International Journal of Community Medicine and Public Health
Nair RK et al. Int J Community Med Public Health. 2023 May;10(5):1817-1821
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20231279

Original Research Article

A study to assess the quality of sleep among medical students of Mysuru, Karnataka, India

Rachana K. Nair, Mansoor Ahmed*

Department of Community Medicine, Mysore Medical College and Research Institute, Mysuru, Karnataka, India

Received: 27 February 2023
Accepted: 04 April 2023

***Correspondence:**
Dr. Mansoor Ahmed,
E-mail: docmansoor2000@yahoo.com

ABSTRACT

Background: Every individual requires a period of rest to enhance and empower his/her work ability. Adequate quality of sleep is a prerequisite for optimal functioning of the students' mind and body. Sleep problems are common in the general population. Medical students are one subgroup who are more vulnerable to poor sleep quality owing to multiple factors in their lifestyle. To assess the quality of sleep in a population of medical students of Mysore Medical College and Research Institute, Mysuru and to study the determinants affecting it.
Methods: An institution-based cross-sectional study was conducted using convenience sampling among 132 medical students of Mysore Medical College and Research Institute. A pre-designed and pre-tested structured questionnaire developed using the Pittsburgh quality of sleep index (PQSI) Score and Epworth daytime sleepiness scale (EDSS) was used. The data collected was compiled in MS- Excel and analysed using statistical package of social sciences (SPSS)Version 20.0.
Results: Out of 132 medical students who were enrolled in the study, 55.3% (73/132) had an abnormal PSQI score. Males had better quality of sleep compared to females. Abnormal PSQI scores were associated with stress, alcohol and smoking.
Conclusions: Sleep quality plays a major role in maintaining a medical student's physical, mental and working capacity.

Keywords: Medical students, Sleep quality, Sleep problems, PSQI score, EDSS score

INTRODUCTION

Sleep is a physiological process, which is essential to basic human needs for their normal functioning.[1] American Heritage Medical Dictionary (2007), defined sleep as "a natural periodic state of rest for the mind and body in which the eyes usually close and consciousness is completely or partially lost so that there is a decrease in bodily movement and responsiveness to external stimuli". According to Lawson et al (2019) 7 to 9 hours of normal sleep is required for human body to conduct memory consolidation and integration.[1,4,5] It is related to one of our biological rhythm called circadian rhythm, which is influenced by factors such as physiological functions, school and work schedules and various medical conditions of the body including genetic differences.[2] Good physical, mental and social wellbeing is the benefit of good sleep and that establishes a good quality of life.[1,3] Quality sleep eliminates concentration difficulties without which the ability to learn and retain information is weakened.[1]

Sleep disturbance is a psychiatric disorder, which impairs the ability to think, to handle stress, to maintain a healthy immune system, and to moderate the emotions. Sleepiness is inversely proportional to hours of sleep and it may have substantial adverse effect on general heath and quality of life.[6] Fatigue, hypertension, cognitive impairment like deterioration of performance, attention and motivation; diminished mental concentration and

intellectual capacity and increase of the likelihood of accidents at work and mental health complications are the main effects of sleep deprivation.[2,10]

The medical student population is one of the populations that appear to be at increased risk of sleep deprivation due to demanding academic and clinical duties, which is co-existent with change in living styles such as poor accommodation, food and being away from family.[7-9] All these further add to the poor quality of sleep and its subsequent mental and physical morbidity.

This study was done to assess the quality of sleep among the three classes of medical students that is, undergraduates, interns and postgraduates of Mysore Medical college and Research Institute, Mysuru and to find the determinants affecting their quality of sleep.

METHODS

It was a cross sectional questionnaire-based study carried out during the period of August 2020 to October 2020 among the three categories of medical students, undergraduates, interns and postgraduates of Mysore Medical College and Research Institute, Mysuru. The study population comprised of a total of 132 medical students, who were enrolled by convenience sampling. It included 44 Undergraduates and the same number of Interns and Postgraduates. Informed consent was obtained and confidentiality was assured to all the medical students who volunteered for the study. Students who were willing to participate were given a brief description about the study and its objectives. Recruitment and collection of data continued for 9 weeks. Information collected included information regarding age, sex, year of study, BMI, addictions, PQSI score and EDSS.

