

Original Article

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A study of the sleep patterns and problems of Medical Students in Bangladesh

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Abstract

Aim: The aim of the present study is to describe sleep habits and sleep-related problems among the medical students in Bangladesh.

Method: This was a cross-sectional study over four weeks in the year 2021 at different medical colleges in Sylhet, Bangladesh. The sample size was 192. Using purposive sampling technique, data were collected digitally using Google Forms as a self-administered questionnaire. Data were examined using Stata version 16. All the descriptive statistics were measured and reported accordingly.

Results: A total of 192 medical students were enlisted with age is 21.3 ± 1.8 years. All the respondents have slept for 6.2 ± 1.54 hours every night with taking on an average of 36.5 ± 35.3 minutes to fall asleep. The ESS score for all the respondents is 7.9 on average with a standard deviation of 4.83. Sleep quality is reported fairly bad by 31 (16.6%) students and very bad by 12 (6.4%) students. Poor sleep quality is usually reported in association with sleep latency, nightmares, incidence of night-time awakenings, and time of going to bed. However, 87% of students have refused to take any over-the-counter medicine to induce sleep despite having sleep problems. Most of the students prefer to use social media (76.2%) before they go to sleep which may attribute to their sleep disorders. Majority of the students (73.7%) responded study stress is the culprit of their lack of sleep, followed by over thinking (47.3%) and social media use (38.2%).

Conclusion: Medical students are exposed to high academic demands, which may affect their sleep pattern. Poor sleep quality with undue daytime sleepiness can affect their mental capability required for good academic performance.

Keywords: Sleep pattern, Sleep quality, Medical students, Academic performance

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Introduction:

Sleep is a biological imperative critical to the upkeep of mental and physical well-being. It is a state of reduced awareness and lessened physical activity during which the organism slows down and repairs itself.

Sleep behaviors and difficulties are also predisposed by physical, mental, and environmental aspects such as age, gender, job, lifestyle, emotive tension, and noise [1]. Adults necessitate on average at least seven to nine hours of sleep per night. A person's psychological and physical is contingent upon both the quality and quantity of sleep he or she gets [1]. When an individual sleeps, his/her brain conducts memory consolidation and integration; good quality sleep eliminates concentration difficulties [2] which in turn reinforces judgment capability, mood, and ability to retain information and learn new things [3].

Ethnic beliefs and cultural practices play crucial roles in the variation of sleep disturbances [1-7]. For instance, a study that tested changes in sleep complaints among young adults from nine ethno cultural groups finds that American and European youths are at higher risk of insomnia in comparison with Chinese Americans at a high significance level, after modifying for age, sex,

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and socio-economic status [8]. Sleep disturbances among medical college students who are dealing with a significant amount of study pressure due to the nature of their academic curriculum is a mostly under-researched topic. Most works of literature have concentrated on young children, elderly people, or a specific set of individuals with certain health problems to explore the determinants and also effect of sleep disturbances [9-12]. Few studies so far has addressed the issue of sleep problems arising from stress and anxiety for university and medical students, the verdicts are consistent with the proposition that sleep deficiency can cause a lethal effect on them [1, 13]. Some of the adverse effects of the frequent shift in the sleep-wake timetable include reduced sleep quality, altered compassionate activity, amplified risk of cardiovascular events, and reduced cognitive enactment [11, 12].

Several studies report that amongst 43% and 88% of medical students suffer from deprived sleep quality due to the persistent stress and anxiety from their wide-ranging medical curricula, recurrent examinations, and dread of letdown [14, 15, and 16]. Sleep problems have been found

To be associated with an amplified incidence of social problems and a various corporal and/ or psychiatric disorders [18]. Prolonged sleep deprivation resulting in poor sleep quality may disturb the cerebral and psychomotor performance of medical students. In Africa, few studies in Sudan, Ethiopia, Nigeria, and Ghana [17-19], respectively) have formed contradictory inferences on the subject. These studies have utilized sample sizes oscillating between 31 to 6011 medical students. In the Ghanaian study, while medical students had sleep deficiency, they did not experience any physical signs.

Even though quite a few works of literature have studied sleep disorders among students and implemented both PSQI and ESS scales to analyze sleep problems, studies particularly focusing on medical students are relatively sparse. More specifically, to the best of our knowledge, no study so far has addressed this issue regarding the medical students in Bangladesh. This study objects to describe sleep habits and sleep-related problems among the students in Bangladesh.

