant.

RESULTS

Out of the 355 students observed, 215 were pursuing MBBS and 140 were pursuing BSc. The average sleep duration in NED of all the students was 6.84 h; in medicos, it was about 6.49 h, whereas in BSc students, it was 7.38 h [Table 1]. Difference in the sleep duration of MBBS students when compared with that of BSc students was highly significant ($P < 0.0001$).

Distribution of number of students in different subgroups is depicted in Table 2. Overall, 34.98% of students were sleeping <7 h. Out of all the MBBS students 52.09% and of the BSc students 17.86% were sleeping <7 h. Sleep duration of <5 h was seen in 1.86% and 0.71% of MBBS and BSc students, respectively.

Figure 1 depicts the distribution of number of students according to their sleep duration.

DISCUSSION

In the present study, on comparing the sleep time per night among medical students with BSc students, the average sleep duration in MBBS students (6.49 h) was found to be significantly less than that of BSc (7.38 h). Also, more than half of the medical students are sleeping <7 h against only 17.86%, which is less than one-fifth of BSc students. Approximately one-fifth of the medical students are sleeping <6 h, which is not recommended for younger adults (18–25 years) as per National Sleep Foundation's Sleep Duration Recommendations.[26] In contrast to this, only 2.86% of BSc students are in this category. If average recommended sleep duration per night is considered to be 8 h (average of 7–9 h recommended for younger adults), it is evident that both the groups have sleep duration less than the recommended average. Also, the number of medical students sleeping <5 h is larger (1.86%).

Around the world, sleep deprivation is common among university students. The number of university students

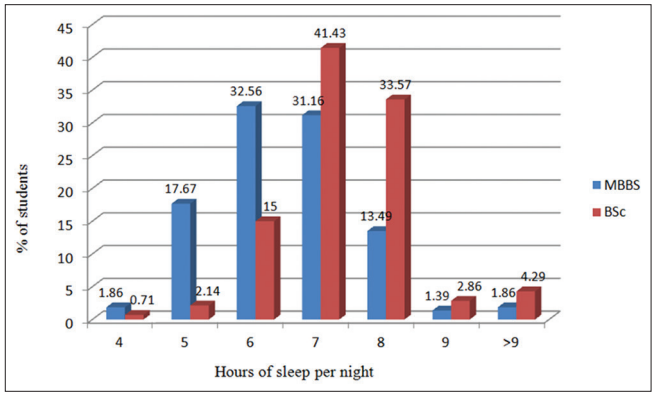

Figure 1: Distribution of number of students according to their sleep duration

obtaining <7 h sleep ranges from 24 to 49%.[27-29] The present work finds concordant result to them. Furthermore, significant reduction in the number of hours of sleep has been found in this phase of student's transition to college.[30]

The unquestionable problem of insufficient sleep among adolescents and young adults is even worse in medical students. Work done in India shows results similar to the global scenario. The present work found medical students with sleep time of <7 h in NED to be 52.09%, which is less than another study with about 70% students sleeping less.[31] Average sleep time on NED is found to be 6.49 h similar to other work [Table 3].[25] Research from the West has found 6.52 h as average sleep duration.[24] In Eastern part of the world, similar finding is reported, along with majority of the medical students being sleep deprived. The mean nocturnal sleep period was 6.6 h (standard deviation: 1.2 h) and about 70% of medical students self-reported sleep deprivation without significant gender and age differences in Hong Kong.[32]

The present study has considered science degree college students for comparison. The data of comparison of sleep duration between medical and other college students are very limited. Other college students observed include those studying law,[5,24] business and economics,[24] dental, nursing, engineering, physiotherapy, and pharmacy.[25] The average sleep among medical students ranged from 6.49 h to 6.52 h; whereas, among others, it was higher from 7.87 h to 6.6 h, with only one exception of 6.2 h in pharmacy students [Table 3].[25] Almost all found the difference to be statistically significant. The possible reason for decreased sleep duration in medical students may be due to highly demanding academics of this profession. In addition, our study found medical students sleeping <7 h with 52.09%, which is more than three times than that of BSc students. Also, those sleeping <5 h are almost three times of BSc students, depicting the intensity of the problem. Another noticeable finding worth mentioning among these comparison studies is the recent research among various professional course students, which found average sleep duration to be <7 h in all,[25] indicating sleep deprivation in them as well; however, the severity is more in medical college students.