Tools for data collection

PQSI (Pittsburgh quality of sleep index) is a self-report instrument to assess the quality of sleep.[11] There are 19 items with 7 component scores, each of which has a range from 0 to 3, where 0 indicates no difficulty and 3 indicates severe difficulty. The sum of these 7 component scores yields one PQSI global score with a range of 0 to 21 points. The questions are framed in a 4-point Likert type and analyze factors such as sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medication and day time dysfunction.

Good sleep quality is defined as score <=5, while scores above 5 demonstrate poor quality.

EDSS (Epworth daytime sleepiness scale) is a scale to measure daytime sleepiness using a very short questionnaire, introduced in 1991 by Dr Murray Johns of Epworth Hospital in Melbourne, Australia.[12] There are 8 questions and scores are ranging from 0 to 3 for each question. The higher the EDSS score, the higher that person's average sleep propensity in daily life (ASP). The eight questions are added together to get a single number which range from 0 to 24. In general, EDSS Scores can be interpreted as follows;

0 to 9 - Normal

10 to 12 - Borderline

13 to 24 - Abnormal

Statistical analysis

Data was entered in Microsoft excel 2010; analysis was done with Statistical Package for the Social Sciences (SPSS) Version 20. Descriptive Statistics were expressed as frequency and percentages. Karl Pearson's Correlation Coefficient was used to test for significance between categorical variables. Statistical significance was set at p<=0.05.

RESULTS

The mean age of the undergraduates was 21.27 years, interns 23.36 years and postgraduates 25.90 years. A total of 132 medical students participated in the study, among which 71 (53.7%) were females and 61 (46.3%) were males. Among 132, 102 (77.2%) stayed in hostels and rest 30 (22.7%) were at their home (Table 1).

Table 1: Distribution of study population according to age, sex and residence.

Socio demographic factors	Undergraduate (n=44)	Interns (n=44)	Postgraduate (n=44)	Total
Mean age in Years (SD)	21.27	23.36	25.90	
Sex				
Male	22	24	15	61
Female	22	20	29	71
Residence				
Home	14	6	10	30
Hostel	30	38	34	102

Table 2: Distribution of the study population according to lifestyle and habits (N=132).

Habits	Number (n)	Percentage (%)
Caffeine		
Yes	39	29.5
No	93	70.4
Alcohol		
Yes	17	12.8
No	115	87.1
Smoking		
Yes	11	8.3
No	121	91.6
Regular exercise		
Yes	55	41.6
No	77	58.3
Laptop/mobile		
Yes	110	83.3
No	22	16.6
Stress		
Yes	107	81.0
No	25	19

It was seen from Table 2 that, out of 132 medical students, smoking was reported by 11/132 (8.3%) students, regular alcohol intake was done by 17/132 (12.9%) students, excessive caffeine intake was revealed by 39/132 (29.5%) students, regular exercise was done by 55/132 (41.6%) students, stress was reported by 107/132 (81.1%) medical students and excessive use of social media at night by 110/132 (83.3%) medical students.

Table 3 demonstrates that 87 (65.9%) medical students had normal body mass index (BMI), while 41 (31%) were overweight and obese. Sleep duration of fewer than 6 hours was seen in 16 (12.1%) interns followed by 12 (9%) postgraduates. Out of 73 medical students who had poor quality of sleep, 27 (36.98%) were interns followed by 23 (17.4%) postgraduates and 23 (17.4%) undergraduates. 23 (17.42%) medical students had abnormal daytime sleepiness, of which 13 were Interns, 7 were postgraduates and 3 were medical students.

Figure 1, illustrates the relationship between PSQI and Epworth day time sleepiness. It is noted that among 73/132 (57.6%) medical students who had poor quality of sleep, 21/132 (15.9%) had abnormal daytime sleepiness. The relationship between PSQI and Epworth day time sleepiness was found to be statistically significant ($p<0.05$).

We can see from Table 4 that there is a significant positive correlation between body mass index (BMI) and sleep index score. While Sleep duration, place of stay, alcohol, smoking, and stress had a negative correlation with sleep index score.

Table 3: Distribution of sleep variables among medical students.