Methodology:

This study employed a cross-sectional survey over four weeks in the year 2021 at different medical colleges in Sylhet, Bangladesh. The sample size was 192, the inference was drawn from a population of 2500 medical students. Purposive sampling technique was used. However, the population size is an approximation of the true population. Both male and female students were included. All the participants were healthy students from the first to fifth academic years. Students with an account of known sleeping disorders as well as students who regularly take sedatives were excluded from the study. Using Google Forms as a self-administered questionnaire, data were collected digitally and all the ethical guidelines were strictly followed in the data collection process. The questionnaire was in English that contained information regarding all the pertinent variables such as age, gender, total sleep time per 24 hours, naps during days, any other possible factors disturbing sleeping habits. Further daytime sleepiness (DTS) was studied by means of the Epworth Sleepiness Scale (ESS) which is a consistent authenticated sleep questionnaire to measure DTS [20]. It comprises eight items including diverse situations and actions of ordinary life. The total ESS score is a measure of the average sleep propensity of falling asleep in those circumstances. The total score ranges from 0 to 24, and the upper limit of normal in healthy adults is to be 10. Hence, an ESS score of >10 indicates increased DTS [21]. In addition to this, data were also collected via the Pittsburgh Sleep Quality Index (PSQI) [21]. Students were requested to limit their responses to events that occurred during the past month. The PSQI questionnaire has self-rated questions, which results include seven categories: Idiosyncratic sleep quality, sleep dormancy, sleep length, typical sleep effectiveness, sleep disorders, usage of sleep medication, and daytime dysfunction. The questionnaire is pretty much self-explanatory and the participants have a clear idea about the questions that are being asked.

Data were examined using Stata version 16. All the descriptive statistics were measured and reported accordingly.

Results:

Table 1 and 2 shows that a total of 192 medical students were enlisted consisting of 148 (77.08%) females and 44(22.92) males. Their average age is 21.3 years with a standard deviation of 1.8 years. All the respondents have slept for 6.2 ± 1.54 hours every night with taking on an average of 36.5 ± 35.3 minutes to fall asleep

Table 1: Description of Continuous Variable

Variable	Mean	Standard Deviation	N
Age	21.36	1.83	192
Total sleep time per night (in hours)	6.29	1.54	192
The time needed to fall asleep (in minutes)	36.45	35.35	192
ESS score	7.91	4.84	192

The ESS score for all the respondents is 7.9 on average with a standard deviation of 4.83. It is worth noting the Daytime Sleepiness indicator (calculated from the ESS scale) shows that at least 30% of the students suffer from sleep problems. However, it can be shown from the data that only 17.71% of students have a family history of sleeping disorders.

Table 2: Description of Categorical Variable

Variable		Frequency	Percent
Sex	Female	148	77.08
	Male	44	22.92
Nationality	Bangladeshi	129	67.19
	Indian	37	19.27
	Nepali	26	13.54
DTS	Yes	56	29.17
	No	136	70.83
Family history of sleep disorder	Yes	34	17.71
	No	158	82.29

The PSQI data from table 3 reveal that about 27.6% of students face difficulty falling asleep at least once or twice a week and 24.2% of

students experience bad dreams which is the most common parasomnia reported by students. 29.9% of students have reported having sleep disturbance at least once or twice a week in the form of abrupt awakening in the middle of the night or very early morning.

Table 3: PSQI scale description (selected questions)

Options	Question	Cannot get to sleep within 30 minutes	Have to get up to use the washroom	Feel too hot	Have bad dreams	Wake up in the middle of the night or, early morning
Not during the past month		29.2*	48.1	52.7	33.3	32.1
Less than once a week		22.2	18.4	16.8	33.3	17.1
Once or twice a week		27.6	20.5	22.3	24.2	29.9
Three or more times a week		21.6	13	9.2	11.8	21.4

Consistent with the finding of other studies [11, 12], sleep quality is reported fairly bad by 31 (16.6%) students and very bad by 12(6.4%) students. Poor sleep quality is usually reported in association with sleep latency, nightmares, occurrence of night-time awakenings, and phase of going to bed. However, 87% of students have refused to take any over-the-counter medicine to induce sleep despite having sleep problems. The results are reported in Figures 1 and 2.

