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Original Research Article

Sleep quality and associated factors among undergraduate medical students in Delhi

Pooja Ahlawat[1], Archana Dwivedi[2], Nidhi Dwivedi[1]*, Gunjan Mahuar[1], Mridul Mahaur[1], Kamaljeet Singh[3], Akshita Jain[4], Soumit Sharma[4]

[1]Department of Community Medicine, North DMC Medical College, New Delhi, India
[2]Department of Neurology, IMS, BHU, Varanasi, Uttar Pradesh, India
[3]IRCH, AIIMS, Delhi, India
[4]North DMC Medical College, New Delhi, India

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***Correspondence:**
Dr. Nidhi Dwivedi,
E-mail: nidhi.stats@gmail.com

ABSTRACT

Background: Sleep disturbances are common among medical students worldwide and affects their health and academic performance. The objective of this study was to assess the quality of sleep in undergraduate medical students of Delhi.
Methods: A cross-sectional study was conducted among 234 undergraduate students from medical college in New Delhi. A pre-designed, pre-tested questionnaire was used to collect socio-demographic and life style details and Pittsburgh Sleep Quality Index (PSQI) was used to study the quality of sleep. Data was analyzed by SPSS software version 25.0 and for qualitative data analysis chi-square test was used.
Results: Mean age of study subjects was 21.99±1.74 years and males (67.5%) were more as compared to (32.5%) females. Most of the participants 47.4% were in first and second year, 35.5% were from third and final year and 17.1% were interns. Out of 234 participants, only 44% of study participants has good quality of sleep. Most of study participants (56%) were suffering from poor sleep quality. Batch of MBBS, relationship status, BMI and dietary habits of participants were found to be significant predictors of quality of sleep.
Conclusions: This study shows that 56% of study participants were suffering from poor quality of sleep. Professionals and medical students who suffer from poor sleep quality have a higher risk of misjudgements, substance abuse, accidents, burnout, anxiety, and depression. So, there is a need to improve knowledge regarding importance of good sleep quality among medical students.

Keywords: PSQI, Sleep quality, Dietary habits, Sleep, Physical activity

INTRODUCTION

Good quality of sleep is important for good health. Sleep quality has been found deteriorating in various populations due to stress, changes in lifestyle, environmental disturbances and various modern technologies. According to WHO at single instant, as many as 50% of adults suffer from one or more sleep disorders globally and for 13% they are severe with significant morbidities.[1]

Sleep disturbances are disorders related to initiating and maintaining sleep, excessive somnolence and those related to the sleep-wake schedule, and parasomnias.[2] The latter are dysfunctions associated with sleep, sleep stages, or partial arousals. Studying medicine involves huge academic workload and extended hours of studying. Sleep disturbances are common among medical students worldwide and affects their health and academic performance. A global review revealed that sleep

disturbances affect significant proportion of medical students ranging from 70% in Hong Kong, to 90% in China and 41% of the participating students in Iran.[3] Professionals and medical students who suffer from poor sleep quality tend to have a higher risk of misjudgements, substance abuse, accidents, burnout, anxiety, and depression.[3-7] The aim of the study was to determine the quality of sleep in students of a medical college in Delhi.

METHODS

Study population and area

This cross-sectional study was conducted in North Delhi Municipal Corporation Medical College. North Delhi Municipal Corporation Medical College is a prominent medical institution in India and is well known for its quality of health services to all strata of society. This cross-sectional study was conducted by Department of Community Medicine in North Delhi Municipal Corporation Medical College and Hindu Rao Hospital, among all the undergraduate medical students of the four academic years including interns. Inclusion criteria was medical students of the four academic years including interns, who gave consent for the study. Students who did not give consent or who were suffering from any mental health disorders were excluded from the study.

Sampling method

Complete enumeration method was used for sampling. All the undergraduate medical students of all the semesters and interns were included in this study. List of the students according to university roll numbers of each semester was obtained from the academic section of the college. According to the list, number of interns in batch 2016 were 51, number of students in batch 2017 were 50, 51 students in batch 2018, 63 students in batch 2019 and 60 students in 2020 batch which makes a total of 275. Among these 234 students filled the form after giving consent. Three attempts were made to include every student. Inclusion criteria was medical students who gave consent for the study. Students who did not give consent and students with history of any mental health disorders were excluded from the study.

Data collection

Before administering the questionnaire to the study participants the importance and objective of study was explained to students. Students were encouraged to fill all the particulars and not to leave any question unanswered. The data was collected between 01 March 2022 to 31 March, 2022.