Sleep variables	Undergraduate (N=44)	Interns (n=44)	Postgraduate (n=44)	Total
BMI				
Underweight	2	1	1	4
Normal	33	25	29	87
Overweight	7	14	9	30
Obese	2	4	5	11
Sleep duration				
<5 hrs	2	11	3	16
5-6 hrs	4	5	9	18
6-7 hrs	24	18	22	64
>7 hrs	14	10	10	34
Sleeping arrangements				
Sharing room	32	21	15	68
Sleeping alone	12	23	29	64
PSQI				
Good	21	17	21	59
Poor	23	27	23	73
Epworth daytime sleepiness				
Normal	39	24	33	96
Borderline	2	7	4	13
Abnormal	3	13	7	23

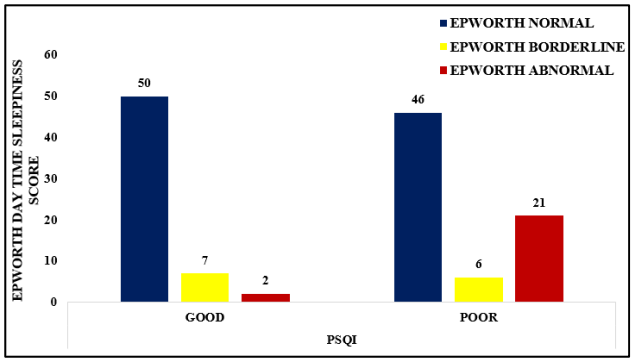

Figure 1: Relationship between PSQI and Epworth day time sleepiness.

Table 4: Correlation of global Pittsburgh quality of sleep index score with demographic profile and addiction pattern.

Particulars	Karl pearson's correlation coefficient	P value
Residence	-0.603	P<0.01
BMI	0.213	P<0.05
Sleep duration	-0.511	P<0.01
Alcohol	-0.192	P<0.05
Smoking	-0.256	P<0.01
Stress	-0.313	P<0.01

DISCUSSION

Sleep disorders are a major issue among students with long term health consequences. An increasing rate of poor-quality sleep has been reported in both developing and developed countries. Medical students are found to be one vulnerable group of students with poor quality of sleep.

It is seen from our study that about 55.5% of medical students demonstrated poor quality of sleep as per PQSI scale. Similarly 67.42% medical students reported poor sleep quality in the study by Priya et al at Pawapuri (Bihar), 63.5% by Gassara et al in Tunisia, Africa, 62.6% by Shad et al, at Delhi and 70.4% by Ibrahim et al in Saudi Arabia.[13-16]

In the present study, interns (36.98%) were found to have a poorer quality of sleep as compared to postgraduates (17.4%) and undergraduates (17.4%), mainly because of their hectic COVID duties and the pressure of preparation for PG entrance examination. But in the study done by Giri et al in Maharashtra, postgraduates had higher disturbance of sleep followed by interns.[19]

This study revealed that 23/132 (17.4%) medical students had abnormal levels of day time sleepiness while 13/ 132 (10%) were in the borderline. A study by Giri et al in Maharashtra, showed similar findings.[17]

In our study substance abuse was found in about 21.2% of Study population. A study by Jean -Louis et al at California revealed that substance abuse may increase daytime sleepiness.[18]

Body mass index showed a significant correlation (R=0.213, p<0.05) with global PQSI score in our study. Study by Veldi et al in Estonia also showed significant correlation between BMI and sleep quality (R=0.172; p=0.035).

In this study excessive day time sleepiness was found in 17.42% of the study population, which is similar to the study by Giri et al in Maharashtra (17.3%).[17] However this was much higher in the study by Priya et al at Pawapuri (Bihar) (37.13%), Ibrahim et al, at Saudi Arabia (37.3%), Zailinawati et al, at Malayasia (35.5%) and Machado-Duque et al. at Columbia (49.8%).[13,16,22,23]

The residents/interns are in constant contact with the patients and observe their suffering especially now in COVID period. Medical students experience extreme level of stress due to academic demands especially during their Exam period. The post graduates on the other hand have to manage the multiple responsibilities of studies, exams and patient care. The stress associated with the duties of medical students leads them to insufficient sleep and excessive day time sleepiness which can lead to depression, anxiety, alcohol and drug abuse.

In our study 107/132 (81%) students were found to be stressed out. Among them, a majority 40 (30.3%) were Interns followed by 35 (26.5%) postgraduates and 32(24.2%) undergraduates. Also, a significant correlation was found between stress and global PQSI score (p<0.05). Similarly, a study conducted by Abdullah D et al at Saudi reported some level of mental stress in 63.5% of the study population and also it was significantly associated with poor quality of sleep (p<0.001).[20]

CONCLUSION

The present study revealed high prevalence of poor sleep quality and day time sleepiness among the medical students as per PQSI score and EDSS score respectively. Poor sleep quality was associated with body mass index (BMI), sleep duration, alcohol, smoking and stress.