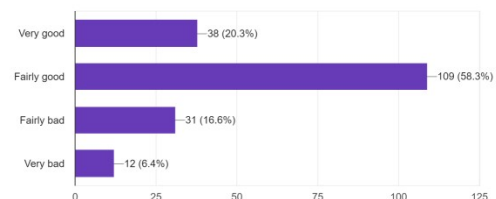


Figure 1: Overall rate of sleep quality during the past month

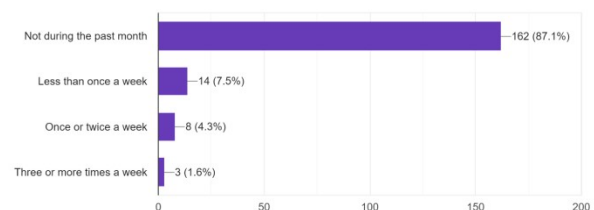


Figure 2: Use of prescribed or OTC medicines to sleep during the past month

This is no surprise that most of the students prefer to use social media (76.2%) before they go to sleep which may attribute to their sleep disorders. Only 30.2% of students report reading a book as a wind-down activity which is considered the best way to spend time before sleep.

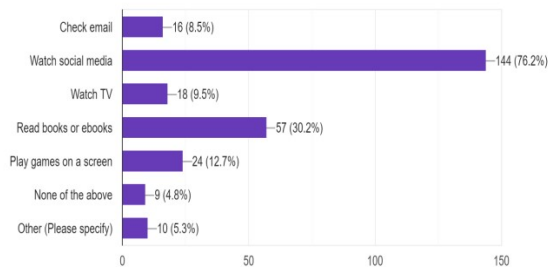


Figure 3: Wind down activity before sleep

Figure 4 presents an interesting finding of sleep problems and the everyday life of a medical student. 64% of medical students have admitted that their poor sleep quality has a detrimental effect on their studies and 43% of the students admit that sleep disturbances make them feel lethargic, unmotivated, and unproductive. 45.2% of students report suffering from emotional imbalance due to lack of proper sleep.

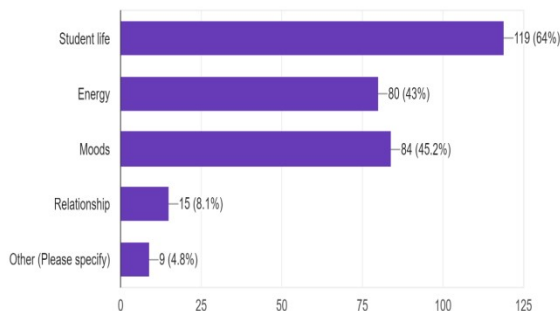


Figure 4: Affects of poor sleep quality

However, when asked what medical students think contributes to their lack of sleep, a majority of the students (73.7%) responded study stress is the culprit of their lack of sleep, followed by over thinking (47.3%) and social media use (38.2%). Medical life is stressful and students generally have to endure greater academic stress and study load than other students, which is often assumed to be the main

cause of sleep disturbances among medical students and the data presented in figure 5 just confirms this hypothesis.

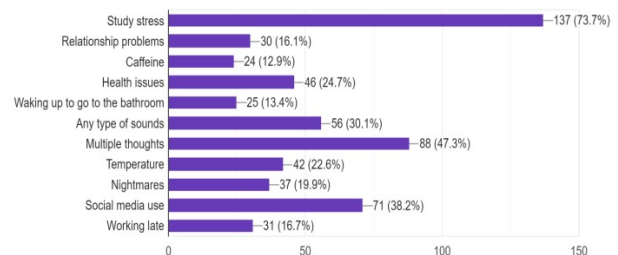


Figure 5: Factors contributing to sleep latency

Discussion:

Medical students, in particular, drive through long and intensive academic years before becoming physicians. Moreover, they face many challenges in their personal lives such as family and relationship issues that affect their mental health. A triggering factor for insomnia is known to be extreme physiological stress and this stress level has a bidirectional association with poor sleep quality [16]. Medical students suffer from high stress throughout their academic career. Stress related with inadequate sleep and extreme daytime drowsiness can lead to difficulties in interpersonal relationship, depression and anxiety.