Study tools

A pre-designed pre-tested semi structured self-administered questionnaire comprising three parts was used to collect the data from students. First part consisting of socio-demographic details, second part consisting of questions regarding dietary habits (WHO-STEPS questionnaire was modified to study the dietary habits among students) and third part consisting of questions related to physical activity.

Pittsburgh sleep quality index (PSQI) was used to assess the quality of sleep among medical students. It is a self-administered questionnaire, in which participants rate their subjective sleep quality based on several questions. These questions deal with various aspects of sleep that range from the average amount of sleep during the night, the difficulty experienced in falling asleep, and other sleep disturbances.

Statistical analysis

Total 234 medical students are analysed for this study. Categorical variables were presented, such as frequency and percentages and continuous variables were presented as mean and standard deviations (SD). Cross tabulation with χ^2 was applied to evaluate the association of sleep quality with participant's demographic characteristics. All the analysis was conducted using SPSS version 25.

RESULTS

Among the 234 study participants 44% students were in the age group of 19-21 years and remaining 56% were from the age group of 22-27 years. 67.5% of students were male and 32.5% were females. Students were divided into three groups group 1 with 40 students consisting of interns, group 2 consisting of 83 students belonging to third and final year and group 3 with 111 students of first and second year. 86.8% students were single. 92.8% students were Hindu and 66.7% students were belonging to upper middle class.

Subjective sleep quality was very good in 28.2% students and very bad in 3% students. Sleep latency of more than 60 minutes was present in only 12% (N=28) student. Sleep duration was≤6 hours in 61.5% (N=144) students and sleep duration was more than 8 hours only in 6.8%. Sleep efficiency was ≤65 in 20.9% of students. 20.9% students reported no sleeping disturbance whereas 61.1% students reported that they experience sleeping disturbance. No sleep medication as used by 85% of the students. Day dysfunction due to sleep was present in 14.5% for less than once a week, 1-2 times a week in 8.1%, and more than or equal to 3 times per week in 3.8% of students.

Figure 2 shows sleep quality among students. Sleep quality was found to be good in 43.6% and poor in 56.4% of students which is a very high percentage and can impact health and academic performance of young medical students.

Subjective sleep quality was found to be very good in 28.2% of students among which maximum were in group 1 comprising interns (32.5%), followed by 28.8% in group 3 comprising first year and second year medical students

and 25.3% in group 2 comprising third year and fourth year medical students and the difference was found to be statistically significant (p=0.028)

Sleep latency ≥60 min was found to be maximum in group 2 comprising third and fourth year medical students (13.4%) as compared to group 1 (12.5%) and group 3 students (9%) and the difference was found to be statistically significant (p=0.027). Day dysfunction due to sleep was more in students who were committed (38.7%) or in a relationship as compared to those who were single (28.6%) and the difference was found to be statistically significant. Sleep latency of more than ≥60 min was also more in committed students (22.6%) as compared to singles (11.8%) but the difference was not found to be statistically significant (p=0.008)

Among 234 students 65% students had normal BMI, 29.1% were overweight and 6% were underweight. Subjective sleep quality was very good in 32.8% of students with normal BMI which is more as compared 31% in overweight and 14.2% of underweight students. Also fairly bad quality of sleep was maximum in overweight students (45.5%) and was least present in students with normal BMI (8.6%) and the difference was found to be statistically significant with p value of 0.006

Good sleep quality was more prevalent (53%) in students with good dietary habits as compared to students with bad dietary habits and association was found to be statistically significant (p=0.0321).

Participant's PSQI scores for each component and global PSQI scores are shown in Table 6. PSQI minimum and maximum score of all the components was found to be 0 and 3 respectively. The mean global PSQI score was 6.43, which indicates poor sleep quality. With regard to each component, sleep latency showed the highest mean score, which indicates that many participants take long time to get sleep after going to bed. The lowest score was found for use of sleeping medications, indicating that most participants did not use sleeping medications.

Table 1: Socio-demographic details of medical students (n=234).

Variables		N	%
Age (years)	19-21	103	44
	22-24	109	46.6
	25-27	22	9.4
Batch wise distribution of students	Group 1 (interns)	40	17.1
	Group 2 (third and final year students)	83	35.5
	Group 3 (first and second year students)	111	47.4
Gender	Male	158	67.5
	Female	76	32.5
Relationship status	Single	203	86.8
	Committed	31	13.2
Residence	Delhi	170	72.6
	Outside Delhi	64	27.4
Religion	Hindu	217	92.8
	Muslim	7	3
	Sikh	5	2.1
	Christian	5	2.1
Socio-economic status	Lower	1	0.4
	Upper lower	15	6.4
	Lower middle	14	6
	Upper middle	156	66.7
	Upper	48	20.5

Table 2: Association of sleep quality with batch in MBBS.