It highlights a strong need for providing a positive environment for improving the sleep quality of young medical students. Establishing counselling facilities and promoting good sleep hygiene can be an initial step to cope with their stressful environment. They should be advised to keep a track of their difficulties and seek ways to tackle them rather than to suppress their feelings.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Lawson HJ, Wellens-Mensah JT, Attah Nantogma S. 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;2019.
2. Sahraian A, Javadpour A. Sleep disruption and its correlation to psychological distress among medical students. Shiraz E-Medical Journal. 2010;11(1):12-7.
3. Siddiqui AF, 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. The Malaysian journal of medical sciences: MJMS. 2016;23(6):94.
4. Harrison Y, Horne JA. The impact of sleep deprivation on decision making: a review. Journal of experimental psychology: Applied. 2000;6(3):236.
5. Mednick S, Nakayama K, Stickgold R. Sleep-dependent learning: a nap is as good as a night. Nature neuroscience. 2003;6(7):697-8.
6. Rasekhi S, Ashouri FP, Pirouzan A. Effects of sleep quality on the academic performance of undergraduate medical students. Health Scope. 2016;5(3):e31641.
7. Veldi M, Aluoja A, Vasar V. Sleep quality and more common sleep-related problems in medical students. Sleep medicine. 2005;6(3):269-75.
8. Browne BJ, Van Susteren T, Onsager DR, Simpson D, Salaymeh B, Condon RE. Influence of sleep deprivation on learning among surgical house staff and medical students. Surgery. 1994;115(5):604-10.
9. Fu ZJ, Ma RS. Effects of sleep deprivation on human performance. Hang tian yi xue yu yi xue gong cheng Space Medicine Medical Engineering. 2000;13(4):240-3.
10. Takase B, Akima T, Satomura K, Mastui T, Ishihara M, Kurita A. Effects of chronic sleep deprivation on autonomic activity by examining heart rate variability, plasma catecholamine, and intracellular magnesium levels. Biomedicine Pharmacotherapy. 2004;58:S35-9.
11. Buysse DJ, Reynolds III CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry research. 1989;28(2):193-213.
12. Johns MW. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. Sleep. 1991;14(6):540-5.
13. 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.
14. Gassara I, Ennaoui R, Halwani N, Turki M, Aloulou J, Amami O. Sleep quality among medical students. European Psychiatry. 2016;33(S1):S594-S594.
15. Shad R, Thawani R, Goel A. Burnout and sleep quality: a cross-sectional questionnaire-based study of medical and non-medical students in India. Cureus. 2015;7(10).
16. Ibrahim N, Badawi F, Mansouri Y, Ainousa A, Jambi S, Fatani AN. Sleep quality among medical students at King Abdulaziz University: a cross-sectional study. J Community Med Health Educ. 2017;7(561):2161-711.
17. Giri PA, Baviskar MP, Phalke DB. Study of sleep habits and sleep problems among medical students of Pravara Institute of Medical Sciences Loni, Western Maharashtra, India. Annals of medical and health sciences research. 2013;3(1):51-4.
18. Jean-Louis G, Von Gizycki H, Zizi F, Nunes J. Mood states and sleepiness in college students: Influences of age, sex, habitual sleep, and substance use. Perceptual Motor Skills. 1998;87(2):507-12.
19. Veldi M, Aluoja A, Vasar V. Sleep quality and more common sleep-related problems in medical students. Sleep Medicine. 2005;6(3):269-75.
20. Alotaibi AD, Alosaimi FM, Alajlan AA, Abdulrahman KA. The relationship between sleep quality, stress, and academic performance among medical students. Journal Family Community medicine. 2020 Jan;27(1):23.
21. Machado-Duque ME, Echeverri CJE, Machado-Alba JE. Excessive daytime sleepiness, poor quality sleep and low academic performance in medical students. Rev Colomb Psiquiatr. 2015;44(3):137-42
22. Zailinawati AH, Teng CL, Chung YC, Teow TL, Lee PN, Jagmohni KS. Daytime sleepiness and sleep quality among Malaysian medical students. Med J Malaysia. 2009;64(2):108-10.

Cite this article as: Nair RK, Ahmed M. A study to assess the quality of sleep among medical students of Mysuru, Karnataka, India. Int J Community Med Public Health 2023;10:1817-21.