In our study, the students have slept for 6.2 ± 1.54 hours every night with taking on an average of 36.5 ± 35.3 minutes to fall asleep. This clearly cannot be termed as adequate sleep, as several studies have revealed that a young adult need at least 7-9 hours of sleep to function at an optimal level [24]. However, these conclusions are consistent with several other studies that attempted to identify sleeping habits and sleeping disorders among medical students [15-17].

Bahammam *et al.*, 2005 exhibited the complete sleep time at night on the samples was 5.9 ± 1.6 hours [22]. Their results are analogous to ours. Study result among the undergraduates of Palestine was 6.4 ± 1.1 hours. Another study reported average sleep duration among Korean college students to be 6.7 ± 1.3 hours [23]. A similar study among Chinese college students described an average duration of sleep during weekdays to be 6.9 hours [24].

Daytime Sleepiness indicator shows that at least 30% of the students suffer from sleep problems. But Henry et al found daytime sleepiness among 78% of students and over 80% of medical students had daytime naps at least once in the past month and experienced morning tiredness [15]. Our findings are in contrast with several other studies, however, it may be due to the point that medical students in Bangladesh rely heavily on caffeinated drinks to keep themselves awake during daytime and actively participate in all academic classes and practical sessions. This explains why they do not report a higher percentage of DTS.

Sleep quality is reported fairly bad by 31 (16.6%) students and very bad by 12 (6.4%) students. Poor sleep quality is usually reported in association with sleep latency, nightmares, occurrence of night-time awakenings, and time of going to bed. However, 87% of students have refused to take any over-the-counter medicine to induce sleep despite having sleep problems. The result is consistent with other studies [14, 15].

A majority of the students (73.7%) responded study stress is the culprit of their lack of sleep, followed by over thinking (47.3%) and social media use (38.2%). Sweileh *et al* 2011 noticed poor sleep quality in only 9.8% and was significantly associated with sleep latency, frequency of nocturnal awakenings, time of going to bed, nightmares [14].

Conclusion:

Medical students are exposed to great academic stresses, which may affect their sleep pattern. Poor sleep quality with extreme daytime sleepiness can affect their mental capability needed for good academic performance.

In the present study we tried to evaluate sleeping habit of medical students and assess their sleep quality and to identify the causes of poor sleep quality. Our findings suggest that, on one hand, most of the medical students do not get proper sleep at night, and as a result they suffer from lack of enthusiasm, lower level of energy and most importantly, their studies are hampered. On the other hand, study stress is one of the pioneering component that affects the medical student's sleep quality and quantity. There seem to be a bidirectional correlation between sleep quality and academic performance. However, we

didn't assess the correlation between sleep quality and their academic performance in this study, so our next goal is to correlate sleep quality with academic performance.

Education of medical students in Bangladesh on sleep problems and practice of good sleep hygiene is recommended. Secondly, assessment of sleep problems in medical students with poor academic performance should be routinely practiced.

This study was conducted in five medical colleges in Sylhet and results cannot be inferred to cover the country. So we recommend further study with larger sample size and territory.

Reference:

1. Bixler, E.O., Kales, A., Soldatos, C.R., Kales, J.D. and Healey, S., 1979. Prevalence of sleep disorders in the Los Angeles metropolitan area. *The American journal of psychiatry*.
2. Quera-Salva, M.A., Orluc, A., Goldenberg, F. and Guilleminault, C., 1991. Insomnia and use of hypnotics: study of a French population. *Sleep*, 14(5), pp.386-391.
3. Hetta, J., Broman, J.E. and Mallon, L., 1999. Evaluation of severe insomnia in the general population—Implications for the management of insomnia: Insomnia, quality of life and healthcare consumption in Sweden. *Journal of Psychopharmacology*.
4. Hoffmann, G., 1999. Evaluation of severe insomnia in the general population—Implications for the management of insomnia: Focus on results from Belgium. *Journal of Psychopharmacology*.
5. Doi, Y., Minowa, M., Okawa, M. and Uchiyama, M., 2000. Prevalence of sleep disturbance and hypnotic medication use in relation to sociodemographic factors in the general Japanese adult population. *Journal of epidemiology*, 10(2), pp.79-86.
6. Ohayon, M.M. and Zulley, J., 2001. Correlates of global sleep dissatisfaction in the German population. *Sleep*, 24(7), pp.780-787.
7. Leger, D., Guilleminault, C., Dreyfus, J.P., Delahaye, C. and Paillard, M., 2000. Prevalence of insomnia in a survey of 12 778 adults in France. *Journal of sleep research*, 9(1), pp.35-42.