This situation may reflect the lack of awareness or negligence of medical students regarding the importance of sleep, the evaluation of which is recommended. Our work yields data of comparison study on sleep duration between medical and other college students in South India. However, only NEDs were considered in this study; however, the chances of worsening of this situation in examination days cannot be denied and further work is needed for the same.

CONCLUSION

The present work finds that the duration of sleep per night of medical students is significantly less than that of BSc students; more than half of the medical students are sleeping <7 h in

Table 1: Average sleep duration per night

Parameter	Medical students	Science degree college students	Recommended in younger adults	*P*
Average sleep duration (hours/night)	6.49±1.14	7.38±1.04	8±1	<0.00001

Table 2: Distribution of number of students in different groups including subgroups

Duration of sleep (hours per night)	Medical students (%)	Science degree college students (%)
<7		
Overall	52.09	17.86
<5	1.86	0.71
5–6	17.67	2.14
6–7	32.56	15
≥7	47.91	82.14

Table 3: Comparison of sleep duration in different studies

Studies	Average sleep duration in medical students (in hours)	Average sleep duration in other college students (in hours)
Preišegolaviciute *et al*.	6.52±1.8	7.13±1.15*, 7.87±1.45[#]
Modi and Bose	6.5±0.9	6.8±1.1[¥], 6.2±1.1[§]
Present study (2017)	6.49±1.14	7.38±1.04

*Average sleep duration in law students, [#]average sleep duration in business and economics students, [¥]longest average sleep duration among the students of different professional courses other than medical students studied, [§]shortest average sleep duration among the students of different professional courses other than medical students studied

contrast to less than one-fifth of BSc students. Approximately one-fifth of the medical students are sleeping <6 h, which is not recommended for younger adults; in comparison to this, only 2.86% BSc students are in this category. Further work to evaluate sleep duration in examination days and the awareness regarding sleep in medical students is suggested.