Characteristics	N (%)				P value	
	Group 1 interns, n=40	Group 2, n=83 third and final year	Group 3, first and second year n=111	Overall		
Subjective sleep quality						
Very good	13 (32.5)	21 (25.3)	32 (28.8)	66 (28.2)	14.19	0.028
Fairly good	19 (47.5)	32 (38.7)	56 (50.5)	107 (45.6)		
Fairly bad	5 (12.5)	14 (16.8)	17 (15.3)	36 (15.4)		
Very bad	3 (7.5)	16 (19.2)	6 (5.4)	25 (10.8)		
Sleep latency (minutes)						
<15	17 (42.5)	18 (21.6)	59 (53.2)	94 (40.2)	14.266	0.027

Continued.

Characteristics	N (%)				P value
	Group 1 interns, n=40	Group 2, n=83 third and final year	Group 3, first and second year n=111	Overall	
16-30	10 (25)	22 (26.5)	26 (23.4)	58 (24.7)	
31-60	8 (20)	32 (38.5)	16 (14.4)	56 (23.9)	
≥60	5 (12.5)	11 (13.4)	10 (9)	26 (11.2)	

Table 3: Association of sleep quality with relationship status in medical students.

Characteristics	N (%)			P value	
	Committed	Single	Overall		
Day dysfunction due to sleep					
Never	12 (38.7)	155 (76.4)	167 (71.4)	11.751	0.008
<once a week	8 (25.8)	26 (12.8)	34 (14.5)		
1-2 times per week	6 (19.4)	13 (6.4)	19 (8.1)		
≥3 times per week	5 (16.1)	9 (4.4)	14 (6)		

Table 4: Association of sleep quality with BMI in medical students.

Characteristics	N (%)				P value	
	Normal	Over weight	Underweight	Overall		
Very good	50 (32.8)	21 (31.0)	2 (14.2)	73 (31.2)	18.243	0.006
Fairly good	89 (58 .6)	16 (23.5)	6 (42.9)	111 (47.4)		
Fairly bad	13 (8.6)	31 (45.5)	6 (42.9)	50 (21.4)		
Very bad	0 (0)	0 (0)	0 (0)	0 (0)		

Table 5: Association of sleep with dietary habits.

Sleep quality	N (%)			P value
	Bad dietary habits	Good dietary habits	Total	
Good	58 (38.4)	44 (53.0)	102 (43.6)	0.0321
Bad	93 (61.6)	39 (47.0)	132 (56.4)	
Total	151	83	234	

Table 6: Descriptive statistics for PSQI.

Categories	Mean±SD	Range
1: Subjective sleep quality	0.91± 0.723	0-3
2: Sleep latency	1.22±1.002	0-3
3: Sleep duration	1.17±1.137	0-3
4: habitual sleep efficiency	1.07±1.204	0-3
5: sleep disturbances	1.00±0.693	0-3
6: use of sleeping medications	0.26±0.670	0-3
7: daytime dysfunction	0.81±0.865	0-3
Global PSQI score (total score)	6.43± 3.534	0-20

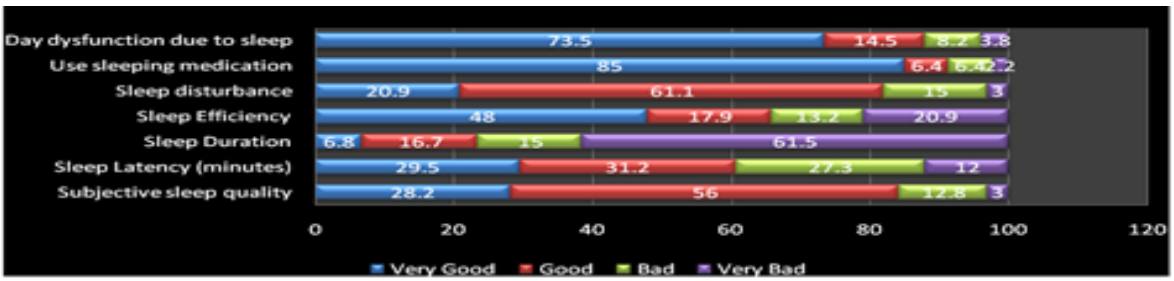

Figure 1: PSQI distribution among medical students.