8. Roberts, R.E., Roberts, C.R. and Chen, I.G., 2000. Ethnocultural differences in sleep complaints among adolescents. *The Journal of nervous and mental disease*, 188(4), pp.222-229.
9. Liu, J., Hay, J., Joshi, D., Faught, B.E., Wade, T. and Cairney, J., 2011. Sleep difficulties and obesity among preadolescents. *Canadian Journal of Public Health*, 102(2), pp.139-143.
10. Ikeda, T., Nagai, T., Kato-Nishimura, K., Mohri, I. and Taniike, M., 2012. Sleep problems in physically disabled children and burden on caregivers. *Brain and Development*, 34(3), pp.223-229.
11. Wali, S.O., Krayem, A.B., Samman, Y.S., Mirdad, S., Alshimemeri, A.A. and Almobaireek, A., 1999. Sleep disorders in Saudi health care workers. *Annals of Saudi medicine*, 19(5), pp.406-409.
12. BaHammam, A., Bin Saeed, A., Al-Faris, E. and Shaikh, S., 2006. Sleep duration and its correlates in a sample of Saudi elementary school children. *Singapore medical journal*, 47(10), p.875.
13. Pilcher, J.J., Ginter, D.R. and Sadowsky, B., 1997. Sleep quality versus sleep quantity: relationships between sleep and measures of health, well-being and sleepiness in college students. *Journal of psychosomatic research*, 42(6), pp.583-596.
14. Sweileh, W.M., Ali, I.A., Sawalha, A.F., Abu-Taha, A.S., Sa'ed, H.Z. and Al-Jabi, S.W., 2011. Sleep habits and sleep problems among Palestinian students. *Child and adolescent psychiatry and mental health*, 5(1), pp.1-8.
15. Lawson, H.J., Wellens-Mensah, J.T. and AttahNantogma, S., 2019. Evaluation of sleep patterns and self-reported academic performance among medical students at the University of Ghana School of Medicine and Dentistry. *Sleep disorders*, 2019.
16. Suchecki, D., Machado, R.B. and Tiba, P.A., 2009. Stress-induced sleep rebound: adaptive behavior and possible mechanisms. *Sleep science*, 2(3), pp.151-160.
17. Lemma, S., Berhane, Y., Worku, A., Gelaye, B. and Williams, M.A., 2014. Good quality sleep is associated with better academic performance among university students in Ethiopia. *Sleep and Breathing*, 18(2), pp.257-263.
18. Mirghani, H.O., Mohammed, O.S., Almutadha, Y.M. and Ahmed, M.S., 2015. Good sleep quality is associated with better academic performance among Sudanese medical students. *BMC research notes*, 8(1), pp.1-5.
19. Chinawa, J.M., Chukwu, B.F. and Obu, H.A., 2014. Sleep practices among medical students in Pediatrics Department of University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu, Nigeria. *Nigerian journal of clinical practice*, 17(2), pp.232-236.
20. Miletin, M.S. and Hanly, P.J., 2003. Measurement properties of the Epworth sleepiness scale. *Sleep medicine*, 4(3), pp.195-199.
21. Chervin, R.D., 2003. Epworth sleepiness scale?. *Sleep medicine*, 4(3), pp.175-176.
22. Bahammam, A.S., Al-Khairi, O.K. and Al-Taweel, A.A., 2005. Sleep habits and patterns among medical students. *Neurosciences Journal*, 10(2), pp.159-162.
23. Ban, D.J. and Lee, T.J., 2001. Sleep duration, subjective sleep disturbances and associated factors among university students in Korea. *Journal of Korean Medical Science*, 16(4), p.475.
24. Tsui, Y.Y. and Wing, Y.K., 2009. A study on the sleep patterns and problems of university business students in Hong Kong. *Journal of American college health*, 58(2), pp.167-176.
25. Hirshkowitz, M., Whiton, K., Albert, S.M., Alessi, C., Bruni, O., DonCarlos, L., Hazen, N., Herman, J., Katz, E.S., Kheirandish-Gozal, L. and Neubauer, D.N., 2015. National Sleep Foundation's sleep time duration recommendations: methodology and results summary. *Sleep health*, 1(1), pp.40-43.