REFERENCES

1. National Sleep Foundation. Sleep in America Poll. Washington, DC: National Sleep Foundation; 2005.
2. American College Health Association. American College Health Association-National College. Hanover, MD: Health Assessment II: Reference Group Summary Report Spring; 2012. Available from: http://www.acha-ncha.org/docs/ACHA-NCHA-II_ReferenceGroup_DataReport_Spring2012.pdf. [Last accessed on 2017 October 30].
3. National Sleep Foundation. Adult Sleep Habits and Styles, Sleep in America Polls. National Sleep Foundation; 2005. Available from: http://www.sleepfoundation.org/sites/default/files/2005_summary_of_findings.pdf. [Last accessed on 2005 Mar 29].
4. Liu Y, Wheaton AG, Chapman DP, Cunningham TJ, Lu H, Croft JB. Prevalence of healthy sleep duration among adults-United States, 2014. MMWR Morb Mortal Wkly Rep 2016;65:137-41.
5. Palatty PL, Fernandes E, Suresh S, Baliga MS. Comparison of sleep pattern between medical and law students. Sleep Hypn 2011;13:15-8.
6. Vajravelu HR, Krishnan P, Ayyavoo S, Narayanan K. Evaluation of cognition using neurophysiological and neuropsychological tests in rotating night shift workers: A pilot study. Natl J Physiol Pharm Pharmacol 2016;6:146-9.
7. Hirkani MA, Yogi J. Effect of sleep deprivation on finger dexterity in resident doctors. Natl J Physiol Pharm Pharmacol 2017;7:697-700.
8. Vioque J, Torres A, Quiles J. Time spent watching television, sleep duration and obesity in adults living in Valencia, Spain. Int J Obes Relat Metab Disord 2000;24:1683-8.
9. Cournot M, Ruidavets JB, Marquié JC, Esquirol Y, Baracat B, Ferrières J. Environmental factors associated with body mass index in a population of Southern France. Eur J Cardiovasc Prev Rehabil 2004;11:291-7.
10. Gangwisch JE, Malaspina D, Boden-Albala B, Heymsfield SB. Inadequate sleep as a risk factor for obesity: Analyses of the NHANES I. Sleep 2005;28:1289-96.
11. Patel SR, Malhotra A, White DP, Gottlieb DJ, Hu FB. Association between reduced sleep and weight gain in women. Am J Epidemiol 2006;164:947-54.
12. Gangwisch JE, Heymsfield SB, Boden-Albala B, Buijs RM, Kreier F, Pickering TG, *et al.* Short sleep duration as a risk factor for hypertension: Analyses of the first national health and nutrition examination survey. Hypertension 2006;47:833-9.
13. Nat Sleep Foundation; 2015. Available from: https://www.sleepfoundation.org/press-release/national-sleep-foundation-recommends-new-sleep-times. [Last accessed on 2017 October 30].
14. Schoenborn CA, Adams PE. Health behaviors of adults: United States, 2005-2007. Vital Health Stat 10 2010;245:1-132.
15. Luckhaupt SE, Tak S, Calvert GM. The prevalence of short sleep duration by industry and occupation in the National Health Interview Survey. Sleep 2010;33:149-59.
16. Knutson KL, Van Cauter E, Rathouz PJ, DeLeire T, Lauderdale DS. Trends in the prevalence of short sleepers in the USA: 1975-2006. Sleep 2010;33:37-45.
17. Philips Issue Wakeup Call on Potential Health Hazards Posed by Sleep Disorders. Press Information; 2009. p. 12-5. Available from: http://www.india.philips.com/sites/philipsin/about/news/press/pressrelease. [Last accessed on 2017 Sep 28].
18. Vargas PA, Flores M, Robles E. Sleep quality and body mass index in college students: The role of sleep disturbances. J Am Coll Health 2014;62:534-41.
19. Lund HG, Reider BD, Whiting AB, Prichard JR. Sleep patterns and predictors of disturbed sleep in a large population of college students. J Adolesc Health 2010;46:124-32.
20. Buboltz WC Jr, Soper B, Brown F, Jenkins S. Treatment approaches for sleep difficulties in college students. Couns Psychol Quart 2002;15:229-37.
21. Jensen DR. Understanding sleep disorders in a college student population. J Coll Couns 2003;6:25-34.
22. Wechsler H, Kelley K, Weitzman ER, SanGiovanni JP, Seibring M. What colleges are doing about student binge drinking. A survey of college administrators. J Am Coll Health 2000;48:219-26.
23. Wong JG, Patil NG, Beh SL, Cheung EP, Wong V, Chan LC, *et al.* Cultivating psychological well-being in Hong Kong's future doctors. Med Teach 2005;27:715-9.
24. Preišegolaviciute E, Leskauskas D, Adomaitiene V. Associations of quality of sleep with lifestyle factors and profile of studies among Lithuanian students. Medicina (Kaunas) 2010;46:482-9.
25. Modi S, Bose S. Study of sleep pattern and sleep problems of under graduate students from different professional courses. Indian J Basic Appl Med Res 2016;5:16-28.
26. Available from: https://www.sleepfoundation.org/press-release/national-sleep-foundation-recommends-new-sleep-times/page/0/1. [Last accessed on 2017 October 30].
27. Webb E, Ashton CH, Kelly P, Kamali F. Alcohol and drug use in UK university students. Lancet 1996;348:922-5.
28. Ban DJ, Lee TJ. Sleep duration, subjective sleep disturbances and associated factors among university students in Korea. J Korean Med Sci 2001;16:475-80.
29. Tsai LL, Li SP. Sleep patterns in college students: Gender and grade differences. J Psychosom Res 2004;56:231-7.
30. Carskadon MA, Davis SS. Sleep-wake patterns in the high-school-to-college transition: Preliminary data. Sleep Res 1989;18:113.
31. Priya J, Sarbil K, Singh J. The relationship between sleep quality and daytime sleepiness on the academic performance of medical students. Indian J Basic Appl Med Res 2017;6:59-66.
32. Huen LL, Chan TW, Yu WM, Wing YK. Do medical students in Hong Kong have enough sleep? Sleep Biol Rhythms 2007;5:226-30.

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