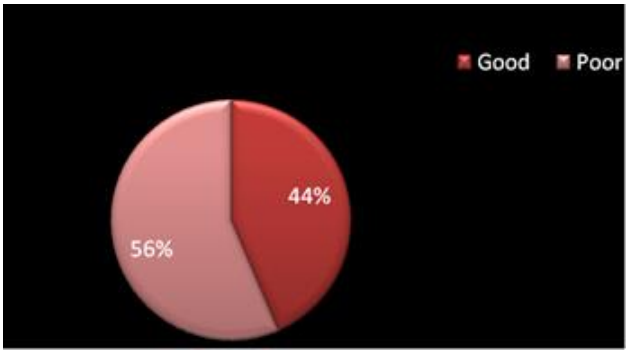

Figure 2: Sleep quality among medical students (n=234).

DISCUSSION

Sleep disorders are one of the emerging health problems. According to International classification of sleep disorders, on basis of symptoms they are categorized as insomnia, hypersomnia, parasomnias, circadian rhythm sleep disorders, sleep-related breathing disorders and sleep-related movement disorders.[8] Medical students due to busy academic and clinical schedules are vulnerable for poor quality of sleep which can potentially affect cognitive functions leading to psychiatric morbidities.[9] In this study sleep quality of medical students was assessed using PSQI. Among the 234 study participants 44% students were in the age group of 19-21 years and remaining 56% were from the age group of 22-27 years. 67.5% of students were male and 32.5% were females. Sleep quality was found to be good in 43.6% and poor in 56.4% of students which is very high and can impact health and academic performance of young medical students. In a study conducted among medical students of Kathmandu Medical College the prevalence of poor sleep quality among medical students was found to be 44.23%.[10] In a similar study conducted in Uttar Pradesh 29.53% students had poor sleep quality scores.[11] This shows that a large number of medical students suffer from poor sleep quality which needs urgent attention.

In batch wise distribution of medical students subjective sleep quality was found to be very good maximum in the group one comprising interns (32.5), followed by 28.8% in group 3 comprising first and second year medical students and 25.3% in group 2 comprising third and fourth year medical students. (p=0.008). Sleep latency ≥60 min was found to be maximum in group 2 comprising third and fourth year medical students. Similar result was found in a study done in Brazil where maximum number of students with sleep latency ≥60 min was third and final year MBBS students.[12] This can be due to the stress of increasing syllabus in the third and final years of MBBS and upcoming final MBBS exams.

Day dysfunction due to sleep was more in students who were committed (38.7%) or in a relationship as compared to those who were single (28.6%) and the difference was found to be statistically significant. Sleep latency of more than ≥60 min was also more in committed students (22.6%) as compared to singles (11.8%) but the difference was not found to be statistically significant. This can be due to the fact that students in a relationship are involved more in social media or online chats or are awake till late night leading to day dysfunction.

Subjective sleep quality was very good in 32.8% of students with normal BMI which is more as compared 31% in overweight and 14.2% of underweight students. Also, fairly bad quality of sleep was maximum in overweight students 45.5% and was least present in students with normal BMI (8.6%) with statistically significant difference in a study conducted by Krističević et al poor sleep quality was associated with increased likelihood of being overweight/obese.[13]

One recent meta-analysis showed that poor sleep duration was associated with overweight/obesity status in children, adolescents, and young adults, independent of sleep duration.[14] Good sleep quality was more prevalent (53%) in students with good dietary habits as compared to students with bad dietary habits and association was found to be statistically significant (p=0.0321) in a study conducted in Israel, eating behaviours (specifically, unhealthy ones) were found to be negatively associated with sleep patterns and DSRB (including sleep problem behaviours, sleepiness, and mood) and with insufficient weekday sleep.[15] Various strength of the studies are use of pretested and pre-validated questionnaire and use of standardized PSQI to assess quality of sleep. Response rate of the study was very high.

Limitations

This study has some limitations like the result cannot be generalized to the all the medical students in the country. As the study was questionnaire based so there can be underreporting or over reporting by the study participants.

CONCLUSION

Sleep quality vary among medical students and in this study 56.4% of medical students had poor sleep quality. To improve quality of sleep among medical students, more emphasis is required to identify factors affecting sleep quality and to find possible solutions to prevent any long-term consequences. These findings can help administration and faculty of medical colleges to identify the importance of good sleep quality and management of stress in students. This study results will also contribute in promoting programmes and actions related to improvement of sleep quality and stress management in early years of medical education.

Recommendations

Good sleep quality is important for medical students as it affects their health and academic performance.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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